vivo001

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[ 0]  RRRR←AAA;X;Y;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006
[ 1]  X←5
[ 2]  Y←8
[ 3]  Δ001←X<5
[ 4]  →(~Δ001)/Δ002
[ 5]  X←X-3
[ 6]  →Δ003
[ 7] Δ002:
[ 8]  Y←Y+2
[ 9]  Δ004←(3|X)≠0
[10]  →(~Δ004)/Δ005
[11]  Y←Y+2
[12] Δ005:
[13] Δ003:
[14]  RRRR←X+Y
------------------------------------------------------------
[  0]  r←cpc algo;nome;PILHA;nnn;saida;aspa;vv;coma;SALVA;i;j;loca;aaa;pn;pna
[  1] ⍝ versao 1.08
[  2]  PILHA←0 21⍴' ' ⋄ nnn←1 ⋄ saida←0 70⍴' ' ⋄ r←0 70⍴' ' ⋄ aspa←'''' ⋄ loca←'' ⋄ pna←'≤'
[  3]  i←1
[  4] t1:→(i>1↑⍴algo)/fim
[  5]  →(algo[i;1]≠'α')/oraviva
[  6]  saida←saida,[1]1 70⍴70↑1↓algo[i;]
[  7]  →(i=i←i+1)/t1
[  8] oraviva:vv←vetoriza algo[i;]
[  9]  →('algoritmo'igual⊃vv[1])/ealg
[ 10]  →('fim{algoritmo}'igual⊃vv[1])/ealf
[ 11]  →('fimalgoritmo'igual⊃vv[1])/ealf
[ 12]  →('funcao'igual⊃vv[1])/efun
[ 13]  →('fim{funcao}'igual⊃vv[1])/efuf
[ 14]  →('fimfuncao'igual⊃vv[1])/efuf
[ 15]  →('leia'igual⊃vv[1])/elei
[ 16]  →('imprima'igual⊃vv[1])/eimp
[ 17]  →('escreva'igual⊃vv[1])/eimp ⍝ para compatibilizar com o VG = 19/06/08
[ 18]  →('devolva'igual⊃vv[1])/eimp  ⍝ em teste: sera que devolva = imprima neste contexto
      ???
[ 19]  →('se'igual⊃vv[1])/esex
[ 20]  →('senao'igual⊃vv[1])/esen
[ 21]  →('fim{se}'igual⊃vv[1])/esef
[ 22]  →('fimse'igual⊃vv[1])/esef
[ 23]  →('enquanto'igual⊃vv[1])/eenq
[ 24]  →('fim{enquanto}'igual⊃vv[1])/eenf
[ 25]  →('fimenquanto'igual⊃vv[1])/eenf
[ 26]  →('repita'igual⊃vv[1])/erep
[ 27]  →('ate'igual⊃vv[1])/eate
[ 28]  →('para'igual⊃vv[1])/epar
[ 29]  →('fim{para}'igual⊃vv[1])/epaf
[ 30]  →('fimpara'igual⊃vv[1])/epaf
[ 31]  →('abandone'igual⊃vv[1])/eaba
[ 32]  →('saia'igual⊃vv[1])/esai
[ 33]  →('<-'igual⊃vv[2])/ecad
[ 34]  →('inteiro'igual⊃vv[1])/eint
[ 35]  →('real'igual⊃vv[1])/erea
[ 36]  →('logico'igual⊃vv[1])/elog
[ 37]  →('caracter'igual 8↑⊃vv[1])/ecar
[ 38]  →('vetor'igual⊃vv[1])/evet
[ 39]  →('vetora'igual⊃vv[1])/evaa
[ 40]  r←r,[1]1 70⍴70↑(3⍕i),' - comando desconhecido'
[ 41] soma:→(i=i←i+1)/t1
[ 42] ⍝--------------algoritmo--------------
[ 43] ealg:saida←saida,[1]1 70⍴70↑⊃vv[2]
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[ 44]  →soma
[ 45] ealf:→fim
[ 46] ⍝--------------funcao-----------------
[ 47] efun:
[ 48]  →(2≥⍴vv)/naotem
[ 49]  coma←'RRRR←',(⊃vv[2]),' AAAA'
[ 50]  →vmesmo
[ 51] naotem:coma←'RRRR←',(⊃vv[2])
[ 52]  saida←saida,[1]1 70⍴70↑coma
[ 53]  nome←⊃vv[2]
[ 54]  →aca0
[ 55] vmesmo:
[ 56]  saida←saida,[1]1 70⍴70↑coma
[ 57]  nome←⊃vv[2]
[ 58]  j←1
[ 59] voi1:→(j>¯2+⍴vv)/aca0
[ 60]  saida←saida,[1]1 70⍴70↑(⊃vv[j+2]),'←AAAA[',(3 0⍕j),']'
[ 61]  loca←loca,';',⊃vv[j+2]
[ 62]  →(j=j←j+1)/voi1
[ 63] aca0:→soma
[ 64] efuf:→fim
[ 65] ⍝---------------leia-----------------
[ 66] elei:saida←saida,[1]1 70⍴70↑aspa,'LEITURA DA VARIAVEL ',(⊃vv[2]),aspa
[ 67]  saida←saida,[1]1 70⍴70↑(⊃vv[2]),'←⍞'
[ 68]  →soma
[ 69] ⍝---------------imprima---------------
[ 70] eimp:→(3=⍴vv)/temmsg
[ 71]  aaa←⊃vv[2]
[ 72]  →(aaa[⍴aaa]=';')/juntaa
[ 73]  saida←saida,[1]1 70⍴70↑aaa
[ 74]  →soma
[ 75] juntaa:saida←saida,[1]1 70⍴70↑'⍞←⍕',¯1↓aaa
[ 76]  →soma
[ 77] temmsg:aaa←⊃vv[3]
[ 78]  →(aaa[⍴aaa]=';')/juntab
[ 79]  saida←saida,[1]1 70⍴70↑(⊃vv[2]),' ',aaa
[ 80]  →soma
[ 81] juntab:saida←saida,[1]1 70⍴70↑'⍞←',(⊃vv[2]),' ,⍕',¯1↓aaa
[ 82]  →soma
[ 83] ⍝---------------atribuicao------------
[ 84] ecad:saida←saida,[1]1 70⍴70↑(⊃vv[1]),'←',,⊃2↓vv
[ 85]  aaa←⊃vv[1]
[ 86]  →('['∊aaa)/soma
[ 87]  →(∨/aaa⍷loca)/soma
[ 88]  loca←loca,';',⊃vv[1]
[ 89]  →soma
[ 90] ⍝---------------se--------------------
[ 91] esex:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[ 92]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn←nnn+1
[ 93]  PILHA←(1 21⍴21↑'SE',('000'⍕nnn)),[1]PILHA
[ 94]  nnn←nnn+1
[ 95]  →soma
[ 96] ⍝--senao--
[ 97] esen:SALVA←PILHA[1;3 4 5] ⋄ PILHA←1 0↓PILHA
[ 98]  PILHA←(1 21⍴21↑'SE',('000'⍕nnn)),[1]PILHA
[ 99]  saida←saida,[1]1 70⍴70↑'→Δ','000'⍕nnn
[100]  nnn←nnn+1
[101]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[102]  →soma
[103] ⍝--fim{se}--
[104] esef:saida←saida,[1]1 70⍴70↑'Δ',PILHA[1;3 4 5],':'
[105]  PILHA←1 0↓PILHA
[106]  →soma
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[107] ⍝------------enquanto--------------------
[108] eenq:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[109]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[110]  nnn←nnn+1
[111]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[112]  nnn←nnn+1
[113]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[114]  nnn←nnn+1
[115]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn-2
[116]  →soma
[117] ⍝----------fim{enquanto}-----------------
[118] eenf:SALVA←PILHA[1;3 4 5]
[119]  PILHA←1 0↓PILHA
[120]  saida←saida,[1]1 70⍴70↑'→Δ',PILHA[1;3 4 5]
[121]  PILHA←1 0↓PILHA
[122]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[123]  →soma
[124] ⍝----------repita-------------------------
[125] erep:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[126]  PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[127]  nnn←nnn+1
[128]  →soma
[129] ⍝-----------ate--------------------------
[130] eate:PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[131]  nnn←nnn+1
[132]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[133]  SALVA←PILHA[1;3 4 5]
[134]  PILHA←1 0↓PILHA
[135]  saida←saida,[1]1 70⍴70↑'→(Δ',('000'⍕nnn),')/Δ',SALVA
[136]  SALVA←PILHA[1;3 4 5]
[137]  PILHA←1 0↓PILHA
[138]  saida←saida,[1]1 70⍴70↑'→Δ',SALVA
[139]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn-1),':'
[140]  nnn←nnn+1 ⍝ inclusao desta linha em 19/04/06. Ainda nao suficientemente testada
[141]  →soma
[142] ⍝----------para-----------------------
[143] epar:saida←saida,[1]1 70⍴70↑(8↑⊃vv[2]),'←',8↑⊃vv[4]
[144]  PILHA←(1 21⍴21↑'PA','000'⍕nnn),[1]PILHA
[145]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[146]  nnn←nnn+1
[147]  →(8=⍴vv)/tempasso
[148]  PILHA←(1 21⍴21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8↑8⍕1),[1]PILHA
[149]  →juntab
[150] tempasso:PILHA←(1 21⍴21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8 2⍕pn←±⊃vv[8]),[1]PILHA
[151] ⍝ 'pn=',⍕pn
[152]  pna←'≤≥'[1+pn<0] ⍝ alteracao a 22/06/06, para acertar passo negativo
[153] juntab:nnn←nnn+1
[154]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',(⊃vv[2]),pna,⍕⊃vv[6]
[155]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn),')/Δ','000'⍕nnn-1
[156]  nnn←nnn+1
[157]  →soma
[158] ⍝----------fim{para}-----------------
[159] epaf:saida←saida,[1]1 70⍴70↑PILHA[1;5+⍳8],'←',PILHA[1;5+⍳8],'+',PILHA[1;13+⍳8]
[160]  SALVA←PILHA[1;3 4 5]
[161]  PILHA←1 0↓PILHA
[162]  saida←saida,[1]1 70⍴70↑'→Δ',PILHA[1;3 4 5]
[163]  PILHA←1 0↓PILHA
[164]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[165]  →soma
[166] ⍝----------abandone-------------------
[167] eaba:→soma
[168] ⍝----------saia-------------------------
[169] esai:→soma
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[170] ⍝-------- definicao de variaveis---------------
[171] eint:
[172]  saida←saida,[1]1 70⍴70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[173]  →soma
[174] erea:
[175]  saida←saida,[1]1 70⍴70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[176]  →soma
[177] elog:
[178]  saida←saida,[1]1 70⍴70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[179]  →soma
[180] ecar:
[181]  saida←saida,[1]1 70⍴70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[182]  →soma
[183] ⍝----------definicao de vetores------------------
[184] evet:
[185]  saida←saida,[1]1 70⍴70↑(1 parte(⊃vv[2])),'←',(2 parte(⊃vv[2])),'⍴0'
[186]  →soma
[187] evaa:
[188]  saida←saida,[1]1 70⍴70↑(1 parte(⊃vv[2])),'←',(2 parte(⊃vv[2])),'⍴',aspa,' ',aspa
[189]  →soma
[190] fim:
[191]  i←1
[192] tfim:→(i>nnn)/mesmo
[193]  loca←loca,';Δ','000'⍕i
[194]  →(i=i←i+1)/tfim
[195] mesmo:→(50>⍴loca)/blz1
[196]  saida←((1↑⍴saida),20+⍴loca)↑saida
[197]  saida[1;20+⍳⍴loca]←loca
[198]  →pula22
[199] blz1:saida[1;20+⍳50]←50↑loca
[200] pula22:r←'_ 'edit saida
-------------------------------------------------------------
[ 0]  r←gera1;p1;p2;aa;bb;cc;dd;ee;ff;gg;hh;nomes;nome
[ 1]  p1←13 79⍴' '
[ 2]  p1[1;]←79↑'funcao AAA'
[ 3]  p1[2;]←79↑'X <- ',2 0⍕aa←5+?5
[ 4]  p1[3;]←79↑'Y <- ',2 0⍕bb←30+?12
[ 5]  p1[4;]←79↑'KOISA <- ',2 0⍕cc←1+?3
[ 6]  p1[5;]←79↑'enquanto X < Y faca'
[ 7]  p1[6;]←79↑'   X <- X + KOISA'
[ 8]  p1[7;]←79↑'   se 0≠',(1 0⍕ee←1+?2),'|KOISA entao'
[ 9]  p1[8;]←79↑'      KOISA <- KOISA + ',2 0⍕dd←?2
[10]  p1[9;]←79↑'   fimse'
[11]  p1[10;]←79↑'   KOISA <- KOISA + 1'
[12]  p1[11;]←79↑'fimenquanto'
[13]  p1[12;]←79↑'RRRR <- X'
[14]  p1[13;]←79↑'fimfuncao'
[15]  p2←11 79⍴' '
[16]  nomes←5 4⍴'ALFABETAALINCTDSGAMA'
[17]  nome←nomes[?5;]
[18]  p2[1;]←79↑'⍀STATE X $⍀gets$ ',2 0⍕aa
[19]  p2[2;]←79↑'⍀STATE Y $⍀gets$ ',2 0⍕bb
[20]  p2[3;]←79↑'⍀STATE ',nome,' $⍀gets$ ',2 0⍕cc
[21]  p2[4;]←79↑'⍀WHILE{X $<$ Y}'
[22]  p2[5;]←79↑'⍀STATE X $⍀gets$ X + ',nome
[23]  p2[6;]←79↑'⍀IF {(',nome,' mod ',(1 0⍕ee),') $⍀neq$ 0)}'
[24]  p2[7;]←79↑'⍀STATE ',nome,' $⍀gets$ ',nome,' + ',2 0⍕dd
[25]  p2[8;]←79↑'⍀ENDIF'
[26]  p2[9;]←79↑'⍀STATE ',nome,' $⍀gets$ ',nome,' + 1'
[27]  p2[10;]←79↑'⍀ENDWHILE'
[28]  p2[11;]←79↑'⍀STATE escreva X'
[29]  r←(p1 p2)
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[ 0]  r←gera2;p1;p2;aa;bb;cc;dd;ee;ff;gg;hh;nomes;nome
[ 1]  p1←13 79⍴' '
[ 2]  p1[1;]←79↑'funcao AAA'
[ 3]  p1[2;]←79↑'X <- ',2 0⍕aa←?5
[ 4]  p1[3;]←79↑'enquanto X < ',(⍕bb←5+?8),' faca'
[ 5]  p1[4;]←79↑'  Y <- ',2 0⍕cc←?7
[ 6]  p1[5;]←79↑'  enquanto Y < ',(⍕dd←10+?5),' faca'
[ 7]  p1[6;]←79↑'    X <- X + ',(⍕ee←?3)
[ 8]  p1[7;]←79↑'    Y <- X + ',(⍕ff←?2)
[ 9]  p1[8;]←79↑'  fimenquanto'
[10]  p1[9;]←79↑'  Y <- Y + ',⍕gg←?3
[11]  p1[10;]←79↑'  X <- X + ',⍕hh←?3
[12]  p1[11;]←79↑'fimenquanto'
[13]  p1[12;]←79↑'RRRR <- X-Y'
[14]  p1[13;]←79↑'fimfuncao'
[15]  p2←11 79⍴' '
[16]  p2[1;]←79↑'⍀STATE X $⍀gets$ ',2 0⍕aa
[17]  p2[2;]←79↑'⍀WHILE {X $<$ ',(⍕bb),'}'
[18]  p2[3;]←79↑'⍀STATE Y $⍀gets$ ',2 0⍕cc
[19]  p2[4;]←79↑'⍀WHILE{Y $<$ ',(⍕dd),'}'
[20]  p2[5;]←79↑'⍀STATE X $⍀gets$ X + ',⍕ee
[21]  p2[6;]←79↑'⍀STATE Y $⍀gets$ X + ',⍕ff
[22]  p2[7;]←79↑'⍀ENDWHILE'
[23]  p2[8;]←79↑'⍀STATE Y $⍀gets$ Y + ',⍕gg
[24]  p2[9;]←79↑'⍀STATE X $⍀gets$ X + ',⍕hh
[25]  p2[10;]←79↑'⍀ENDWHILE'
[26]  p2[11;]←79↑'⍀STATE escreva (X-Y)'
[27]  r←(p1 p2)
-------------------------------------------------------------
[ 0]  r←gera301;p1;p2;aa;bb;cc;dd;ee;ff;gg;hh;ii
[ 1]  p1←13 79⍴' '
[ 2]  p1[1;]←79↑'funcao AAA'
[ 3]  p1[2;]←79↑'A <- ',2 0⍕aa←?3
[ 4]  p1[3;]←79↑'B <- ',2 0⍕bb←20+?3
[ 5]  p1[4;]←79↑'enquanto A ≤ B'
[ 6]  p1[5;]←79↑'   se ((B > ',(⍕gg←5+?10),') ∨ (A ≤ ',(⍕hh←5+?10),'))'
[ 7]  p1[6;]←79↑'      B <- B - ',2 0⍕cc←?3
[ 8]  p1[7;]←79↑'   fimse'
[ 9]  p1[8;]←79↑'   A <- A + ',2 0⍕dd←?3
[10]  p1[9;]←79↑'   B <- B - ',2 0⍕ee←?3
[11]  p1[10;]←79↑'fimenquanto'
[12]  p1[11;]←79↑'A <- A - ',2 0⍕ff←?3
[13]  p1[12;]←79↑'RRRR <- A + B'
[14]  p1[13;]←79↑'fimfuncao'
[15]  p2←11 79⍴' '
[16]  p2[1;]←79↑'⍀STATE A $⍀gets$ ',2 0⍕aa
[17]  p2[2;]←79↑'⍀STATE B $⍀gets$ ',2 0⍕bb
[18]  p2[3;]←79↑'⍀WHILE {A $⍀le$ B}'
[19]  p2[4;]←79↑'⍀IF{((B $>$ ',(⍕gg),') $⍀lor$ (A $⍀le$ ',(⍕hh),'))}'
[20]  p2[5;]←79↑'⍀STATE B $⍀gets$ B - ',2 0⍕cc
[21]  p2[6;]←79↑'⍀ENDIF'
[22]  p2[7;]←79↑'⍀STATE A $⍀gets$ A + ',2 0⍕dd
[23]  p2[8;]←79↑'⍀STATE B $⍀gets$ B - ',2 0⍕ee
[24]  p2[9;]←79↑'⍀ENDWHILE'
[25]  p2[10;]←79↑'⍀STATE A $⍀gets$ A - ',2 0⍕ff
[26]  p2[11;]←79↑'⍀STATE escreva (A + B)'
[27]  r←(p1 p2)
-------------------------------------------------------------
[ 0]  r←gera4;p1;p2;aa;bb;cc;dd;ee;ff;gg;hh;nomes;nome
[ 1]  p1←13 79⍴' '
[ 2]  p1[1;]←79↑'funcao AAA'
[ 3]  p1[2;]←79↑'X <- ',2 0⍕aa←?9
[ 4]  p1[3;]←79↑'Y <- ',2 0⍕bb←?9
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[ 5]  p1[4;]←79↑'se X < ',(⍕cc←3+?3),' e Y > ',(⍕dd←2+?3),' entao'
[ 6]  p1[5;]←79↑'   X <- X - ',⍕ee←?3
[ 7]  p1[6;]←79↑'senao'
[ 8]  p1[7;]←79↑'   Y <- Y + ',⍕ff←?3
[ 9]  p1[8;]←79↑'   se (',(⍕gg←1+?3),'|X)≠ 0 entao'
[10]  p1[9;]←79↑'     Y <- Y + ',⍕hh←?3
[11]  p1[10;]←79↑'fimse'
[12]  p1[11;]←79↑'fimse'
[13]  p1[12;]←79↑'RRRR <- X+Y'
[14]  p1[13;]←79↑'fimfuncao'
[15]  p2←11 79⍴' '
[16]  p2[1;]←79↑'⍝STATE X $⍝gets$ ',2 0⍕aa
[17]  p2[2;]←79↑'⍝STATE Y $⍝gets$ ',2 0⍕bb
[18]  p2[3;]←79↑'⍝IF{ X $< ',(⍕cc),'⍝land Y > $',(2 0⍕dd),'}'
[19]  p2[4;]←79↑'⍝STATE X $⍝gets$ X - ',⍕ee
[20]  p2[5;]←79↑'⍝ELSE'
[21]  p2[6;]←79↑'⍝STATE Y $⍝gets$ Y + ',⍕ff
[22]  p2[7;]←79↑'⍝IF {X mod ',(⍕gg),' $⍝neq$ 0}'
[23]  p2[8;]←79↑'⍝STATE Y $⍝gets$ Y + ',⍕hh
[24]  p2[9;]←79↑'⍝ENDIF'
[25]  p2[10;]←79↑'⍝ENDIF'
[26]  p2[11;]←79↑'⍝STATE escreva X+Y'
[27]  r←(p1 p2)
-------------------------------------------------------------
[0]  r←a igual b;maior
[1]  maior←(1↑⍴a)⌈1↑⍴b
[2]  a←maior↑a ⋄ b←maior↑b
[3]  r←maior=+/a=b
-------------------------------------------------------------
[ 0]  r←vetoriza x;i;rr;letra;aspa;nume
[ 1] ⍝ versao 1.07
[ 2]  aspa←'''' ⋄ nume←'0123456789'
[ 3]  letra←'abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ()',aspa
[ 4] ⍝ tira os brancos
[ 5]  i←1 ⋄ rr←1
[ 6] t2:→(i>¯2+⍴x)/vaiz
[ 7]  →((x[i+1]=' ')∧(x[i]∈letra)∧(x[i+2]∈nume))/mataz
[ 8]  →((x[i+1]=' ')∧(x[i]∈nume)∧(x[i+2]∈letra))/mataz
[ 9]  →((x[i]∈letra)∧(x[i+2]∈letra))/naopode
[10]  →((x[i]∈letra)∧(x[i+2]='-'))/naopode  ⍝ comando incluido para o passo negativo
[11]  →(x[i+1]≠' ')/naopode
[12] pode:rr←rr,0
[13]  →(i=i←i+1)/t2
[14] mataz:x[i+1]←'!'
[15] naopode:rr←rr,1
[16]  →(i=i←i+1)/t2
[17] vaiz:rr←rr,1
[18]  x←rr/x
[19] ⍝ separa o sinal <-
[20]  →(2≠+/'<-'∈x)/faca
[21]  i←1 ⋄ rr←⍳0
[22] t1:→(i>¯1+⍴x)/vaix
[23]  →((x[i]='<')∧(x[i+1]='-'))/esim
[24]  rr←rr,1
[25]  →(i=i←i+1)/t1
[26] esim:rr←rr,0 1 1 0
[27]  →(i=i←i+2)/t1
[28] vaix:rr←rr,1
[29]  x←rr⍀x
[30] faca:x←'! 'edit x
[31]  r←(~' '=x)⊂x
-------------------------------------------------------------
[ 0]  opesq vivo001a n;CORRECAO;EVENTO;aaa;acuja;bb;dhx;esse;f;lixo1;lixonol;nomes;ql39;ql
```

```
      inha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL001   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA001←ajusta80 FOLHALA001
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA001)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 5⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←53 80⍴' '
[16]  f←FOLHALA001
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[52;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[53;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera1
[35]  esse[7+⍳11;]←11 80↑⊃xx[2]
[36]  bb←⎕FX cpc⊃xx[1]
[37]  resp←resp,⍤'AAA'
[38]  xx←gera301
[39]  esse[18+⍳11;]←11 80↑⊃xx[2]
[40]  bb←⎕FX cpc⊃xx[1]
[41]  resp←resp,,⍤'AAA'
[42]  xx←gera2
[43]  esse[29+⍳11;]←11 80↑⊃xx[2]
[44]  bb←⎕FX cpc⊃xx[1]
[45]  resp←resp,⍤'AAA'
[46]  xx←gera4
[47]  esse[40+⍳11;]←11 80↑⊃xx[2]
[48]  bb←⎕FX cpc⊃xx[1]
[49]  resp←resp,⍤'AAA'
[50]  resu←resu,[1]1 5⍴resp
[51]  acuja←(f[;2]='#')/⍳1↑⍴f
[52]  f[acuja;⍳80]←esse[⍤,f[acuja;3 4],' ';]
[53]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[54]  ⍞←(⍎xk←xk+1),'-'
[55]  →testa
[56] fim:upag←(1 0+⍴f)⍴' '
[57]  →(1=≡n)/elafa
[58]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[59]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[60]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←5 0 10 0 8 0 8 0 8 0)⍎resu
[61]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
```

```
[62]  →terminando
[63] elafa:aaa←(ylu[;⍳36],'¯-'edit 9 0⍕0 1↓resu)
[64]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[65]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[66] terminando:
[67]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[68]  relat[1↑⍴relat;;]←upag
[69]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[70]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[71]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[72]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo002

```
[ 0]  r←a G b
[ 1]  →(a>b)/um
[ 2]  →(a<b)/dois
[ 3] iguais:r←a+b
[ 4]  →0
[ 5] um:r←⌊a×(1÷3)×b
[ 6]  →0
[ 7] dois:
[ 8]  r←⌈a×0.5×b
[ 9]  →0
-------------------------------------------------------------
[0]  r←a H b
[1]  r←a+b+1
-------------------------------------------------------------
[0]  r←a I b
[1]  →((a+b)>3)/sim
[2]  r←2
[3]  →0
[4] sim:r←1
-------------------------------------------------------------
[0]  r←a K b
[1]  →(a>5)/sim
[2]  r←a
[3]  →0
[4] sim:
[5]  r←b
-------------------------------------------------------------
[0]  r←a L b
[1]  r←(20-(a+b))
-------------------------------------------------------------
[0]  r←a N b
[1]  →((×a)=×b)/ms
[2]  r←7
[3]  →0
[4] ms:r←3
-------------------------------------------------------------
[ 0]  r←a P b
[ 1] ⍝ funcao ⍬
[ 2]  →((a=0)∨(b=0))/eum
[ 3]  →(0=a|b)/e10
[ 4]  →(0=b|a)/e5
[ 5]  →eum
[ 6] e5:
[ 7]  r←5
[ 8]  →0
[ 9] e10:
[10]  r←10
```

```
[11]  →0
[12] eum:r←1
[13]  →0
------------------------------------------------------------
[ 0]  r←a Q b;p1;p2;i1;i2
[ 1] ⍝ funcao ⍰
[ 2]  p1←0=2|a
[ 3]  i1←~p1
[ 4]  p2←0=2|b
[ 5]  i2←~p2
[ 6]  →(p1∧i2)/e3
[ 7]  →(p1∧p2)/e6
[ 8]  →(i1∧p2)/e9
[ 9]  →(i1∧i2)/ec
[10]  'deu xabu'
[11]  →0
[12] e3:r←3
[13]  →0
[14] e6:r←6
[15]  →0
[16] e9:r←9
[17]  →0
[18] ec:r←12
[19]  →0
------------------------------------------------------------
[0]  r←a R b
[1]  →(0=2|a)/epar
[2]  r←3×b
[3]  →0
[4] epar:r←b×2
------------------------------------------------------------
[0]  r←a S b
[1] ⍝ funcao ⍟
[2]  →(a>b)/sim
[3] nao:r←-1
[4]  →0
[5] sim:r←1
------------------------------------------------------------
[0]  r←a T b
[1]  →(a>b)/ma
[2]  r←b-a
[3]  →0
[4] ma:r←a-b
------------------------------------------------------------
[0]  r←a U b
[1]  →((a≥b)∨(b=0))/ma
[2]  r←a-b
[3]  →0
[4] ma:
[5]  r←a×b
------------------------------------------------------------
[0]  r←a V b
[1]  →(1=a I b)/sim
[2]  r←10
[3]  →0
[4] sim:r←5
------------------------------------------------------------
[0]  r←a W b
[1]  r←a+b+3
------------------------------------------------------------
[ 0]  r←a Z b
[ 1]  →(1=a|b)/um
[ 2]  →(2=a|b)/dois
```

```
[ 3]  →(3=a|b)/tres
[ 4] otherwise:r←a×b×3
[ 5]  →0
[ 6] um:r←a×b
[ 7]  →0
[ 8] dois:
[ 9]  r←a×b×2
[10]  →0
[11] tres:
[12]  r←a×b×4
[13]  →0
-------------------------------------------------------------
[ 0]  r←bloco6b;res;i;aa;ra;bb;lixo
[ 1]  r←2ρ0
[ 2]  ra←13 76ρ' '
[ 3]  ra[1;]←76↑'{ \normalsize \begin{algorithmic}'
[ 4]  ra[13;]←76↑'\end{algorithmic} }'
[ 5]  res←6ρ0
[ 6]  ra[1+⍳5;]←geravars
[ 7]  i←7
[ 8] t1:→(i>12)/fim
[ 9] denovo:
[10]  bb←traduz002b aa←geracom3b
[11]  →(1=ρ,bb)/denovo
[12]  ra[i;]←76↑bb
[13]  res[i-6]←⊂aa
[14]  i←i+1
[15]  →t1
[16] fim:r[1]←⊂ra
[17]  r[2]←⊂res
[18]  lixo←⎕EX 5 1ρ'ABCDF'
-------------------------------------------------------------
[ 0]  r←bloco6c;res;i;aa;ra;bb;lixo
[ 1]  r←2ρ0
[ 2]  ra←13 76ρ' '
[ 3]  ra[1;]←76↑'{ \normalsize \begin{algorithmic}'
[ 4]  ra[13;]←76↑'\end{algorithmic} }'
[ 5]  res←6ρ0
[ 6]  ra[1+⍳5;]←geravars
[ 7]  i←7
[ 8] t1:→(i>12)/fim
[ 9] denovo:
[10]  bb←traduz002c aa←geracom3c
[11]  →(1=ρ,bb)/denovo
[12]  ra[i;]←76↑bb
[13]  res[i-6]←⊂expandec aa
[14]  i←i+1
[15]  →t1
[16] fim:r[1]←⊂ra
[17]  r[2]←⊂res
[18]  lixo←⎕EX 5 1ρ'ABCDF'
-------------------------------------------------------------
[ 0]  r←bloco6d;res;i;aa;ra;bb;lixo
[ 1]  r←2ρ0
[ 2]  ra←13 76ρ' '
[ 3]  ra[1;]←76↑'{ \normalsize \begin{algorithmic}'
[ 4]  ra[13;]←76↑'\end{algorithmic} }'
[ 5]  res←6ρ0
[ 6]  ra[1+⍳5;]←geravars
[ 7]  i←7
[ 8] t1:→(i>12)/fim
[ 9] denovo:
[10]  bb←traduz002d aa←geracom3d
```

```
[11]  →(1=ρ,bb)/denovo
[12]  ra[i;]←76↑bb
[13]  res[i-6]←⍎expandec aa
[14]  i←i+1
[15]  →t1
[16] fim:r[1]←⊂ra
[17]  r[2]←⊂res
[18]  lixo←⎕EX 5 1ρ'ABCDF'
-------------------------------------------------------------
[ 0]  r←bloco6e;res;i;aa;ra;bb;lixo
[ 1]  r←2ρ0
[ 2]  ra←13 76ρ' '
[ 3]  ra[1;]←76↑'{ \normalsize \begin{algorithmic}'
[ 4]  ra[13;]←76↑'\end{algorithmic} }'
[ 5]  res←6ρ0
[ 6]  ra[1+⍳5;]←geravars
[ 7]  i←7
[ 8] t1:→(i>12)/fim
[ 9] denovo:
[10]  bb←traduz002e aa←geracom3e
[11]  →(1=ρ,bb)/denovo
[12]  ra[i;]←76↑bb
[13]  res[i-6]←⍎expandec aa
[14]  i←i+1
[15]  →t1
[16] fim:r[1]←⊂ra
[17]  r[2]←⊂res
[18]  lixo←⎕EX 5 1ρ'ABCDF'
-------------------------------------------------------------
[ 0]  r←bloco6f;res;i;aa;ra;bb;lixo
[ 1]  r←2ρ0
[ 2]  ra←13 76ρ' '
[ 3]  ra[1;]←76↑'{ \normalsize \begin{algorithmic}'
[ 4]  ra[13;]←76↑'\end{algorithmic} }'
[ 5]  res←6ρ0
[ 6]  ra[1+⍳5;]←geravars
[ 7]  i←7
[ 8] t1:→(i>12)/fim
[ 9] denovo:
[10]  bb←traduz002f aa←geracom3f
[11]  →(1=ρ,bb)/denovo
[12]  ra[i;]←76↑bb
[13]  res[i-6]←⍎expandec aa
[14]  i←i+1
[15]  →t1
[16] fim:r[1]←⊂ra
[17]  r[2]←⊂res
[18]  lixo←⎕EX 5 1ρ'ABCDF'
-------------------------------------------------------------
[ 0]  r←bloco6g;res;i;aa;ra;bb;lixo
[ 1]  r←2ρ0
[ 2]  ra←13 76ρ' '
[ 3]  ra[1;]←76↑'{ \normalsize \begin{algorithmic}'
[ 4]  ra[13;]←76↑'\end{algorithmic} }'
[ 5]  res←6ρ0
[ 6]  ra[1+⍳5;]←geravars
[ 7]  i←7
[ 8] t1:→(i>12)/fim
[ 9] denovo:
[10]  bb←traduz002g aa←geracom3g
[11]  →(1=ρ,bb)/denovo
[12]  ra[i;]←76↑bb
[13]  res[i-6]←⍎expandec aa
```

```
[14]  i←i+1
[15]  →t1
[16] fim:r[1]←⊂ra
[17]  r[2]←⊂res
[18]  lixo←⎕EX 5 1⍴'ABCDF'
------------------------------------------------------------
[ 0]  cavaleiro002f n;acuja;esse;f;lixol;relat;resp;x;xk;xx
[ 1]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 2]  FOLHALA002f←80 ajusta FOLHALA002f
[ 3]  relat←ΔFM'c:\apl2\VIVOBLO1'
[ 4]  xk←1
[ 5] testa:→(xk>n)/fim
[ 6]  esse←88 80⍴' '
[ 7]  f←FOLHALA002f
[ 8]  esse[1;⍳⍴x]←x←' -- Cavaleiros da Tavola Redonda --'
[ 9]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[10]  esse[87;⍳8]←'@000000@'
[11] inica:
[12]  xx←gcaso2f
[13]  esse[7+⍳13;]←13 80↑(⊃xx[1])[1;;]
[14]  esse[20+⍳13;]←13 80↑(⊃xx[1])[2;;]
[15]  esse[33+⍳13;]←13 80↑(⊃xx[1])[3;;]
[16]  esse[46+⍳13;]←13 80↑(⊃xx[1])[4;;]
[17]  esse[59+⍳13;]←13 80↑(⊃xx[1])[5;;]
[18]  esse[72+⍳13;]←13 80↑(⊃xx[1])[6;;]
[19]  esse[86;]←1 80⍴80↑10 0⍕+/⊃xx[2]
[20]  resp←,⊃xx[2]
[21]  acuja←(f[;2]='#')/⍳1↑⍴f
[22]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[23]  ⍞←(⍕xk←xk+1),'-'
[24]  f←(((1↑⍴relat),1↓⍴f)↑relat),[1]f
[25]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'\end{document}'
[26]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'% ','¯'-'edit⍕resp
[27]  lixol←f ΔFM'c:\apl2\CA002f',('00'⍕xk-1),'.tex'
[28]  →testa
[29] fim:
------------------------------------------------------------
[0]  r←expandec x
[1]  r←((2×⍴x)⍴1 0)\x
------------------------------------------------------------
[0]  r←gabarito x;i
[1]  i←1
[2] t1:→(i>1↑⍴x)/fim
[3]  ⍋x[i;]
[4]  i←i+1
[5]  →t1
[6] fim:
------------------------------------------------------------
[ 0]  r←gcaso2b;aa;ra;resp
[ 1]  ra←6 13 76⍴' '
[ 2]  aa←bloco6b
[ 3]  ra[1;;]←⊃aa[1]
[ 4]  resp←+/1=2|⊃aa[2]
[ 5]  aa←bloco6b
[ 6]  ra[2;;]←⊃aa[1]
[ 7]  resp←resp,+/(⊃aa[2])>50
[ 8]  aa←bloco6b
[ 9]  ra[3;;]←⊃aa[1]
[10]  resp←resp,+/(⊃aa[2])≠0
[11]  aa←bloco6b
[12]  ra[4;;]←⊃aa[1]
[13]  resp←resp,+/(⊃aa[2])<75
[14]  aa←bloco6b
```

```
[15]  ra[5;;]←⊃aa[1]
[16]  resp←resp,+/0=2|⊃aa[2]
[17]  aa←bloco6b
[18]  ra[6;;]←⊃aa[1]
[19]  resp←resp,qtsprim⊃aa[2]
[20]  r←2ρ0
[21]  r[1]←⊂ra
[22]  r[2]←⊂resp
-------------------------------------------------------------
[ 0]  r←gcaso2c;aa;ra;resp
[ 1]  ra←6 13 76ρ' '
[ 2]  aa←bloco6c
[ 3]  ra[1;;]←⊃aa[1]
[ 4]  resp←+/1=2|⊃aa[2]
[ 5]  aa←bloco6c
[ 6]  ra[2;;]←⊃aa[1]
[ 7]  resp←resp,+/(⊃aa[2])>50
[ 8]  aa←bloco6c
[ 9]  ra[3;;]←⊃aa[1]
[10]  resp←resp,+/(⊃aa[2])≠0
[11]  aa←bloco6c
[12]  ra[4;;]←⊃aa[1]
[13]  resp←resp,+/(⊃aa[2])<50
[14]  aa←bloco6c
[15]  ra[5;;]←⊃aa[1]
[16]  resp←resp,+/0=2|⊃aa[2]
[17]  aa←bloco6c
[18]  ra[6;;]←⊃aa[1]
[19]  resp←resp,qtsprim⊃aa[2]
[20]  r←2ρ0
[21]  r[1]←⊂ra
[22]  r[2]←⊂resp
-------------------------------------------------------------
[ 0]  r←gcaso2d;aa;ra;resp
[ 1]  ra←6 13 76ρ' '
[ 2]  aa←bloco6d
[ 3]  ra[1;;]←⊃aa[1]
[ 4]  resp←+/⊃aa[2]
[ 5]  aa←bloco6d
[ 6]  ra[2;;]←⊃aa[1]
[ 7]  resp←resp,+/⊃aa[2]
[ 8]  aa←bloco6d
[ 9]  ra[3;;]←⊃aa[1]
[10]  resp←resp,+/⊃aa[2]
[11]  aa←bloco6d
[12]  ra[4;;]←⊃aa[1]
[13]  resp←resp,+/⊃aa[2]
[14]  aa←bloco6d
[15]  ra[5;;]←⊃aa[1]
[16]  resp←resp,+/⊃aa[2]
[17]  aa←bloco6d
[18]  ra[6;;]←⊃aa[1]
[19]  resp←resp,+/⊃aa[2]
[20]  r←2ρ0
[21]  r[1]←⊂ra
[22]  r[2]←⊂resp
-------------------------------------------------------------
[ 0]  r←gcaso2e;aa;ra;resp
[ 1]  ra←6 13 76ρ' '
[ 2]  aa←bloco6e
[ 3]  ra[1;;]←⊃aa[1]
[ 4]  resp←+/⊃aa[2]
[ 5]  aa←bloco6e
```

```
[ 6]  ra[2;;]←⊃aa[1]
[ 7]  resp←resp,+/⊃aa[2]
[ 8]  aa←bloco6e
[ 9]  ra[3;;]←⊃aa[1]
[10]  resp←resp,+/⊃aa[2]
[11]  aa←bloco6e
[12]  ra[4;;]←⊃aa[1]
[13]  resp←resp,+/⊃aa[2]
[14]  aa←bloco6e
[15]  ra[5;;]←⊃aa[1]
[16]  resp←resp,+/⊃aa[2]
[17]  aa←bloco6e
[18]  ra[6;;]←⊃aa[1]
[19]  resp←resp,+/⊃aa[2]
[20]  r←2⍴0
[21]  r[1]←⊂ra
[22]  r[2]←⊂resp
-------------------------------------------------------------
[ 0]  r←gcaso2f;aa;ra;resp
[ 1]  ra←6 13 76⍴' '
[ 2]  aa←bloco6f
[ 3]  ra[1;;]←⊃aa[1]
[ 4]  resp←+/⊃aa[2]
[ 5]  aa←bloco6f
[ 6]  ra[2;;]←⊃aa[1]
[ 7]  resp←resp,+/⊃aa[2]
[ 8]  aa←bloco6f
[ 9]  ra[3;;]←⊃aa[1]
[10]  resp←resp,+/⊃aa[2]
[11]  aa←bloco6f
[12]  ra[4;;]←⊃aa[1]
[13]  resp←resp,+/⊃aa[2]
[14]  aa←bloco6f
[15]  ra[5;;]←⊃aa[1]
[16]  resp←resp,+/⊃aa[2]
[17]  aa←bloco6f
[18]  ra[6;;]←⊃aa[1]
[19]  resp←resp,+/⊃aa[2]
[20]  r←2⍴0
[21]  r[1]←⊂ra
[22]  r[2]←⊂resp
-------------------------------------------------------------
[ 0]  r←gcaso2g;aa;ra;resp
[ 1]  ra←6 13 76⍴' '
[ 2]  aa←bloco6g
[ 3]  ra[1;;]←⊃aa[1]
[ 4]  resp←+/⊃aa[2]
[ 5]  aa←bloco6g
[ 6]  ra[2;;]←⊃aa[1]
[ 7]  resp←resp,+/⊃aa[2]
[ 8]  aa←bloco6g
[ 9]  ra[3;;]←⊃aa[1]
[10]  resp←resp,+/⊃aa[2]
[11]  aa←bloco6g
[12]  ra[4;;]←⊃aa[1]
[13]  resp←resp,+/⊃aa[2]
[14]  aa←bloco6g
[15]  ra[5;;]←⊃aa[1]
[16]  resp←resp,+/⊃aa[2]
[17]  aa←bloco6g
[18]  ra[6;;]←⊃aa[1]
[19]  resp←resp,+/⊃aa[2]
[20]  r←2⍴0
```

```
[21]  r[1]←⊂ra
[22]  r[2]←⊂resp
------------------------------------------------------------
[ 0]  r←geracom1b;ops;ra;qual
[ 1]  ops←'+-×÷'
[ 2]  →(1=?2)/evar1
[ 3]  ra←1 0⍕1+?8
[ 4]  →junta1
[ 5] evar1:ra←'ABCDF'[?5]
[ 6] junta1:ra←ra,qual←ops[?4]
[ 7]  →(1=?2)/evar2
[ 8]  ra←ra,1 0⍕1+?8
[ 9]  →junta2
[10] evar2:
[11]  ra←ra,'ABCDF'[5]
[12] junta2:
[13]  →(qual≠'÷')/blz
[14]  ra←('⌈⌊'[?2]),'(',ra,')'
[15] blz:
[16]  r←ra
------------------------------------------------------------
[ 0]  r←geracom1c;ops;ra;qual
[ 1]  ops←'+-×÷PQS'
[ 2]  →(1=?2)/evar1
[ 3]  ra←1 0⍕1+?8
[ 4]  →junta1
[ 5] evar1:ra←'ABCDF'[?5]
[ 6] junta1:ra←ra,qual←ops[?7]
[ 7]  →(1=?2)/evar2
[ 8]  ra←ra,1 0⍕1+?8
[ 9]  →junta2
[10] evar2:
[11]  ra←ra,'ABCDF'[5]
[12] junta2:
[13]  →(qual≠'÷')/blz
[14]  ra←('⌈⌊'[?2]),'(',ra,')'
[15] blz:
[16]  r←ra
------------------------------------------------------------
[ 0]  r←geracom1d;ops;ra;qual
[ 1]  ops←'+-×÷RNL'
[ 2]  →(1=?2)/evar1
[ 3]  ra←1 0⍕1+?8
[ 4]  →junta1
[ 5] evar1:ra←'ABCDF'[?5]
[ 6] junta1:ra←ra,qual←ops[?7]
[ 7]  →(1=?2)/evar2
[ 8]  ra←ra,1 0⍕1+?8
[ 9]  →junta2
[10] evar2:
[11]  ra←ra,'ABCDF'[5]
[12] junta2:
[13]  →(qual≠'÷')/blz
[14]  ra←('⌈⌊'[?2]),'(',ra,')'
[15] blz:
[16]  r←ra
------------------------------------------------------------
[ 0]  r←geracom1e;ops;ra;qual
[ 1]  ops←'+-×÷UWT'
[ 2]  →(1=?2)/evar1
[ 3]  ra←1 0⍕1+?8
[ 4]  →junta1
[ 5] evar1:ra←'ABCDF'[?5]
```

```
[ 6] junta1:ra←ra,qual←ops[?7]
[ 7]  →(1=?2)/evar2
[ 8]  ra←ra,1 0⍕1+?8
[ 9]  →junta2
[10] evar2:
[11]  ra←ra,'ABCDF'[5]
[12] junta2:
[13]  →(qual≠'÷')/blz
[14]  ra←('⌈⌊'[?2]),'(',ra,')'
[15] blz:
[16]  r←ra
------------------------------------------------------------
[ 0]  r←geracom1f;ops;ra;qual
[ 1]  ops←'+-×÷IVK'
[ 2]  →(1=?2)/evar1
[ 3]  ra←1 0⍕1+?8
[ 4]  →junta1
[ 5] evar1:ra←'ABCDF'[?5]
[ 6] junta1:ra←ra,qual←ops[?7]
[ 7]  →(1=?2)/evar2
[ 8]  ra←ra,1 0⍕1+?8
[ 9]  →junta2
[10] evar2:
[11]  ra←ra,'ABCDF'[5]
[12] junta2:
[13]  →(qual≠'÷')/blz
[14]  ra←('⌈⌊'[?2]),'(',ra,')'
[15] blz:
[16]  r←ra
------------------------------------------------------------
[ 0]  r←geracom1g;ops;ra;qual
[ 1]  ops←'+-×÷ZGH'
[ 2]  →(1=?2)/evar1
[ 3]  ra←1 0⍕1+?8
[ 4]  →junta1
[ 5] evar1:ra←'ABCDF'[?5]
[ 6] junta1:ra←ra,qual←ops[?7]
[ 7]  →(1=?2)/evar2
[ 8]  ra←ra,1 0⍕1+?8
[ 9]  →junta2
[10] evar2:
[11]  ra←ra,'ABCDF'[5]
[12] junta2:
[13]  →(qual≠'÷')/blz
[14]  ra←('⌈⌊'[?2]),'(',ra,')'
[15] blz:
[16]  r←ra
------------------------------------------------------------
[0]  r←geracom2b;x;y
[1]  x←geracom1b
[2]  y←geracom1b
[3]  r←'(',x,')',('+-×'[?3]),'(',y,')'
------------------------------------------------------------
[0]  r←geracom2c;x;y
[1]  x←geracom1c
[2]  y←geracom1c
[3]  r←'(',x,')',('+-×PQS'[?6]),'(',y,')'
------------------------------------------------------------
[0]  r←geracom2d;x;y
[1]  x←geracom1d
[2]  y←geracom1d
[3]  r←'(',x,')',('+-×RLN'[?6]),'(',y,')'
------------------------------------------------------------
```

```
[0]  r←geracom2e;x;y
[1]  x←geracom1e
[2]  y←geracom1e
[3]  r←'(',x,')',('+-×UWT'[?6]),'(',y,')'
------------------------------------------------------------
[0]  r←geracom2f;x;y
[1]  x←geracom1f
[2]  y←geracom1f
[3]  r←'(',x,')',('+-×IVK'[?6]),'(',y,')'
------------------------------------------------------------
[0]  r←geracom2g;x;y
[1]  x←geracom1g
[2]  y←geracom1g
[3]  r←'(',x,')',('+-×ZGH'[?6]),'(',y,')'
------------------------------------------------------------
[ 0]  r←geracom3b;r1;x;ope;y
[ 1] uja:
[ 2]  x←geracom2b
[ 3]  ope←'+-×÷'[?4]
[ 4] uba:
[ 5]  y←geracom1b
[ 6]  →(1=?2)/para
[ 7]  r1←'(',x,')',ope,'(',y,')'
[ 8]  →(ope≠'÷')/ufa
[ 9]  →(0=±y)/uba
[10]  r1←('⌈⌊'[?2]),'(',r1,')'
[11] ufa:r←r1
[12]  →0
[13] para:
[14]  r1←'(',y,')',ope,'(',x,')'
[15]  →(ope≠'÷')/ufa1
[16]  →(0=±x)/uja
[17]  r1←('⌈⌊'[?2]),'(',r1,')'
[18] ufa1:r←r1
------------------------------------------------------------
[ 0]  r←geracom3c;r1;x;ope;y
[ 1] uja:
[ 2]  →(1=?3)/mesmo
[ 3]  x←geracom1c
[ 4]  →kkk
[ 5] mesmo:
[ 6]  x←geracom2c
[ 7] kkk:
[ 8]  ope←'+-×÷PQS'[?7]
[ 9] uba:
[10]  y←geracom1c
[11]  →(1=?2)/para
[12]  r1←'(',x,')',ope,'(',y,')'
[13]  →(ope≠'÷')/ufa
[14]  →(0=±expandec y)/uba
[15]  r1←('⌈⌊'[?2]),'(',r1,')'
[16] ufa:r←r1
[17]  →0
[18] para:
[19]  r1←'(',y,')',ope,'(',x,')'
[20]  →(ope≠'÷')/ufa1
[21]  →(0=±expandec x)/uja
[22]  r1←('⌈⌊'[?2]),'(',r1,')'
[23] ufa1:r←r1
------------------------------------------------------------
[ 0]  r←geracom3d;r1;x;ope;y
[ 1] uja:
[ 2]  →(1=?3)/mesmo
```

```
[ 3]  x←geracom1d
[ 4]  →kkk
[ 5] mesmo:
[ 6]  x←geracom2d
[ 7] kkk:
[ 8]  ope←'+-×÷RNL'[?7]
[ 9] uba:
[10]  y←geracom1d
[11]  →(1=?2)/para
[12]  r1←'(',x,')',ope,'(',y,')'
[13]  →(ope≠'÷')/ufa
[14]  →(0=±expandec y)/uba
[15]  r1←('⌈⌊'[?2]),'(',r1,')'
[16] ufa:r←r1
[17]  →0
[18] para:
[19]  r1←'(',y,')',ope,'(',x,')'
[20]  →(ope≠'÷')/ufa1
[21]  →(0=±expandec x)/uja
[22]  r1←('⌈⌊'[?2]),'(',r1,')'
[23] ufa1:r←r1
------------------------------------------------------------
[ 0]  r←geracom3e;r1;x;ope;y
[ 1] uja:
[ 2]  →(1=?3)/mesmo
[ 3]  x←geracom1e
[ 4]  →kkk
[ 5] mesmo:
[ 6]  x←geracom2e
[ 7] kkk:
[ 8]  ope←'+-×÷UWT'[?7]
[ 9] uba:
[10]  y←geracom1e
[11]  →(1=?2)/para
[12]  r1←'(',x,')',ope,'(',y,')'
[13]  →(ope≠'÷')/ufa
[14]  →(0=±expandec y)/uba
[15]  r1←('⌈⌊'[?2]),'(',r1,')'
[16] ufa:r←r1
[17]  →0
[18] para:
[19]  r1←'(',y,')',ope,'(',x,')'
[20]  →(ope≠'÷')/ufa1
[21]  →(0=±expandec x)/uja
[22]  r1←('⌈⌊'[?2]),'(',r1,')'
[23] ufa1:r←r1
------------------------------------------------------------
[ 0]  r←geracom3f;r1;x;ope;y
[ 1] uja:
[ 2]  →(1=?3)/mesmo
[ 3]  x←geracom1f
[ 4]  →kkk
[ 5] mesmo:
[ 6]  x←geracom2f
[ 7] kkk:
[ 8]  ope←'+-×÷IVK'[?7]
[ 9] uba:
[10]  y←geracom1f
[11]  →(1=?2)/para
[12]  r1←'(',x,')',ope,'(',y,')'
[13]  →(ope≠'÷')/ufa
[14]  →(0=±expandec y)/uba
[15]  r1←('⌈⌊'[?2]),'(',r1,')'
```

```
[16] ufa:r←r1
[17]  →0
[18] para:
[19]  r1←'(',y,')',ope,'(',x,')'
[20]  →(ope≠'÷')/ufa1
[21]  →(0=⍎expandec x)/uja
[22]  r1←('⌈⌊'[?2]),'(',r1,')'
[23] ufa1:r←r1
------------------------------------------------------------
[ 0]  r←geracom3g;r1;x;ope;y
[ 1] uja:
[ 2]  →(1=?3)/mesmo
[ 3]  x←geracom1g
[ 4]  →kkk
[ 5] mesmo:
[ 6]  x←geracom2g
[ 7] kkk:
[ 8]  ope←'+-×÷ZGH'[?7]
[ 9] uba:
[10]  y←geracom1g
[11]  →(1=?2)/para
[12]  r1←'(',x,')',ope,'(',y,')'
[13]  →(ope≠'÷')/ufa
[14]  →(0=⍎expandec y)/uba
[15]  r1←('⌈⌊'[?2]),'(',r1,')'
[16] ufa:r←r1
[17]  →0
[18] para:
[19]  r1←'(',y,')',ope,'(',x,')'
[20]  →(ope≠'÷')/ufa1
[21]  →(0=⍎expandec x)/uja
[22]  r1←('⌈⌊'[?2]),'(',r1,')'
[23] ufa1:r←r1
------------------------------------------------------------
[0]  r←geravars
[1]  r←5 76⍴' '
[2]  r[1;]←76↑'⍀STATE $A ⍀gets ',(1 0⍕A←1+?8),'$'
[3]  r[2;]←76↑'⍀STATE $B ⍀gets ',(1 0⍕B←1+?8),'$'
[4]  r[3;]←76↑'⍀STATE $C ⍀gets ',(1 0⍕C←1+?8),'$'
[5]  r[4;]←76↑'⍀STATE $D ⍀gets ',(1 0⍕D←1+?8),'$'
[6]  r[5;]←76↑'⍀STATE $F ⍀gets ',(1 0⍕F←1+?8),'$'
------------------------------------------------------------
[ 0]  r←qtsprim x;q;i;pri;d
[ 1]  q←0
[ 2]  i←1
[ 3] t1:→(i>⍴x)/fim
[ 4]  →(x[i]<2)/soma
[ 5]  →(x[i]=2)/vamos
[ 6]  →(x[i]=3)/vamos
[ 7]  →(x[i]=4)/soma
[ 8]  pri←1
[ 9]  d←2
[10] t2:→(d>⌈x[i]*0.5)/aca
[11]  →(0=d|x[i])/esim
[12]  d←d+1
[13]  →t2
[14] esim:
[15]  pri←0
[16]  d←x[i]
[17]  →t2
[18] aca:q←q+pri
[19] soma:
[20]  i←i+1
```

```
[21]  →t1
[22] vamos:
[23]  q←q+1
[24]  i←i+1
[25]  →t1
[26] fim:r←q
------------------------------------------------------------
[ 0]  r←traduz002b x;i
[ 1]  r←'⍀STATE $'
[ 2]  i←1
[ 3] t1:→(i>⍴x)/fim
[ 4]  →(x[i]='÷')/ediv
[ 5]  →(x[i]='×')/evez
[ 6]  →(x[i]='⌊')/echa
[ 7]  →(x[i]='⌈')/etet
[ 8]  r←r,x[i]
[ 9] soma:i←i+1
[10]  →t1
[11] ediv:r←r,' ⍀div '
[12]  →soma
[13] evez:r←r,' ⍀times '
[14]  →soma
[15] echa:r←r,' ⍀lfloor '
[16]  →soma
[17] etet:r←r,' ⍀lceil '
[18]  →soma
[19] fim:r←r,'$'
[20]  →(76≥⍴r)/oba
[21]  □←'*'
[22]  r←'*'
[23]  →0
[24] oba:
------------------------------------------------------------
[ 0]  r←traduz002c x;i
[ 1]  r←'⍀STATE $'
[ 2]  i←1
[ 3] t1:→(i>⍴x)/fim
[ 4]  →(x[i]='÷')/ediv
[ 5]  →(x[i]='×')/evez
[ 6]  →(x[i]='⌊')/echa
[ 7]  →(x[i]='⌈')/etet
[ 8]  →(x[i]='S')/esss
[ 9]  →(x[i]='P')/eppp
[10]  →(x[i]='Q')/eqqq
[11]  r←r,x[i]
[12] soma:i←i+1
[13]  →t1
[14] ediv:r←r,' ⍀div '
[15]  →soma
[16] evez:r←r,' ⍀times '
[17]  →soma
[18] echa:r←r,' ⍀lfloor '
[19]  →soma
[20] etet:r←r,' ⍀lceil '
[21]  →soma
[22] esss:r←r,' ⍀APLcirclestar '
[23]  →soma
[24] eppp:r←r,' ⍀APLcircleslope '
[25]  →soma
[26] eqqq:r←r,' ⍀APLquaddivide '
[27]  →soma
[28] fim:r←r,'$'
[29]  →(76≥⍴r)/oba
```

```
[30]  □←'*'
[31]  r←'*'
[32]  →0
[33] oba:
------------------------------------------------------------
[ 0]  r←traduz002d x;i
[ 1]  r←'⍀STATE $'
[ 2]  i←1
[ 3] t1:→(i>⍴x)/fim
[ 4]  →(x[i]='÷')/ediv
[ 5]  →(x[i]='×')/evez
[ 6]  →(x[i]='⌊')/echa
[ 7]  →(x[i]='⌈')/etet
[ 8]  →(x[i]='R')/errr
[ 9]  →(x[i]='N')/ennn
[10]  →(x[i]='L')/elll
[11]  r←r,x[i]
[12] soma:i←i+1
[13]  →t1
[14] ediv:r←r,' ⍀div '
[15]  →soma
[16] evez:r←r,' ⍀times '
[17]  →soma
[18] echa:r←r,' ⍀lfloor '
[19]  →soma
[20] etet:r←r,' ⍀lceil '
[21]  →soma
[22] errr:r←r,' ⍀APLrho '
[23]  →soma
[24] ennn:r←r,' ⍀APLdiamond '
[25]  →soma
[26] elll:r←r,' ⍀APLdel '
[27]  →soma
[28] fim:r←r,'$'
[29]  →(76≥⍴r)/oba
[30]  □←'*'
[31]  r←'*'
[32]  →0
[33] oba:
------------------------------------------------------------
[ 0]  r←traduz002e x;i
[ 1]  r←'⍀STATE $'
[ 2]  i←1
[ 3] t1:→(i>⍴x)/fim
[ 4]  →(x[i]='÷')/ediv
[ 5]  →(x[i]='×')/evez
[ 6]  →(x[i]='⌊')/echa
[ 7]  →(x[i]='⌈')/etet
[ 8]  →(x[i]='U')/euuu
[ 9]  →(x[i]='W')/ewww
[10]  →(x[i]='T')/ettt
[11]  r←r,x[i]
[12] soma:i←i+1
[13]  →t1
[14] ediv:r←r,' ⍀div '
[15]  →soma
[16] evez:r←r,' ⍀times '
[17]  →soma
[18] echa:r←r,' ⍀lfloor '
[19]  →soma
[20] etet:r←r,' ⍀lceil '
[21]  →soma
[22] euuu:r←r,' ⍀APLuparrow '
```

```
[23]  →soma
[24] ewww:r←r,' ⍀APLdownarrow '
[25]  →soma
[26] ettt:r←r,' ⍀APLdeltilde '
[27]  →soma
[28] fim:r←r,'$'
[29]  →(76≥⍴r)/oba
[30]  ⍞←'*'
[31]  r←'*'
[32]  →0
[33] oba:
------------------------------------------------------------
[ 0]  r←traduz002f x;i
[ 1]  r←'⍀STATE $'
[ 2]  i←1
[ 3] t1:→(i>⍴x)/fim
[ 4]  →(x[i]='÷')/ediv
[ 5]  →(x[i]='×')/evez
[ 6]  →(x[i]='⌊')/echa
[ 7]  →(x[i]='⌈')/etet
[ 8]  →(x[i]='I')/eiii
[ 9]  →(x[i]='V')/evvv
[10]  →(x[i]='K')/ekkk
[11]  r←r,x[i]
[12] soma:i←i+1
[13]  →t1
[14] ediv:r←r,' ⍀div '
[15]  →soma
[16] evez:r←r,' ⍀times '
[17]  →soma
[18] echa:r←r,' ⍀lfloor '
[19]  →soma
[20] etet:r←r,' ⍀lceil '
[21]  →soma
[22] eiii:r←r,' ⍀APLiota '
[23]  →soma
[24] evvv:r←r,' ⍀APLtilde '
[25]  →soma
[26] ekkk:r←r,' ⍀APLuptack '
[27]  →soma
[28] fim:r←r,'$'
[29]  →(76≥⍴r)/oba
[30]  ⍞←'*'
[31]  r←'*'
[32]  →0
[33] oba:
------------------------------------------------------------
[ 0]  r←traduz002g x;i
[ 1]  r←'⍀STATE $'
[ 2]  i←1
[ 3] t1:→(i>⍴x)/fim
[ 4]  →(x[i]='÷')/ediv
[ 5]  →(x[i]='×')/evez
[ 6]  →(x[i]='⌊')/echa
[ 7]  →(x[i]='⌈')/etet
[ 8]  →(x[i]='Z')/ezzz
[ 9]  →(x[i]='G')/eggg
[10]  →(x[i]='H')/ehhh
[11]  r←r,x[i]
[12] soma:i←i+1
[13]  →t1
[14] ediv:r←r,' ⍀div '
[15]  →soma
```

```
[16] evez:r←r,' ⍀times '
[17]  →soma
[18] echa:r←r,' ⍀lfloor '
[19]  →soma
[20] etet:r←r,' ⍀lceil '
[21]  →soma
[22] ezzz:r←r,' ⍀APLuptackjot '   ⍝ format
[23]  →soma
[24] eggg:r←r,' ⍀APLdowntackjot '  ⍝ execute
[25]  →soma
[26] ehhh:r←r,' ⍀APLupshoejot '   ⍝ lamp
[27]  →soma
[28] fim:r←r,'$'
[29]  →(76≥⍴r)/oba
[30]  ⍞←'*'
[31]  r←'*'
[32]  →0
[33] oba:
------------------------------------------------------------
[ 0]  opesq vivo002b n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo002 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PL002b  '
[ 9]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[42]  xx←gcaso2b
[43]  esse[7+⍳13;]←13 80↑(⊃xx[1])[1;;]
[44]  esse[20+⍳13;]←13 80↑(⊃xx[1])[2;;]
[45]  esse[33+⍳13;]←13 80↑(⊃xx[1])[3;;]
[46]  esse[46+⍳13;]←13 80↑(⊃xx[1])[4;;]
[47]  esse[59+⍳13;]←13 80↑(⊃xx[1])[5;;]
[48]  esse[72+⍳13;]←13 80↑(⊃xx[1])[6;;]
[49]  esse[86;]←1 80⍴80↑'¯-'edit 10 0⍕+/⊃xx[2]
[50]  resp←resp,,⊃xx[2]
[51]  resu←resu,[1]1 7⍴resp
[52]  acuja←(f[;2]='#')/⍳1↑⍴f
[53]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[54]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[55]  ⍞←(⍕xk←xk+1),'-'
[56]  →testa
[57] fim:upag←(1 0+⍴f)⍴' '
[58]  →(1=≡n)/elafa
[59]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[60]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[61]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 6 0 3 0 3 0 3 0 3 0 3 0)⍕resu
[62]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[63]  →terminando
[64] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[65] elafa:aaa←(ylu[;⍳36],4 0⍕0 1↓resu)
[66] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[67]  lixonol←aaa ⎕FM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[68]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[69] terminando:
[70]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[71]  relat[1↑⍴relat;;]←upag
[72]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[73] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[74]  lixonol←lixonol ⎕FM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[75]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[76]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo002c n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo002 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PL002c  '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[25]  esse[4;]←80↑ylu[xk;⍳6]
[26] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[27]  →(36=1↓⍴ylu)/zebra
[28]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[29]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[30]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[31]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[32]  →maiszebra
[33] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[71]  relat[1↑⍴relat;;]←upag
[72]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[73] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[74]  lixonol←lixonol ΔFM'c:\apl2\','((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[75]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[76]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo002e n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo002 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PL002e  '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[54]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[55]  ⍞←(⍕xk←xk+1),'-'
[56]  →testa
[57] fim:upag←(1 0+⍴f)⍴' '
[58]  →(1=≡n)/elafa
[59]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[60]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[61]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←6 0 8 0 5 0 5 0 5 0 5 0 5 0)⍕resu
[62]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[63]  →terminando
[64] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[65] elafa:aaa←(ylu[;⍳36],'¯-'edit 6 0⍕0 1↓resu)
[66] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[67]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[68]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[69] terminando:
[70]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[71]  relat[1↑⍴relat;;]←upag
[72]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[73] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[74]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[75]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[76]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo002f n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo002 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PL002f  '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[37]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[38]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[39]  esse[87;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[40]  esse[88;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[41] inica:
[42]  xx←gcaso2f
[43]  esse[7+⍳13;]←13 80↑(⊃xx[1])[1;;]
[44]  esse[20+⍳13;]←13 80↑(⊃xx[1])[2;;]
[45]  esse[33+⍳13;]←13 80↑(⊃xx[1])[3;;]
[46]  esse[46+⍳13;]←13 80↑(⊃xx[1])[4;;]
[47]  esse[59+⍳13;]←13 80↑(⊃xx[1])[5;;]
[48]  esse[72+⍳13;]←13 80↑(⊃xx[1])[6;;]
[49]  esse[86;]←1 80⍴80↑'¯-'edit 10 0⍕+/⊃xx[2]
[50]  resp←resp,,⊃xx[2]
[51]  resu←resu,[1]1 7⍴resp
[52]  acuja←(f[;2]='#')/⍳1↑⍴f
[53]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[54]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[55]  ⍞←(⍕xk←xk+1),'-'
[56]  →testa
[57] fim:upag←(1 0+⍴f)⍴' '
[58]  →(1=≡n)/elafa
[59]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[60]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[61]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←6 0 8 0 5 0 5 0 5 0 5 0 5 0)⍕resu
[62]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[63]  →terminando
[64] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[65] elafa:aaa←(ylu[;⍳36],'¯-'edit 6 0⍕0 1↓resu)
[66] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[67]  lixonol←aaa ⎕FM('c:\apl2\',((~⊖∧\⊖EVENTO=' ')/EVENTO),'.gpa')
[68]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[69] terminando:
[70]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[71]  relat[1↑⍴relat;;]←upag
[72]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[73] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[74]  lixonol←lixonol ⎕FM'c:\apl2\',((~⊖∧\⊖EVENTO=' ')/EVENTO),'.tex'
[75]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[76]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo002g n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo002 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PL002g  '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[20]  esse←88 80ρ' '
[21]  f←FOLHALA002g
[22]  esse[1;]←80↑dhx[1;]
[23]  esse[2;]←80↑dhx[2;]
[24]  esse[3;]←80↑4 2⍕VERSAOg←1.05
[25]  esse[4;]←80↑ylu[xk;ι6]
[26] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[27]  →(36=1↓ρylu)/zebra
[28]  qlinha←(1=∧/[2]f[;ι4]=((1↑ρf),4)ρ'⍀#05')/ι1↑ρf
[29]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[30]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[31]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[32]  →maiszebra
[33] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[1]  'Para gerar um gabarito, chame raizq num'
------------------------------------------------------------
[ 0]  r←acertaca x;i
[ 1]  r←3 78⍴' '
[ 2]  i←1
[ 3] t1:→(i>3)/fim
[ 4]  →(i≠1)/pulla
[ 5]  r[i;]←78↑(⍕x[i;1]),'&-',(⍕x[i;2]),'&-',(⍕x[i;3]),'&-',(⍕x[i;4]),'&...&',(⍕x[i;5]),'⍀
      ⍀ ⍀hline'
[ 6]  →vaii
[ 7] pulla:
[ 8]  r[i;]←78↑(⍕x[i;1]),'&-',(⍕x[i;2]),'&-',(⍕x[i;3]),'&-',(⍕x[i;4]),'&...&⍀⍀ ⍀hline'
[ 9] vaii:
[10]  i←i+1
[11]  →t1
[12] fim:
------------------------------------------------------------
[ 0]  r←geracaso;z;x
[ 1]  r←0 5⍴0
[ 2] denovo:x←10000+?50000
[ 3]  z←raizq x
[ 4]  →(5>⍴FRASE)/denovo
[ 5]  →(0=FRASE[5])/denovo
[ 6]  r←1 5⍴x,FRASE[1 2 3 5]
[ 7] denovo2:x←40000+?10000
[ 8]  z←raizq x
[ 9]  →(5>⍴FRASE)/denovo2
[10]  →(0=FRASE[5])/denovo2
[11]  r←r,[1]1 5⍴x,FRASE[1 2 3 5]
[12] denovo4:x←10000+?20000
[13]  z←raizq x
[14]  →(5>⍴FRASE)/denovo4
[15]  →(0=FRASE[5])/denovo4
[16]  r←r,[1]1 5⍴x,FRASE[1 2 3 5]
------------------------------------------------------------
[0]  r←pedemail x
[1]  →(40≠+/' '=x)/aindanao
[2]  r←80↑'Por favor, informe seu e-mail: ⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_'
[3]  →junnao
[4] aindanao:r←80↑'e-mail cadastrado: ⍀verb+',x,'+'
[5] junnao:
------------------------------------------------------------
[ 0]  r←raizq alfa;alfa1;alfa2;i;j;a;b;c;d;res;tira1;esq;dir;max;ma;bac;mul
[ 1]  QTDOPS←0 ⋄ FRASE←0⍴0
[ 2]  alfa1←alfa×100000000
[ 3]  esq←0 39⍴' ' ⋄ dir←0 39⍴' '
[ 4]  alfa2←100 100 100 100 100 100 100 100 100 100 100 100⍪alfa1
[ 5]  ma←3
[ 6]  i←1
[ 7] t1:→(alfa2[i]≠0)/vai
[ 8]  i←i+1
[ 9]  →t1
[10] vai:
[11]  alfa2←(i-1)⍀alfa2
[12]  esq←esq,[1]1 39⍴39↑'00 '⍕alfa2
[13]  esq←esq,[1]1 39⍴39↑'============'
[14]  i←1
[15]  a←⌊alfa2[i]*0.5
[16]  dir←dir,[1]1 39⍴39↑1 0⍕a
[17]  dir←dir,[1]1 39⍴39↑'============'
[18]  dir←dir,[1]1 39⍴39↑'rq(',(⍕alfa2[i]),') v =',⍕a
[19]  dir←dir,[1]1 39⍴39↑'----------'
[20]  esq←esq,[1]1 39⍴39↑'-',⍕a*2
```

```
[21]  FRASE←FRASE,a*2
[22]  esq←esq,[1]1 39ρ39↑'-----------'
[23]  res←(100×alfa2[i]-a*2)+alfa2[i+1]
[24]  esq←esq,[1]1 39ρ39↑5 0⍕res
[25]  →((res≠0)∨(0≠+/(i+1)↓alfa2))/vai2
[26] ⍝ aqui sao tratados os 100, 400, 900, 1600...
[27]  mul←1 ⋄ bac←alfa
[28] pergunta:→(0=100|bac)/so1
[29]  →acaba
[30] so1:bac←bac÷100
[31]  mul←mul×10
[32]  →pergunta
[33] acaba:
[34]  a←a×mul
[35]  →mesmo
[36] vai2:
[37]  i←i+1
[38]  b←a×2
[39]  dir←dir,[1]1 39ρ39↑'2x',(⍕a),'=',⍕b
[40]  tira1←0
[41] conta:c←(⌊res÷b×10)-tira1
[42]  →(c≥0)/kraca
[43]  c←0
[44]  d←0
[45]  →blz
[46] kraca:
[47]  d←⍎(⍕b),(⍕c),'×',⍕c
[48]  →(res≥d)/blz
[49]  dir←dir,[1]1 39ρ39↑'                ops'
[50]  QTDOPS←QTDOPS+1
[51]  tira1←tira1+1
[52]  →conta
[53] blz:
[54]  dir←dir,[1]1 39ρ39↑(⍕res),'/',(⍕10×b),'=',⍕c
[55]  dir←dir,[1]1 39ρ39↑(⍕b),(⍕c),'x',(⍕c),'=',⍕d
[56]  esq←esq,[1]1 39ρ39↑(maρ' '),'-',⍕d
[57]  FRASE←FRASE,d
[58]  esq←esq,[1]1 39ρ39↑(maρ'-'),'----------'
[59]  ma←ma+3
[60]  dir←dir,[1]1 39ρ39↑'--------------'
[61]  esq←esq,[1]1 39ρ39↑(maρ' '),⍕res-d
[62]  res←⍎(⍕res-d),'00'⍕alfa2[i+1]
[63]  esq←esq,[1]1 39ρ39↑(maρ' '),⍕res
[64]  a←⍎(⍕a),⍕c
[65]  dir[1;]←39↑⍕a
[66]  →(i≥¯1+ρalfa2)/fim
[67]  →vai2
[68] fim:a←a÷1000
[69] mesmo:RAIZ←a
[70]  dir[1;]←39↑⍕a
[71]  max←((1↑ρesq)⌈1↑ρdir)
[72]  r←((max,39)↑esq),(max,39)↑dir
------------------------------------------------------------
[ 0]  testa;i;x
[ 1]  i←1
[ 2] t1:→(i>100000)/0
[ 3]  x←raizq i
[ 4]  →((⍎10 1⍕RAIZ)=⍎10 1⍕i*0.5)/blz
[ 5]  i
[ 6] blz:i←i+1
[ 7] ⍝ i,QTDOPS
[ 8]  →t1
------------------------------------------------------------
```

```
[ 0]  opesq vivo003a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo003 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  CORRECAO←1 ⋄ EVENTO←'PL003   '
[ 9]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[61]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[62]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴paaa),' linhas e ',(⍕1↓⍴paaa),' colunas'
[63] terminando:
[64]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[65]  relat[1↑⍴relat;;]←upag
[66]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[67] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[68]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[69]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[70]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo004

```
[0]  r←mdc xy
[1] contr:
[2]  →(xy[2]=0)/zero
[3]  r←mdc xy[2],xy[2]|xy[1]
[4]  →0
[5] zero:r←xy[1]
[6] ⍝ referencia Ata99, pag 39-9.
-------------------------------------------------------------
[ 0]  r←a ondeta b;i;j;k;⎕PW
[ 1]  ⎕PW←120
[ 2]  b←,b
[ 3]  i←1
[ 4] t1:→(i>1↑⍴a)/fim
[ 5]  j←1
[ 6] t2:→(j>1↓⍴a)/upa
[ 7]  →(a[i;j]≠b[1])/soma
[ 8]  k←1
[ 9] t3:→(k>⍴b)/achou
[10]  →(a[i;j+k-1]=b[k])/ainda
[11]  →soma
[12] ainda:k←k+1
[13]  →t3
[14] achou:'=',(⍕i),' ',(⍕j),a[i;]
[15]  j←j+⍴b
[16]  →t2
[17] soma:j←j+1
[18]  →t2
[19] upa:i←i+1
[20]  →t1
[21] fim:
-------------------------------------------------------------
[0]  r←pedemail x
[1]  →(40≠+/' '=x)/aindanao
[2]  r←80↑'Por favor, informe seu e-mail: ⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_'
[3]  →junnao
[4] aindanao:r←80↑'e-mail cadastrado: ',x
[5] junnao:
-------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i>1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
```

```
[10] te3:→(candi[j]=' ')/ufa
[11]  j←j-1
[12]  →te3
[13] ufa:r←r,[1]1 80ρ80↑j↑candi
[14]  candi←j↓candi
[15]  →((ρcandi)=+/candi=' ')/som
[16]  →te2
[17] eca:r←r,[1]1 80ρ80↑candi
[18] som:i←i+1
[19]  →te
[20] fim:'acabou'
-------------------------------------------------------------
[ 0]  opesq vivo004a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←1 ⋄ EVENTO←'PL004   '
[ 6]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)ρ4 0⍕ιn
[ 9]  FOLHALA004←ajusta80 FOLHALA004
[10]  relat←((2+1↑ρylu),1 0+ρFOLHALA004)ρ' '
[11]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 2ρ0
[13] testa:→(xk>1↑ρylu)/fim
[14]  esse←14 80ρ' '
[15]  f←FOLHALA004
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.06
[19]  esse[4;]←80↑ylu[xk;ι6]
[20]  esse[5;]←80↑ylu[xk;6+ι30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO[ι4],'{\large{',EVENTO[4+ι4],'}}'
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23] ⍝ esse[13;]←pedemail ylu[xk;36+ι40]
[24]  esse[13;ι10]←'@',esse[6;5+ι3],esse[4;1+ι5],'@'
[25]  esse[14;]←80↑esse[6;5+ι3],'-',esse[4;1+ι5],' - ',opesq[6 7],'/',opesq[9 10]
[26] inica:
[27]  zz←999+2?999
[28]  zz←zz[⍒zz]
[29]  resp←resp,mdc zz
[30]  esse[8;]←80↑10 0⍕zz
[31]  esse[8+ι4;]←4 80↑QUES[((4×¯1+?8)+ι4);]
[32]  resu←resu,[1]1 2ρresp
[33]  acuja←(f[;2]='#')/ι1↑ρf
[34]  f[acuja;ι80]←esse[⍋,f[acuja;3 4],' ';]
[35]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\newpage'
[36]  ⍞←(⍕xk←xk+1),'-'
[37]  →testa
[38] fim:upag←(1 0+ρf)ρ' '
[39]  →(1=≡n)/elafa
[40]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[41]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[42]  upag[2+ι1↑ρresu;ι+/lixo1]←(lixo1←5 0 5 0)⍕resu
[43]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[44]  →terminando
[45] elafa:aaa←(ylu,(((1↑ρylu),4)ρ' 0.0'),6 0⍕0 1↓resu)
[46]  aaa[1;35 36]←2 0⍕CORRECAO
[47]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[48]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
```

```
[49] terminando:
[50]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[51]  relat[1↑⍴relat;;]←upag
[52]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[53] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[54]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[55]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[56]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo005

```
[0]  r←a Z b
[1]  r←b|a
-------------------------------------------------------------
[ 0]  r←frmt5 x;i
[ 1]  r←'$'
[ 2]  i←1
[ 3] t1:→(i>⍴x)/f0
[ 4]  →(x[i]='×')/vezes
[ 5]  →(x[i]='÷')/divid
[ 6]  →(x[i]='⌊')/chao
[ 7]  →(x[i]='⌈')/teto
[ 8]  →(x[i]='Z')/mod
[ 9]  →(x[i]='¯')/minu
[10]  r←r,x[i]
[11]  →soma
[12] vezes:r←r,'\times '
[13]  →soma
[14] divid:r←r,'\div '
[15]  →soma
[16] chao:r←r,'\lfloor '
[17]  →soma
[18] teto:r←r,'\lceil '
[19]  →soma
[20] mod:r←r,'|'
[21]  →soma
[22] minu:r←r,'-'
[23]  →soma
[24] soma:
[25]  i←i+1
[26]  →t1
[27] f0:r←r,'$'
-------------------------------------------------------------
[ 0]  r←geracaso5;y;x
[ 1]  y←5⍴0
[ 2]  r←6 80⍴' '
[ 3]  x←gp55
[ 4]  y[1]←⍎x
[ 5]  r[1;]←80↑frmt5 x
[ 6]  x←gp55
[ 7]  y[2]←⍎x
[ 8]  r[2;]←80↑frmt5 x
[ 9]  x←gp55
[10]  y[3]←⍎x
[11]  r[3;]←80↑frmt5 x
[12]  x←gp55
[13]  y[4]←⍎x
[14]  r[4;]←80↑frmt5 x
[15]  x←gp55
[16]  y[5]←⍎x
[17]  r[5;]←80↑frmt5 x
```

```
[18]  y←y+0.01 0.02 0.03 0.04 0.05
[19]  r[6;1]←'ABCDE'[(y⍳y[⍋y])[3]]
------------------------------------------------------------
[0]  r←gp5;a;b
[1]  a←(1 0⍕3+?6)
[2]  b←(1 0⍕1+?5)
[3]  →(1=?5)/di
[4]  r←'(',a,' ',('+-×Z'[?4]),' ',b,')'
[5]  →0
[6] di:r←'(',('⌈⌊'[?2]),'(',a,'÷',b,'))'
------------------------------------------------------------
[ 0]  r←gp55;a;aa;b;bb;c;qual
[ 1]  a←gp5
[ 2]  b←gp5
[ 3]  c←gp5
[ 4]  bb←⍎b
[ 5]  aa←⍎a
[ 6]  →(0=bb)/naopode
[ 7]  →(1=?4)/divi
[ 8]  →(1=?3)/trip
[ 9] naopode:
[10]  qual←'+-×Z'[?4]
[11]  →((0=bb)∧(qual='Z'))/naopode
[12]  r←a,' ',qual,' ',b
[13]  →0
[14] divi:
[15]  r←'(',('⌈⌊'[?2]),'(',a,'÷',b,'))'
[16]  →0
[17] trip:r←'(',a,' ',('+-×Z'[?4]),' ',b,')',('+-×'[?3]),' ',c
[18]  →0
------------------------------------------------------------
[ 0]  opesq vivo005a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo005 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PL005   '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[30]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[31]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[32]  →maiszebra
[33] ⍝⍝⍝
```

```
[93]  lixonol←(((×/2↑⍴prelat),¯1↑⍴prelat)⍴prelat)
[94] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[95]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[96]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[97]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo006

```
[0]  AVISO
[1]  'A variavel X2 contem a solucao da ultima folha.'
[2]  'CTS e a quantidade de geracoes em que houve vivos na matriz'
[3]  ' '
[4]  'para gabarito, gere x←a matriz da folha e depois'
[5]  '   e depois 4 jogovida x'
[6]  '   AO PREENCHER X, use pontos e letras X MAIUSCULAS'
-------------------------------------------------------------
[0]  r←gerainst;x1;x2
[1]  x1←geratab 10 10
[2]  X2←x2←4 jogovida x1
[3]  r←2⍴0
[4]  r[2]←⊂selcand x2
[5]  r[1]←⊂x1
-------------------------------------------------------------
[0]  r←geratab x;t
[1]  r←(t←×/x)⍴'.'
[2]  r[(⌊0.1×t)?t]←'X'
[3]  r[(⌊0.1×t)?t]←'X'
[4]  r[(⌊0.1×t)?t]←'X'
[5]  r←x⍴r
-------------------------------------------------------------
[ 0]  r←ger jogovida m;m1;mlar;i;j;qt;ct
[ 1]  ct←1
[ 2]  r←((ger+1),⍴m)⍴' '
[ 3]  r[1;;]←m
[ 4] testa:→(ct>ger)/acabou
[ 5]  m1←(⍴m)⍴'.'
[ 6]  mlar←'.',[2]('.',[1]m,[1]'.'),[2]'.'
[ 7]  i←1
[ 8] t1:→(i>1↑⍴m)/aca
[ 9]  j←1
[10] t2:→(j>1↓⍴m)/fi
[11]  qt←+/'X'=mlar[i;¯1+j+⍳3],mlar[i+1;j],mlar[i+1;j+2],mlar[i+2;¯1+j+⍳3]
[12]  →((qt<2)∨(qt>3))/morre
[13]  →(qt=3)/vive
[14] fica:m1[i;j]←m[i;j]
[15]  →soma
[16] morre:m1[i;j]←'.'
[17]  →soma
[18] vive:m1[i;j]←'X'
[19] soma:→(j=j←j+1)/t2
[20] fi:→(i=i←i+1)/t1
[21] aca:
[22]  r[ct+1;;]←m1
[23]  m←m1
[24]  ct←ct+1
[25]  →testa
[26] acabou:
-------------------------------------------------------------
[0]  r←pedemail x
[1]  →(40≠+/' '=x)/aindanao
[2]  r←80↑'Por favor, informe seu e-mail: \_\_\_\_\_'
```

```
[3]  →junnao
[4] aindanao:r←80↑'e-mail cadastrado: ⍀verb+',x,'+'
[5] junnao:
------------------------------------------------------------
[ 0]  r←selcand tr;dims;cts;i;j;lim
[ 1]  dims←1↓⍴tr
[ 2]  r←0 3⍴0
[ 3]  CTS←cts←+/[1]tr='X'
[ 4]  i←(?1↑⍴cts)
[ 5]  j←(?1↓⍴cts)
[ 6] t1:→(i>1↑⍴cts)/aca
[ 7]  j←1
[ 8] t2:→(j>1↓⍴cts)/aga
[ 9]  →((,cts[i;j])<⌊0.7×1↑⍴tr)/soma
[10]  r←r,[1]1 3⍴i,j,tr[1↑⍴tr;i;j]='X'
[11]  →(4<1↑⍴r)/fim
[12] soma:j←j+1
[13]  →t2
[14] aga:i←i+1
[15]  →t1
[16] aca:i←1
[17]  →t1
[18] fim:
------------------------------------------------------------
[ 0]  opesq vivo006a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;relat;resp;resu;
      upag;xixo;xk;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←1 ⋄ EVENTO←'PL006   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA006←ajusta80 FOLHALA006
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA006)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[12]  xk←1 ⋄ resu←0 5⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←27 80⍴' '
[15]  f←FOLHALA006
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←1.03
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[23] ⍝ esse[26;]←pedemail ylu[xk;36+⍳40]
[24]  esse[26;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[25]  esse[27;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[26] inica:
[27]  zz←gerainst
[28]  esse[7+⍳10;⍳34]←1 numera(30⍴1 0 0)⍀10 10↑⊃zz[1]
[29]  esse[18;1 2]←2 0⍎(⊃zz[2])[1;1]
[30]  esse[19;1 2]←2 0⍎(⊃zz[2])[1;2]
[31]  esse[20;1 2]←2 0⍎(⊃zz[2])[2;1]
[32]  esse[21;1 2]←2 0⍎(⊃zz[2])[2;2]
[33]  esse[22;1 2]←2 0⍎(⊃zz[2])[3;1]
[34]  esse[23;1 2]←2 0⍎(⊃zz[2])[3;2]
[35]  esse[24;1 2]←2 0⍎(⊃zz[2])[4;1]
[36]  esse[25;1 2]←2 0⍎(⊃zz[2])[4;2]
```

```
[37]  resp←resp,,(⊃zz[2])[⍳4;3]
[38]  resu←resu,[1]1 5⍴resp
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←(ULTIMOa←f),[1](1,1↓⍴f)⍴200↑'\newpage'
[42]  ⎕←(⍕xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←4 0 7 0 2 0 2 0 2 0)⍕resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),4 0⍕0 1↓resu)
[52]  aaa[1;35 36]←2 0⍕CORRECAO
[53]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[54]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[55] terminando:
[56]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[57]  relat[1↑⍴relat;;]←upag
[58]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[59] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[60]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[61]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[62]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo007

```
[0]  AVISO
[1]  ' no diretorio \material\varig-254 ha 2 arquivos'
[2]  ' ex.gs e dadosex.gs'
[3]  '  depois de instalar o gnuplot, (que esta no repositorio) chame:'
[4]  '   gnuplot -persist -ex.gs'
[5]  '  '
[6]  ' vai aparecer o grafico do exemplo da folha'
-------------------------------------------------------------
[0]  comoresolve
[1]  '1 resolve x1 y1 x2 y2 t1 t2'
-------------------------------------------------------------
[ 0]  r←qual gabaritovelho x1y1x2y2t1t2;d1;d2;ddd;delta;eq1;eq2;eq3;eq4x;eq4y;eq5;eq6;lix;
      raiz1;raiz11;raiz2;raiz21;t1;t2;x1;x2;y1;y27
[ 1]  ⎕PW←88
[ 2]  'forneca qual=1, para nao mostrar o resultado final'
[ 3]  'forneca TODOS os digitos da folha, pois os pontos podem estar muito proximos'
[ 4]  RESPO←0 88⍴''
[ 5]  x1←x1y1x2y2t1t2[1] ⋄ x2←x1y1x2y2t1t2[3] ⋄ y1←x1y1x2y2t1t2[2] ⋄ y2←x1y1x2y2t1t2[4]
[ 6]  t1←x1y1x2y2t1t2[5] ⋄ t2←x1y1x2y2t1t2[6]
[ 7]  d1←t1×340 ⋄ d2←t2×340
[ 8]  RESPO←RESPO,[1]1 88⍴88↑'Distancia 1 = ',⍕d1
[ 9]  RESPO←RESPO,[1]1 88⍴88↑'Distancia 2 = ',⍕d2
[10] ⍝ 'eq1'
[11]  eq1←(-2×x1),(-2×y1),+/(x1*2),(y1*2),(-d1*2)
[12]  lix←'Eq 1 > x2 + y2 ',(si eq1[1]),'x',(si eq1[2]),'y',(si eq1[3]),' = 0'
[13]  RESPO←RESPO,[1]1 88⍴88↑lix
[14] ⍝'eq2'
[15]  eq2←(-2×x2),(-2×y2),+/(x2*2),(y2*2),(-d2*2)
[16]  lix←'Eq 2 > x2 + y2 ',(si eq2[1]),'x',(si eq2[2]),'y',(si eq2[3]),' = 0'
[17]  RESPO←RESPO,[1]1 88⍴88↑lix
[18] ⍝'eq3'
[19]  eq3←eq1-eq2
```

```
[20]  lix←'Eq 3 > ',(si eq3[1]),'x',(si eq3[2]),'y',(si eq3[3]),' = 0'
[21]  RESPO←RESPO,[1]1 88⍴88↑lix
[22] ⍝ 'eq4x'
[23]  eq4x←(-eq3[2]÷eq3[1]),-eq3[3]÷eq3[1]
[24] ⍝ lix←'Eq 4 >     x = ',(si eq4x[1]),'y',si eq4x[2]
[25] ⍝ RESPO←RESPO,[1]1 80⍴80↑lix
[26] ⍝ 'eq4y'
[27]  eq4y←(-eq3[1]÷eq3[2]),-eq3[3]÷eq3[2]
[28]  lix←'Eq 4 >     y = ',(si eq4y[1]),'x',si eq4y[2]
[29]  RESPO←RESPO,[1]1 88⍴88↑lix
[30] ⍝ 'eq5'
[31]  eq5←1,(eq4y[1]*2),(2×eq4y[1]×eq4y[2]),(eq4y[2]*2),(eq1[1]),(eq1[2]×eq4y[1]),(eq1[2]×
      eq4y[2]),eq1[3]
[32]  RESPO←RESPO,[1]1 88⍴88↑'eq 5 > '
[33]  lix←'1x2',(si eq5[2]),'x2',(si eq5[3]),'x',(si eq5[5]),'x',(si eq5[6]),'x',(si eq5[4
      ]),(si eq5[7]),si eq5[8]
[34]  RESPO←RESPO,[1]1 88⍴88↑lix
[35] ⍝ 'eq6'
[36]  eq6←(+/eq5[1 2]),(+/eq5[3 5 6]),+/eq5[4 7 8]
[37]  eq6←⍪14 4⍕eq6
[38]  lix←'Eq 6 > ',(si eq6[1]),'x2',(si eq6[2]),'x',(si eq6[3]),' = 0'
[39]  RESPO←RESPO,[1]1 88⍴88↑lix
[40]  delta←(eq6[2]*2)-4×eq6[1]×eq6[3]
[41]  lix←'DELTA = (',(si eq6[2]),')^2 - 4 x (',(si eq6[1]),') x (',(si eq6[3]),')'
[42]  RESPO←RESPO,[1]1 88⍴88↑lix
[43]  RESPO←RESPO,[1]1 88⍴88↑'DELTA = ',si delta
[44]  →(delta≥0)/blz
[45]  RESPO←RESPO,[1]1 88⍴88↑'raizes imaginarias'
[46]  →fim
[47] blz:
[48] ⍝ 'raiz1'
[49]  raiz1←((-eq6[2])+(((eq6[2]*2)-4×eq6[1]×eq6[3])*0.5))÷2×eq6[1]
[50] ⍝'raiz2'
[51]  raiz2←((-eq6[2])-(((eq6[2]*2)-4×eq6[1]×eq6[3])*0.5))÷2×eq6[1]
[52] ⍝'raiz11'
[53]  raiz11←+/(eq4y[1]×raiz1),eq4y[2]
[54] ⍝ 'raiz21'
[55]  raiz21←+/(eq4y[1]×raiz2),eq4y[2]
[56]  →(qual=1)/0
[57]  RESPO←RESPO,[1]1 88⍴88↑' RESPOSTA 1 >   x1 = ',(si raiz1),'    y1 = ',si raiz11
[58]  RESPO←RESPO,[1]1 88⍴88↑' RESPOSTA 2 >   x2 = ',(si raiz2),'    y2 = ',si raiz21
[59]  ddd←(((raiz1-raiz2)*2)+(raiz11-raiz21)*2)*0.5
[60]  RESPO←RESPO,[1]1 88⍴88↑'                  distancia entre p1 e p2',14 4⍕ddd
[61]  r←2 2⍴⍪20 0⍕raiz1,raiz11,raiz2,raiz21
[62] fim:
-------------------------------------------------------------
[ 0]  r←geracaso2;a1;r1;eq1;eq2;raiz1;raiz2;centro2;a2;r2
[ 1] novo:a1←(40+?40),20+?40
[ 2]  r1←30+?20
[ 3]  eq1←1 1,(-2×a1[1]),(-2×a1[2]),(a1[1]*2)+(a1[2]*2)-r1*2
[ 4]  eq2←eq1[1 3],eq1[5]+(a1[2]*2)+eq1[4]×a1[2]
[ 5]  raiz1←((-eq2[2])+((eq2[2]*2)-4×eq2[3])*0.5)÷2
[ 6]  raiz2←((-eq2[2])-((eq2[2]*2)-4×eq2[3])*0.5)÷2
[ 7]  centro2←(⌈/raiz1,raiz2),a1[2]
[ 8]  a2←centro2+(¯5+?10),¯5+?10
[ 9]  r2←20+?15
[10]  r←⍪20 2⍕a1,a2,(r1,r2)÷0.34
-------------------------------------------------------------
[ 0]  r←geracasoantigo;a1;a2;c;d1;d2;t1;t2
[ 1] novo:a1←(300+100-?200),(150+50-?100)
[ 2]  a2←(500+200-?200),(250+50-?100)
[ 3]  c←((⌊(a1[1]+a2[1])÷2)+20-?40),((⌊(a1[2]+a2[2])÷2)+20-?40)
[ 4]  d1←(((a1[1]-c[1])*2)+((a1[2]-c[2])*2))*0.5
```

```
[ 5]  d2←(((a2[1]-c[1])*2)+((a2[2]-c[2])*2))*0.5
[ 6]  t1←d1÷340
[ 7]  t2←d2÷340
[ 8]  →(30<|d1-d2)/blz
[ 9]  □←'*'
[10]  →novo
[11] blz:
[12]  r←a1,a2,c,d1,d2,t1,t2
[13] ⍝ r[1] e r[2] = coordenadas  do amigo1
[14] ⍝ r[3] e r[4] = coordenadas  do amigo2
[15] ⍝ r[5] e r[6] = coordenadas x e y de voce (e a resposta)
[16] ⍝ r[7] e r[8] = distancias a seu amigo 1 e a seu amigo 2
[17] ⍝ r[9] e r[10] = tempos 1 e 2
------------------------------------------------------------
[0]  r←maisum;xx;yy
[1] novo:xx←geracaso2
[2]  yy←1 resolve xx
[3]  →(¯1≠yy[1])/oka
[4]  □←'o'
[5]  →novo
[6] oka:r←xx,yy
------------------------------------------------------------
[0]  r←pedemail x
[1]  →(40≠+/' '=x)/aindanao
[2]  r←80↑'Por favor, informe seu e-mail: ⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_'
[3]  →junnao
[4] aindanao:r←80↑'e-mail cadastrado: ⍀verb+',x,'+'
[5] junnao:
------------------------------------------------------------
[ 0]  r←qual resolve x1y1x2y2t1t2;x1;x2;y1;y2;t1;t2;d1;d2;eq1;lix;eq2;eq3;eq4x;eq4y;eq5;eq
      6;delta;raiz1;raiz2;raiz11;raiz21;ddd
[ 1] ⍝ 'para mostrar resultado: 1 resolve...'
[ 2]  →(0≠⎕NC'qual')/foio
[ 3]  qual←0
[ 4] foio:
[ 5]  x1←x1y1x2y2t1t2[1] ⋄ x2←x1y1x2y2t1t2[3] ⋄ y1←x1y1x2y2t1t2[2] ⋄ y2←x1y1x2y2t1t2[4]
[ 6]  t1←x1y1x2y2t1t2[5] ⋄ t2←x1y1x2y2t1t2[6]
[ 7]  d1←t1×0.34 ⋄ d2←t2×0.34
[ 8]  RESPO←0 78⍴' '
[ 9]  RESPO←RESPO,[1]1 78⍴78↑'Distancia 1 = ',⍕d1
[10]  RESPO←RESPO,[1]1 78⍴78↑'Distancia 2 = ',⍕d2
[11] ⍝ 'eq1'
[12]  eq1←(-2×x1),(-2×y1),+/(x1*2),(y1*2),(-d1*2)
[13]  lix←'Eq 1 > x2 + y2 ',(si eq1[1]),'x',(si eq1[2]),'y',(si eq1[3]),' = 0'
[14]  RESPO←RESPO,[1]1 78⍴78↑lix
[15] ⍝'eq2'
[16]  eq2←(-2×x2),(-2×y2),+/(x2*2),(y2*2),(-d2*2)
[17]  lix←'Eq 2 > x2 + y2 ',(si eq2[1]),'x',(si eq2[2]),'y',(si eq2[3]),' = 0'
[18]  RESPO←RESPO,[1]1 78⍴78↑lix
[19] ⍝'eq3'
[20]  eq3←eq1-eq2
[21]  →((eq3[1]=0)∨(eq3[2]=0))/xabu
[22]  lix←'Eq 3 > ',(si eq3[1]),'x',(si eq3[2]),'y',(si eq3[3]),' = 0'
[23]  RESPO←RESPO,[1]1 78⍴78↑lix
[24] ⍝ 'eq4x'
[25]  eq4x←(-eq3[2]÷eq3[1]),-eq3[3]÷eq3[1]
[26] ⍝ lix←'Eq 4 >     x = ',(si eq4x[1]),'y',si eq4x[2]
[27] ⍝ RESPO←RESPO,[1]1 80⍴80↑lix
[28] ⍝ 'eq4y'
[29]  eq4y←(-eq3[1]÷eq3[2]),-eq3[3]÷eq3[2]
[30]  lix←'Eq 4 >     y = ',(si eq4y[1]),'x',si eq4y[2]
[31]  RESPO←RESPO,[1]1 78⍴78↑lix
[32] ⍝ 'eq5'
```

```
[33]  eq5←1,(eq4y[1]*2),(2×eq4y[1]×eq4y[2]),(eq4y[2]*2),(eq1[1]),(eq1[2]×eq4y[1]),(eq1[2]×
      eq4y[2]),eq1[3]
[34]  RESPO←RESPO,[1]1 78ρ78↑'eq 5 > '
[35]  lix←'1x2',(si eq5[2]),'x2',(si eq5[3]),'x',(si eq5[5]),'x',(si eq5[6]),'x',(si eq5[4
      ]),(si eq5[7]),si eq5[8]
[36]  RESPO←RESPO,[1]1 78ρ78↑lix
[37] ⍝ 'eq6';ddd
[38]  eq6←(+/eq5[1 2]),(+/eq5[3 5 6]),+/eq5[4 7 8]
[39]  eq6←⍕14 4⍕eq6
[40]  →(eq6[1]=0)/xabu
[41]  lix←'Eq 6 > ',(si eq6[1]),'x2',(si eq6[2]),'x',(si eq6[3]),' = 0'
[42]  RESPO←RESPO,[1]1 78ρ78↑lix
[43]  delta←(eq6[2]*2)-4×eq6[1]×eq6[3]
[44]  lix←'DELTA = (',(si eq6[2]),')^2 - 4 x (',(si eq6[1]),') x (',(si eq6[3]),')'
[45]  RESPO←RESPO,[1]1 78ρ78↑lix
[46]  RESPO←RESPO,[1]1 78ρ78↑'DELTA = ',si delta
[47]  →(delta≥0)/blz
[48]  RESPO←RESPO,[1]1 78ρ78↑'raizes imaginarias'
[49]  →fim
[50] blz:
[51] ⍝ 'raiz1'
[52]  →(0=qual)/fim
[53]  raiz1←((-eq6[2])+(((eq6[2]*2)-4×eq6[1]×eq6[3])*0.5))÷2×eq6[1]
[54] ⍝'raiz2'
[55]  raiz2←((-eq6[2])-(((eq6[2]*2)-4×eq6[1]×eq6[3])*0.5))÷2×eq6[1]
[56] ⍝'raiz11'
[57]  raiz11←+/(eq4y[1]×raiz1),eq4y[2]
[58] ⍝ 'raiz21'
[59]  raiz21←+/(eq4y[1]×raiz2),eq4y[2]
[60]  RESPO←RESPO,[1]1 78ρ78↑' RESPOSTA 1 >   x1 = ',(si raiz1),'    y1 = ',si raiz11
[61]  RESPO←RESPO,[1]1 78ρ78↑' RESPOSTA 2 >   x2 = ',(si raiz2),'    y2 = ',si raiz21
[62]  ddd←(((raiz1-raiz2)*2)+(raiz11-raiz21)*2)*0.5
[63]  RESPO←RESPO,[1]1 78ρ78↑'                  distancia entre p1 e p2',14 4⍕ddd
[64]  r←,2 2ρ⍕20 0⍕raiz1,raiz11,raiz2,raiz21
[65]  →0
[66] fim:
[67]  RESPO
[68]  →0
[69] xabu:r←¯1 0 0 0
------------------------------------------------------------
[ 0]  r←si a
[ 1]  →((a=⌊a)∧(a≥0))/intpos
[ 2]  →((a≠⌊a)∧(a≥0))/frapos
[ 3]  →((a=⌊a)∧(a<0))/intneg
[ 4]  →((a≠⌊a)∧(a<0))/franeg
[ 5]  →0
[ 6] intpos:r←' + ',rtrim⍕a
[ 7]  →0
[ 8] frapos:r←' + ',rtrim 14 4⍕a
[ 9]  →0
[10] intneg:r←' - ',rtrim⍕-a
[11]  →0
[12] franeg:r←' - ',rtrim 14 4⍕-a
------------------------------------------------------------
[ 0]  opesq vivo007a gn;CORRECAO;EVENTO;f;acuja;ylu;relat;dhx;resu;xk;lixo1;upag;esse;resp
      ;a1;a2;lixonol;aaa;zaza
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4] ⍝ ---------------- inicializacao ----------------------
[ 5]  FOLHALA007←ajusta80 FOLHALA007
[ 6]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.76543232
[ 7]  CORRECAO←0 ⋄ EVENTO←'PL007   '
```

```
[ 8]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 9] ⍝ ------------ processamento de alunos ---------------
[10]  →(isnum gn)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑gn),'.alu' ⋄ EVENTO←gn
[11]  →(~isnum gn)/1+⎕LC ⋄ ylu←(gn,76)↑(gn,4)⍴4 0⍕⍳gn
[12] ⍝ modelo de IF: →(~condicao)/1+⎕LC ⋄ fazer se condicao verdadeira
[13]  relat←((2+1↑⍴ylu),(1 0+⍴FOLHALA007))⍴' '
[14]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[15] ⍝ ------------ comeco do processamento ---------------
[16]  xk←1 ⋄ resu←0 9⍴0
[17] testa:→(xk>1↑⍴ylu)/fim
[18]  f←FOLHALA007
[19]  esse←21 80⍴' '
[20]  esse[1;]←80↑dhx[1;]
[21]  esse[2;]←80↑dhx[2;]
[22]  esse[3;]←80↑4 2⍕VERSAOa←4.15
[23]  esse[4;]←80↑ylu[xk;⍳6]
[24]  esse[5;]←80↑ylu[xk;6+⍳30]
[25] ⍝ →(~isnum gn)/1+⎕LC⋄esse[6;]←79↑EVENTO[⍳4],'{\large{',EVENTO[4+⍳4],'}}'
[26]  →(~1=≡gn)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[27]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[28] ⍝ esse[14;]←pedemail ylu[xk;36+⍳40]
[29]  esse[20;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[30]  esse[21;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[31] inica:
[32] ⍝ ---------------------- loop -------------------------
[33]  zaza←maisum
[34]  esse[8 9 10 11 12 13;]←6 80↑6 10⍴(10 0⍕zaza[⍳4]),10 2⍕zaza[4+⍳2]
[35]  resp←resp,zaza[6+⍳4]
[36] ⍝ ------------------- monta o resultado -----------------
[37]  zaza←maisum
[38]  esse[13+⍳6;]←6 80↑6 10⍴(10 0⍕zaza[⍳4]),10 2⍕zaza[4+⍳2]
[39]  resp←resp,zaza[6+⍳4]
[40] ⍝ ------------------- monta o resultado -----------------
[41]  resu←resu,[1](1,9)⍴resp
[42]  acuja←(f[;2]='#')/⍳1↑⍴f
[43]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[44]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[45]  ⍞←(⍕¯1+xk←xk+1),'-'
[46]  →testa
[47] ⍝ -------------------- fim de tudo --------------------
[48] fim:upag←(1 0+⍴f)⍴' '
[49]  →(~isnum gn)/elafa1
[50]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[51]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[52]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←5 0 10 0 5 0 8 0 5 0 10 0 5 0 8 0 5 0)⍕resu
[53]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[54]  →terminando
[55] elafa1:aaa←(ylu,'¯-'edit 10 0 5 0 8 0 5 0 10 0 5 0 8 0 5 0⍕0 1↓resu)
[56]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[57]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'.gpa'
[58]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[59] terminando:
[60]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[61]  relat[1↑⍴relat;;]←upag
[62]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.t
      ex'
[63]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[64]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'.tex'
-------------------------------------------------------------
```

vivo008

```
[0]  AVISO
[1]  ' no diretorio ⍀material⍀varig-254 ha 2 arquivos'
[2]  ' ex.gs e dadosex.gs'
[3]  '  depois de instalar o gnuplot, (que esta no repositorio) chame:'
[4]  '   gnuplot -persist -ex.gs'
[5]  '  '
[6]  ' vai aparecer o grafico do exemplo da folha'
-------------------------------------------------------------
[0]  comoresolve
[1]  '1 resolve x1 y1 x2 y2 t1 t2'
-------------------------------------------------------------
[ 0]  r←qual gabaritovelho x1y1x2y2t1t2;d1;d2;ddd;delta;eq1;eq2;eq3;eq4x;eq4y;eq5;eq6;lix;
      raiz1;raiz11;raiz2;raiz21;t1;t2;x1;x2;y1;y27
[ 1]  ⎕PW←88
[ 2]  'forneca qual=1, para nao mostrar o resultado final'
[ 3]  'forneca TODOS os digitos da folha, pois os pontos podem estar muito proximos'
[ 4]  RESPO←0 88⍴''
[ 5]  x1←x1y1x2y2t1t2[1] ⋄ x2←x1y1x2y2t1t2[3] ⋄ y1←x1y1x2y2t1t2[2] ⋄ y2←x1y1x2y2t1t2[4]
[ 6]  t1←x1y1x2y2t1t2[5] ⋄ t2←x1y1x2y2t1t2[6]
[ 7]  d1←t1×340 ⋄ d2←t2×340
[ 8]  RESPO←RESPO,[1]1 88⍴88↑'Distancia 1 = ',⍕d1
[ 9]  RESPO←RESPO,[1]1 88⍴88↑'Distancia 2 = ',⍕d2
[10] ⍝ 'eq1'
[11]  eq1←(-2×x1),(-2×y1),+/(x1*2),(y1*2),(-d1*2)
[12]  lix←'Eq 1 > x2 + y2 ',(si eq1[1]),'x',(si eq1[2]),'y',(si eq1[3]),' = 0'
[13]  RESPO←RESPO,[1]1 88⍴88↑lix
[14] ⍝'eq2'
[15]  eq2←(-2×x2),(-2×y2),+/(x2*2),(y2*2),(-d2*2)
[16]  lix←'Eq 2 > x2 + y2 ',(si eq2[1]),'x',(si eq2[2]),'y',(si eq2[3]),' = 0'
[17]  RESPO←RESPO,[1]1 88⍴88↑lix
[18] ⍝'eq3'
[19]  eq3←eq1-eq2
[20]  lix←'Eq 3 > ',(si eq3[1]),'x',(si eq3[2]),'y',(si eq3[3]),' = 0'
[21]  RESPO←RESPO,[1]1 88⍴88↑lix
[22] ⍝ 'eq4x'
[23]  eq4x←(-eq3[2]÷eq3[1]),-eq3[3]÷eq3[1]
[24] ⍝ lix←'Eq 4 >     x = ',(si eq4x[1]),'y',si eq4x[2]
[25] ⍝ RESPO←RESPO,[1]1 80⍴80↑lix
[26] ⍝ 'eq4y'
[27]  eq4y←(-eq3[1]÷eq3[2]),-eq3[3]÷eq3[2]
[28]  lix←'Eq 4 >     y = ',(si eq4y[1]),'x',si eq4y[2]
[29]  RESPO←RESPO,[1]1 88⍴88↑lix
[30] ⍝ 'eq5'
[31]  eq5←1,(eq4y[1]*2),(2×eq4y[1]×eq4y[2]),(eq4y[2]*2),(eq1[1]),(eq1[2]×eq4y[1]),(eq1[2]×
      eq4y[2]),eq1[3]
[32]  RESPO←RESPO,[1]1 88⍴88↑'eq 5 > '
[33]  lix←'1x2',(si eq5[2]),'x2',(si eq5[3]),'x',(si eq5[5]),'x',(si eq5[6]),'x',(si eq5[4
      ]),(si eq5[7]),si eq5[8]
[34]  RESPO←RESPO,[1]1 88⍴88↑lix
[35] ⍝ 'eq6'
[36]  eq6←(+/eq5[1 2]),(+/eq5[3 5 6]),+/eq5[4 7 8]
[37]  eq6←⍪14 4⍕eq6
[38]  lix←'Eq 6 > ',(si eq6[1]),'x2',(si eq6[2]),'x',(si eq6[3]),' = 0'
[39]  RESPO←RESPO,[1]1 88⍴88↑lix
[40]  delta←(eq6[2]*2)-4×eq6[1]×eq6[3]
[41]  lix←'DELTA = (',(si eq6[2]),')^2 - 4 x (',(si eq6[1]),') x (',(si eq6[3]),')'
[42]  RESPO←RESPO,[1]1 88⍴88↑lix
[43]  RESPO←RESPO,[1]1 88⍴88↑'DELTA = ',si delta
[44]  →(delta≥0)/blz
[45]  RESPO←RESPO,[1]1 88⍴88↑'raizes imaginarias'
[46]  →fim
```

```
[47] blz:
[48] ⍝ 'raiz1'
[49]  raiz1←((-eq6[2])+(((eq6[2]*2)-4×eq6[1]×eq6[3])*0.5))÷2×eq6[1]
[50] ⍝'raiz2'
[51]  raiz2←((-eq6[2])-(((eq6[2]*2)-4×eq6[1]×eq6[3])*0.5))÷2×eq6[1]
[52] ⍝'raiz11'
[53]  raiz11←+/(eq4y[1]×raiz1),eq4y[2]
[54] ⍝ 'raiz21'
[55]  raiz21←+/(eq4y[1]×raiz2),eq4y[2]
[56]  →(qual=1)/0
[57]  RESPO←RESPO,[1]1 88⍴88↑' RESPOSTA 1 >   x1 = ',(si raiz1),'    y1 = ',si raiz11
[58]  RESPO←RESPO,[1]1 88⍴88↑' RESPOSTA 2 >   x2 = ',(si raiz2),'    y2 = ',si raiz21
[59]  ddd←(((raiz1-raiz2)*2)+(raiz11-raiz21)*2)*0.5
[60]  RESPO←RESPO,[1]1 88⍴88↑'                  distancia entre p1 e p2',14 4⍕ddd
[61]  r←2 2⍴±20 0⍕raiz1,raiz11,raiz2,raiz21
[62] fim:
------------------------------------------------------------
[ 0]  r←geracaso2;a1;r1;eq1;eq2;raiz1;raiz2;centro2;a2;r2
[ 1] novo:a1←(40+?40),20+?40
[ 2]  r1←30+?20
[ 3]  eq1←1 1,(-2×a1[1]),(-2×a1[2]),(a1[1]*2)+(a1[2]*2)-r1*2
[ 4]  eq2←eq1[1 3],eq1[5]+(a1[2]*2)+eq1[4]×a1[2]
[ 5]  raiz1←((-eq2[2])+((eq2[2]*2)-4×eq2[3])*0.5)÷2
[ 6]  raiz2←((-eq2[2])-((eq2[2]*2)-4×eq2[3])*0.5)÷2
[ 7]  centro2←(⌈/raiz1,raiz2),a1[2]
[ 8]  a2←centro2+(¯5+?10),¯5+?10
[ 9]  r2←20+?15
[10]  r←±20 2⍕a1,a2,(r1,r2)÷0.34
------------------------------------------------------------
[ 0]  r←geracasoantigo;a1;a2;c;d1;d2;t1;t2
[ 1] novo:a1←(300+100-?200),(150+50-?100)
[ 2]  a2←(500+200-?200),(250+50-?100)
[ 3]  c←((⌊(a1[1]+a2[1])÷2)+20-?40),((⌊(a1[2]+a2[2])÷2)+20-?40)
[ 4]  d1←(((a1[1]-c[1])*2)+((a1[2]-c[2])*2))*0.5
[ 5]  d2←(((a2[1]-c[1])*2)+((a2[2]-c[2])*2))*0.5
[ 6]  t1←d1÷340
[ 7]  t2←d2÷340
[ 8]  →(30<|d1-d2)/blz
[ 9]  □←'*'
[10]  →novo
[11] blz:
[12]  r←a1,a2,c,d1,d2,t1,t2
[13] ⍝ r[1] e r[2] = coordenadas  do amigo1
[14] ⍝ r[3] e r[4] = coordenadas  do amigo2
[15] ⍝ r[5] e r[6] = coordenadas x e y de voce (e a resposta)
[16] ⍝ r[7] e r[8] = distancias a seu amigo 1 e a seu amigo 2
[17] ⍝ r[9] e r[10] = tempos 1 e 2
------------------------------------------------------------
[ 0]  r←f junta2 pe;i;j
[ 1]  i←1 ⋄ r←0 80⍴' ' ⋄ j←1
[ 2] t1:→(i>1↑⍴f)/fim
[ 3]  →(f[i;1]='!')/blz
[ 4]  r←r,[1]f[i;]
[ 5]  →(i=i←i+1)/t1
[ 6] blz:r←r,[1]ENUN[pe[j;1]+⍳pe[j;2];]
[ 7]  j←j+1
[ 8]  i←i+1
[ 9]  →t1
[10] fim:
------------------------------------------------------------
[ 0]  listatudo2;i;k;onde;qtos
[ 1] ⍝ gera uma listagem completa do DB e das respostas
[ 2]  ENUN←ajusta80 ENUN
```

```
[ 3]  i←1 ◇ r←ajusta80 CABE,[1]1 80ρ80↑'\begin{description}' ◇ k←1
[ 4] t1:→(i>1↑ρENUN)/fim
[ 5]  →(ENUN[i;1]≠'%')/soma
[ 6]  →(ENUN[i;2]='r')/respo
[ 7] inicio:onde←i ◇ i←i+1 ◇ qtos←0
[ 8]  →t1
[ 9] respo:
[10]  r←r,[1]1 80ρ80↑'\item[',(3 0∓k),']'
[11]  k←k+1
[12]  r←r,[1]ENUN[onde+⍳qtos;]
[13]  i←i+1
[14]  r←r,[1]3 80ρ(80↑'\begin{verbatim}'),(80↑ENUN[i;]),80↑'\end{verbatim}'
[15]  i←i+1
[16]  →t1
[17] soma:qtos←qtos+1 ◇ i←i+1
[18]  →t1
[19] fim:r←r,[1]2 80ρ(80↑'\end{description}'),80↑'\end{document}'
[20]  r ⎕FM'c:\apl2\lista005.tex'
[21]  'gerada a listagem com o nome de c:\apl2\lista005.tex'
------------------------------------------------------------
[0]  r←maisum;xx;yy
[1] novo:xx←geracaso2
[2]  yy←1 resolve xx
[3]  →(¯1≠yy[1])/oka
[4]  ⍞←'o'
[5]  →novo
[6] oka:r←xx,yy
------------------------------------------------------------
[0]  r←pedemail x
[1]  →(40≠+/' '=x)/aindanao
[2]  r←80↑'Por favor, informe seu e-mail: \_\_\_\_\_'
[3]  →junnao
[4] aindanao:r←80↑'e-mail cadastrado: ',x
[5] junnao:
------------------------------------------------------------
[ 0]  questoes;i;qtos;onde
[ 1]  i←1 ◇ pENUN←0 2ρ0 ◇ rENUN←0ρ0
[ 2] t1:→(i>1↑ρENUN)/fim
[ 3]  →(ENUN[i;1]≠'%')/soma
[ 4]  →(ENUN[i;2]='r')/respo
[ 5] inicio:onde←i ◇ i←i+1 ◇ qtos←0
[ 6]  →t1
[ 7] respo:rENUN←rENUN,⍪ENUN[i+1;]
[ 8]  pENUN←pENUN,[1]1 2ρonde,qtos
[ 9]  i←i+2
[10]  →t1
[11] soma:qtos←qtos+1 ◇ i←i+1
[12]  →t1
[13] fim:
------------------------------------------------------------
[ 0]  r←qual resolve x1y1x2y2t1t2;x1;x2;y1;y2;t1;t2;d1;d2;eq1;lix;eq2;eq3;eq4x;eq4y;eq5;eq
      6;delta;raiz1;raiz2;raiz11;raiz21;ddd
[ 1] ⍝ 'para mostrar resultado: 1 resolve...'
[ 2]  →(0≠⎕NC'qual')/foio
[ 3]  qual←0
[ 4] foio:
[ 5]  x1←x1y1x2y2t1t2[1] ◇ x2←x1y1x2y2t1t2[3] ◇ y1←x1y1x2y2t1t2[2] ◇ y2←x1y1x2y2t1t2[4]
[ 6]  t1←x1y1x2y2t1t2[5] ◇ t2←x1y1x2y2t1t2[6]
[ 7]  d1←t1×0.34 ◇ d2←t2×0.34
[ 8]  RESPO←0 78ρ' '
[ 9]  RESPO←RESPO,[1]1 78ρ78↑'Distancia 1 = ',⍕d1
[10]  RESPO←RESPO,[1]1 78ρ78↑'Distancia 2 = ',⍕d2
[11] ⍝ 'eq1'
```

```
[12]  eq1←(-2×x1),(-2×y1),+/(x1*2),(y1*2),(-d1*2)
[13]  lix←'Eq 1 > x2 + y2 ',(si eq1[1]),'x',(si eq1[2]),'y',(si eq1[3]),' = 0'
[14]  RESPO←RESPO,[1]1 78ρ78↑lix
[15] ⍝'eq2'
[16]  eq2←(-2×x2),(-2×y2),+/(x2*2),(y2*2),(-d2*2)
[17]  lix←'Eq 2 > x2 + y2 ',(si eq2[1]),'x',(si eq2[2]),'y',(si eq2[3]),' = 0'
[18]  RESPO←RESPO,[1]1 78ρ78↑lix
[19] ⍝'eq3'
[20]  eq3←eq1-eq2
[21]  →((eq3[1]=0)∨(eq3[2]=0))/xabu
[22]  lix←'Eq 3 > ',(si eq3[1]),'x',(si eq3[2]),'y',(si eq3[3]),' = 0'
[23]  RESPO←RESPO,[1]1 78ρ78↑lix
[24] ⍝ 'eq4x'
[25]  eq4x←(-eq3[2]÷eq3[1]),-eq3[3]÷eq3[1]
[26] ⍝ lix←'Eq 4 >     x = ',(si eq4x[1]),'y',si eq4x[2]
[27] ⍝ RESPO←RESPO,[1]1 80ρ80↑lix
[28] ⍝ 'eq4y'
[29]  eq4y←(-eq3[1]÷eq3[2]),-eq3[3]÷eq3[2]
[30]  lix←'Eq 4 >     y = ',(si eq4y[1]),'x',si eq4y[2]
[31]  RESPO←RESPO,[1]1 78ρ78↑lix
[32] ⍝ 'eq5'
[33]  eq5←1,(eq4y[1]*2),(2×eq4y[1]×eq4y[2]),(eq4y[2]*2),(eq1[1]),(eq1[2]×eq4y[1]),(eq1[2]×
      eq4y[2]),eq1[3]
[34]  RESPO←RESPO,[1]1 78ρ78↑'eq 5 > '
[35]  lix←'1x2',(si eq5[2]),'x2',(si eq5[3]),'x',(si eq5[5]),'x',(si eq5[6]),'x',(si eq5[4
      ]),(si eq5[7]),si eq5[8]
[36]  RESPO←RESPO,[1]1 78ρ78↑lix
[37] ⍝ 'eq6';ddd
[38]  eq6←(+/eq5[1 2]),(+/eq5[3 5 6]),+/eq5[4 7 8]
[39]  eq6←⍪14 4⍕eq6
[40]  →(eq6[1]=0)/xabu
[41]  lix←'Eq 6 > ',(si eq6[1]),'x2',(si eq6[2]),'x',(si eq6[3]),' = 0'
[42]  RESPO←RESPO,[1]1 78ρ78↑lix
[43]  delta←(eq6[2]*2)-4×eq6[1]×eq6[3]
[44]  lix←'DELTA = (',(si eq6[2]),')^2 - 4 x (',(si eq6[1]),') x (',(si eq6[3]),')'
[45]  RESPO←RESPO,[1]1 78ρ78↑lix
[46]  RESPO←RESPO,[1]1 78ρ78↑'DELTA = ',si delta
[47]  →(delta≥0)/blz
[48]  RESPO←RESPO,[1]1 78ρ78↑'raizes imaginarias'
[49]  →fim
[50] blz:
[51] ⍝ 'raiz1'
[52]  →(0=qual)/fim
[53]  raiz1←((-eq6[2])+(((eq6[2]*2)-4×eq6[1]×eq6[3])*0.5))÷2×eq6[1]
[54] ⍝'raiz2'
[55]  raiz2←((-eq6[2])-(((eq6[2]*2)-4×eq6[1]×eq6[3])*0.5))÷2×eq6[1]
[56] ⍝'raiz11'
[57]  raiz11←+/(eq4y[1]×raiz1),eq4y[2]
[58] ⍝ 'raiz21'
[59]  raiz21←+/(eq4y[1]×raiz2),eq4y[2]
[60]  RESPO←RESPO,[1]1 78ρ78↑' RESPOSTA 1 >   x1 = ',(si raiz1),'    y1 = ',si raiz11
[61]  RESPO←RESPO,[1]1 78ρ78↑' RESPOSTA 2 >   x2 = ',(si raiz2),'    y2 = ',si raiz21
[62]  ddd←(((raiz1-raiz2)*2)+(raiz11-raiz21)*2)*0.5
[63]  RESPO←RESPO,[1]1 78ρ78↑'                  distancia entre p1 e p2',14 4⍕ddd
[64]  r←,2 2ρ⍪20 0⍕raiz1,raiz11,raiz2,raiz21
[65]  →0
[66] fim:
[67]  RESPO
[68]  →0
[69] xabu:r←¯1 0 0 0
------------------------------------------------------------
[ 0]  r←si a
[ 1]  →((a=⌊a)∧(a≥0))/intpos
```

```
[ 2]  →((a≠⌊a)∧(a≥0))/frapos
[ 3]  →((a=⌊a)∧(a<0))/intneg
[ 4]  →((a≠⌊a)∧(a<0))/franeg
[ 5]  →0
[ 6] intpos:r←' + ',rtrim⍕a
[ 7]  →0
[ 8] frapos:r←' + ',rtrim 14 4⍕a
[ 9]  →0
[10] intneg:r←' - ',rtrim⍕-a
[11]  →0
[12] franeg:r←' - ',rtrim 14 4⍕-a
------------------------------------------------------------
[ 0]  opesq vivo007a gn;CORRECAO;EVENTO;f;acuja;ylu;relat;dhx;resu;xk;lixo1;upag;esse;resp
      ;a1;a2;lixonol;aaa;zaza
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4] ⍝ ---------------- inicializacao ----------------------
[ 5]  FOLHALA007←ajusta80 FOLHALA007
[ 6]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.76543232
[ 7]  CORRECAO←0 ⋄ EVENTO←'PL007   '
[ 8]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 9] ⍝ ------------- processamento de alunos ----------------
[10]  →(isnum gn)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑gn),'.alu' ⋄ EVENTO←gn
[11]  →(~isnum gn)/1+⎕LC ⋄ ylu←(gn,76)↑(gn,4)⍴4 0⍕⍳gn
[12] ⍝ modelo de IF: →(~condicao)/1+⎕LC ⋄ fazer se condicao verdadeira
[13]  relat←((2+1↑⍴ylu),(1 0+⍴FOLHALA007))⍴' '
[14]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[15] ⍝ ------------- comeco do processamento ----------------
[16]  xk←1 ⋄ resu←0 9⍴0
[17] testa:→(xk>1↑⍴ylu)/fim
[18]  f←FOLHALA007
[19]  esse←21 80⍴' '
[20]  esse[1;]←80↑dhx[1;]
[21]  esse[2;]←80↑dhx[2;]
[22]  esse[3;]←80↑4 2⍕VERSAOa←4.15
[23]  esse[4;]←80↑ylu[xk;⍳6]
[24]  esse[5;]←80↑ylu[xk;6+⍳30]
[25] ⍝ →(~isnum gn)/1+⎕LC⋄esse[6;]←79↑EVENTO[⍳4],'{\large{',EVENTO[4+⍳4],'}}'
[26]  →(~1=≡gn)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[27]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[28] ⍝ esse[14;]←pedemail ylu[xk;36+⍳40]
[29]  esse[20;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[30]  esse[21;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[31] inica:
[32] ⍝ ---------------------- loop -------------------------
[33]  zaza←maisum
[34]  esse[8 9 10 11 12 13;]←6 80↑6 10⍴(10 0⍕zaza[⍳4]),10 2⍕zaza[4+⍳2]
[35]  resp←resp,zaza[6+⍳4]
[36] ⍝ ------------------- monta o resultado -----------------
[37]  zaza←maisum
[38]  esse[13+⍳6;]←6 80↑6 10⍴(10 0⍕zaza[⍳4]),10 2⍕zaza[4+⍳2]
[39]  resp←resp,zaza[6+⍳4]
[40] ⍝ ------------------- monta o resultado -----------------
[41]  resu←resu,[1](1,9)⍴resp
[42]  acuja←(f[;2]='#')/⍳1↑⍴f
[43]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[44]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[45]  ⍞←(⍕¯1+xk←xk+1),'-'
[46]  →testa
[47] ⍝ -------------------- fim de tudo --------------------
[48] fim:upag←(1 0+⍴f)⍴' '
```

```
[49]  →(~isnum gn)/elafa1
[50]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[51]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[52]  upag[2+⍳1↑⍴resu;⍳⍴/lixo1]←'¯'-'edit(lixo1←5 0 10 0 5 0 8 0 5 0 10 0 5 0 8 0 5 0)⍕resu
[53]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[54]  →terminando
[55] elafa1:aaa←(ylu,'¯'-'edit 10 0 5 0 8 0 5 0 10 0 5 0 8 0 5 0⍕0 1↓resu)
[56]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[57]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'.gpa'
[58]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[59] terminando:
[60]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[61]  relat[1↑⍴relat;;]←upag
[62]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.t
      ex'
[63]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[64]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'.tex'
------------------------------------------------------------
[ 0]  opesq vivo008a n;CORRECAO;EVENTO;aa;aaa;acuja;cab;dhx;esse;f;fo;lixo1;lixonol;qual;r
      e;resp;resu;upag;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←10 ⋄ EVENTO←'PL008   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA008←ajusta80 FOLHALA008
[10]  ENUN←ajusta80 ENUN
[11]  re←((1↑⍴aa),80)↑aa←⎕FM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 11⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←9 80⍴' '
[15]  f←FOLHALA008
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.03
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23] ⍝esse[8;]←pedemail ylu[xk;36+⍳40]
[24]  esse[8;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[25]  esse[9;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[26] ini1:
[27]  acuja←(f[;2]='#')/⍳1↑⍴f
[28]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[29]  questoes  ⍝ este comando atualiza as questoes e as respostas
[30]  qual←10?1↑⍴pENUN
[31]  fo←f junta2 pENUN[qual;]
[32]  re←re,[1]fo,[1]1 80⍴'\newpage'
[33]  resu←resu,[1]1 11⍴resp,rENUN[qual]
[34]  ⍞←(⍕xk←xk+1),'-'
[35]  →testa
[36] fim:upag←200 80⍴' '
[37]  →(1=≡n)/elafa
[38]  upag[1;]←80↑'\begin{verbatim}'
[39]  upag[2;]←80↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[40]  upag[2+⍳1↑⍴resu;⍳¯10++/lixo1]←(lixo1←4 0 9 1,18⍴7 1)⍕resu
[41]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[42]  →terminando
```

```
[43] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),7 1⍕0 1↓resu)
[44]  aaa[1;35 36]←2 0⍕CORRECAO
[45]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵=' ')/EVENTO),'.gpa')
[46]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[47] terminando:
[48]  upag[1↑⍴upag;]←80↑'\end{document}'
[49]  re←re,[1]upag
[50]  lixonol←re ⎕FM'c:\apl2\',((~⍵∧\⍵=' ')/EVENTO),'.tex'
[51]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo009

```
[0]  AVISO
[1]  'tem um vg (fol009.alg) que automatiza esta folha'
-------------------------------------------------------------
[ 0]  r←azulejo cebd;c;e;b;d;aux;regras
[ 1]  c←cebd[1] ⋄ e←cebd[2] ⋄ b←cebd[3] ⋄ d←cebd[4]
[ 2]  r←0
[ 3]  regras←0
[ 4] r1:→((c≥20)∧(b≤45))/ok2
[ 5]  →r2
[ 6] ok2:r←r+1
[ 7]  regras←regras+1
[ 8] r2:→((d+e)>100)/ok3
[ 9]  →r3
[10] ok3:r←r+2
[11]  regras←regras+1
[12] r3:→(((par c)∧(impar b))∨((par b)∧(impar e)))/ok4
[13]  →r4
[14] ok4:r←r+4
[15]  regras←regras+1
[16] r4:→((c<⌊(b+e+d)÷3)∧(b>45))/ok5
[17]  →r5
[18] ok5:r←r+8
[19]  regras←regras+1
[20] r5:aux←b,e,c,d
[21]  →(4=+/(⍋aux)=⍳4)/ok6
[22]  →r6
[23] ok6:r←r+16
[24]  regras←regras+1
[25] r6:→((b+e)≥(c+d))/ok7
[26]  →r7
[27] ok7:r←r+32
[28]  regras←regras+1
[29] r7:→((25≤|e-d)∧(25≤|b-c))/ok8
[30]  →acabou
[31] ok8:r←r+64
[32]  regras←regras+1
[33] acabou:r←r,regras
-------------------------------------------------------------
[ 0]  r←geracaso;i;j
[ 1]  i←1 ⋄ r←30 12⍴0
[ 2] t1:→(i>30)/fim
[ 3]  r[i;⍳11]←1↓seq?6
[ 4]  i←i+1
[ 5]  →t1
[ 6] fim:i←1
[ 7] t2:→(i>30)/fi2
[ 8]  j←7+?3
[ 9]  r[i;12]←r[i;j]
[10]  r[i;j]←9999
```

```
[11]  i←i+1
[12]  →t2
[13] fi2:
------------------------------------------------------------
[ 0]  r←qtd geracaso009d tam;res;ll;lc;i;ii;jj;qt;perola;res0;inds;res1;onde;viva;aa;zu;k2
      ;k3;k4;k5;k6;qu
[ 1]  r←5⍴0 ⋄ viva←'' ⋄ res←tam⍴?(×/tam)⍴127 ⋄ qt←0 ⋄ ll←⌊tam[1]÷2 ⋄ lc←⌊tam[2]÷2 ⋄ i←1
[ 2] t1:→(i>qtd)/fim
[ 3]  qt←qt+1 ⋄ ii←2×?ll+¯1+2|tam[1] ⋄ jj←2×?lc+¯1+2|tam[2]
[ 4]  →(qt>10000)/erro
[ 5]  →(res[ii;jj]<0)/t1
[ 6]  res[ii;jj]←-i
[ 7]  i←i+1
[ 8]  →t1
[ 9] fim:res0←,res
[10]  inds←(0>res0)/⍳×/tam
[11]  res1←4 0⍕,res ⋄ i←1
[12] t2:→(i>qtd)/orra
[13]  perola←(4×inds[i])+¯3 ¯2 ¯1 0
[14]  res1[perola]←' **',aa←'ABCDEFGHIJKLMNOPQRSTUVWXYZ'[|res0[inds[i]]]
[15]  viva←viva,aa ⋄ i←i+1
[16]  →t2
[17] orra:r[1]←⊂((tam[1]),4×tam[2])⍴res1
[18]  onde←⍉(1+⌊(inds-1)÷tam[1]),[0.5]1+tam[2]|inds-1
[19]  r[2]←⊂onde[⍋AV⍋viva;]
[20]  r[3]←⊂res
[21] gabarito:
[22]  i←1 ⋄ zu←(qtd,2)⍴0
[23] t3:→(i>qtd)/ufa
[24]  k2←onde[i;]
[25]  k3←k2-1 0 ⋄ k4←k2-0 1 ⋄ k5←k2+1 0 ⋄ k6←k2+0 1
[26]  zu[i;]←azulejo(,res[k3[1];k3[2]]),(,res[k4[1];k4[2]]),(,res[k5[1];k5[2]]),,res[k6[1]
      ;k6[2]]
[27]  i←i+1
[28]  →t3
[29] ufa:r[4]←⊂zu
[30]  qu←3⍴0
[31]  qu[1]←+/(,zu[;1])>70
[32]  qu[2]←+/0=2|,zu[;1]
[33]  qu[3]←+/(,zu[;2])>2
[34]  r[5]←⊂qu
[35]  →0
[36] erro:'nao foi possivel gerar a matriz'
------------------------------------------------------------
[0]  r←impar x
[1]  r←1=2|x
------------------------------------------------------------
[0]  r←par x
[1]  r←0=2|x
------------------------------------------------------------
[0]  r←pedemail x
[1]  →(40≠+/' '=x)/aindanao
[2]  r←80⍴'Por favor, informe seu e-mail: ⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_'
[3]  →junnao
[4] aindanao:r←80⍴'e-mail cadastrado: ',x
[5] junnao:
------------------------------------------------------------
[0]  r←prepcaso x
[1]  r←'55& 55& 55& 555& 555& 5555& 5555& 5555& 55555& 55555& 55555& 55555& '⍕(30 1⍴⍳30),
      x[;⍳11]
[2]  r←r replace'9999' '{⍀large ?}'
[3]  r←r,(30 1⍴' ++ ++ ++ ++ ++ ++ ++ ++ ++ ++'),(30 1⍴'&'),(30 1⍴30⍴'  ='),30 15⍴'⍀⍀ ⍀cl
      ine{1-13}'
```

```
------------------------------------------------------------
[0]  r←quaisregras x
[1]  r←(⍉2 2 2 2 2 2⍴x)/⍳7
------------------------------------------------------------
[ 0]  r←quem replace depara;de;i;j;k;onde;para
[ 1] ⍝ forma de usar: texto replace 'strin-de' 'string para'
[ 2] ⍝ obviamente eles nao precisam ter o mesmo tamanho
[ 3]  de←,⊃depara[1] ⋄ para←,⊃depara[2]
[ 4]  i←1 ⋄ r←((1↑⍴quem),200)⍴' '
[ 5] t1:→(i>1↑⍴quem)/fim
[ 6]  →(0=∨/onde←de⍷quem[i;])/naotem
[ 7]  j←1 ⋄ k←1
[ 8] t2:→(k>⍴quem[i;])/acabou
[ 9]  →(onde[k]=0)/soma
[10]  r[i;(j-1)+⍳⍴para]←para
[11]  j←j+⍴para
[12]  k←k+⍴de
[13]  →t2
[14] soma:r[i;j]←quem[i;k]
[15]  k←k+1
[16]  →(j=j←j+1)/t2
[17] naotem:r[i;]←200↑quem[i;]
[18] acabou:→(i=i←i+1)/t1
[19] fim:r←trim⍉ r
------------------------------------------------------------
[ 0]  r←resolvecaso009d caso;tam;res;ll;lc;i;ii;jj;qt;perola;res0;inds;res1;onde;viva;aa;z
      u;k2;k3;k4;k5;k6;qu;qtd
[ 1]  qtd←+/,caso<0
[ 2]  tam←⍴caso
[ 3]  r←5⍴0 ⋄ viva←'' ⋄ qt←0 ⋄ ll←⌊tam[1]÷2 ⋄ lc←⌊tam[2]÷2 ⋄ i←1
[ 4]  res0←,res←caso
[ 5]  inds←(0>res0)/⍳×/tam
[ 6]  res1←⍉ 0⍕,res ⋄ i←1
[ 7] t2:→(i>qtd)/orra
[ 8]  perola←(⍉×inds[i])+¯3 ¯2 ¯1 0
[ 9]  res1[perola]←' **',aa←'ABCDEFGHIJKLMNOPQRSTUVWXYZ'[|res0[inds[i]]]
[10]  viva←viva,aa ⋄ i←i+1
[11]  →t2
[12] orra:r[1]←⊂((tam[1]),⍉×tam[2])⍴res1
[13]  onde←⍒(1+⌊(inds-1)÷tam[1]),[0.5]1+tam[2]|inds-1
[14]  r[2]←⊂onde[⎕AV⍋viva;]            ⍝ onde nao foi botado em ordem
[15]  r[3]←⊂res
[16] gabarito:
[17]  i←1 ⋄ zu←(qtd,2)⍴0
[18] t3:→(i>qtd)/ufa
[19]  k2←onde[i;]
[20]  k3←k2-1 0 ⋄ k4←k2-0 1 ⋄ k5←k2+1 0 ⋄ k6←k2+0 1
[21]  zu[i;]←azulejo(,res[k3[1];k3[2]]),(,res[k4[1];k4[2]]),(,res[k5[1];k5[2]]),,res[k6[1]
      ;k6[2]]
[22] ⍝ zu[i;]
[23]  i←i+1
[24]  →t3
[25] ufa:r[⍉4]←⊂zu
[26]  qu←3⍴0
[27]  qu[1]←+/(,zu[;1])>70
[28]  qu[2]←+/0=2|,zu[;1]
[29]  qu[3]←+/(,zu[;2])>2
[30]  r[5]←⊂qu
[31]  →0
[32] erro:'nao foi possivel gerar a matriz'
------------------------------------------------------------
[ 0]  z←seq x;i;sem1;w;r
[ 1]  sem1←?9
```

```
[ 2] ⍝ r←(?9),(?9),(?9),8⍴0
[ 3]  r←(?9),(?9),?9
[ 4]  r←r[⍋r]
[ 5]  r←r,8⍴0
[ 6]  i←4
[ 7]  →(x=1)/um
[ 8]  →(x=2)/dois
[ 9]  →(x=3)/tres
[10]  →(x=4)/quatro
[11]  →(x=5)/cinco
[12]  →(x=6)/seis
[13] erro:'x errado, saindo'
[14]  →0
[15] um:w←2
[16] tum:→(i>11)/fim
[17]  r[i]←r[i-2]+r[i-1]
[18]  →(i=i←i+1)/tum
[19] dois:w←3
[20] tdois:→(i>11)/fim
[21]  r[i]←r[i-3]+r[i-2]+r[i-1]
[22]  →(i=i←i+1)/tdois
[23] tres:w←1
[24] ttres:→(i>11)/fim
[25]  r[i]←r[i-1]+i*2
[26]  →(i=i←i+1)/ttres
[27] quatro:w←2
[28] tquatro:→(i>11)/fim
[29]  r[i]←(2×r[i-2])+r[i-1]
[30]  →(i=i←i+1)/tquatro
[31] cinco:w←2
[32] tcinco:→(i>11)/fim
[33]  r[i]←r[i-2]+2×r[i-1]
[34]  →(i=i←i+1)/tcinco
[35] seis:w←2
[36] tseis:→(i>11)/fim
[37]  r[i]←sem1+r[i-2]+r[i-1]
[38]  →(i=i←i+1)/tseis
[39] fim:z←w,r
-------------------------------------------------------------
[0]  r←trim4 x;z
[1] ⍝f corta as colunas direitas que sao brancos
[2]  →(2≠⍴⍴x)/erro
[3]  z←+/[1]x=' '
[4]  r←(z≠1↑⍴x)/[2]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
-------------------------------------------------------------
[ 0]  opesq vivo009b n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;va;xk;xy;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←1 ⋄ EVENTO←'PL009b  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA009b←ajusta80 FOLHALA009b
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA009b)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 11⍴0
```

```
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←40 80⍴' '
[16]  f←FOLHALA009b
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.07
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:
[28]  esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[32] ⍝ esse[38;]←pedemail ylu[xk;36+⍳40]
[33]  esse[39;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[34]  esse[40;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[35] inica:
[36]  xy←geracaso
[37]  esse[7+⍳30;]←30 80↑⍴prepcaso xy[;⍳11]
[38]  va←(+/,xy[1 2 3;12]),(+/,xy[4 5 6;12]),(+/,xy[7 8 9;12]),(+/,xy[10 11 12;12])
[39]  va←va,(+/,xy[13 14 15;12]),(+/,xy[16 17 18;12]),(+/,xy[19 20 21;12])
[40]  va←va,(+/,xy[22 23 24;12]),(+/,xy[25 26 27;12]),(+/,xy[28 29 30;12])
[41]  resp←resp,va
[42]  resu←resu,[1]1 11⍴resp
[43]  acuja←(f[;2]='#')/⍳1↑⍴f
[44]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[45]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[46]  ⍞←(⍕xk←xk+1),'-'
[47]  →testa
[48] fim:upag←(1 0+⍴f)⍴' '
[49]  →(1=≡n)/elafa
[50]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[51]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[52]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←3 0,20⍴6 0)⍕resu
[53]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[54]  →terminando
[55] elafa:aaa←(ylu[;⍳36],6 0⍕0 1↓resu)
[56]  aaa[1;35 36]←2 0⍕CORRECAO
[57]  lixonol←aaa ⍙FM('c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.gpa')
[58]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[59] terminando:
[60]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[61]  relat[1↑⍴relat;;]←upag
[62]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[63] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[64]  lixonol←lixonol ⍙FM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.tex'
[65]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[66]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo009d n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;va;xk;xy;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←1 ⋄ EVENTO←'PL009d  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
```

```
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA009d←ajusta80 FOLHALA009d
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA009d)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 10⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←42 80⍴' '
[16]  f←FOLHALA009d
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.11
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:
[28]  esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[32] ⍝ esse[38;]←pedemail ylu[xk;36+⍳40]
[33]  esse[41;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[34]  esse[42;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[35] inica:
[36]  va←10 geracaso009d 11 11
[37]  esse[7+⍳11;]←11 80↑⊃va[1]
[38]  resp←resp,,⊃va[5]
[39]  va←10 geracaso009d 11 11
[40]  esse[18+⍳11;]←11 80↑⊃va[1]
[41]  resp←resp,,⊃va[5]
[42]  va←10 geracaso009d 11 11
[43]  esse[29+⍳11;]←11 80↑⊃va[1]
[44]  resp←resp,,⊃va[5]
[45]  resu←resu,[1]1 10⍴resp
[46]  acuja←(f[;2]='#')/⍳1↑⍴f
[47]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[48]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[49]  ⍞←(⍕xk←xk+1),'-'
[50]  →testa
[51] fim:upag←(1 0+⍴f)⍴' '
[52]  →(1=≡n)/elafa
[53]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[54]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[55]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←3 0,6 0 3 0 3 0 6 0 3 0 3 0 6 0 3 0 3 0)⍕resu
[56]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[57]  →terminando
[58] elafa:aaa←(ylu[;⍳36],6 0 3 0 3 0 6 0 3 0 3 0 6 0 3 0 3 0⍕0 1↓resu)
[59]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[60]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[61] terminando:
[62]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[63]  relat[1↑⍴relat;;]←upag
[64]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[65] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[66]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[67]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[68]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo010

```
[0]  AVISO
[1]  MAISINFORMS
-------------------------------------------------------------
[0]  r←deapcuva dp;rt;dt
[1] ⍝ dp[1]=lat_a, dp[2]=lon_a, dp[3]=lat_b, dp[4]=lob_b
[2]  dt←12756.274 ⍝ diametro da terra
[3]  rt←dt÷2
[4]  r←rt×¯2○((1○dp[1])×1○dp[3])+((((2○dp[1])×2○dp[3])×2○dp[2])×2○dp[4])+((((2○dp[1])×2○d
      p[3])×1○dp[2])×1○dp[4])
-------------------------------------------------------------
[0]  r←geracaso1
[1] ⍝ '1=N, 2=S,        1=W, 2=E'
[2]  r←4 4⍴0
[3]  r[1;]←(¯1+?5),(¯1+?60),(¯1+?60),?2  ⍝1=N, 2=S
[4]  r[2;]←(¯1+?20),(¯1+?60),(¯1+?60),?2  ⍝1=W, 2=E
[5]  r[3;]←(¯1+?5),(¯1+?60),(¯1+?60),?2  ⍝1=N, 2=S
[6]  r[4;]←(¯1+?20),(¯1+?60),(¯1+?60),?2  ⍝1=W, 2=E
-------------------------------------------------------------
[0]  r←geracaso2
[1] um:r←9+?60
[2]  →((r≠48)∧(r≠42))/0
[3]  →um
-------------------------------------------------------------
[0]  r←pedemail x
[1]  →(40≠+/' '=x)/aindanao
[2]  r←80↑'Por favor, informe seu e-mail: ⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_'
[3]  →junnao
[4] aindanao:r←80↑'e-mail cadastrado: ',x
[5] junnao:
-------------------------------------------------------------
[ 0]  r←resolve1 caso;c1;c2;c3;c4;d1;d2;x1;x2;ob
[ 1]  ob←0 60⍴' '
[ 2]  c1←(caso[1;1]×3600)+(caso[1;2]×60)+caso[1;3]
[ 3]  ob←ob,[1]1 60⍴60↑'c1=',⍕c1
[ 4]  c2←(caso[2;1]×3600)+(caso[2;2]×60)+caso[2;3]
[ 5]  ob←ob,[1]1 60⍴60↑'c2=',⍕c2
[ 6]  c3←(caso[3;1]×3600)+(caso[3;2]×60)+caso[3;3]
[ 7]  ob←ob,[1]1 60⍴60↑'c3=',⍕c3
[ 8]  c4←(caso[4;1]×3600)+(caso[4;2]×60)+caso[4;3]
[ 9]  ob←ob,[1]1 60⍴60↑'c4=',⍕c4
[10]  →(caso[1;4]=caso[3;4])/iguaisNS
[11] difsNS:d1←c1+c3
[12]  ob←ob,[1]1 60⍴60↑'d1=',⍕d1
[13]  →junta1
[14] iguaisNS:d1←|c1-c3
[15]  ob←ob,[1]1 60⍴60↑'d1=',⍕d1
[16] junta1:
[17]  →(caso[2;4]=caso[4;4])/iguaisEW
[18] difsEW:d2←c2+c4
[19]  ob←ob,[1]1 60⍴60↑'d2=',⍕d2
[20]  →junta2
[21] iguaisEW:d2←|c2-c4
[22]  ob←ob,[1]1 60⍴60↑'d2=',⍕d2
[23] junta2:x1←d1×111.3194÷3600
[24]  ob←ob,[1]1 60⍴60↑'x1=',⍕x1
[25]  x2←d2×111.3194÷3600
[26]  ob←ob,[1]1 60⍴60↑'x2=',⍕x2
[27]  r←((x1*2)+(x2*2))*0.5
[28]  ob←ob,[1]1 60⍴60↑'r=',⍕r
[29]  RES←ob
-------------------------------------------------------------
```

```
[0]  r←resolve2 ang;x;y;ob
[1]  ob←0 60⍴' '
[2]  x←((90-ang)×○1)÷180
[3]  ob←ob,[1]1 60⍴60↑'angulo em rd = ',⍕x
[4]  y←(1○x)×12756.274÷2
[5]  ob←ob,[1]1 60⍴60↑'cateto horizontal = ',⍕y
[6]  r←(○1)×2×y
[7]  ob←ob,[1]1 60⍴60↑'circunferencia pedida = ',⍕r
[8]  RES←ob
------------------------------------------------------------
[ 0]  opesq vivo010a gn;CORRECAO;EVENTO;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinha;r
      elat;resp;resu;upag;xk;ylu;zza;zzb
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4] ⍝ ---------------- inicializacao ----------------------
[ 5]  FOLHALA010←ajusta80 FOLHALA010
[ 6]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.76543232
[ 7]  CORRECAO←0 ⋄ EVENTO←'PL010   '
[ 8]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 9] ⍝ ------------- processamento de alunos ----------------
[10]  →(isnum gn)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑gn),'.alu' ⋄ EVENTO←gn
[11]  →(~isnum gn)/1+⎕LC ⋄ ylu←(gn,36)↑(gn,4)⍴4 0⍕⍳gn
[12]  ylu←gn grupo ylu
[13] ⍝ modelo de IF: →(~condicao)/1+⎕LC ⋄ fazer se condicao verdadeira
[14]  relat←((2+1↑⍴ylu),(1 0+⍴FOLHALA010))⍴' '
[15]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[16] ⍝ ------------- comeco do processamento ----------------
[17]  xk←1 ⋄ resu←0 3⍴0
[18] testa:→(xk>1↑⍴ylu)/fim
[19]  f←FOLHALA010
[20]  esse←14 80⍴' '
[21]  esse[1;]←80↑dhx[1;]
[22]  esse[2;]←80↑dhx[2;]
[23]  esse[3;]←80↑4 2⍕VERSAOa←1.02
[24]  esse[4;]←80↑ylu[xk;⍳6]
[25]  →(36=1↓⍴ylu)/zebra
[26]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[27]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[28]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[29]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[30]  →maiszebra
[31] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[32] maiszebra:
[33]  →(~1=≡gn)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[34]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[35] ⍝ esse[13;]←pedemail ylu[xk;36+⍳40]
[36]  esse[13;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[37]  esse[14;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[38] inica:
[39] ⍝ ---------------------- loop -------------------------
[40]  zza←resolve1 zzb←geracaso1
[41]  esse[8;]←80↑('50 graus 55 min 55 seg '⍕zzb[1;1 2 3]),'NS'[zzb[1;4]]
[42]  →(zzb[1;1]≠1)/oba1
[43]  esse[8;8]←' '
[44] oba1:esse[9;]←80↑('50 graus 55 min 55 seg '⍕zzb[2;1 2 3]),'WE'[zzb[2;4]]
[45]  →(zzb[2;1]≠1)/oba2
[46]  esse[9;8]←' '
[47] oba2:esse[10;]←80↑('50 graus 55 min 55 seg '⍕zzb[3;1 2 3]),'NS'[zzb[3;4]]
[48]  →(zzb[3;1]≠1)/oba3
[49]  esse[10;8]←' '
[50] oba3:esse[11;]←80↑('50 graus 55 min 55 seg '⍕zzb[4;1 2 3]),'WE'[zzb[4;4]]
```

```
[51]  →(zzb[4;1]≠1)/oba4
[52]  esse[11;8]←' '
[53] oba4:resp←resp,zza
[54]  zza←resolve2 zzb←geracaso2
[55]  esse[12;]←80↑'55 graus '⍕zzb
[56]  resp←resp,zza
[57] ⍝ ------------------- monta o resultado -----------------
[58]  resu←resu,[1](1,3)⍴resp
[59]  acuja←(f[;2]='#')/⍳1↑⍴f
[60]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[61]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[62]  □←(⍕¯1+xk←xk+1),'-'
[63]  →testa
[64] ⍝ -------------------- fim de tudo ---------------------
[65] fim:upag←(1 0+⍴f)⍴' '
[66]  →(~isnum gn)/elafa1
[67]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[68]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[69]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 10 0)⍕resu
[70]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[71]  →terminando
[72] elafa1:aaa←(ylu[;⍳36],10 0⍕0 1↓resu)
[73]  aaa[1;35 36]←2 0⍕CORRECAO
[74]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[75]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'.gpa'
[76]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[77] terminando:
[78]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[79]  relat[1↑⍴relat;;]←upag
[80]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.t
      ex'
[81]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[82]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'.tex'
-------------------------------------------------------------
```

vivo011

```
[ 0]  AVISO
[ 1]  'para olhar o gabarito, faca gabarl seguido da expressao'
[ 2]  'se for mais de uma linha, crie uma matriz a e faca gabarl a'
[ 3]  ''
[ 4]  'para imprimir, execute, selecione, DIMINUA A FONTE e imprima'
[ 5]  'fiz a funcao gabarl que gabariteia'
[ 6]  'fiz  a funcao retrad, que retraduz'
[ 7]  'olhe a funcao testacaso'
[ 8]  'boa sorte'
-------------------------------------------------------------
[0]  r←achaneg x
[1]  →(3>?10)/poe
[2]  r←x
[3]  →0
[4] poe:r←'(~',x,')'
-------------------------------------------------------------
[0]  r←a div b
[1]  →((b=0)∧(a≠0))/lixo
[2]  r←⌊a÷b
[3]  →0
[4] lixo:'divisao por zero'
-------------------------------------------------------------
[0]  r←gabar x
[1] ⍝ esta funcao devolve o resultado de uma linha
[2]  r←⍋x
```

```
------------------------------------------------------------
[ 0]  r←gabarl x;y;lin;i;ct;ma;ocara;comeca;termina;vc;si;respa;j;rija
[ 1]  r←0 76⍴' ' ⋄ si←'-' ⋄ rija←6⍴0
[ 2]  →(1≠⍴⍴x)/blz
[ 3]  x←(1,⍴x)⍴x
[ 4] blz:
[ 5]  j←1
[ 6] t0:→(j>1↑⍴x)/acaboum
[ 7]  y←x[j;]
[ 8]  y←trim y
[ 9] ini:⍝analisa a expressao, se nao ha (), desvia, mostra e cai fora
[10]  →(~'('∈y)/naotem
[11]  i←1 ⋄ ct←0 ⋄ ma←(⍴y)⍴0
[12] t1:→(i>1↑⍴y)/fi1
[13]  →(y[i]='(')/add
[14]  →(y[i]=')')/sub
[15] soma:ma[i]←ct
[16]  →(i=i←i+1)/t1
[17] add:ct←ct+1
[18]  →soma
[19] sub:ct←ct-1
[20]  →soma
[21] fi1:
[22]  lin←(⍴y)⍴' '
[23]  r←r,[1]1 76⍴76↑y
[24]  comeca←1 ⋄ ocara←⌈/ma
[25] t2:→(comeca>⍴y)/deuzebra
[26]  →(ma[comeca]=ocara)/achou
[27]  →(comeca=comeca←comeca+1)/t2
[28] achou:termina←comeca+1
[29] t3:→(termina>⍴y)/deuzebra
[30]  →(ma[termina]≠ocara)/terma
[31]  →(termina=termina←termina+1)/t3
[32] terma:
[33]  comeca←comeca-1
[34]  vc←comeca+⍳(termina-comeca)
[35]  lin[vc]←si
[36]  r←r,[1]1 76⍴76↑lin
[37]  respa←⍋y[vc]
[38]  lin←(⍴y)⍴' '
[39]  lin[5↑vc]←5↑⍕respa
[40]  r←r,[1]1 76⍴76↑lin
[41]  y[vc]←' '
[42]  y[5↑vc]←5↑⍕respa
[43]  →ini
[44] naotem:lin←(⍴y)⍴si
[45]  r←r,[1]1 76⍴76↑lin
[46]  r←r,[1]1 76⍴76↑4 0⍕⍋y
[47]  rija[j]←⍋y
[48]  →andac
[49] deuzebra:'deuzebra'
[50]  →0
[51] andac:
[52]  r←r,[1]1 76⍴'*'
[53]  →(j=j←j+1)/t0
[54] acaboum:r←r,[1]1 76⍴'='
[55]  →(1=1↑⍴x)/soum
[56]  r←r,[1]1 76⍴76↑(4 0⍕+/rija),'=',4 0⍕(1↑⍴x)↑rija
[57]  →0
[58] soum:
[59]  r←r,[1]1 76⍴76↑(4 0⍕+/rija)
------------------------------------------------------------
[ 0]  ra←geracomal;aa;vv;z1;z2;r
```

```
[ 1] ⍝retorna 6 linhas numeradas de comandos e os 6 resultados logicos
[ 2]  r←12 76⍴' ' ⋄ vv←0⍴0 ⋄ ra←2⍴0
[ 3]  r[1;]←76↑'⍎item[',(⍕1),']'
[ 4] a1:→(1=?2)/b1
[ 5]  aa←(trim 76↑z1←geramod 2),'$>$',trim 76↑z2←gerafunc 3
[ 6]  →(76>⍴aa)/v1
[ 7]  □←'*'
[ 8]  →a1
[ 9] v1:r[2;]←76↑aa ⋄ vv←⍪z1[76+⍳4],' > ',z2[76+⍳4]
[10]  →h1
[11] b1:
[12]  aa←(trim 76↑z1←geramod 2),'$<$',trim 76↑z2←gerafunc 3
[13]  →(76>⍴aa)/v2
[14]  □←'*'
[15]  →b1
[16] v2:r[2;]←76↑aa ⋄ vv←⍪z1[76+⍳4],' < ',z2[76+⍳4]
[17] h1:r[3;]←76↑'⍎item[',(⍕2),']'
[18] a3:→(1=?2)/b3
[19]  aa←(trim 76↑z1←geramod 1),'$>$',trim 76↑z2←gerafunc 2
[20]  →(76>⍴aa)/v3
[21]  □←'*'
[22]  →a3
[23] v3:r[4;]←76↑aa ⋄ vv←vv,⍪z1[76+⍳4],' > ',z2[76+⍳4]
[24]  →h2
[25] b3:
[26]  aa←(trim 76↑z1←geramod 1),'$<$',trim 76↑z2←gerafunc 2
[27]  →(76>⍴aa)/v4
[28]  □←'*'
[29]  →b3
[30] v4:r[4;]←76↑aa ⋄ vv←vv,⍪z1[76+⍳4],' < ',z2[76+⍳4]
[31] h2:r[5;]←76↑'⍎item[',(⍕4),']'
[32] a5:→(1=?2)/b5
[33]  aa←(trim 76↑z1←geralog 1),'$⍎land$',trim 76↑z2←geralog 2
[34]  →(76>⍴aa)/v5
[35]  □←'*'
[36]  →a5
[37] v5:r[6;]←76↑aa ⋄ vv←vv,⍪z1[76+⍳4],' ∧ ',z2[76+⍳4]
[38]  →h3
[39] b5:
[40]  aa←(trim 76↑z1←geralog 1),'$⍎lor$',trim 76↑z2←geralog 2
[41]  →(76>⍴aa)/v6
[42]  □←'*'
[43]  →b5
[44] v6:r[6;]←76↑aa ⋄ vv←vv,⍪z1[76+⍳4],' ∨ ',z2[76+⍳4]
[45] h3:r[7;]←76↑'⍎item[',(⍕8),']'
[46] a7:→(1=?2)/b7
[47]  aa←(trim 76↑z1←geramod 1),'$>$',trim 76↑z2←gerafunc 3
[48]  →(76>⍴aa)/v7
[49]  □←'*'
[50]  →a7
[51] v7:r[8;]←76↑aa ⋄ vv←vv,⍪z1[76+⍳4],' > ',z2[76+⍳4]
[52]  →h4
[53] b7:
[54]  aa←(trim 76↑z1←geramod 1),'$<$',trim 76↑z2←gerafunc 3
[55]  →(76>⍴aa)/v8
[56]  □←'*'
[57]  →b7
[58] v8:r[8;]←76↑aa ⋄ vv←vv,⍪z1[76+⍳4],' < ',z2[76+⍳4]
[59] h4:r[9;]←76↑'⍎item[',(⍕16),']'
[60] a9:→(1=?2)/b9
[61]  aa←(trim 76↑z1←geramod 1),'$>$',trim 76↑z2←gerafunc 3
[62]  →(76>⍴aa)/v9
[63]  □←'*'
```

```
[64]  →a9
[65] v9:r[10;]←76↑aa ⋄ vv←vv,⍕z1[76+⍳4],' > ',z2[76+⍳4]
[66]  →h5
[67] b9:
[68]  aa←(trim 76↑z1←geramod 1),'$<$',trim 76↑z2←gerafunc 2
[69]  →(76>⍴aa)/va
[70]  □←'*'
[71]  →b9
[72] va:r[10;]←76↑aa ⋄ vv←vv,⍕z1[76+⍳4],' < ',z2[76+⍳4]
[73] h5:r[11;]←76↑'⍀item[',(⍕32),']'
[74] ab:→(1=?2)/bb
[75]  aa←(trim 76↑z1←geralog 1),'$⍀land$',trim 76↑z2←geralog 2
[76]  →(76>⍴aa)/vb
[77]  □←'*'
[78]  →ab
[79] vb:r[12;]←76↑aa ⋄ vv←vv,⍕z1[76+⍳4],' ∧ ',z2[76+⍳4]
[80]  →h6
[81] bb:
[82]  aa←(trim 76↑z1←geralog 1),'$⍀lor$',trim 76↑z2←geralog 2
[83]  →(76>⍴aa)/vc
[84]  □←'*'
[85]  →bb
[86] vc:r[12;]←76↑aa ⋄ vv←vv,⍕z1[76+⍳4],' ∨ ',z2[76+⍳4]
[87] h6:ra[1]←⊂r ⋄ ra[2]←⊂vv
-------------------------------------------------------------
[  0]  ra←geracoman;aa;vv;z1;z2;r;respa
[  1] ⍝retorna 6 linhas numeradas de comandos e a soma dos 6 resultados
[  2]  r←12 76⍴' ' ⋄ vv←0⍴0 ⋄ ra←2⍴0
[  3]  r[1;]←76↑'⍀item'
[  4] a1:→(1=?2)/b1
[  5]  aa←(trim 76↑z1←geramod 2),'+',trim 76↑z2←gerafunc 3
[  6]  →(76>⍴aa)/v1
[  7]  □←'*'
[  8]  →a1
[  9] v1:r[2;]←76↑aa ⋄ vv←respa←⍕z1[76+⍳4],' + ',z2[76+⍳4]
[ 10]  →h1
[ 11] b1:
[ 12]  aa←(trim 76↑z1←geramod 3),'-',trim 76↑z2←gerafunc 2
[ 13]  →(76>⍴aa)/v2
[ 14]  □←'!'
[ 15]  →b1
[ 16] v2:r[2;]←76↑aa ⋄ vv←respa←⍕z1[76+⍳4],' - ',z2[76+⍳4]
[ 17] h1:→(respa≠⍕,retrad 76↑aa)/merda
[ 18]  r[3;]←76↑'⍀item'
[ 19] a3:→(1=?2)/b3
[ 20]  aa←(trim 76↑z1←geramod 3),'+',trim 76↑z2←gerafunc 2
[ 21]  →(76>⍴aa)/v3
[ 22]  □←'%'
[ 23]  →a3
[ 24] v3:r[4;]←76↑aa ⋄ vv←vv,respa←⍕z1[76+⍳4],' + ',z2[76+⍳4]
[ 25]  →h2
[ 26] b3:
[ 27]  aa←(trim 76↑z1←geramod 2),'-',trim 76↑z2←gerafunc 3
[ 28]  →(76>⍴aa)/v4
[ 29]  □←'&'
[ 30]  →b3
[ 31] v4:r[4;]←76↑aa ⋄ vv←vv,respa←⍕z1[76+⍳4],' - ',z2[76+⍳4]
[ 32] h2:→(respa≠⍕,retrad 76↑aa)/merda
[ 33]  r[5;]←76↑'⍀item'
[ 34] a5:→(1=?2)/b5
[ 35]  aa←(trim 76↑z1←gerafunc 1),'+',trim 76↑z2←gerafunc 2
[ 36]  →(76>⍴aa)/v5
[ 37]  □←'('
```

```
[ 38]  →a5
[ 39] v5:r[6;]←76↑aa ⋄ vv←vv,respa←⍤z1[76+⍳4],' + ',z2[76+⍳4]
[ 40]  →h3
[ 41] b5:
[ 42]  aa←(trim 76↑z1←gerafunc 2),'-',trim 76↑z2←gerafunc 1
[ 43]  →(76>⍴aa)/v6
[ 44]  □←')'
[ 45]  →b5
[ 46] v6:r[6;]←76↑aa ⋄ vv←vv,respa←⍤z1[76+⍳4],' - ',z2[76+⍳4]
[ 47] h3:→(respa≠⍤,retrad 76↑aa)/merda
[ 48]  r[7;]←76↑'⍀item'
[ 49] a7:→(1=?2)/b7
[ 50]  aa←(trim 76↑z1←geramod 2),'+',trim 76↑z2←gerafunc 3
[ 51]  →(76>⍴aa)/v7
[ 52]  □←'#'
[ 53]  →a7
[ 54] v7:r[8;]←76↑aa ⋄ vv←vv,respa←⍤z1[76+⍳4],' + ',z2[76+⍳4]
[ 55]  →h4
[ 56] b7:
[ 57]  aa←(trim 76↑z1←geramod 3),'-',trim 76↑z2←gerafunc 2
[ 58]  →(76>⍴aa)/v8
[ 59]  □←'@'
[ 60]  →b7
[ 61] v8:r[8;]←76↑aa ⋄ vv←vv,respa←⍤z1[76+⍳4],' - ',z2[76+⍳4]
[ 62] h4:→(respa≠⍤,retrad 76↑aa)/merda
[ 63]  r[9;]←76↑'⍀item'
[ 64] a9:→(1=?2)/b9
[ 65]  aa←(trim 76↑z1←geramod 3),'+',trim 76↑z2←gerafunc 2
[ 66]  →(76>⍴aa)/v9
[ 67]  □←'?'
[ 68]  →a9
[ 69] v9:r[10;]←76↑aa ⋄ vv←vv,respa←⍤z1[76+⍳4],' + ',z2[76+⍳4]
[ 70]  →h5
[ 71] b9:
[ 72]  aa←(trim 76↑z1←geramod 2),'-',trim 76↑z2←gerafunc 3
[ 73]  →(76>⍴aa)/va
[ 74]  □←'/'
[ 75]  →b9
[ 76] va:r[10;]←76↑aa ⋄ vv←vv,respa←⍤z1[76+⍳4],' - ',z2[76+⍳4]
[ 77] h5:→(respa≠⍤,retrad 76↑aa)/merda
[ 78]  r[11;]←76↑'⍀item'
[ 79] ab:→(1=?2)/bb
[ 80]  aa←(trim 76↑z1←gerafunc 1),'+',trim 76↑z2←gerafunc 2
[ 81]  →(76>⍴aa)/vb
[ 82]  □←'>'
[ 83]  →ab
[ 84] vb:r[12;]←76↑aa ⋄ vv←vv,respa←⍤z1[76+⍳4],' + ',z2[76+⍳4]
[ 85]  →h6
[ 86] bb:
[ 87]  aa←(trim 76↑z1←gerafunc 2),'-',trim 76↑z2←gerafunc 1
[ 88]  →(76>⍴aa)/vc
[ 89]  □←'<'
[ 90]  →bb
[ 91] vc:r[12;]←76↑aa ⋄ vv←vv,respa←⍤z1[76+⍳4],' - ',z2[76+⍳4]
[ 92] h6:→(respa≠⍤,retrad 76↑aa)/merda
[ 93]  ra[1]←⊂r ⋄ ra[2]←⊂vv
[ 94]  →0
[ 95] merda:WARNING1←z1
[ 96]  WARNING2←z2
[ 97]  WARNING3←aa
[ 98]  '3'+2
-------------------------------------------------------------
[ 0]  r←gerafunc v;a1;a2;a3;a4;a5;a6;a7;a8;f1;f2;f3;f4;f5;ggg;r1;r2;r3;r4;r5;z1;z2;z3;z4;z
```

```
      5
[ 1] inicio:a1←1+?8 ◇ a2←1+?8 ◇ a3←1+?8 ◇ a4←1+?8 ◇ a5←1+?8 ◇ a6←1+?8 ◇ a7←1+?8 ◇ a8←1+?8
[ 2]  f1←'+-×÷++-'[?7] ◇ f2←'++-+-×÷'[?7] ◇ f3←'++-+-×÷'[?7] ◇ f4←'++-+-×÷'[?7] ◇ f5←'++-+
      -×÷'[?7]
[ 3]  →(v>2)/eseis
[ 4]  →(v>1)/equa
[ 5] edois:
[ 6]  z1←'(',(1 0⍕a1),' ',f1,' ',(1 0⍕a2),')'
[ 7]  →('÷'≠f1)/ob1
[ 8]  z1←'(⌊',z1,')'
[ 9] ob1:r1←⍎z1
[10]  →(0=r1)/inicio
[11]  →(76>⍴trim ggg←traduzr 76↑z1)/ufa1
[12]  ⍞←'O'
[13]  →inicio
[14] ufa1:
[15]  r←(76↑ggg),4 0⍕r1
[16]  →0
[17] equa:
[18]  z1←'(',(1 0⍕a1),' ',f1,' ',(1 0⍕a2),')'
[19]  →('÷'≠f1)/ob11
[20]  z1←'(⌊',z1,')'
[21] ob11:r1←⍎z1
[22]  →(0=r1)/inicio
[23] in2:z2←'(',(1 0⍕a3),' ',f2,' ',(1 0⍕a4),')'
[24]  →('÷'≠f2)/ob2
[25]  z2←'(⌊',z2,')'
[26] ob2:r2←⍎z2
[27]  →(0=r2)/inicio
[28] in3:z3←'(',z1,' ',f3,' ',z2,')'
[29]  →('÷'≠f3)/ob3
[30]  z3←'(⌊',z3,')'
[31] ob3:r3←⍎z3
[32]  →(0=r3)/inicio
[33]  →(76>⍴trim ggg←traduzr 76↑z3)/ufa2
[34]  ⍞←'O'
[35]  →inicio
[36] ufa2:
[37]  r←(76↑ggg),4 0⍕r3
[38] eseis:
[39]  z1←'(',(1 0⍕a1),' ',f1,' ',(1 0⍕a2),')'
[40]  →('÷'≠f1)/ob11
[41]  z1←'(⌊',z1,')'
[42] ob11:r1←⍎z1
[43]  →(0=r1)/inicio
[44] in2:z2←'(',(1 0⍕a3),' ',f2,' ',(1 0⍕a4),')'
[45]  →('÷'≠f2)/ob2
[46]  z2←'(⌊',z2,')'
[47] ob2:r2←⍎z2
[48]  →(0=r2)/inicio
[49] in3:z3←'(',z1,' ',f3,' ',z2,')'
[50]  →('÷'≠f3)/ob3
[51]  z3←'(⌊',z3,')'
[52] ob3:r3←⍎z3
[53]  →(0=r3)/inicio
[54]  z4←'(',(1 0⍕a5),' ',f4,' ',(1 0⍕a6),')'
[55]  →('÷'≠f4)/ob4
[56]  z4←'(⌊',z4,')'
[57] ob4:r4←⍎z4
[58]  →(0=r4)/inicio
[59]  z5←'(',z3,' ',f5,' ',z4,')'
[60]  →('÷'≠f5)/ob5
[61]  z5←'(⌊',z5,')'
```

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[62] ob5:r5←⍎z5
[63]  →(0=r5)/inicio
[64]  →(76>⍴trim ggg←traduzr 76↑z5)/ufa3
[65]  ⍞←'O'
[66]  →inicio
[67] ufa3:
[68]  →(1000<|r5)/inicio
[69]  r←(76↑ggg),4 0⍕r5
------------------------------------------------------------
[ 0]  r←geralog v;a1;a2;a3;a4;i1;i2;i3;y1;y2;y3;z1;z2;z3
[ 1]  y1←'∨∧'[i1←?2]
[ 2]  y2←'∨∧'[i2←?2]
[ 3]  y3←'∨∧'[i3←?2]
[ 4]  →(v=3)/eseis
[ 5]  →(v=2)/equat
[ 6] edoi:z1←achaneg'(',((1 0⍕a1←¯1+?2),' ',y1,' ',1 0⍕a2←¯1+?2),')'
[ 7] ⍝ r←(76↑traduzl z1),(2 3⍴'.F..V.')[1+⍎z1;]
[ 8]  r←(76↑traduzl z1),4 0⍕⍎z1
[ 9]  →0
[10] equat:
[11]  z1←achaneg'(',((1 0⍕a1←¯1+?2),' ',y1,' ',1 0⍕a2←¯1+?2),')'
[12]  z2←achaneg'(',((1 0⍕a3←¯1+?2),' ',y2,' ',1 0⍕a4←¯1+?2),')'
[13]  z3←'(',z1,' ',y3,' ',z2,')'
[14] ⍝ r←(76↑traduzl z3),(2 3⍴'.F..V.')[1+⍎z1,y3,z2;]
[15]  r←(76↑traduzl z3),4 0⍕⍎z1,y3,z2
[16] eseis:
[17]  z1←achaneg'(',((1 0⍕a1←¯1+?2),' ',y1,' ',1 0⍕a2←¯1+?2),')'
[18]  z2←achaneg'01'[?2]
[19]  z3←'(',z1,' ',y3,' ',z2,')'
[20] ⍝ r←(76↑traduzl z3),(2 3⍴'.F..V.')[1+⍎z1,y3,z2;]
[21]  r←(76↑traduzl z3),4 0⍕⍎z1,y3,z2
------------------------------------------------------------
[ 0]  r←geramod x;y1;y2;y3;z;i1;i2;i3;a1;a2;b1;b2;b3;c1;c2;c3;c4;c5;res
[ 1] denovo:y1←(2 3⍴'moddiv')[(i1←?2);]
[ 2]  y2←(2 3⍴'moddiv')[(i2←?2);]
[ 3]  y3←(2 3⍴'moddiv')[(i3←?2);]
[ 4]  →(x=3)/com3
[ 5]  →(x=2)/com2
[ 6] com1:z←'(',((⍕a1←10+?20),' ',y1,' ',⍕a2←?10),')'
[ 7]  →(i1=1)/p1
[ 8] p2:r←(76↑z),4 0⍕res←⌊a1÷a2
[ 9]  →(res=0)/denovo
[10]  →0
[11] p1:r←(76↑z),4 0⍕res←a2|a1
[12]  →(res=0)/denovo
[13]  →0
[14] com2:z←'((',(((⍕b1←10+?20),' ',y1,' ',⍕b2←?10),') ',y2,' ',⍕b3←?6),')'
[15]  →((i1=1)∧(i2=1))/duum
[16]  →((i1=1)∧(i2=2))/umdo
[17]  →((i1=2)∧(i2=1))/doum
[18] dodo:r←(76↑z),4 0⍕res←⌊(⌊b1÷b2)÷b3
[19]  →(res=0)/denovo
[20]  →0
[21] doum:r←(76↑z),4 0⍕res←b3|(⌊b1÷b2)
[22]  →(res=0)/denovo
[23]  →0
[24] umdo:r←(76↑z),4 0⍕res←⌊(b2|b1)÷b3
[25]  →(res=0)/denovo
[26]  →0
[27] duum:r←(76↑z),4 0⍕res←b3|(b2|b1)
[28]  →(res=0)/denovo
[29]  →0
[30] com3:z←'(((',((⍕c1←10+?20),' ',y1,' ',⍕c2←?10),') ',y2,' ',(⍕c3←?6),')'
```

```
[31]  z←z,' ',y3,' (',(⍕c4←10+?20),' ',y1,' ',(⍕c5←?10),'))'
[32]  →((i1=1)∧(i2=1)∧(i3=1))/d111
[33]  →((i1=1)∧(i2=1)∧(i3=2))/d112
[34]  →((i1=1)∧(i2=2)∧(i3=1))/d121
[35]  →((i1=1)∧(i2=2)∧(i3=2))/d122
[36]  →((i1=2)∧(i2=1)∧(i3=1))/d211
[37]  →((i1=2)∧(i2=1)∧(i3=2))/d212
[38]  →((i1=2)∧(i2=2)∧(i3=1))/d221
[39]  →((i1=2)∧(i2=2)∧(i3=2))/d222
[40] d111:r←(76↑z),4 0⍕res←(c5|c4)|(c3|(c2|c1))
[41]  →(res=0)/denovo
[42]  →0
[43] d112:→(0=c5|c4)/denovo
[44]  r←(76↑z),4 0⍕res←⌊(c3|(c2|c1))÷(c5|c4)
[45]  →(res=0)/denovo
[46]  →0
[47] d121:r←(76↑z),4 0⍕res←(c5|c4)|⌊(c2|c1)÷c3
[48]  →(res=0)/denovo
[49]  →0
[50] d122:→(0=c5|c4)/denovo
[51]  r←(76↑z),4 0⍕res←⌊(⌊(c2|c1)÷c3)÷(c5|c4)
[52]  →(res=0)/denovo
[53]  →0
[54] d211:r←(76↑z),4 0⍕res←(⌊c4÷c5)|(c3|(⌊c1÷c2))
[55]  →(res=0)/denovo
[56]  →0
[57] d212:→(0=⌊c4÷c5)/denovo
[58]  r←(76↑z),4 0⍕res←⌊(c3|⌊(c1÷c2))÷⌊c4÷c5
[59]  →(res=0)/denovo
[60]  →0
[61] d221:r←(76↑z),4 0⍕res←(⌊c4÷c5)|⌊(⌊c1÷c2)÷c3
[62]  →(res=0)/denovo
[63]  →0
[64] d222:r←(76↑z),4 0⍕res←⌊(⌊(⌊c1÷c2)÷c3)÷⌊c4÷c5
[65]  →(res=0)/denovo
[66]  →0
-------------------------------------------------------------
[ 0]  r←geraquestaoprova;x;y;zz
[ 1]  x←geracoman
[ 2]  zz←(⊃x[1])[2 4 6 8 10 12;],'&'
[ 3]  zz,[2]6 9⍴'\\ \hline'
[ 4]  '    '
[ 5]  y←geracomal
[ 6]  zz←(⊃y[1])[2 4 6 8 10 12;],'&'
[ 7]  zz,[2]6 9⍴'\\ \hline'
[ 8]  '    '
[ 9]  '⍝-'edit⍕x[2]
[10]  '    '
[11]  y[2]
-------------------------------------------------------------
[0]  r←a mod b
[1]  →((b=0)∧(a≠0))/dab
[2]  r←b|a
[3]  →0
[4] dab:
[5]  r←a
-------------------------------------------------------------
[0]  r←pedemail x
[1]  →(40≠+/' '=x)/aindanao
[2]  r←80↑'Por favor, informe seu e-mail: \_\_\_\_\_'
[3]  →junnao
[4] aindanao:r←80↑'e-mail cadastrado: ',x
[5] junnao:
```

```
------------------------------------------------------------
[ 0]  r←quem replace depara;de;i;j;k;onde;para
[ 1] ⍝ forma de usar: texto replace 'strin-de' 'string para'
[ 2] ⍝ obviamente eles nao precisam ter o mesmo tamanho
[ 3]  de←,⊃depara[1] ⋄ para←,⊃depara[2]
[ 4]  i←1 ⋄ r←((1↑⍴quem),200)⍴' '
[ 5] t1:→(i>1↑⍴quem)/fim
[ 6]  →(0=∨/onde←de⍷quem[i;])/naotem
[ 7]  j←1 ⋄ k←1
[ 8] t2:→(k>⍴quem[i;])/acabou
[ 9]  →(onde[k]=0)/soma
[10]  r[i;(j-1)+⍳⍴para]←para
[11]  j←j+⍴para
[12]  k←k+⍴de
[13]  →t2
[14] soma:r[i;j]←quem[i;k]
[15]  k←k+1
[16]  →(j=j←j+1)/t2
[17] naotem:r[i;]←200↑quem[i;]
[18] acabou:→(i=i←i+1)/t1
[19] fim:r←trim⍤1 r
------------------------------------------------------------
[ 0]  r←retrad x;i;j;in;trex
[ 1]  →(1<⍴⍴x)/blz
[ 2]  x←(1,(⍴x))⍴x
[ 3] blz:i←1 ⋄ r←(⍴x)⍴' '
[ 4] t1:→(i>1↑⍴x)/fim
[ 5]  j←1
[ 6] t2:→(j>1↓⍴x)/ula
[ 7]  →(x[i;j]='$')/e
[ 8]  r[i;j]←x[i;j]
[ 9] soma:→(j=j←j+1)/t2
[10] e:in←j
[11] t3:j←j+1
[12]  →(x[i;j]='$')/foi
[13]  →t3
[14] foi:trex←x[i;in+⍳j-in]
[15]  trex←8↑trex
[16]  →(8=+/trex='⍀times$ ')/vezes
[17]  →(8=+/trex='⍀lor$   ')/ou
[18]  →(8=+/trex='⍀land$  ')/eee
[19]  →(8=+/trex='⍀sim$   ')/nao
[20]  →(8=+/trex='>$      ')/ma
[21]  →(8=+/trex='<$      ')/me
[22]  →(8=+/trex='⍀ge$    ')/ge
[23]  →(8=+/trex='⍀le$    ')/le
[24]  →(8=+/trex='⍀div$   ')/div
[25]  →(8=+/trex='⍀gets$  ')/rec
[26]  →(8=+/trex='⍀lfloor$')/cha
[27]  →(8=+/trex='⍀lceil$ ')/tet
[28]  'deu merda'
[29]  →0
[30] vezes:r[i;j]←'×'
[31]  →soma
[32] ou:r[i;j]←'∨'
[33]  →soma
[34] eee:r[i;j]←'∧'
[35]  →soma
[36] nao:r[i;j]←'~'
[37]  →soma
[38] ma:r[i;j]←'>'
[39]  →soma
[40] me:r[i;j]←'<'
```

```
[41]  →soma
[42] ge:r[i;j]←'≥'
[43]  →soma
[44] le:r[i;j]←'≤'
[45]  →soma
[46] div:r[i;j]←'÷'
[47]  →soma
[48] rec:r[i;j]←'←'
[49]  →soma
[50] cha:r[i;j]←'⌊'
[51]  →soma
[52] tet:r[i;j]←'⌈'
[53]  →soma
[54] ula:→(i=i←i+1)/t1
[55] fim:
------------------------------------------------------------
[0]  testacaso
[1]  X←geracoman
[2]  Z←⊃X[1]
[3]  R←⊃X[2]
[4]  W←retrad Z[2 4 6 8 10 12;]
[5]  Q←gabarl W
[6]  6↓,Q[(1↑⍴Q);]
[7]  R
------------------------------------------------------------
[ 0]  r←traduzl x;i
[ 1]  i←1 ⋄ r←''
[ 2] t1:→(i>⍴x)/fim
[ 3]  →('∨'=x[i])/eou
[ 4]  →('∧'=x[i])/ee
[ 5]  →('>'=x[i])/emai
[ 6]  →('<'=x[i])/emen
[ 7]  →('≥'=x[i])/emag
[ 8]  →('≤'=x[i])/emeg
[ 9]  →('~'=x[i])/enao
[10]  →('0'=x[i])/efal
[11]  →('1'=x[i])/ever
[12]  r←r,x[i]
[13] soma:→(i=i←i+1)/t1
[14] eou:r←r,'$⍱lor$'
[15]  →soma
[16] ee:r←r,'$⍱land$'
[17]  →soma
[18] enao:r←r,'$⍱sim$'
[19]  →soma
[20] efal:r←r,'.F.'
[21]  →soma
[22] ever:r←r,'.V.'
[23]  →soma
[24] emai:r←r,'$>$'
[25]  →soma
[26] emen:r←r,'$<$'
[27]  →soma
[28] emag:r←r,'$⍱ge$'
[29]  →soma
[30] emeg:r←r,'$⍱le$'
[31]  →soma
[32] fim:
------------------------------------------------------------
[ 0]  r←traduzr x;i
[ 1]  i←1 ⋄ r←''
[ 2] t1:→(i>⍴x)/fim
[ 3]  →('∨'=x[i])/eou
```

```
[ 4]  →('∧'=x[i])/ee
[ 5]  →('>'=x[i])/emai
[ 6]  →('<'=x[i])/emen
[ 7]  →('≥'=x[i])/emag
[ 8]  →('≤'=x[i])/emeg
[ 9]  →('~'=x[i])/enao
[10]  →('÷'=x[i])/ediv
[11]  →('×'=x[i])/evez
[12]  →('←'=x[i])/erec
[13]  →('⌈'=x[i])/ecei
[14]  →('⌊'=x[i])/eflo
[15]  r←r,x[i]
[16] soma:→(i=i←i+1)/t1
[17] eou:r←r,'$⍀lor$'
[18]  →soma
[19] ee:r←r,'$⍀land$'
[20]  →soma
[21] enao:r←r,'$⍀sim$'
[22]  →soma
[23] emai:r←r,'$>$'
[24]  →soma
[25] emen:r←r,'$<$'
[26]  →soma
[27] emag:r←r,'$⍀ge$'
[28]  →soma
[29] emeg:r←r,'$⍀le$'
[30]  →soma
[31] ediv:r←r,'$⍀div$'
[32]  →soma
[33] evez:r←r,'$⍀times$'
[34]  →soma
[35] erec:r←r,'$⍀gets$'
[36]  →soma
[37] eflo:r←r,'$⍀lfloor$'
[38]  →soma
[39] ecei:r←r,'$⍀lceil$'
[40]  →soma
[41] fim:
-------------------------------------------------------------
[0]  r←trim4 x;z
[1] ⍝f corta as colunas direitas que sao brancos
[2]  →(2≠⍴⍴x)/erro
[3]  z←+/[1]x=' '
[4]  r←(z≠1↑⍴x)/[2]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
-------------------------------------------------------------
[ 0]  opesq vivo011b n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;ma;relat;resp;re
      su;upag;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←10 ⋄ EVENTO←'PL011b  '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA011B←ajusta80 FOLHALA011B
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA011B)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[12]  xk←1 ⋄ resu←0 11⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
```

```
[14]  esse←149 80ρ' '
[15]  f←FOLHALA011B
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.05
[19]  esse[4;]←80↑ylu[xk;ι6]
[20]  esse[5;]←80↑ylu[xk;6+ι30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23] ⍝ esse[148;]←pedemail ylu[xk;36+ι40]
[24]  esse[148;ι10]←'@',esse[6;5+ι3],esse[4;1+ι5],'@'
[25]  esse[149;]←80↑esse[6;5+ι3],'-',esse[4;1+ι5],' - ',opesq[6 7],'/',opesq[9 10]
[26] ini1:
[27]  zzz←geracoman
[28]  esse[7+ι14;]←14 80↑⊃zzz[1]
[29]  resp←resp,+/⊃zzz[2]
[30]  zzz←geracomal
[31]  esse[21+ι14;]←14 80↑⊃zzz[1]
[32]  resp←resp,+/(⊃zzz[2])/1 2 4 8 16 32
[33]  zzz←geracoman
[34]  esse[35+ι14;]←14 80↑⊃zzz[1]
[35]  resp←resp,+/⊃zzz[2]
[36]  zzz←geracomal
[37]  esse[49+ι14;]←14 80↑⊃zzz[1]
[38]  resp←resp,+/(⊃zzz[2])/1 2 4 8 16 32
[39]  zzz←geracoman
[40]  esse[63+ι14;]←14 80↑⊃zzz[1]
[41]  resp←resp,+/⊃zzz[2]
[42]  zzz←geracomal
[43]  esse[77+ι14;]←14 80↑⊃zzz[1]
[44]  resp←resp,+/(⊃zzz[2])/1 2 4 8 16 32
[45]  zzz←geracoman
[46]  esse[91+ι14;]←14 80↑⊃zzz[1]
[47]  resp←resp,+/⊃zzz[2]
[48]  zzz←geracomal
[49]  esse[105+ι14;]←14 80↑⊃zzz[1]
[50]  resp←resp,+/(⊃zzz[2])/1 2 4 8 16 32
[51]  zzz←geracoman
[52]  esse[119+ι14;]←14 80↑⊃zzz[1]
[53]  resp←resp,+/⊃zzz[2]
[54]  zzz←geracomal
[55]  esse[133+ι14;]←14 80↑⊃zzz[1]
[56]  resp←resp,+/(⊃zzz[2])/1 2 4 8 16 32
[57]  resu←resu,[1]1 11ρresp
[58]  acuja←(f[;2]='#')/ι1↑ρf
[59]  f[acuja;]←esse[⍤,f[acuja;3 4 5],' ';]
[60]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\newpage'
[61]  ⍞←(⍕xk←xk+1),'-'
[62]  →testa
[63] fim:upag←(1 0+ρf)ρ' '
[64]  ma←6 0 6 0 6 0 6 0 7 0 6 0 6 0 6 0 6 0 6 0 6 0
[65]  →(1=≡n)/elafa
[66]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[67]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[68]  upag[2+ι1↑ρresu;ι+/lixo1]←'¯'-'edit(lixo1←ma)⍕resu
[69]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[70]  →terminando
[71] elafa:aaa←(ylu,'¯'-'edit(2↓ma)⍕0 1↓resu)
[72]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[73]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[74] terminando:
[75]  upag[1↑ρupag;]←(1↓ρupag)↑'\end{document}'
[76]  relat[1↑ρrelat;;]←upag
```

```
[77]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[78] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[79]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∘'EVENTO=' ')/EVENTO),'.tex'
[80]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo011c n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;ma;relat;resp;re
      su;upag;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←10 ⋄ EVENTO←'PL011c  '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA011C←ajusta80 FOLHALA011C
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA011C)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 11⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←149 80⍴' '
[15]  f←FOLHALA011C
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←3.05
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[23] ⍝ esse[148;]←pedemail ylu[xk;36+⍳40]
[24]  esse[148;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[25]  esse[149;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[26] ini1:
[27]  zzz←geracoman
[28]  esse[7+⍳14;]←14 80↑voltaac⊃zzz[1]
[29]  resp←resp,+/⊃zzz[2]
[30]  zzz←geracomal
[31]  esse[21+⍳14;]←14 80↑voltaac⊃zzz[1]
[32]  resp←resp,+/(⊃zzz[2])/1 2 4 8 16 32
[33]  zzz←geracoman
[34]  esse[35+⍳14;]←14 80↑voltaac⊃zzz[1]
[35]  resp←resp,+/⊃zzz[2]
[36]  zzz←geracomal
[37]  esse[49+⍳14;]←14 80↑voltaac⊃zzz[1]
[38]  resp←resp,+/(⊃zzz[2])/1 2 4 8 16 32
[39]  zzz←geracoman
[40]  esse[63+⍳14;]←14 80↑voltaac⊃zzz[1]
[41]  resp←resp,+/⊃zzz[2]
[42]  zzz←geracomal
[43]  esse[77+⍳14;]←14 80↑voltaac⊃zzz[1]
[44]  resp←resp,+/(⊃zzz[2])/1 2 4 8 16 32
[45]  zzz←geracoman
[46]  esse[91+⍳14;]←14 80↑voltaac⊃zzz[1]
[47]  resp←resp,+/⊃zzz[2]
[48]  zzz←geracomal
[49]  esse[105+⍳14;]←14 80↑voltaac⊃zzz[1]
[50]  resp←resp,+/(⊃zzz[2])/1 2 4 8 16 32
[51]  zzz←geracoman
[52]  esse[119+⍳14;]←14 80↑voltaac⊃zzz[1]
[53]  resp←resp,+/⊃zzz[2]
[54]  zzz←geracomal
[55]  esse[133+⍳14;]←14 80↑voltaac⊃zzz[1]
```

```
[56]  resp←resp,+/(⊃zzz[2])/1 2 4 8 16 32
[57]  ESSE←esse
[58]  resu←resu,[1]1 11⍴resp
[59]  acuja←(f[;2]='#')/⍳1↑⍴f
[60]  f[acuja;]←esse[⍋,f[acuja;3 4 5],' ';]
[61]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[62]  □←(⍕xk←xk+1),'-'
[63]  →testa
[64] fim:upag←(1 0+⍴f)⍴' '
[65]  ma←6 0 6 0 6 0 6 0 7 0 6 0 6 0 6 0 6 0 6 0 6 0
[66]  →(1=≡n)/elafa
[67]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[68]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[69]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯'-'edit(lixo1←ma)⍕resu
[70]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[71]  →terminando
[72] elafa:aaa←(ylu,'¯'-'edit(2↓ma)⍕0 1↓resu)
[73]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[74]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[75] terminando:
[76]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[77]  relat[1↑⍴relat;;]←upag
[78]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[79] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[80]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[81]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[ 0]  r←voltaac x
[ 1]  r←x replace'$\div$' '/'
[ 2]  r←r replace'mod' '\%'
[ 3]  r←r replace'div' '/'
[ 4]  r←r replace'$\times$' '*'
[ 5]  r←r replace'$\land$' '\&\&'
[ 6]  r←r replace'$\lor$' '\verb+||+'
[ 7]  r←r replace'.V.' '1'
[ 8]  r←r replace'.F.' '0'
[ 9]  r←r replace'$\sim$' '!'
[10]  r←r replace'$\lfloor$' ''
[11]  r←r replace'$\lceil$' 'VVVVVV'
-------------------------------------------------------------
```

vivo012

```
[0]  AVISO
[1]  'Ha um erro: o numero 87 eh elemento de par de primos gemeos e o gabarito estava'
[2]  'dando 0 (nao), quando deveria dar 1 (sim)'
[3]  ''
[4]  'Nova forma: Desde quando 87 eh primo ? Ele e divisivel por 3...'
[5]  'portanto o programa esta CERTO...'
-------------------------------------------------------------
[ 0]  r←ackermann xy
[ 1]  CTD←CTD+1
[ 2]  →(xy[1]=0)/xzero
[ 3]  →(xy[2]=0)/yzero
[ 4] senao:
[ 5]  r←ackermann(xy[1]-1),ackermann xy[1],xy[2]-1
[ 6]  →0
[ 7] xzero:r←xy[2]+1
[ 8]  →0
[ 9] yzero:r←ackermann(xy[1]-1),1
[10]  →0
-------------------------------------------------------------
```

```
[ 0]  r←divisores x;den;soma
[ 1]  den←1
[ 2]  soma←0
[ 3] testa:→(den≥x)/acabou
[ 4]  →(0≠den|x)/nao
[ 5] sim:
[ 6]  soma←soma+den
[ 7] nao:den←den+1
[ 8]  →testa
[ 9] acabou:r←soma
------------------------------------------------------------
[ 0]  r←divs23 x;di;som;qua
[ 1]  di←2
[ 2]  som←1
[ 3]  qua←,1
[ 4] t0:→(di>(x*0.5))/fim
[ 5] t1:→(0=di|x)/sim
[ 6]  di←di+1
[ 7]  →t0
[ 8] sim:qua←qua,di
[ 9]  di←di+1
[10]  →t0
[11] fim:→((di-1)=x*0.5)/qp
[12]  r←¯1↓qua,⊖x÷qua
[13]  →ju
[14] qp:r←¯1↓qua,1↓⊖x÷qua
[15] ju:
------------------------------------------------------------
[ 0]  r←geraack;x;y;z
[ 1]  CTD←0
[ 2]  x←¯1+?3
[ 3]  y←¯1+?3
[ 4]  →(x=2)/blz
[ 5]  →(x=1)/meiaboca
[ 6]  y←¯1+?13
[ 7]  →blz
[ 8] meiaboca:
[ 9]  y←¯1+?6
[10] blz:
[11]  z←ackermann x,y
[12]  r←x,y,z
[13]  r←r,CTD
------------------------------------------------------------
[ 0]  r←gerahomog;x;p;y;n1;n2;xx
[ 1]  p←2 3 5 7 11 13 17 19
[ 2]  x←?2
[ 3]  →(x=2)/nnn
[ 4]  xx←p[3?⍴p]
[ 5]  y←'123'[?3⍴3]
[ 6]  n1←×/xx
[ 7]  n2←(⍎(2 0⍕xx[1]),'*',2 0⍕y[1])×(⍎(2 0⍕xx[2]),'*',2 0⍕y[2])×⍎(2 0⍕xx[3]),'*',2 0⍕y[3]
[ 8]  r←n1,n2,1
[ 9]  →0
[10] nnn:
[11]  xx←p[3?⍴p]
[12]  y←'123'[?3⍴3]
[13]  n1←×/xx
[14]  n2←(⍎(2 0⍕xx[1]),'*',2 0⍕y[1])×(⍎(2 0⍕xx[2]),'*',2 0⍕y[2])×⍎(2 0⍕xx[3]),'*',2 0⍕y[3]
[15]  r←n1,(n2-2),0
------------------------------------------------------------
[0]  r←geramigo;ami
[1]  ami←1184 1210 2620,2924,5020,5564,6232,6368,10744,10856,12285,14595
[2]  ami←ami,17296,18416,63020,76084
```

```
[3]  ami←(((⍴ami)÷2),2)⍴ami
[4]  r←ami[?1↑⍴ami;]
-------------------------------------------------------------
[0]  r←gerammc;x;y;md
[1] novo:x←2×20+?50
[2]  y←3×20+?50
[3]  md←mdc x,y
[4]  →(md<11)/novo
[5]  r←((x×y)÷md),md,x,y
-------------------------------------------------------------
[0]  r←gerapal;z;x
[1] novo:x←0 palindromo z←9+?10000
[2]  →(x<2)/novo
[3]  r←x,z
-------------------------------------------------------------
[ 0]  r←gerapgemeo;z;moe;sin;aa;bb;m
[ 1]  z←4 6 12 18 30 42 60 72 88 102 108 138 150 180 192 228 240 270 282
[ 2]  m←z-1
[ 3]  m←m,z+1
[ 4]  moe←?2
[ 5]  sin←'-+'[?2]
[ 6]  →(1=moe)/sim
[ 7] nao:
[ 8]  aa←2×?135
[ 9]  bb←⍎(⍕aa),sin,'1'
[10]  →(bb∈m)/nao
[11]  r←0,bb
[12]  →0
[13] sim:
[14]  r←1,⍎(⍕z[?⍴z]),sin,'1'
[15]  →0
-------------------------------------------------------------
[ 0]  r←gerarmstr;arms;narms;moe
[ 1]  arms←370,371,407,1634,8208,9474,54748,92727,93084,548834
[ 2] ⍝ ai encima havia um 5448834 e o aluno carlos balsalobre disse
[ 3] ⍝ que o certo era 548834 e eu acreditei.
[ 4]  narms←369,406,1633,1635,8209,9475,54749,92726,93083,93085
[ 5]  moe←?2
[ 6]  →(1=moe)/sim
[ 7] nao:r←0,narms[?⍴narms]
[ 8]  →0
[ 9] sim:r←1,arms[?⍴arms]
-------------------------------------------------------------
[0]  r←geravamp;arms;narms;moe
[1]  arms←1395,1435,1530,1827,2187,6880,102510,104260,105210,105264,105750
[2]  narms←1394,1434,1531,1287,2189,6990,102611,104160,109810,108764,106750
[3]  moe←?2
[4]  →(1=moe)/sim
[5] nao:r←0,narms[?⍴narms]
[6]  →0
[7] sim:r←1,arms[?⍴arms]
-------------------------------------------------------------
[0]  r←gerawodall;arms;narms;moe
[1]  arms←1,23,63,159,383,895,2047,4607,10239,22527,49151
[2]  narms←3,31,65,161,387,899,2048,4608,10240,22529,48151
[3]  moe←?2
[4]  →(1=moe)/sim
[5] nao:r←0,narms[?⍴narms]
[6]  →0
[7] sim:r←1,arms[?⍴arms]
-------------------------------------------------------------
[ 0]  r←listadivisores x;i
[ 1]  r←⍳0
```

```
[ 2]  i←1
[ 3] t1:→(i>x)/aca
[ 4]  →(0=i|x)/sim
[ 5] nao:i←i+1
[ 6]  →t1
[ 7] sim:r←r,i
[ 8]  i←i+1
[ 9]  →t1
[10] aca:
------------------------------------------------------------
[0]  r←mdc xy
[1] contr:
[2]  →(xy[2]=0)/zero
[3]  r←mdc xy[2],xy[2]|xy[1]
[4]  →0
[5] zero:r←xy[1]
[6] ⍝ referencia Ata99, pag 39-9.
------------------------------------------------------------
[ 0]  r←mos palindromo x;y;z;ctd
[ 1]  →(∨/196 887 1675 7435 13783=x)/erro
[ 2]  →(x>13783)/erro
[ 3]  RESPA←⍳0
[ 4]  ctd←1
[ 5] dois:y←⍎⍕x
[ 6]  z←±⌽y
[ 7]  x←x+z
[ 8]  →(mos≠1)/oba
[ 9] ⍝ x
[10]  RESPA←RESPA,x
[11] oba:→(x=±⌽⍎⍕x)/fim
[12]  ctd←ctd+1
[13]  →(ctd>10)/erro
[14]  →dois
[15] fim:r←ctd
[16]  →0
[17] erro:
[18]  r←0
------------------------------------------------------------
[0]  r←pedemail x
[1]  →(40≠+/' '=x)/aindanao
[2]  r←80⍴'Por favor, informe seu e-mail: ⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_'
[3]  →junnao
[4] aindanao:r←80⍴'e-mail cadastrado: ⍀verb+',x,'+'
[5] junnao:
------------------------------------------------------------
[ 0]  opesq vivo012a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;num;relat
      ;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL012   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5⍴n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)⍴(n,4)⍴4 0⍎⍕n
[ 9]  FOLHALA012←ajusta80 FOLHALA012
[10]  relat←((2+1⍴⍴ylu),1 0+⍴FOLHALA012)⍴' '
[11]  relat[1;;]←(1↓⍴relat)⍴ΔFM'c:⍀apl2⍀VIVOBLOI'
[12]  xk←1 ⋄ resu←0 9⍴0
[13] testa:→(xk>1⍴⍴ylu)/fim
[14]  esse←19 80⍴' '
[15]  f←FOLHALA012
```

```
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+□LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23] ⍝ esse[18;]←80↑pedemail ylu[xk;36+⍳40]
[24]  esse[18;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[25]  esse[19;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[26] ini1:
[27]  aaa←,gerapal
[28]  resp←resp,aaa[1]
[29]  esse[8;]←80↑⍕aaa[2]
[30]  aaa←,gerahomog
[31]  resp←resp,aaa[3]
[32]  esse[9;]←80↑⍕aaa[1]
[33]  esse[10;]←80↑⍕aaa[2]
[34]  aaa←,geramigo
[35]  resp←resp,aaa[2]
[36]  esse[11;]←80↑⍕aaa[1]
[37]  aaa←,gerarmstr
[38]  resp←resp,aaa[1]
[39]  esse[12;]←80↑⍕aaa[2]
[40]  aaa←,gerawodall
[41]  resp←resp,aaa[1]
[42]  esse[13;]←80↑⍕aaa[2]
[43]  aaa←,geravamp
[44]  resp←resp,aaa[1]
[45]  esse[14;]←80↑⍕aaa[2]
[46]  aaa←,gerapgemeo
[47]  resp←resp,aaa[1]
[48]  esse[15;]←80↑⍕aaa[2]
[49]  aaa←,gerammc
[50]  resp←resp,aaa[1]
[51]  esse[16;]←80↑⍕aaa[3]
[52]  esse[17;]←80↑⍕aaa[4]
[53]  resu←resu,[1]1 9⍴resp
[54]  acuja←(f[;2]='#')/⍳1↑⍴f
[55]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[56]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[57]  □←(⍕xk←xk+1),'-'
[58]  →testa
[59] fim:upag←(1 0+⍴f)⍴' '
[60]  →(1=≡n)/elafa
[61]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[62]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[63]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←4 0 7 0 5 0 7 0,4 0,(6⍴2 0),5 0)⍕resu
[64]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[65]  →terminando
[66] elafa:aaa←(ylu,(7 0 5 0 7 0,4 0,(6⍴2 0),5 0)⍕0 1↓resu)
[67]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[68]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[69] terminando:
[70]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[71]  relat[1↑⍴relat;;]←upag
[72]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[73] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[74]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[75]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo013

```
[0]  AVISO
[1]  'Existem os programas divisores.c e primo1.c e primobom.c'
[2]  'em f:\p\n\013\*.c que auxiliam nesta folha'
------------------------------------------------------------
[ 0]  r←ackermann xy
[ 1]  CTD←CTD+1
[ 2]  →(xy[1]=0)/xzero
[ 3]  →(xy[2]=0)/yzero
[ 4] senao:
[ 5]  r←ackermann(xy[1]-1),ackermann xy[1],xy[2]-1
[ 6]  →0
[ 7] xzero:r←xy[2]+1
[ 8]  →0
[ 9] yzero:r←ackermann(xy[1]-1),1
[10]  →0
------------------------------------------------------------
[ 0]  r←divs23 x;di;som;qua
[ 1]  di←2
[ 2]  som←1
[ 3]  qua←,1
[ 4] t0:→(di>(x*0.5))/fim
[ 5] t1:→(0=di|x)/sim
[ 6]  di←di+1
[ 7]  →t0
[ 8] sim:qua←qua,di
[ 9]  di←di+1
[10]  →t0
[11] fim:→((di-1)=x*0.5)/qp
[12]  r←¯1↓qua,⊖x÷qua
[13]  →ju
[14] qp:r←¯1↓qua,1↓⊖x÷qua
[15] ju:
------------------------------------------------------------
[ 0]  r←eprimo x;divs;ate;i
[ 1]  →(x≠1)/vai
[ 2]  r←0
[ 3]  →0
[ 4] vai:
[ 5]  divs←0
[ 6]  ate←⌊x*0.5
[ 7]  i←2
[ 8] t1:→(i>ate)/aca
[ 9]  →(0=i|x)/sim
[10] nao:i←i+1
[11]  →t1
[12] sim:divs←divs+1
[13] aca:r←divs=0
------------------------------------------------------------
[ 0]  r←geraack;x;y;z
[ 1]  CTD←0
[ 2]  x←¯1+?3
[ 3]  y←¯1+?3
[ 4]  →(x=2)/blz
[ 5]  →(x=1)/meiaboca
[ 6]  y←¯1+?13
[ 7]  →blz
[ 8] meiaboca:
[ 9]  y←¯1+?6
[10] blz:
[11]  z←ackermann x,y
[12]  r←x,y,z
```

```
[13]  r←r,CTD
-------------------------------------------------------------
[ 0]  r←geracompl;quais;x
[ 1]  x←10+?65
[ 2]  quais←1,2,3,4,5,5,6,6,6,7,8
[ 3]  quais←quais,7,8,8,8,8,9,8,9,9,9
[ 4]  quais←quais,10,11,9,10,10,9,10,11,10,11
[ 5]  quais←quais,10,11,11,11,10,11,11,11,11,12
[ 6]  quais←quais,11,12,12,11,12,13,11,12,12,12
[ 7]  quais←quais,12,13,11,12,12,12,13,14,12,13
[ 8]  quais←quais,13,12,12,13,13,14,13,14,13,14
[ 9]  quais←quais,12,13,13,13,13,14,13,14
[10]  r←x,quais[x]
[11] A referencia bibliografica ??????
-------------------------------------------------------------
[ 0]  r←geracullen;x;quais;naosao
[ 1]  quais←25,65,161,385,897,2049,4609,10241
[ 2]  quais←quais,22529,49153,106497,229377,491521
[ 3]  quais←quais,1048577,2228225,4718593,9961473
[ 4]  naosao←26,66,160,384,899,2047,4608,10240
[ 5]  naosao←naosao,22528,49152,106496,229379,491523
[ 6]  naosao←naosao,1048579,2228223,4718595,9961475
[ 7]  x←?2
[ 8]  →(x=1)/sim
[ 9]  →(x=2)/nao
[10] sim:r←quais[?⍴quais],1
[11]  →0
[12] nao:r←naosao[?⍴naosao],0
[13]  →0
-------------------------------------------------------------
[ 0]  r←geraeuclid;quais;x;□PP
[ 1]  □PP←16
[ 2]  quais←2311,30031,510511,9699691,223092871,6469693231
[ 3]  quais←quais,200560490131,7420738134811,304250263527211
[ 4]  quais←quais,13082761331670030
[ 5]  quais←((⍴quais),1)⍴quais
[ 6]  quais←20 0↑quais
[ 7]  r←quais[x←?1↑⍴quais;]
[ 8]  r←(,r),4 0↑x+4
-------------------------------------------------------------
[ 0]  r←geraeuler;n;f;z;cands;i;j
[ 1] ini:n←?40
[ 2]  f←40+?40
[ 3] t1:→(n>f)/aca
[ 4]  →(eprimo z←1+6×n)/sim
[ 5] nao:n←n+1
[ 6]  →t1
[ 7] aca:→ini
[ 8] sim:cands←⍳0
[ 9]  i←1
[10] t2:→(z<3×i*2)/ooo
[11]  cands←cands,3×i*2
[12]  i←i+1
[13]  →t2
[14] ooo:i←1
[15] ty:→(i>⍴cands)/aca
[16]  j←1
[17] t4:→(j>cands[i])/novo
[18]  →(((j*2)+cands[i])=z)/achou
[19]  j←j+1
[20]  →t4
[21] novo:i←i+1
[22]  →ty
```

```
[23] achou:r←z,n,j,(cands[i]÷3)*0.5
-------------------------------------------------------------
[ 0]  r←geraharshad;x;y;d;i;sim;nao
[ 1]  sim←nao←⍳0
[ 2]  x←300
[ 3] t1:→(x>600)/fim
[ 4]  y←'000'⍕x
[ 5]  d←(⍎y[1])+(⍎y[2])+⍎y[3]
[ 6]  →(0=d|x)/sss
[ 7] nnn:nao←nao,x
[ 8]  x←x+1
[ 9]  →t1
[10] sss:sim←sim,x
[11]  x←x+1
[12]  →t1
[13] fim:x←?2
[14]  →(x=1)/positivo
[15]  r←nao[?⍴nao],0
[16]  →0
[17] positivo:r←sim[?⍴sim],1
-------------------------------------------------------------
[ 0]  r←gerahept;x;n;sim;c
[ 1]  n←11
[ 2]  sim←⍳0
[ 3] t1:→(n>100)/aca
[ 4]  sim←sim,(n×((5×n)-3))÷2
[ 5]  n←n+1
[ 6]  →t1
[ 7] aca:SIM←sim
[ 8]  x←?2
[ 9]  →(x=1)/sss
[10] nnn:
[11]  c←100+?24000
[12]  →(c∈sim)/aca
[13]  r←c,0
[14]  →0
[15] sss:r←sim[?⍴sim],1
-------------------------------------------------------------
[ 0]  r←gerahomog;x;p;y;n1;n2;xx
[ 1]  p←2 3 5 7 11 13 17 19
[ 2]  x←?2
[ 3]  →(x=2)/nnn
[ 4]  xx←p[3?⍴p]
[ 5]  y←'123'[?3⍴3]
[ 6]  n1←×/xx
[ 7]  n2←(⍎(2 0⍕xx[1]),'*',2 0⍕y[1])×(⍎(2 0⍕xx[2]),'*',2 0⍕y[2])×⍎(2 0⍕xx[3]),'*',2 0⍕y[3]
[ 8]  r←n1,n2,1
[ 9]  →0
[10] nnn:
[11]  xx←p[3?⍴p]
[12]  y←'123'[?3⍴3]
[13]  n1←×/xx
[14]  n2←(⍎(2 0⍕xx[1]),'*',2 0⍕y[1])×(⍎(2 0⍕xx[2]),'*',2 0⍕y[2])×⍎(2 0⍕xx[3]),'*',2 0⍕y[3]
[15]  r←n1,(n2-2),0
-------------------------------------------------------------
[ 0]  r←gerahundred;e;x;y;z
[ 1]  e←40↑'$⍀sqrt{9}-6+72-(1)(3!)-8+45$'
[ 2]  e←e,40↑'$⍀sqrt{9}+72-(1)(3!)-8+45-6$'
[ 3]  e←e,40↑'$3^2+91+7+8-6-5-4$'
[ 4]  e←e,40↑'$3^2-6-5+91+7+8-4$'
[ 5]  e←e,40↑'$3^2-6-5-4+91+7+8$'
[ 6]  e←e,40↑'$123-45-67+89$'
[ 7]  e←e,40↑'$123-67-45+89$'
```

```
[ 8]  e←e,40↑'$89-67-45+123$'
[ 9]  e←e,40↑'$1+2+34-5+67-8+9$'
[10]  e←e,40↑'$1+2-5-8+34+67+9$'
[11]  e←e,40↑'$12+3-4+5+67+8+9$'
[12]  e←e,40↑'$12-4+9+3+5+67+8$'
[13]  e←e,40↑'$123+4-5+67-89$'
[14]  e←e,40↑'$123-5-89+4+67$'
[15]  e←e,40↑'$123-45-67+89$'
[16]  e←e,40↑'$123+89-67-45$'
[17]  e←(((⍴e)÷40),40)⍴e
[18]  y←,e[?1↑⍴e;]
[19]  z←1 0⍒3?9
[20]  y←(z[1],'x')edit y
[21]  y←(z[2],'y')edit y
[22]  y←(z[3],'z')edit y
[23]  r←y,3 0⍒z
-------------------------------------------------------------
[ 0]  r←gerapbom;quais;naosao;yy;x
[ 1]  quais←29,37,41,53,59,67,71,97,101,127
[ 2]  naosao←⍳0
[ 3]  yy←30
[ 4] testa:→(yy>120)/fin
[ 5]  →((eprimo yy)∧(~yy∈quais))/blz
[ 6]  yy←yy+1
[ 7]  →testa
[ 8] blz:naosao←naosao,yy
[ 9]  yy←yy+1
[10]  →testa
[11] fin:
[12]  x←?2
[13]  →(x=1)/sss
[14] nnn:r←naosao[?⍴naosao],0
[15]  →0
[16] sss:r←quais[?⍴quais],1
-------------------------------------------------------------
[ 0]  r←gerapfat;np;nm;x;i
[ 1]  np←1 2 3 11
[ 2]  nm←3 4 6 7 12 14
[ 3]  x←?2
[ 4]  →(x=1)/pp
[ 5] mm:i←?⍴nm
[ 6]  r←(20 0⍒(!nm[i])-1),3 0⍒nm[i]
[ 7]  →0
[ 8] pp:i←?⍴np
[ 9]  r←(20 0⍒(!np[i])+1),3 0⍒np[i]
-------------------------------------------------------------
[ 0]  r←geraprimos n;i;PRIMOS
[ 1]  PRIMOS←0⍴0
[ 2]  i←2
[ 3] oba:→(n<⍴PRIMOS)/fim
[ 4]  →(1=eprimo i)/poe
[ 5] soma:i←i+1
[ 6]  →oba
[ 7] poe:PRIMOS←PRIMOS,i
[ 8]  →soma
[ 9] fim:r←PRIMOS
-------------------------------------------------------------
[0]  r←pedemail x
[1]  →(40≠+/' '=x)/aindanao
[2]  r←80↑'Por favor, informe seu e-mail: ⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_'
[3]  →junnao
[4] aindanao:r←80↑'e-mail cadastrado: ',x
[5] junnao:
```

```
------------------------------------------------------------
[ 0]  opesq vivo013a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;nomes;num
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL013   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA013←ajusta80 FOLHALA013
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA013)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 53⍴' '
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←20 80⍴' '
[16]  f←FOLHALA013
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.03
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:
[28]  esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[32]  esse[19;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[20;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] ini1:
[35]  aaa←,geracompl
[36]  resp←(3 0⍎resp),'=',(5 0⍎aaa[2]),'/'
[37]  esse[8;]←80↑⍎aaa[1]
[38]  aaa←,geracullen
[39]  resp←resp,(2 0⍎aaa[2]),'/'
[40]  esse[9;]←80↑8 0⍎aaa[1]
[41]  aaa←,geraeuclid
[42]  resp←resp,(aaa[20+⍳4]),'/'
[43]  esse[10;]←80↑aaa[⍳20]
[44]  aaa←,geraeuler
[45]  resp←resp,(3 0⍎aaa[2 3 4]),'/'
[46]  esse[11;]←80↑6 0⍎aaa[1]
[47]  aaa←,gerapfat
[48]  resp←resp,(aaa[20+⍳3]),'/'
[49]  esse[12;]←80↑aaa[⍳20]
[50]  aaa←,gerahundred
[51]  resp←resp,(aaa[40+⍳9]),'/'
[52]  esse[13;]←80↑aaa[⍳40],'$=100$'
[53]  aaa←,geraharshad
[54]  resp←resp,(2 0⍎aaa[2]),'/'
[55]  esse[14;]←80↑5 0⍎aaa[1]
[56]  aaa←,gerahept
[57]  resp←resp,(2 0⍎aaa[2]),'/'
[58]  esse[15;]←80↑6 0⍎aaa[1]
[59]  aaa←,gerahomog
```

```
[60]  resp←resp,(2 0⍕aaa[3]),'/'
[61]  esse[16;]←80↑5 0⍕aaa[1]
[62]  esse[17;]←80↑13 0⍕aaa[2]
[63]  aaa←,gerapbom
[64]  resp←resp,2 0⍕aaa[2]
[65]  esse[18;]←80↑4 0⍕aaa[1]
[66]  resu←resu,[1]1 53⍴resp
[67]  acuja←(f[;2]='#')/⍳1↑⍴f
[68]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[69]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[70]  ⎕←(⍕xk←xk+1),'-'
[71]  →testa
[72] fim:upag←(1 0+⍴f)⍴' '
[73]  →(1=≡n)/elafa
[74]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[75]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[76]  upag[2+⍳1↑⍴resu;⍳53]←resu
[77]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[78]  →terminando
[79] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[80]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[81]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[82] terminando:
[83]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[84]  relat[1↑⍴relat;;]←upag
[85]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[86]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[87]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo014

```
[ 0]  r←caogato;g;c;ra;aa
[ 1]  g←0,0,1,2,2,3,4,4,5,6,6,7,7,8,9,9       ⍝ feminino
[ 2]  g←g,10,11,11,12,12,13,14,14,15,16,16,17
[ 3]  g←g,17,18,19,19,20,20,21,22,22,23,24,24
[ 4]  g←g,25,25,26,27,27,28,29,29,30,30,31,32
[ 5]  g←g,32,33,33,34,35,35,36,37,37,38,38,39
[ 6]  g←g,40,40,41,42,42,43,43,44,45,45
[ 7]  c←1,1,2,2,3,3,4,5,5,6,6,7,8,8,9,9     ⍝ masculino
[ 8]  c←c,10,11,11,12,13,13,14,14,15,16,16,17
[ 9]  c←c,17,18,19,19,20,21,21,22,22,23,24,24
[10]  c←c,25,25,26,27,27,28,29,29,30,30,31,32
[11]  c←c,32,33,34,34,35,35,36,37,37,38,38,39
[12]  c←c,40,40,41,42,42,43,43,44,45,45
[13]  c←c[10+⍳10]
[14]  g←g[10+⍳10]
[15]  ra←⍉2 10⍴c,g
[16]  r←(10+aa),ra[aa←?10;]
------------------------------------------------------------
[ 0]  r←diviss x;den;soma
[ 1]  den←2
[ 2]  soma←⍳0
[ 3] testa:→(den≥x)/acabou
[ 4]  →(0≠den|x)/nao
[ 5] sim:
[ 6]  soma←soma,den
[ 7] nao:den←den+1
[ 8]  →testa
[ 9] acabou:r←soma
------------------------------------------------------------
[ 0]  r←eprimo x;div
```

```
[ 1]  div←3
[ 2]  r←1
[ 3]  →((2=x)∨(x=1))/termina
[ 4]  →(0=2|x)/naoe
[ 5] testa:→(div>⌊x*0.5)/termina
[ 6]  →(0=div|x)/naoe
[ 7]  div←div+1
[ 8]  →testa
[ 9] naoe:r←0
[10] termina:
```

```
[0]  r←fibonacc;n
[1]  n←15+?27
[2]  r←FIBONACCI[(n+4),(n+7),n]
```

```
[ 0]  geradivisores;i
[ 1]  DIVISORES←500⍴0
[ 2]  i←1
[ 3] t1:→(i>500)/fim
[ 4]  DIVISORES[i]←2+⍴diviss i
[ 5]  i←i+1
[ 6]  →t1
[ 7] fim:DIVIKAN←DIVISORES
[ 8]  i←2
[ 9] t2:→(i>500)/fim55
[10]  DIVIKAN[i]←DIVIKAN[i-1]⌈DIVIKAN[i]
[11]  i←i+1
[12]  →t2
[13] fim55:
```

```
[0]  gerafibonacci;a;i
[1]  a←49⍴0
[2]  a[1]←a[2]←1
[3]  i←3
[4] t1:→(i>49)/fim
[5]  a[i]←a[i-2]+a[i-1]
[6]  i←i+1
[7]  →t1
[8] fim:FIBONACCI←a
```

```
[0]  geraodiosos
```

```
[ 0]  geraprimos;i;c
[ 1]  PRIMOS←⍳0
[ 2]  i←1
[ 3] t1:→(i>50)/fim
[ 4]  c←100+?1000
[ 5] testaprimo:→(eprimo c)/esim
[ 6]  c←c+1
[ 7]  →testaprimo
[ 8] esim:PRIMOS←PRIMOS,c
[ 9]  c←c+1
[10]  i←i+1
[11]  →t1
[12] fim:
```

```
[ 0]  r←germain;v;ra
[ 1]  v←113,131,173,179,191,233,239,251,281,293,359,419,431,443
[ 2]  v←v,491,509,593,641,653,659,683,719,743,761,809,911,953
[ 3]  v←v,1013,1019,1031,1049,1103,1223,1229,1289,1409,1439
[ 4]  v←v,1451,1481,1499,1511,1559
[ 5]  ra←84 2⍴0
[ 6]  ra[⍳42;1]←v
```

```
[ 7]  ra[⍳42;2]←1
[ 8]  ra[42+⍳42;1]←42↑PRIMOS
[ 9]  ra[42+⍳42;2]←0
[10]  r←ra[2?84;]
------------------------------------------------------------
[ 0]  r←juggler;a;i;j;ini
[ 1] denovo:ini←50+?50
[ 2]  a←20⍴0
[ 3]  a[1]←ini
[ 4]  i←1
[ 5]  j←8+?8
[ 6] t1:→(i>j)/fim
[ 7]  →(0=2|ini)/par
[ 8] impar:ini←⌊ini*3÷2
[ 9]  →junta
[10] par:ini←⌊ini*1÷2
[11] junta:i←i+1
[12]  a[i]←ini
[13]  →t1
[14] fim:
[15]  →(a[i]≠a[i-1])/blz
[16]  ⍞←'*'
[17]  →denovo
[18] blz:
[19]  →(a[1]≠77)/ufa
[20]  ⍞←'o'
[21]  →denovo
[22] ufa:
[23]  r←a[1],i,ini
------------------------------------------------------------
[0]  r←kantek;x;y;aa
[1]  x←6 12 24 36 48 60 120 180 240 360
[2]  y←,x∘.+¯4 ¯2 ¯1 0 2
[3]  r←DIVIKAN[aa],aa←y[?⍴y]
------------------------------------------------------------
[ 0]  r←odiosos;ODIOSOS;aa
[ 1]  ODIOSOS←1,2,4,7,8,11,13,14,16,19,21,22,25,26,28,31,32,35
[ 2]  ODIOSOS←ODIOSOS,37,38,41,42,44,47,49,50,52,55,56,59,61,62,64,67
[ 3]  ODIOSOS←ODIOSOS,69,70,73,74,76,79,81,82,84,87,88,91,93,94,97,98
[ 4]  ODIOSOS←ODIOSOS,100,103,104,107,109,110,112,115,117,118,121,122
[ 5]  ODIOSOS←ODIOSOS,124,127,128
[ 6]  aa←20+?40
[ 7]  r←aa,ODIOSOS[aa]
------------------------------------------------------------
[0]  r←pedemail x
[1]  →(40≠+/' '=x)/aindanao
[2]  r←80↑'Por favor, informe seu e-mail: ⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_'
[3]  →junnao
[4] aindanao:r←80↑'e-mail cadastrado: ⍀verb+',x,'+'
[5] junnao:
------------------------------------------------------------
[ 0]  r←ruthaaron;p;i;k;z
[ 1]  p←153,369,492,1682,2107,2299,2600,2783
[ 2]  p←p,6556,6811,8855,9800,12726,13775,18655,21183,24024
[ 3]  p←p,24432,24880,25839,35456,40081,43680,48203
[ 4]  p←p,48762,52554,61760,63665,64232,75140
[ 5]  i←948,1330,1520,1862,2491,3248,4185
[ 6]  i←i,4191,5560,5959,6867,8280,8463,10647,12351
[ 7]  i←i,14587,16932,17080,18490,20450,24895,26649
[ 8]  i←i,28448,28809,33019,37828,37881,41261,42624,43215
[ 9]  k←90 2⍴0
[10]  k[⍳30;1]←p
[11]  k[⍳30;2]←1
```

```
[12]  k[30+⍳30;1]←i
[13]  k[30+⍳30;2]←2
[14]  z←1000+100?50000
[15]  z←(~z∈p)/z
[16]  z←(~z∈i)/z
[17]  k[60+⍳30;1]←30↑z
[18]  k[60+⍳30;2]←0
[19]  r←k[2?90;]
-------------------------------------------------------------
[ 0]  opesq vivo014a n;CORRECAO;EVENTO;aaa;acuja;bb;dhx;esse;f;lixo1;lixonol;relat;resp;re
      su;upag;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←8 ⋄ EVENTO←'PL014   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA014←ajusta80 FOLHALA014
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA014)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[12]  xk←1 ⋄ resu←0 11⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←20 80⍴' '
[15]  f←FOLHALA014
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←1.01
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[23]  esse[19;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[20;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] ini1:
[26]  bb←germain
[27]  esse[8 9;]←2 80↑2 20⍴20 0⍎bb[;1]
[28]  resp←resp,,bb[;2]
[29]  bb←ruthaaron
[30]  esse[10 11;]←2 80↑2 20⍴20 0⍎bb[;1]
[31]  resp←resp,,bb[;2]
[32]  bb←caogato
[33]  esse[12;]←80↑20 0⍎bb[1]
[34]  resp←resp,bb[2 3]
[35]  bb←juggler
[36]  esse[13 14;]←2 80↑2 20⍴20 0⍎bb[1 2]
[37]  resp←resp,bb[3]
[38]  bb←kantek
[39]  esse[15;]←80↑20 0⍎bb[1]
[40]  resp←resp,bb[2]
[41]  bb←fibonacc
[42]  esse[16 17;]←2 80↑2 20⍴20 0⍎bb[1 2]
[43]  resp←resp,bb[3]
[44]  bb←odiosos
[45]  esse[18;]←80↑20 0⍎bb[1]
[46]  resp←resp,bb[2]
[47]  resu←resu,[1]1 11⍴resp
[48]  acuja←(f[;2]='#')/⍳1↑⍴f
[49]  f[acuja;]←esse[⍤,f[acuja;3 4],' ';]
[50]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[51]  ⍞←(⍎xk←xk+1),'-'
```

```
[52]  →testa
[53] fim:upag←(1 0+⍴f)⍴' '
[54]  →(1=≡n)/elafa
[55]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[56]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[57]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←4 0 4 0 2 0 2 0 2 0 5 0 4 0 8 0 8 0 12 0 8 0)⍀resu
[58]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[59]  →terminando
[60] elafa:aaa←(ylu,4 0 2 0 2 0 2 0 5 0 4 0 8 0 8 0 12 0 8 0⍀0 1↓resu)
[61]  lixonol←aaa ⍙FM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[62]  '!!!!!  Arquivo GPA com ',(⍀1↑⍴aaa),' linhas e ',(⍀1↓⍴aaa),' colunas'
[63] terminando:
[64]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[65]  relat[1↑⍴relat;;]←upag
[66]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[67] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[68]  lixonol←lixonol ⍙FM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[69]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo015

```
[ 0]  RRRR←AAA;E;F;RRRR;⍙001;⍙002;⍙003;⍙004;⍙005
[ 1]  E←8
[ 2]  F←1
[ 3]  ⍙001←(E<1)
[ 4]  →(~⍙001)/⍙002
[ 5]  E←E+4
[ 6] ⍙002:
[ 7]  ⍙003←(F≥6)
[ 8]  →(~⍙003)/⍙004
[ 9]  F←F-1
[10] ⍙004:
[11]  RRRR←E+F
-------------------------------------------------------------
[0]  AVISO
[1]  'A funcao vivo015a tem um limite de 80, e demora...'
-------------------------------------------------------------
[0]  RRRR←EX1;X;RRRR;⍙001;⍙002;⍙003
[1]  X←4
[2]  ⍙001←8>6
[3]  →(~⍙001)/⍙002
[4]  X←6
[5] ⍙002:
[6]  RRRR←X
-------------------------------------------------------------
[0]  RRRR←EX2;X;RRRR;⍙001;⍙002;⍙003;⍙004
[1]  ⍙001←8<7
[2]  →(~⍙001)/⍙002
[3]  X←4
[4]  →⍙003
[5] ⍙002:
[6]  X←3
[7] ⍙003:
[8]  RRRR←X
-------------------------------------------------------------
[ 0]  RRRR←EX3;X;RRRR;⍙001;⍙002;⍙003;⍙004;⍙005;⍙006
[ 1]  X←7
[ 2]  ⍙001←7>6
[ 3]  →(~⍙001)/⍙002
[ 4]  ⍙003←6≥4
[ 5]  →(~⍙003)/⍙004
```

```
[ 6]  X←2
[ 7]  →Δ005
[ 8] Δ004:
[ 9]  X←1
[10] Δ005:
[11] Δ002:
[12]  RRRR←X
-------------------------------------------------------------
[ 0]  RRRR←EX4;X;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ008;Δ009;Δ010
[ 1]  Δ001←7≤5
[ 2]  →(~Δ001)/Δ002
[ 3]  Δ003←7>5
[ 4]  →(~Δ003)/Δ004
[ 5]  X←3
[ 6]  →Δ005
[ 7] Δ004:
[ 8]  X←1
[ 9] Δ005:
[10]  →Δ006
[11] Δ002:
[12]  Δ007←6≤5
[13]  →(~Δ007)/Δ008
[14]  X←4
[15]  →Δ009
[16] Δ008:
[17]  X←2
[18] Δ009:
[19] Δ006:
[20]  RRRR←X
-------------------------------------------------------------
[0]  r←car achalincol mat
[1]  r←((∨/[2]car=mat)/⍳1↑⍴mat),(∨/[1]car=mat)/⍳1↓⍴mat
-------------------------------------------------------------
[0]  ajustatams
[1]  BEX1C←70 ajusta BEX1C
[2]  BEX1F←70 ajusta BEX1F
[3]  BEX1L←70 ajusta BEX1L
-------------------------------------------------------------
[  0]  cavaleiro015j n;acuja;bb;esse;f;lixo1;relat;resp;xixa;xk;xx
[  1]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[  2]  FOLHALA015j←80 ajusta FOLHALA015j
[  3]  relat←ΔFM'c:\apl2\VIVOBLO1'
[  4]  xk←1
[  5] testa:→(xk>n)/fim
[  6]  esse←306 80⍴' '
[  7]  f←FOLHALA015j
[  8]  esse[1;⍳⍴x]←x←' -- Cavaleiros da Tavola Redonda'
[  9]  esse[3;]←80↑4 2⍕1.03
[ 10]  esse[305;⍳8]←'@OOOOOO@'
[ 11] inica:
[ 12]  xx←ajeita corpo1
[ 13]  esse[7+⍳11;]←11 80↑⊃xx[1]
[ 14]  bb←⎕FX cpc⊃xx[2]
[ 15]  xixa←,⍤'AAA'
[ 16]  xx←ajeita corpo2
[ 17]  esse[18+⍳11;]←11 80↑⊃xx[1]
[ 18]  bb←⎕FX cpc⊃xx[2]
[ 19]  xixa←xixa+⍤'AAA'
[ 20]  xx←ajeita corpo3
[ 21]  esse[29+⍳11;]←11 80↑⊃xx[1]
[ 22]  bb←⎕FX cpc⊃xx[2]
[ 23]  xixa←xixa+⍤'AAA'
[ 24]  resp←xixa
```

```
[ 25]  xx←ajeita corpo4
[ 26]  esse[40+⍳11;]←11 80⍴⊃xx[1]
[ 27]  bb←⎕FX cpc⊃xx[2]
[ 28]  xixa←,⍤'AAA'
[ 29]  xx←ajeita corpo5
[ 30]  esse[51+⍳11;]←11 80⍴⊃xx[1]
[ 31]  bb←⎕FX cpc⊃xx[2]
[ 32]  xixa←xixa+⍤'AAA'
[ 33]  xx←ajeita corpo6
[ 34]  esse[62+⍳11;]←11 80⍴⊃xx[1]
[ 35]  bb←⎕FX cpc⊃xx[2]
[ 36]  xixa←xixa+⍤'AAA'
[ 37]  resp←resp,xixa
[ 38]  xx←ajeita corpo1
[ 39]  esse[73+⍳11;]←11 80⍴⊃xx[1]
[ 40]  bb←⎕FX cpc⊃xx[2]
[ 41]  xixa←,⍤'AAA'
[ 42]  xx←ajeita corpo2
[ 43]  esse[84+⍳11;]←11 80⍴⊃xx[1]
[ 44]  bb←⎕FX cpc⊃xx[2]
[ 45]  xixa←xixa+⍤'AAA'
[ 46]  xx←ajeita corpo3
[ 47]  esse[95+⍳11;]←11 80⍴⊃xx[1]
[ 48]  bb←⎕FX cpc⊃xx[2]
[ 49]  xixa←xixa+⍤'AAA'
[ 50]  resp←resp,xixa
[ 51]  xx←ajeita corpo4
[ 52]  esse[106+⍳11;]←11 80⍴⊃xx[1]
[ 53]  bb←⎕FX cpc⊃xx[2]
[ 54]  xixa←⍤'AAA'
[ 55]  xx←ajeita corpo5
[ 56]  esse[117+⍳11;]←11 80⍴⊃xx[1]
[ 57]  bb←⎕FX cpc⊃xx[2]
[ 58]  xixa←xixa+⍤'AAA'
[ 59]  xx←ajeita corpo6
[ 60]  esse[128+⍳11;]←11 80⍴⊃xx[1]
[ 61]  bb←⎕FX cpc⊃xx[2]
[ 62]  xixa←xixa+⍤'AAA'
[ 63]  resp←resp,xixa
[ 64]  xx←ajeita corpo1
[ 65]  esse[139+⍳11;]←11 80⍴⊃xx[1]
[ 66]  bb←⎕FX cpc⊃xx[2]
[ 67]  xixa←⍤'AAA'
[ 68]  xx←ajeita corpo2
[ 69]  esse[150+⍳11;]←11 80⍴⊃xx[1]
[ 70]  bb←⎕FX cpc⊃xx[2]
[ 71]  xixa←xixa+,⍤'AAA'
[ 72]  xx←ajeita corpo3
[ 73]  esse[161+⍳11;]←11 80⍴⊃xx[1]
[ 74]  bb←⎕FX cpc⊃xx[2]
[ 75]  xixa←xixa+⍤'AAA'
[ 76]  resp←resp,xixa
[ 77]  xx←ajeita corpo4
[ 78]  esse[172+⍳11;]←11 80⍴⊃xx[1]
[ 79]  bb←⎕FX cpc⊃xx[2]
[ 80]  xixa←⍤'AAA'
[ 81]  xx←ajeita corpo5
[ 82]  esse[183+⍳11;]←11 80⍴⊃xx[1]
[ 83]  bb←⎕FX cpc⊃xx[2]
[ 84]  xixa←xixa+⍤'AAA'
[ 85]  xx←ajeita corpo6
[ 86]  esse[194+⍳11;]←11 80⍴⊃xx[1]
[ 87]  bb←⎕FX cpc⊃xx[2]
```

```
[ 88]  xixa←xixa+⍤'AAA'
[ 89]  resp←resp,xixa
[ 90]  xx←ajeita corpo1
[ 91]  esse[205+⍳11;]←11 80⍴⊃xx[1]
[ 92]  bb←⎕FX cpc⊃xx[2]
[ 93]  xixa←⍤'AAA'
[ 94]  xx←ajeita corpo2
[ 95]  esse[216+⍳11;]←11 80⍴⊃xx[1]
[ 96]  bb←⎕FX cpc⊃xx[2]
[ 97]  xixa←xixa+,⍤'AAA'
[ 98]  xx←ajeita corpo3
[ 99]  esse[227+⍳11;]←11 80⍴⊃xx[1]
[100]  bb←⎕FX cpc⊃xx[2]
[101]  xixa←xixa+⍤'AAA'
[102]  resp←resp,xixa
[103]  xx←ajeita corpo4
[104]  esse[238+⍳11;]←11 80⍴⊃xx[1]
[105]  bb←⎕FX cpc⊃xx[2]
[106]  xixa←⍤'AAA'
[107]  xx←ajeita corpo5
[108]  esse[249+⍳11;]←11 80⍴⊃xx[1]
[109]  bb←⎕FX cpc⊃xx[2]
[110]  xixa←xixa+⍤'AAA'
[111]  xx←ajeita corpo6
[112]  esse[260+⍳11;]←11 80⍴⊃xx[1]
[113]  bb←⎕FX cpc⊃xx[2]
[114]  xixa←xixa+⍤'AAA'
[115]  resp←resp,xixa
[116]  xx←ajeita corpo1
[117]  esse[271+⍳11;]←11 80⍴⊃xx[1]
[118]  bb←⎕FX cpc⊃xx[2]
[119]  xixa←⍤'AAA'
[120]  xx←ajeita corpo2
[121]  esse[282+⍳11;]←11 80⍴⊃xx[1]
[122]  bb←⎕FX cpc⊃xx[2]
[123]  xixa←xixa+⍤'AAA'
[124]  xx←ajeita corpo3
[125]  esse[293+⍳11;]←11 80⍴⊃xx[1]
[126]  bb←⎕FX cpc⊃xx[2]
[127]  xixa←xixa+⍤'AAA'
[128]  resp←resp,xixa
[129]  acuja←(f[;2]='#')/⍳1⍴⍴f
[130]  f[acuja;⍳80]←esse[⍤,f[acuja;3 4 5],' ';]
[131]  ⍞←(⍕xk←xk+1),'-'
[132]  f←(((1⍴⍴relat),1↓⍴f)⍴relat),[1]f
[133]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)⍴'\end{document}'
[134]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)⍴'%',⍕resp
[135]  ⍴f
[136]  lixo1←f ⎕FM'c:\apl2\CA015j',('00'⍕xk-1),'.tex'
[137]  →testa
[138] fim:
------------------------------------------------------------
[  0]  r←cpc algo;nome;PILHA;nnn;saida;aspa;vv;coma;SALVA;i;j;loca;aaa
[  1]  PILHA←0 21⍴' ' ⋄ nnn←1 ⋄ saida←0 70⍴' ' ⋄ r←0 70⍴' ' ⋄ aspa←'''' ⋄ loca←''
[  2]  i←1
[  3] t1:→(i>1⍴⍴algo)/fim
[  4]  vv←vetoriza algo[i;]
[  5]  →('algoritmo'igual⊃vv[1])/ealg
[  6]  →('fimalgoritmo'igual⊃vv[1])/ealf
[  7]  →('funcao'igual⊃vv[1])/efun
[  8]  →('fimfuncao'igual⊃vv[1])/efuf
[  9]  →('leia'igual⊃vv[1])/elei
[ 10]  →('imprima'igual⊃vv[1])/eimp
```

```
[ 11]  →('devolva'igual⊃vv[1])/eimp  ⍝ em teste: sera que devolva = imprima neste contexto
       ???
[ 12]  →('se'igual⊃vv[1])/esex
[ 13]  →('senao'igual⊃vv[1])/esen
[ 14]  →('fimse'igual⊃vv[1])/esef
[ 15]  →('enquanto'igual⊃vv[1])/eenq
[ 16]  →('fimenquanto'igual⊃vv[1])/eenf
[ 17]  →('repita'igual⊃vv[1])/erep
[ 18]  →('ate'igual⊃vv[1])/eate
[ 19]  →('para'igual⊃vv[1])/epar
[ 20]  →('fimpara'igual⊃vv[1])/epaf
[ 21]  →('abandone'igual⊃vv[1])/eaba
[ 22]  →('saia'igual⊃vv[1])/esai
[ 23]  →('<-'igual⊃vv[2])/ecad
[ 24]  →('inteiro'igual⊃vv[1])/eint
[ 25]  →('real'igual⊃vv[1])/erea
[ 26]  →('logico'igual⊃vv[1])/elog
[ 27]  →('caracter'igual 8↑⊃vv[1])/ecar
[ 28]  →('vetor'igual⊃vv[1])/evet
[ 29]  r←r,[1]1 70ρ70↑(3⍕i),' - comando desconhecido'
[ 30] soma:→(i=i←i+1)/t1
[ 31] ⍝--------------algoritmo--------------
[ 32] ealg:saida←saida,[1]1 70ρ70↑⊃vv[2]
[ 33]  →soma
[ 34] ealf:→fim
[ 35] ⍝--------------funcao-----------------
[ 36] efun:
[ 37]  →(2≥ρvv)/naotem
[ 38]  coma←'RRRR←',(⊃vv[2]),' AAAA'
[ 39]  →vmesmo
[ 40] naotem:coma←'RRRR←',(⊃vv[2])
[ 41]  saida←saida,[1]1 70ρ70↑coma
[ 42]  nome←⊃vv[2]
[ 43]  →aca0
[ 44] vmesmo:
[ 45]  saida←saida,[1]1 70ρ70↑coma
[ 46]  nome←⊃vv[2]
[ 47]  j←1
[ 48] voi1:→(j>¯2+ρvv)/aca0
[ 49]  saida←saida,[1]1 70ρ70↑(⊃vv[j+2]),'←AAAA[',(3 0⍕j),']'
[ 50]  loca←loca,';',⊃vv[j+2]
[ 51]  →(j=j←j+1)/voi1
[ 52] aca0:→soma
[ 53] efuf:→fim
[ 54] ⍝---------------leia-----------------
[ 55] elei:saida←saida,[1]1 70ρ70↑aspa,'LEITURA DA VARIAVEL ',(⊃vv[2]),aspa
[ 56]  saida←saida,[1]1 70ρ70↑(⊃vv[2]),'←□'
[ 57]  →soma
[ 58] ⍝---------------imprima--------------
[ 59] eimp:→(3=ρvv)/temmsg
[ 60]  aaa←⊃vv[2]
[ 61]  →(aaa[ρaaa]=';')/juntaa
[ 62]  saida←saida,[1]1 70ρ70↑aaa
[ 63]  →soma
[ 64] juntaa:saida←saida,[1]1 70ρ70↑'□←⍕',¯1↓aaa
[ 65]  →soma
[ 66] temmsg:aaa←⊃vv[3]
[ 67]  →(aaa[ρaaa]=';')/juntab
[ 68]  saida←saida,[1]1 70ρ70↑(⊃vv[2]),' ',aaa
[ 69]  →soma
[ 70] juntab:saida←saida,[1]1 70ρ70↑'□←',(⊃vv[2]),' ,⍕',¯1↓aaa
[ 71]  →soma
[ 72] ⍝---------------atribuicao------------
```

```
[ 73] ecad:saida←saida,[1]1 70⍴70↑(⊃vv[1]),'←',⊃vv[3]
[ 74]  aaa←⊃vv[1]
[ 75]  →('['∊aaa)/soma
[ 76]  →(∨/aaa⍷loca)/soma
[ 77]  loca←loca,';',⊃vv[1]
[ 78]  →soma
[ 79] ⍝---------------se--------------------
[ 80] esex:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[ 81]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn←nnn+1
[ 82]  PILHA←(1 21⍴21↑'SE',('000'⍕nnn)),[1]PILHA
[ 83]  nnn←nnn+1
[ 84]  →soma
[ 85] ⍝--senao--
[ 86] esen:SALVA←PILHA[1;3 4 5] ⋄ PILHA←1 0↓PILHA
[ 87]  PILHA←(1 21⍴21↑'SE',('000'⍕nnn)),[1]PILHA
[ 88]  saida←saida,[1]1 70⍴70↑'→Δ','000'⍕nnn
[ 89]  nnn←nnn+1
[ 90]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[ 91]  →soma
[ 92] ⍝--fim{se}--
[ 93] esef:saida←saida,[1]1 70⍴70↑'Δ',PILHA[1;3 4 5],':'
[ 94]  PILHA←1 0↓PILHA
[ 95]  →soma
[ 96] ⍝-------------enquanto--------------------
[ 97] eenq:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[ 98]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[ 99]  nnn←nnn+1
[100]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[101]  nnn←nnn+1
[102]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[103]  nnn←nnn+1
[104]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn-2
[105]  →soma
[106] ⍝----------fim{enquanto}------------------
[107] eenf:SALVA←PILHA[1;3 4 5]
[108]  PILHA←1 0↓PILHA
[109]  saida←saida,[1]1 70⍴70↑'→Δ',PILHA[1;3 4 5]
[110]  PILHA←1 0↓PILHA
[111]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[112]  →soma
[113] ⍝----------repita-------------------------
[114] erep:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[115]  PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[116]  nnn←nnn+1
[117]  →soma
[118] ⍝-----------ate--------------------------
[119] eate:PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[120]  nnn←nnn+1
[121]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[122]  SALVA←PILHA[1;3 4 5]
[123]  PILHA←1 0↓PILHA
[124]  saida←saida,[1]1 70⍴70↑'→(Δ',('000'⍕nnn),')/Δ',SALVA
[125]  SALVA←PILHA[1;3 4 5]
[126]  PILHA←1 0↓PILHA
[127]  saida←saida,[1]1 70⍴70↑'→Δ',SALVA
[128]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn-1),':'
[129]  nnn←nnn+1 ⍝ inclusao desta linha em 19/04/06. Ainda nao suficientemente testada
[130]  →soma
[131] ⍝----------para-----------------------
[132] epar:saida←saida,[1]1 70⍴70↑(8↑⊃vv[2]),'←',8↑⊃vv[4]
[133]  PILHA←(1 21⍴21↑'PA','000'⍕nnn),[1]PILHA
[134]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[135]  nnn←nnn+1
```

```
[136]  →(8=ρvv)/tempasso
[137]  PILHA←(1 21ρ21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8↑8⍕1),[1]PILHA
[138]  →juntab
[139] tempasso:PILHA←(1 21ρ21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8 2⍕⊃vv[8]),[1]PILHA
[140] juntab:nnn←nnn+1
[141]  saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),'←',(⊃vv[2]),'≤',⍕⊃vv[6]
[142]  saida←saida,[1]1 70ρ70↑'→(~Δ',('000'⍕nnn),')/Δ','000'⍕nnn-1
[143]  nnn←nnn+1
[144]  →soma
[145] ⍝----------fim{para}------------------
[146] epaf:saida←saida,[1]1 70ρ70↑PILHA[1;5+⍳8],'←',PILHA[1;5+⍳8],'+',PILHA[1;13+⍳8]
[147]  SALVA←PILHA[1;3 4 5]
[148]  PILHA←1 0↓PILHA
[149]  saida←saida,[1]1 70ρ70↑'→Δ',PILHA[1;3 4 5]
[150]  PILHA←1 0↓PILHA
[151]  saida←saida,[1]1 70ρ70↑'Δ',SALVA,':'
[152]  →soma
[153] ⍝----------abandone--------------------
[154] eaba:→soma
[155] esai:→soma
[156] eint:→soma
[157] erea:→soma
[158] elog:→soma
[159] ecar:→soma
[160] evet:
[161]  saida←saida,[1]1 70ρ70↑(1 parte(⊃vv[2])),'←',(2 parte(⊃vv[2])),'ρ0'
[162]  →soma
[163] fim:
[164]  i←1
[165] tfim:→(i>nnn)/mesmo
[166]  loca←loca,';Δ','000'⍕i
[167]  →(i=i←i+1)/tfim
[168] mesmo:→(50>ρloca)/blz1
[169]  saida←((1↑ρsaida),20+ρloca)↑saida
[170]  saida[1;20+⍳ρloca]←loca
[171]  →pula22
[172] blz1:saida[1;20+⍳50]←50↑loca
[173] pula22:r←'_ 'edit saida
-------------------------------------------------------------
[0]  funcao EX1
[1]  X<-4
[2]  se 3=5
[3]  X<-1
[4]  fimse
[5]  RRRR<-X
[6]  fimfuncao
-------------------------------------------------------------
[ 0]  r←geraex1;g;g1
[ 1]  g1←2?8
[ 2]  g←7ρ' '
[ 3]  g[1]←1 0⍕g1[1]
[ 4]  g[2]←'<≤>≥=≠'[?6]
[ 5]  g[3]←1 0⍕3+?4
[ 6]  g[4]←1 0⍕g1[2]
[ 7]  g[5]←1 0⍕(±g[3])-?2
[ 8]  g[6]←g[3]
[ 9]  g[7]←1 0⍕(±g[3])+?2
[10]  r←g
-------------------------------------------------------------
[ 0]  r←geraex2;g;g1
[ 1]  g1←2?8
[ 2]  g←7ρ' '
[ 3]  g[1]←'<≤>≥=≠'[?6]
```

```
[ 4]  g[2]←1 0⍕3+?4
[ 5]  g[3]←1 0⍕g1[1]
[ 6]  g[4]←1 0⍕g1[2]
[ 7]  g[5]←1 0⍕(±g[2])-?2
[ 8]  g[6]←g[2]
[ 9]  g[7]←1 0⍕(±g[2])+?2
[10]  r←g
------------------------------------------------------------
[ 0]  r←geraex3;g;g1
[ 1]  g1←3?8
[ 2]  g←13⍴' '
[ 3]  g[1]←1 0⍕g1[1]
[ 4]  g[2]←'<≤>≥=≠'[?6]
[ 5]  g[3]←1 0⍕3+?4
[ 6]  g[4]←'<≤>≥=≠'[?6]
[ 7]  g[5]←1 0⍕3+?4
[ 8]  g[6]←1 0⍕g1[2]
[ 9]  g[7]←1 0⍕g1[3]
[10]  g[8]←1 0⍕(±g[3])-?2
[11]  g[9]←g[3]
[12]  g[10]←1 0⍕(±g[3])+?2
[13]  g[11]←1 0⍕(±g[5])-?2
[14]  g[12]←g[5]
[15]  g[13]←1 0⍕(±g[5])+?2
[16]  r←g
------------------------------------------------------------
[ 0]  r←geraex4;g;g1
[ 1]  g1←4?8
[ 2]  g←22⍴' '
[ 3]  g[1]←'<≤>≥=≠'[?6]
[ 4]  g[2]←1 0⍕3+?4
[ 5]  g[3]←'<≤>≥=≠'[?6]
[ 6]  g[4]←1 0⍕3+?4
[ 7]  g[5]←1 0⍕g1[1]
[ 8]  g[6]←1 0⍕g1[2]
[ 9]  g[7]←'<≤>≥=≠'[?6]
[10]  g[8]←1 0⍕3+?4
[11]  g[9]←1 0⍕g1[3]
[12]  g[10]←1 0⍕g1[4]
[13]  g[11]←1 0⍕(±g[2])-?2
[14]  g[12]←g[2]
[15]  g[13]←1 0⍕(±g[2])+?2
[16]  g[14]←1 0⍕(±g[4])-?2
[17]  g[15]←g[4]
[18]  g[16]←1 0⍕(±g[4])+?2
[19]  g[17]←1 0⍕(±g[8])-?2
[20]  g[18]←g[8]
[21]  g[19]←1 0⍕(±g[8])+?2
[22]  r←g
------------------------------------------------------------
[0]  r←a igual b;maior
[1]  maior←(1↑⍴a)⌈1↑⍴b
[2]  a←maior↑a ⋄ b←maior↑b
[3]  r←maior=+/a=b
------------------------------------------------------------
[0]  r←pedemail x
[1]  →(40≠+/' '=x)/aindanao
[2]  r←80↑'Por favor, informe seu e-mail: ⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_'
[3]  →junnao
[4] aindanao:r←80↑'e-mail cadastrado: ',x
[5] junnao:
------------------------------------------------------------
[ 0]  r←quem replace depara;de;i;j;k;onde;para
```

```
[ 1] ⍝ forma de usar: texto replace 'strin-de' 'string para'
[ 2] ⍝ obviamente eles nao precisam ter o mesmo tamanho
[ 3]  de←,⊃depara[1] ⋄ para←,⊃depara[2]
[ 4]  i←1 ⋄ r←((1↑⍴quem),200)⍴' '
[ 5] t1:→(i>1↑⍴quem)/fim
[ 6]  →(0=∨/onde←de⍷quem[i;])/naotem
[ 7]  j←1 ⋄ k←1
[ 8] t2:→(k>⍴quem[i;])/acabou
[ 9]  →(onde[k]=0)/soma
[10]  r[i;(j-1)+⍳⍴para]←para
[11]  j←j+⍴para
[12]  k←k+⍴de
[13]  →t2
[14] soma:r[i;j]←quem[i;k]
[15]  k←k+1
[16]  →(j=j←j+1)/t2
[17] naotem:r[i;]←200↑quem[i;]
[18] acabou:→(i=i←i+1)/t1
[19] fim:r←trim⍤1 r
------------------------------------------------------------
[ 0]  r←ajk resolveex1 x;t;rr;lixo;aa
[ 1]  t←(1↑⍴BEX1C)⌈(1↑⍴BEX1L)⌈1↑⍴BEX1F
[ 2]  r←(3,t,70)⍴' '
[ 3]  aa←('_',x[1])edit aa←('!',x[2])edit aa←('@',x[3])edit aa←('#',x[4])edit aa←('%',x[5]
      )edit BEX1C
[ 4]  AA←aa
[ 5]  lixo←⎕FX cpc aa
[ 6]  r[3;1;1]←1 0⍎EX1
[ 7]  aa←('_',x[1])edit aa←('!',x[2])edit aa←('@',x[3])edit aa←('#',x[4])edit aa←('%',x[6]
      )edit BEX1C
[ 8]  lixo←⎕FX cpc aa
[ 9]  r[3;1;2]←1 0⍎EX1
[10]  aa←('_',x[1])edit aa←('!',x[2])edit aa←('@',x[3])edit aa←('#',x[4])edit aa←('%',x[7]
      )edit BEX1C
[11]  lixo←⎕FX cpc aa
[12]  r[3;1;3]←1 0⍎EX1
[13]  aa←('_',x[1])edit aa←('@',x[3])edit aa←('#',x[4])edit ajk
[14]  rr←'!'achalincol aa
[15]  aa[rr[1];¯1+rr[2]+⍳6]←traduzrel x[2]
[16]  r[1;;]←(t,70)↑aa
[17]  aa←('_',x[1])edit aa←('@',x[3])edit aa←('#',x[4])edit BEX1F
[18]  rr←'!'achalincol aa
[19]  aa[rr[1];¯1+rr[2]+⍳6]←traduzrel x[2]
[20]  r[2;;]←(t,70)↑aa
------------------------------------------------------------
[ 0]  r←ajk resolveex2 x;t;rr;lixo;aa
[ 1]  t←(1↑⍴BEX2C)⌈(1↑⍴BEX2L)⌈1↑⍴BEX2F
[ 2]  r←(3,t,70)⍴' '
[ 3]  aa←('_',x[1])edit aa←('!',x[2])edit aa←('@',x[3])edit aa←('#',x[4])edit aa←('%',x[5]
      )edit BEX2C
[ 4]  AA←aa
[ 5]  lixo←⎕FX cpc aa
[ 6]  r[3;1;1]←1 0⍎EX2
[ 7]  aa←('_',x[1])edit aa←('!',x[2])edit aa←('@',x[3])edit aa←('#',x[4])edit aa←('%',x[6]
      )edit BEX2C
[ 8]  lixo←⎕FX cpc aa
[ 9]  r[3;1;2]←1 0⍎EX2
[10]  aa←('_',x[1])edit aa←('!',x[2])edit aa←('@',x[3])edit aa←('#',x[4])edit aa←('%',x[7]
      )edit BEX2C
[11]  lixo←⎕FX cpc aa
[12]  r[3;1;3]←1 0⍎EX2
[13]  aa←('!',x[2])edit aa←('@',x[3])edit aa←('#',x[4])edit ajk
[14]  rr←'_'achalincol aa
```

```
[15]  aa[rr[1];¯1+rr[2]+⍳6]←traduzrel x[1]
[16]  r[1;;]←(t,70)↑aa
[17]  aa←('!',x[2])edit aa←('@',x[3])edit aa←('#',x[4])edit BEX2F
[18]  rr←'_'achalincol aa
[19]  aa[rr[1];¯1+rr[2]+⍳6]←traduzrel x[1]
[20]  r[2;;]←(t,70)↑aa
-------------------------------------------------------------
[ 0]  r←ajk resolveex3 x;t;rr;lixo;aa
[ 1]  t←(1↑⍴BEX3C)⌈(1↑⍴BEX3L)⌈1↑⍴BEX3F
[ 2]  r←(3,t,70)⍴' '
[ 3]  aa←('_',x[1])edit aa←('!',x[2])edit aa←('@',x[3])edit aa←('#',x[4])edit aa←('%',x[5]
      )edit BEX3C
[ 4]  aa←('⋄',x[6])edit aa←('*',x[7])edit aa←('∘',x[8])edit aa←('○',x[11])edit aa
[ 5]  lixo←⎕FX cpc aa
[ 6]  r[3;1;1]←1 0⍕EX3
[ 7]  aa←('_',x[1])edit aa←('!',x[2])edit aa←('@',x[3])edit aa←('#',x[4])edit aa←('%',x[5]
      )edit BEX3C
[ 8]  aa←('⋄',x[6])edit aa←('*',x[7])edit aa←('∘',x[9])edit aa←('○',x[12])edit aa
[ 9]  lixo←⎕FX cpc aa
[10]  r[3;1;2]←1 0⍕EX3
[11]  aa←('_',x[1])edit aa←('!',x[2])edit aa←('@',x[3])edit aa←('#',x[4])edit aa←('%',x[5]
      )edit BEX3C
[12]  aa←('⋄',x[6])edit aa←('*',x[7])edit aa←('∘',x[10])edit aa←('○',x[13])edit aa
[13]  lixo←⎕FX cpc aa
[14]  r[3;1;3]←1 0⍕EX3
[15]  aa←('_',x[1])edit aa←('@',x[3])edit aa←('%',x[5])edit aa←('⋄',x[6])edit aa←('*',x[7]
      )edit ajk
[16]  rr←'!'achalincol aa
[17]  aa[rr[1];¯1+rr[2]+⍳6]←traduzrel x[2]
[18]  rr←'#'achalincol aa
[19]  aa[rr[1];¯1+rr[2]+⍳6]←traduzrel x[4]
[20]  r[1;;]←(t,70)↑aa
[21]  aa←('_',x[1])edit aa←('@',x[3])edit aa←('%',x[5])edit aa←('⋄',x[6])edit aa←('*',x[7]
      )edit BEX3F
[22]  rr←'!'achalincol aa
[23]  aa[rr[1];¯1+rr[2]+⍳6]←traduzrel x[2]
[24]  rr←'#'achalincol aa
[25]  aa[rr[1];¯1+rr[2]+⍳6]←traduzrel x[4]
[26]  r[2;;]←(t,70)↑aa
-------------------------------------------------------------
[ 0]  r←ajk resolveex4 x;t;rr;lixo;aa
[ 1]  t←(1↑⍴BEX4C)⌈(1↑⍴BEX4L)⌈1↑⍴BEX4F
[ 2]  r←(3,t,70)⍴' '
[ 3]  aa←('_',x[1])edit aa←('!',x[2])edit aa←('@',x[3])edit aa←('#',x[4])edit aa←('%',x[5]
      )edit BEX4C
[ 4]  aa←('⋄',x[6])edit aa←('*',x[7])edit aa←('+',x[8])edit aa←('⍁',x[9])edit aa←('⍈',x[10
      ])edit aa
[ 5]  aa←('⍴',x[11])edit aa←('↑',x[14])edit aa←('↓',x[17])edit aa
[ 6]  lixo←⎕FX cpc aa
[ 7]  r[3;1;1]←1 0⍕EX4
[ 8]  aa←('_',x[1])edit aa←('!',x[2])edit aa←('@',x[3])edit aa←('#',x[4])edit aa←('%',x[5]
      )edit BEX4C
[ 9]  aa←('⋄',x[6])edit aa←('*',x[7])edit aa←('+',x[8])edit aa←('⍁',x[9])edit aa←('⍈',x[10
      ])edit aa
[10]  aa←('⍴',x[12])edit aa←('↑',x[15])edit aa←('↓',x[18])edit aa
[11]  lixo←⎕FX cpc aa
[12]  r[3;1;2]←1 0⍕EX4
[13]  aa←('_',x[1])edit aa←('!',x[2])edit aa←('@',x[3])edit aa←('#',x[4])edit aa←('%',x[5]
      )edit BEX4C
[14]  aa←('⋄',x[6])edit aa←('*',x[7])edit aa←('+',x[8])edit aa←('⍁',x[9])edit aa←('⍈',x[10
      ])edit aa
[15]  aa←('⍴',x[13])edit aa←('↑',x[16])edit aa←('↓',x[19])edit aa
[16]  lixo←⎕FX cpc aa
```

```
[17]  r[3;1;3]←1 0⍕EX4
[18]  aa←('!',x[2])edit aa←('#',x[4])edit aa←('%',x[5])edit aa←('⋄',x[6])edit aa←('+',x[8]
      )edit ajk
[19]  aa←('⍞',x[9])edit aa←('⍈',x[10])edit aa
[20]  rr←'_'achalincol aa
[21]  aa[rr[1];¯1+rr[2]+⍳6]←traduzrel x[1]
[22]  rr←'@'achalincol aa
[23]  aa[rr[1];¯1+rr[2]+⍳6]←traduzrel x[3]
[24]  rr←'*'achalincol aa
[25]  aa[rr[1];¯1+rr[2]+⍳6]←traduzrel x[7]
[26]  r[1;;]←(t,70)↑aa
[27]  aa←('!',x[2])edit aa←('#',x[4])edit aa←('%',x[5])edit aa←('⋄',x[6])edit aa←('+',x[8]
      )edit BEX4F
[28]  aa←('⍞',x[9])edit aa←('⍈',x[10])edit aa
[29]  rr←'_'achalincol aa
[30]  aa[rr[1];¯1+rr[2]+⍳6]←traduzrel x[1]
[31]  rr←'@'achalincol aa
[32]  aa[rr[1];¯1+rr[2]+⍳6]←traduzrel x[3]
[33]  rr←'*'achalincol aa
[34]  aa[rr[1];¯1+rr[2]+⍳6]←traduzrel x[7]
[35]  r[2;;]←(t,70)↑aa
-------------------------------------------------------------
[ 0]  r←retra x
[ 1]  x←x replace'fimse ' '\ENDIF '
[ 2]  x←x replace'|' '\STATE '
[ 3]  x←x replace'se ' '\IF{'
[ 4]  x←x replace'entao' '}'
[ 5]  x←x replace'RRRR <- ' '\STATE escreva '
[ 6]  x←x replace'<-' '$\gets$'
[ 7]  x←x replace'<' '$<$'
[ 8]  x←x replace'>' '$>$'
[ 9]  x←x replace'≥' '$\ge$'
[10]  x←x replace'≤' '$\le$'
[11]  x←x replace'≠' '$\neq$'
[12]  x←x replace'~' '$\til$'
[13]  x←x replace'⌈' '$\lceil$'
[14]  x←x replace'÷' '$\div$'
[15]  x←x replace'fimse' '\ENDIF'
[16]  x←x replace'senao' '\ELSE'
[17]  x←x replace'×' '$\times$'
[18]  x←((1↑⍴x),60)↑x
[19]  x[1;]←60↑'\begin{algorithmic}[1]'
[20]  x[1↑⍴x;]←60↑'\end{algorithmic}'
[21]  r←x
-------------------------------------------------------------
[ 0]  tabconv;t
[ 1]  t←19 1⍴' '
[ 2]  t[1;1]←'_'
[ 3]  t[2;1]←'!'
[ 4]  t[3;1]←'@'
[ 5]  t[4;1]←'#'
[ 6]  t[5;1]←'%'
[ 7]  t[6;1]←'⋄'
[ 8]  t[7;1]←'*'
[ 9]  t[8;1]←'+'
[10]  t[9;1]←'⍞'
[11]  t[10;1]←'⍈'
[12]  t[11;1]←'⌈'
[13]  t[12;1]←'⌊'
[14]  t[13;1]←'⍳'
[15]  t[14;1]←'∘'
[16]  t[15;1]←'○'
[17]  t[16;1]←'⊗'
```

```
[18]  t[17;1]←'⍋'
[19]  t[18;1]←'⍒'
[20]  t[19;1]←'÷'
[21]  t[20;1]←'⍴'
[22]  t[21;1]←'↑'
[23]  t[22;1]←'↓'
-------------------------------------------------------------
[0]  testa c;x
[1]  x←ajeita c
[2]  x[1]
[3]  ⎕FX cpc⊃x[2]
[4]  AAA
-------------------------------------------------------------
[ 0]  r←traduzrel x
[ 1]  →(x='>')/e01
[ 2]  →(x='≥')/e02
[ 3]  →(x='<')/e03
[ 4]  →(x='≤')/e04
[ 5]  →(x='=')/e05
[ 6]  →(x='≠')/e06
[ 7] erro:'deu xabu'
[ 8]  →0
[ 9] e01:r←'$>$   '
[10]  →0
[11] e02:r←'$≮ge$ '
[12]  →0
[13] e03:r←'$<$   '
[14]  →0
[15] e04:r←'$≯le$ '
[16]  →0
[17] e05:r←'$=$   '
[18]  →0
[19] e06:r←'$≠neq$'
[20]  →0
-------------------------------------------------------------
[0]  r←trim4 x;z
[1] ⍝f corta as colunas direitas que sao brancos
[2]  →(2≠⍴⍴x)/erro
[3]  z←+/[1]x=' '
[4]  r←(z≠1↑⍴x)/[2]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
-------------------------------------------------------------
[ 0]  r←vetoriza x;i;rr;letra;aspa;nume
[ 1] ⍝ versao 1.07
[ 2]  aspa←'''' ⋄ nume←'0123456789'
[ 3]  letra←'abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ()',aspa
[ 4] ⍝ tira os brancos
[ 5]  i←1 ⋄ rr←1
[ 6] t2:→(i>¯2+⍴x)/vaiz
[ 7]  →((x[i+1]=' ')∧(x[i]∈letra)∧(x[i+2]∈nume))/mataz
[ 8]  →((x[i+1]=' ')∧(x[i]∈nume)∧(x[i+2]∈letra))/mataz
[ 9]  →((x[i]∈letra)∧(x[i+2]∈letra))/naopode
[10]  →(((x[1]='p')∨(x[1]='P'))∧(x[2]='a')∧(x[i]∈letra)∧(x[i+2]='-'))/naopode  ⍝ comando i
      ncluido para o passo negativo
[11] ⍝ os 3 testes iniciais (pPa) foram incluidos porque o comando acima estava
[12] ⍝ fazendo besteira: vetoriza 'A <- A -1' estava gerando 4 tokens e nao 3.
[13] ⍝ correcao em 13/03/12 - P.kantek
[14]  →(x[i+1]≠' ')/naopode
[15] pode:rr←rr,0
[16]  →(i=i←i+1)/t2
[17] mataz:x[i+1]←'!'
[18] naopode:rr←rr,1
```

```
[19]  →(i=i←i+1)/t2
[20] vaiz:rr←rr,1
[21]  x←rr/x
[22] ⍝ separa o sinal <-
[23]  →(2≠+/'<-'∈x)/faca
[24]  i←1 ⋄ rr←⍳0
[25] t1:→(i>¯1+⍴x)/vaix
[26]  →((x[i]='<')∧(x[i+1]='-'))/esim
[27]  rr←rr,1
[28]  →(i=i←i+1)/t1
[29] esim:rr←rr,0 1 1 0
[30]  →(i=i←i+2)/t1
[31] vaix:rr←rr,1
[32]  x←rr⌿x
[33] faca:x←'! 'edit x
[34]  r←(~' '=x)⊂x
-------------------------------------------------------------
[  0]  opesq vivo015b n;CORRECAO;EVENTO;aa;aaa;acuja;bb;cab;cc;dhx;esse;f;lixo1;lixonol;nom
       es;ql39;qlinha;relat;resp;resu;upag;xixa;xk;xx;ylu
[  1]  →(0≠⎕NC'opesq')/qveio
[  2]  opesq←10⍴' '
[  3] qveio:
[  4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[  5]  EVENTO←'PL015b  '
[  6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
       4 5],⎕TS[6]+⎕TS[7]÷1000
[  7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⌿apl2⌿',(5↑n),'.ALU' ⋄ EVENTO←n
[  8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[  9]  ylu←n grupo ylu
[ 10]  FOLHALA015b←ajusta80 FOLHALA015b
[ 11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA015b)⍴' '
[ 12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⌿apl2⌿VIVOB18F'
[ 13]  xk←1 ⋄ resu←0 8⍴0
[ 14] testa:→(xk>1↑⍴ylu)/fim
[ 15]  esse←222 80⍴' '
[ 16]  f←FOLHALA015b
[ 17]  esse[1;]←80↑dhx[1;]
[ 18]  esse[2;]←80↑dhx[2;]
[ 19]  esse[3;]←80↑4 2⍎VERSAOa←1.01
[ 20]  esse[4;]←80↑ylu[xk;⍳6]
[ 21]  →(36=1↓⍴ylu)/zebra
[ 22]  qlinha←(1=∧/[⎕IO+1]f[;⍳5]=((1↑⍴f),5)⍴'⌿#005')/⍳1↑⍴f
[ 23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[ 24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[ 25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[ 26]  →maiszebra
[ 27] zebra:
[ 28]  esse[5;]←80↑ylu[xk;6+⍳30]
[ 29] maiszebra:
[ 30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[ 31]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[ 32] ⍝ esse[305;]←80↑pedemail ylu[xk;36+⍳40]
[ 33]  esse[221;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[ 34]  esse[222;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[ 35] inica:
[ 36]  xx←geraex1
[ 37]  bb←BEX1L resolveex1 xx
[ 38]  esse[7+⍳10;]←10 80↑bb[1;;]
[ 39]  esse[17+⍳8;]←8 80↑bb[2;;]
[ 40]  esse[26;1]←xx[5]
[ 41]  esse[27;1]←xx[6]
[ 42]  esse[28;1]←xx[7]
[ 43]  resp←resp,⍪bb[3;1;1 2 3]
```

```
[ 44]  xx←geraex2
[ 45]  bb←BEX2L resolveex2 xx
[ 46]  esse[28+⍳11;]←11 80↑bb[1;;]
[ 47]  esse[39+⍳8;]←8 80↑bb[2;;]
[ 48]  esse[48;1]←xx[5]
[ 49]  esse[49;1]←xx[6]
[ 50]  esse[50;1]←xx[7]
[ 51]  resp←resp,⊂bb[3;1;1 2 3]
[ 52]  xx←geraex3
[ 53]  bb←BEX3L resolveex3 xx
[ 54]  esse[50+⍳14;]←14 80↑bb[1;;]
[ 55]  esse[64+⍳11;]←11 80↑bb[2;;]
[ 56]  esse[76;1]←xx[8]
[ 57]  esse[77;1]←xx[9]
[ 58]  esse[78;1]←xx[10]
[ 59]  esse[79;1]←xx[11]
[ 60]  esse[80;1]←xx[12]
[ 61]  esse[81;1]←xx[13]
[ 62]  resp←resp,⊂bb[3;1;1 2 3]
[ 63]  xx←geraex4
[ 64]  bb←BEX4L resolveex4 xx
[ 65]  esse[81+⍳19;]←19 80↑bb[1;;]
[ 66]  esse[100+⍳15;]←15 80↑bb[2;;]
[ 67]  esse[116;1]←xx[11]
[ 68]  esse[117;1]←xx[12]
[ 69]  esse[118;1]←xx[13]
[ 70]  esse[119;1]←xx[14]
[ 71]  esse[120;1]←xx[15]
[ 72]  esse[121;1]←xx[16]
[ 73]  esse[122;1]←xx[17]
[ 74]  esse[123;1]←xx[18]
[ 75]  esse[124;1]←xx[19]
[ 76]  resp←resp,⊂bb[3;1;1 2 3]
[ 77]  xx←geraex4
[ 78]  bb←BEX4L resolveex4 xx
[ 79]  esse[124+⍳19;]←19 80↑bb[1;;]
[ 80]  esse[143+⍳15;]←15 80↑bb[2;;]
[ 81]  esse[159;1]←xx[11]
[ 82]  esse[160;1]←xx[12]
[ 83]  esse[161;1]←xx[13]
[ 84]  esse[162;1]←xx[14]
[ 85]  esse[163;1]←xx[15]
[ 86]  esse[164;1]←xx[16]
[ 87]  esse[165;1]←xx[17]
[ 88]  esse[166;1]←xx[18]
[ 89]  esse[167;1]←xx[19]
[ 90]  resp←resp,⊂bb[3;1;1 2 3]
[ 91]  xx←geraex3
[ 92]  bb←BEX3L resolveex3 xx
[ 93]  esse[167+⍳14;]←14 80↑bb[1;;]
[ 94]  esse[181+⍳11;]←11 80↑bb[2;;]
[ 95]  esse[193;1]←xx[8]
[ 96]  esse[194;1]←xx[9]
[ 97]  esse[195;1]←xx[10]
[ 98]  esse[196;1]←xx[11]
[ 99]  esse[197;1]←xx[12]
[100]  esse[198;1]←xx[13]
[101]  resp←resp,⊂bb[3;1;1 2 3]
[102]  xx←geraex2
[103]  bb←BEX2L resolveex2 xx
[104]  esse[198+⍳11;]←11 80↑bb[1;;]
[105]  esse[209+⍳8;]←8 80↑bb[2;;]
[106]  esse[218;1]←xx[5]
```

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[107]  esse[219;1]←xx[6]
[108]  esse[220;1]←xx[7]
[109]  resp←resp,⍪bb[3;1;1 2 3]
[110]  resu←resu,[1]1 8⍴resp
[111]  acuja←(f[;2]='#')/⍳1↑⍴f
[112]  f[acuja;⍳80]←esse[⍪,f[acuja;3 4 5],' ';]
[113]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[114]  ⎕←(⍕xk←xk+1),'-'
[115]  →testa
[116] fim:upag←(1 0+⍴f)⍴' '
[117]  →(1=≡n)/elafa
[118]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[119]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[120]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←16⍴4 0)⍕resu
[121]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[122]  →terminando
[123] elafa:aaa←(ylu,(14⍴4 0)⍕0 1↓resu)
[124]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[125]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[126] terminando:
[127]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[128]  relat[1↑⍴relat;;]←upag
[129]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[130] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[131]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[132]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[  0]  opesq vivo015d n;CORRECAO;EVENTO;aa;aaa;acuja;bb;cab;cc;dhx;esse;f;lixo1;lixonol;nom
       es;ql39;qlinha;relat;resp;resu;upag;xixa;xk;xx;ylu
[  1]  →(0≠⎕NC'opesq')/qveio
[  2]  opesq←10⍴' '
[  3] qveio:
[  4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[  5]  EVENTO←'PL015d  '
[  6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
       4 5],⎕TS[6]+⎕TS[7]÷1000
[  7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[  8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[  9]  ylu←n grupo ylu
[ 10]  FOLHALA015d←ajusta80 FOLHALA015d
[ 11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA015d)⍴' '
[ 12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[ 13]  xk←1 ⋄ resu←0 16⍴0
[ 14] testa:→(xk>1↑⍴ylu)/fim
[ 15]  esse←281 80⍴' '
[ 16]  f←FOLHALA015d
[ 17]  esse[1;]←80↑dhx[1;]
[ 18]  esse[2;]←80↑dhx[2;]
[ 19]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[ 20]  esse[4;]←80↑ylu[xk;⍳6]
[ 21]  →(36=1↓⍴ylu)/zebra
[ 22]  qlinha←(1=∧/[⎕IO+1]f[;⍳5]=((1↑⍴f),5)⍴'\#005')/⍳1↑⍴f
[ 23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[ 24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[ 25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[ 26]  →maiszebra
[ 27] zebra:
[ 28]  esse[5;]←80↑ylu[xk;6+⍳30]
[ 29] maiszebra:
[ 30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[ 31]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[ 32] ⍝ esse[305;]←80↑pedemail ylu[xk;36+⍳40]
[ 33]  esse[280;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
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[ 34]  esse[281;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[ 35] inica:
[ 36]  xx←geraex1
[ 37]  bb←DEX1L resolveex1 xx
[ 38]  esse[7+⍳10;]←10 80↑bb[1;;]
[ 39]  esse[18;1]←xx[5]
[ 40]  esse[19;1]←xx[6]
[ 41]  esse[20;1]←xx[7]
[ 42]  resp←resp,⊂bb[3;1;1 2 3]
[ 43]  xx←geraex2
[ 44]  bb←DEX2L resolveex2 xx
[ 45]  esse[20+⍳11;]←11 80↑bb[1;;]
[ 46]  esse[32;1]←xx[5]
[ 47]  esse[33;1]←xx[6]
[ 48]  esse[34;1]←xx[7]
[ 49]  resp←resp,⊂bb[3;1;1 2 3]
[ 50]  xx←geraex3
[ 51]  bb←DEX3L resolveex3 xx
[ 52]  esse[34+⍳14;]←14 80↑bb[1;;]
[ 53]  esse[49;1]←xx[8]
[ 54]  esse[50;1]←xx[9]
[ 55]  esse[51;1]←xx[10]
[ 56]  esse[52;1]←xx[11]
[ 57]  esse[53;1]←xx[12]
[ 58]  esse[54;1]←xx[13]
[ 59]  resp←resp,⊂bb[3;1;1 2 3]
[ 60]  xx←geraex4
[ 61]  bb←DEX4L resolveex4 xx
[ 62]  esse[54+⍳19;]←19 80↑bb[1;;]
[ 63]  esse[74;1]←xx[11]
[ 64]  esse[75;1]←xx[12]
[ 65]  esse[76;1]←xx[13]
[ 66]  esse[77;1]←xx[14]
[ 67]  esse[78;1]←xx[15]
[ 68]  esse[79;1]←xx[16]
[ 69]  esse[80;1]←xx[17]
[ 70]  esse[81;1]←xx[18]
[ 71]  esse[82;1]←xx[19]
[ 72]  resp←resp,⊂bb[3;1;1 2 3]
[ 73]  xx←geraex1
[ 74]  bb←DEX1L resolveex1 xx
[ 75]  esse[82+⍳10;]←10 80↑bb[1;;]
[ 76]  esse[93;1]←xx[5]
[ 77]  esse[94;1]←xx[6]
[ 78]  esse[95;1]←xx[7]
[ 79]  resp←resp,⊂bb[3;1;1 2 3]
[ 80]  xx←geraex2
[ 81]  bb←DEX2L resolveex2 xx
[ 82]  esse[95+⍳11;]←11 80↑bb[1;;]
[ 83]  esse[107;1]←xx[5]
[ 84]  esse[108;1]←xx[6]
[ 85]  esse[109;1]←xx[7]
[ 86]  resp←resp,⊂bb[3;1;1 2 3]
[ 87]  xx←geraex3
[ 88]  bb←DEX3L resolveex3 xx
[ 89]  esse[109+⍳14;]←14 80↑bb[1;;]
[ 90]  esse[124;1]←xx[8]
[ 91]  esse[125;1]←xx[9]
[ 92]  esse[126;1]←xx[10]
[ 93]  esse[127;1]←xx[11]
[ 94]  esse[128;1]←xx[12]
[ 95]  esse[129;1]←xx[13]
[ 96]  resp←resp,⊂bb[3;1;1 2 3]
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[ 97]  xx←geraex4
[ 98]  bb←DEX4L resolveex4 xx
[ 99]  esse[129+⍳19;]←19 80↑bb[1;;]
[100]  esse[149;1]←xx[11]
[101]  esse[150;1]←xx[12]
[102]  esse[151;1]←xx[13]
[103]  esse[152;1]←xx[14]
[104]  esse[153;1]←xx[15]
[105]  esse[154;1]←xx[16]
[106]  esse[155;1]←xx[17]
[107]  esse[156;1]←xx[18]
[108]  esse[157;1]←xx[19]
[109]  resp←resp,⊂bb[3;1;1 2 3]
[110]  xx←geraex1
[111]  bb←DEX1L resolveex1 xx
[112]  esse[157+⍳10;]←10 80↑bb[1;;]
[113]  esse[168;1]←xx[5]
[114]  esse[169;1]←xx[6]
[115]  esse[170;1]←xx[7]
[116]  resp←resp,⊂bb[3;1;1 2 3]
[117]  xx←geraex2
[118]  bb←DEX2L resolveex2 xx
[119]  esse[170+⍳11;]←11 80↑bb[1;;]
[120]  esse[182;1]←xx[5]
[121]  esse[183;1]←xx[6]
[122]  esse[184;1]←xx[7]
[123]  resp←resp,⊂bb[3;1;1 2 3]
[124]  xx←geraex3
[125]  bb←DEX3L resolveex3 xx
[126]  esse[184+⍳14;]←14 80↑bb[1;;]
[127]  esse[199;1]←xx[8]
[128]  esse[200;1]←xx[9]
[129]  esse[201;1]←xx[10]
[130]  esse[202;1]←xx[11]
[131]  esse[203;1]←xx[12]
[132]  esse[204;1]←xx[13]
[133]  resp←resp,⊂bb[3;1;1 2 3]
[134]  xx←geraex4
[135]  bb←DEX4L resolveex4 xx
[136]  esse[204+⍳19;]←19 80↑bb[1;;]
[137]  esse[224;1]←xx[11]
[138]  esse[225;1]←xx[12]
[139]  esse[226;1]←xx[13]
[140]  esse[227;1]←xx[14]
[141]  esse[228;1]←xx[15]
[142]  esse[229;1]←xx[16]
[143]  esse[230;1]←xx[17]
[144]  esse[231;1]←xx[18]
[145]  esse[232;1]←xx[19]
[146]  resp←resp,⊂bb[3;1;1 2 3]
[147]  xx←geraex1
[148]  bb←DEX1L resolveex1 xx
[149]  esse[232+⍳10;]←10 80↑bb[1;;]
[150]  esse[243;1]←xx[5]
[151]  esse[244;1]←xx[6]
[152]  esse[245;1]←xx[7]
[153]  resp←resp,⊂bb[3;1;1 2 3]
[154]  xx←geraex2
[155]  bb←DEX2L resolveex2 xx
[156]  esse[245+⍳11;]←11 80↑bb[1;;]
[157]  esse[257;1]←xx[5]
[158]  esse[258;1]←xx[6]
[159]  esse[259;1]←xx[7]
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[160]  resp←resp,⍪bb[3;1;1 2 3]
[161]  xx←geraex3
[162]  bb←DEX3L resolveex3 xx
[163]  esse[259+⍳14;]←14 80↑bb[1;;]
[164]  esse[274;1]←xx[8]
[165]  esse[275;1]←xx[9]
[166]  esse[276;1]←xx[10]
[167]  esse[277;1]←xx[11]
[168]  esse[278;1]←xx[12]
[169]  esse[279;1]←xx[13]
[170]  resp←resp,⍪bb[3;1;1 2 3]
[171]  resu←resu,[1]1 16⍴resp
[172]  acuja←(f[;2]='#')/⍳1↑⍴f
[173]  f[acuja;⍳80]←esse[⍪,f[acuja;3 4 5],' ';]
[174]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[175]  ⎕←(⍕xk←xk+1),'-'
[176]  →testa
[177] fim:upag←(1 0+⍴f)⍴' '
[178]  →(1=≡n)/elafa
[179]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[180]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[181]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←32⍴4 0)⍉resu
[182]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[183]  →terminando
[184] elafa:aaa←(ylu,(30⍴4 0)⍉0 1↓resu)
[185]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[186]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[187] terminando:
[188]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[189]  relat[1↑⍴relat;;]←upag
[190]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[191] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[192]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[193]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[  0]  opesq vivo015j n;CORRECAO;EVENTO;aa;aaa;acuja;bb;cab;cc;dhx;esse;f;lixo1;lixonol;ql3
       9;qlinha;qnomes;relat;resp;resu;upag;xixa;xk;xx;ylu
[  1]  →(0≠⎕NC'opesq')/qveio
[  2]  opesq←10⍴' '
[  3] qveio:
[  4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[  5]  EVENTO←'PL015j  '
[  6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
       4 5],⎕TS[6]+⎕TS[7]÷1000
[  7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[  8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍉⍳n
[  9]  ylu←n grupo ylu
[ 10]  FOLHALA015j←ajusta80 FOLHALA015j
[ 11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA015j)⍴' '
[ 12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[ 13]  xk←1 ⋄ resu←0 10⍴0
[ 14] testa:→(xk>1↑⍴ylu)/fim
[ 15]  esse←306 80⍴' '
[ 16]  f←FOLHALA015j
[ 17]  esse[1;]←80↑dhx[1;]
[ 18]  esse[2;]←80↑dhx[2;]
[ 19]  esse[3;]←80↑4 2⍕VERSAOa←1.03 ⍝ a 1.02 tem erro...
[ 20]  esse[4;]←80↑ylu[xk;⍳6]
[ 21]  →(36=1↓⍴ylu)/zebra
[ 22]  qlinha←(1=∧/[⎕IO+1]f[;⍳5]=((1↑⍴f),5)⍴'\#005')/⍳1↑⍴f
[ 23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[ 24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[ 25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
```

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[ 26]  →maiszebra
[ 27] zebra:
[ 28]  esse[5;]←80↑ylu[xk;6+⍳30]
[ 29] maiszebra:
[ 30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[ 31]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[ 32] ⍝ esse[305;]←80↑pedemail ylu[xk;36+⍳40]
[ 33]  esse[305;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[ 34]  esse[306;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[ 35] inica:
[ 36]  xx←ajeita corpo1
[ 37]  esse[7+⍳11;]←11 80↑⊃xx[1]
[ 38]  bb←⎕FX cpc⊃xx[2]
[ 39]  xixa←,⍠'AAA'
[ 40]  xx←ajeita corpo2
[ 41]  esse[18+⍳11;]←11 80↑⊃xx[1]
[ 42]  bb←⎕FX cpc⊃xx[2]
[ 43]  xixa←xixa+⍠'AAA'
[ 44]  xx←ajeita corpo3
[ 45]  esse[29+⍳11;]←11 80↑⊃xx[1]
[ 46]  bb←⎕FX cpc⊃xx[2]
[ 47]  xixa←xixa+⍠'AAA'
[ 48]  resp←resp,xixa
[ 49]  xx←ajeita corpo4
[ 50]  esse[40+⍳11;]←11 80↑⊃xx[1]
[ 51]  bb←⎕FX cpc⊃xx[2]
[ 52]  xixa←,⍠'AAA'
[ 53]  xx←ajeita corpo5
[ 54]  esse[51+⍳11;]←11 80↑⊃xx[1]
[ 55]  bb←⎕FX cpc⊃xx[2]
[ 56]  xixa←xixa+⍠'AAA'
[ 57]  xx←ajeita corpo6
[ 58]  esse[62+⍳11;]←11 80↑⊃xx[1]
[ 59]  bb←⎕FX cpc⊃xx[2]
[ 60]  xixa←xixa+⍠'AAA'
[ 61]  resp←resp,xixa
[ 62]  xx←ajeita corpo1
[ 63]  esse[73+⍳11;]←11 80↑⊃xx[1]
[ 64]  bb←⎕FX cpc⊃xx[2]
[ 65]  xixa←,⍠'AAA'
[ 66]  xx←ajeita corpo2
[ 67]  esse[84+⍳11;]←11 80↑⊃xx[1]
[ 68]  bb←⎕FX cpc⊃xx[2]
[ 69]  xixa←xixa+⍠'AAA'
[ 70]  xx←ajeita corpo3
[ 71]  esse[95+⍳11;]←11 80↑⊃xx[1]
[ 72]  bb←⎕FX cpc⊃xx[2]
[ 73]  xixa←xixa+⍠'AAA'
[ 74]  resp←resp,xixa
[ 75]  xx←ajeita corpo4
[ 76]  esse[106+⍳11;]←11 80↑⊃xx[1]
[ 77]  bb←⎕FX cpc⊃xx[2]
[ 78]  xixa←⍠'AAA'
[ 79]  xx←ajeita corpo5
[ 80]  esse[117+⍳11;]←11 80↑⊃xx[1]
[ 81]  bb←⎕FX cpc⊃xx[2]
[ 82]  xixa←xixa+⍠'AAA'
[ 83]  xx←ajeita corpo6
[ 84]  esse[128+⍳11;]←11 80↑⊃xx[1]
[ 85]  bb←⎕FX cpc⊃xx[2]
[ 86]  xixa←xixa+⍠'AAA'
[ 87]  resp←resp,xixa
[ 88]  xx←ajeita corpo1
```

```
[ 89]  esse[139+⍳11;]←11 80⍴⊃xx[1]
[ 90]  bb←⎕FX cpc⊃xx[2]
[ 91]  xixa←⍤'AAA'
[ 92]  xx←ajeita corpo2
[ 93]  esse[150+⍳11;]←11 80⍴⊃xx[1]
[ 94]  bb←⎕FX cpc⊃xx[2]
[ 95]  xixa←xixa+,⍤'AAA'
[ 96]  xx←ajeita corpo3
[ 97]  esse[161+⍳11;]←11 80⍴⊃xx[1]
[ 98]  bb←⎕FX cpc⊃xx[2]
[ 99]  xixa←xixa+⍤'AAA'
[100]  resp←resp,xixa
[101]  xx←ajeita corpo4
[102]  esse[172+⍳11;]←11 80⍴⊃xx[1]
[103]  bb←⎕FX cpc⊃xx[2]
[104]  xixa←⍤'AAA'
[105]  xx←ajeita corpo5
[106]  esse[183+⍳11;]←11 80⍴⊃xx[1]
[107]  bb←⎕FX cpc⊃xx[2]
[108]  xixa←xixa+⍤'AAA'
[109]  xx←ajeita corpo6
[110]  esse[194+⍳11;]←11 80⍴⊃xx[1]
[111]  bb←⎕FX cpc⊃xx[2]
[112]  xixa←xixa+⍤'AAA'
[113]  resp←resp,xixa
[114]  xx←ajeita corpo1
[115]  esse[205+⍳11;]←11 80⍴⊃xx[1]
[116]  bb←⎕FX cpc⊃xx[2]
[117]  xixa←⍤'AAA'
[118]  xx←ajeita corpo2
[119]  esse[216+⍳11;]←11 80⍴⊃xx[1]
[120]  bb←⎕FX cpc⊃xx[2]
[121]  xixa←xixa+,⍤'AAA'
[122]  xx←ajeita corpo3
[123]  esse[227+⍳11;]←11 80⍴⊃xx[1]
[124]  bb←⎕FX cpc⊃xx[2]
[125]  xixa←xixa+⍤'AAA'
[126]  resp←resp,xixa
[127]  xx←ajeita corpo4
[128]  esse[238+⍳11;]←11 80⍴⊃xx[1]
[129]  bb←⎕FX cpc⊃xx[2]
[130]  xixa←⍤'AAA'
[131]  xx←ajeita corpo5
[132]  esse[249+⍳11;]←11 80⍴⊃xx[1]
[133]  bb←⎕FX cpc⊃xx[2]
[134]  xixa←xixa+⍤'AAA'
[135]  xx←ajeita corpo6
[136]  esse[260+⍳11;]←11 80⍴⊃xx[1]
[137]  bb←⎕FX cpc⊃xx[2]
[138]  xixa←xixa+⍤'AAA'
[139]  resp←resp,xixa
[140]  xx←ajeita corpo1
[141]  esse[271+⍳11;]←11 80⍴⊃xx[1]
[142]  bb←⎕FX cpc⊃xx[2]
[143]  xixa←⍤'AAA'
[144]  xx←ajeita corpo2
[145]  esse[282+⍳11;]←11 80⍴⊃xx[1]
[146]  bb←⎕FX cpc⊃xx[2]
[147]  xixa←xixa+⍤'AAA'
[148]  xx←ajeita corpo3
[149]  esse[293+⍳11;]←11 80⍴⊃xx[1]
[150]  bb←⎕FX cpc⊃xx[2]
[151]  xixa←xixa+⍤'AAA'
```

```
[152]  resp←resp,xixa
[153]  resu←resu,[1]1 10ρresp
[154]  acuja←(f[;2]='#')/ι1↑ρf
[155]  f[acuja;ι80]←esse[⍋,f[acuja;3 4 5],' ';]
[156]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'⍀newpage'
[157]  ⍞←(⍕xk←xk+1),'-'
[158]  →testa
[159] fim:upag←(1 0+ρf)ρ' '
[160]  →(1=≡n)/elafa
[161]  upag[1;]←(1↓ρupag)↑'⍀begin{verbatim}'
[162]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[163]  upag[2+ι1↑ρresu;ι+/lixo1]←(lixo1←4 0 10 0 4 0 4 0 6 0 4 0 4 0 6 0 4 0 4 0)⍕resu
[164]  upag[3+1↑ρresu;]←(1↓ρupag)↑'⍀end{verbatim}'
[165]  →terminando
[166] elafa:aaa←(ylu,4 0 4 0 4 0 6 0 4 0 4 0 6 0 4 0 4 0⍕0 1↓resu)
[167]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[168]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[169] terminando:
[170]  upag[1↑ρupag;]←(1↓ρupag)↑'⍀end{document}'
[171]  relat[1↑ρrelat;;]←upag
[172]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[173] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[174]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[175]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo016

```
[ 0]  RRRR←AAA;G;B;F;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ008;Δ009
[ 1]  G←6
[ 2]  B←8
[ 3]  F←2+4
[ 4]  Δ001←((G>B)∨(F<12))
[ 5]  →(~Δ001)/Δ002
[ 6]  Δ003←(B≥3)
[ 7]  →(~Δ003)/Δ004
[ 8]  F←F+2
[ 9] Δ004:
[10]  F←F+3
[11] Δ002:
[12]  Δ005←(G≤5)
[13]  →(~Δ005)/Δ006
[14]  Δ007←(((B+2)>6)∧(F>3))
[15]  →(~Δ007)/Δ008
[16]  B←B+2
[17] Δ008:
[18] Δ006:
[19]  G←G+1
[20]  RRRR←G+B+(2×F)
-------------------------------------------------------------
[0]  AVISO
[1]  'demora um pouco...'
-------------------------------------------------------------
[ 0]  r←ajeita8 x;z;koisa;meia
[ 1]  x←x replace('aa'(2 0⍕?8))
[ 2]  x←x replace('bb'(2 0⍕?8))
[ 3]  x←x replace('cc'(2 0⍕?8))
[ 4]  x←x replace('dd'(2 0⍕?8))
[ 5]  x←x replace('ee'(2 0⍕?6))
[ 6]  x←x replace('ff'(2 0⍕?8))
[ 7]  x←x replace('gg'(2 0⍕?8))
[ 8]  x←x replace('hh'(2 0⍕?8))
```

```
[ 9]  z←x replace('ii'(2 0⍕?8))
[10]  z←((1↑⍴z),60)↑z
[11]  koisa←(1 60⍴60↑'funcao AAA'),[1]z,[1]1 60⍴60↑'fimfuncao'
[12]  meia←retra8 koisa
[13]  koisa←koisa replace'entao' ' '
[14]  r←(meia('| 'edit koisa))
------------------------------------------------------------
[ 0]  cavaleiro016h n;acuja;bb;busao;esse;f;lixo1;relat;resp;xixa;xk;xx
[ 1]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 2]  FOLHALA016h←80 ajusta FOLHALA016h
[ 3]  relat←ΔFM'c:\apl2\VIVOBLO1'
[ 4]  xk←1
[ 5] testa:→(xk>n)/fim
[ 6]  esse←324 80⍴' '
[ 7]  f←FOLHALA016h
[ 8]  esse[1;⍳⍴x]←x←' -- Cavaleiros da Tavola Redonda'
[ 9]  esse[3;]←80↑4 2⍕1.04
[10]  esse[323;⍳8]←'@OOOOOO@'
[11] inica:
[12]  xx←gereh
[13]  bb←⎕FX cpc tradhc xx
[14]  xixa←,⍪'AAA'
[15]  busao←(1 80⍴80↑'\paragraph{1.}'),[1]tradhl xx
[16]  xx←gereh
[17]  bb←⎕FX cpc tradhc xx
[18]  xixa←xixa,⍪'AAA'
[19]  busao←busao,[1](1 80⍴80↑'\paragraph{2.}'),[1]tradhl xx
[20]  xx←gereh
[21]  bb←⎕FX cpc tradhc xx
[22]  xixa←xixa,⍪'AAA'
[23]  busao←busao,[1](1 80⍴80↑'\paragraph{3.}'),[1]tradhl xx
[24]  xx←gereh
[25]  bb←⎕FX cpc tradhc xx
[26]  xixa←xixa,⍪'AAA'
[27]  busao←busao,[1](1 80⍴80↑'\paragraph{4.}'),[1]tradhl xx
[28]  xx←gereh
[29]  bb←⎕FX cpc tradhc xx
[30]  xixa←xixa,⍪'AAA'
[31]  busao←busao,[1](1 80⍴80↑'\paragraph{5.}'),[1]tradhl xx
[32]  xx←gereh
[33]  bb←⎕FX cpc tradhc xx
[34]  xixa←xixa,⍪'AAA'
[35]  busao←busao,[1](1 80⍴80↑'\paragraph{6.}'),[1]tradhl xx
[36]  xx←gereh
[37]  bb←⎕FX cpc tradhc xx
[38]  xixa←xixa,⍪'AAA'
[39]  busao←busao,[1](1 80⍴80↑'\paragraph{7.}'),[1]tradhl xx
[40]  xx←gereh
[41]  bb←⎕FX cpc tradhc xx
[42]  xixa←xixa,⍪'AAA'
[43]  busao←busao,[1](1 80⍴80↑'\paragraph{8.}'),[1]tradhl xx
[44]  xx←gereh
[45]  bb←⎕FX cpc tradhc xx
[46]  xixa←xixa,⍪'AAA'
[47]  busao←busao,[1](1 80⍴80↑'\paragraph{9.}'),[1]tradhl xx
[48]  →(315≥1↑⍴busao)/blzinha
[49]  '&'
[50]  →inica
[51] blzinha:
[52]  esse[7+⍳315;]←315 80↑busao
[53]  resp←'¯-'edit⍕xixa
[54]  acuja←(f[;2]='#')/⍳1↑⍴f
[55]  f[acuja;⍳80]←esse[⍪,f[acuja;3 4 5],' ';]
```

```
[56]  ⍞←(⍕xk←xk+1),'-'
[57]  f←(((1↑⍴relat),1↓⍴f)↑relat),[1]f
[58]  f←f,[1](1,1↓⍴f)⍴(1↑⍴f)↑'\end{document}'
[59]  f←f,[1](1,1↓⍴f)⍴(1↑⍴f)↑'%',resp
[60]  lixo1←f ⎕FM'c:\apl2\CA016h',('00'⍕xk-1),'.tex'
[61]  →testa
[62] fim:
------------------------------------------------------------
[  0]  r←cpc algo;nome;PILHA;nnn;saida;aspa;vv;coma;SALVA;i;j;loca;aaa;pn;pna
[  1] ⍝ versao 1.10
[  2]  PILHA←0 21⍴' ' ⋄ nnn←1 ⋄ saida←0 70⍴' ' ⋄ r←0 70⍴' ' ⋄ aspa←'''' ⋄ loca←'' ⋄ pna←'≤'
[  3]  →(1=⍴⍴algo)/erro90
[  4]  i←1
[  5] t1:→(i>1↑⍴algo)/fim
[  6]  →(algo[i;1]≠'α')/oraviva
[  7]  saida←saida,[1]1 70⍴70↑1↓algo[i;]
[  8]  →(i=i←i+1)/t1
[  9] oraviva:vv←vetoriza algo[i;]
[ 10]  →('algoritmo'igual⊃vv[1])/ealg
[ 11]  →('fim{algoritmo}'igual⊃vv[1])/ealf
[ 12]  →('fimalgoritmo'igual⊃vv[1])/ealf
[ 13]  →('funcao'igual⊃vv[1])/efun
[ 14]  →('fim{funcao}'igual⊃vv[1])/efuf
[ 15]  →('fimfuncao'igual⊃vv[1])/efuf
[ 16]  →('leia'igual⊃vv[1])/elei
[ 17]  →('imprima'igual⊃vv[1])/eimp
[ 18]  →('escreva'igual⊃vv[1])/eimp ⍝ para compatibilizar com o VG = 19/06/08
[ 19]  →('devolva'igual⊃vv[1])/eimp  ⍝ em teste: sera que devolva = imprima neste contexto
       ???
[ 20]  →('se'igual⊃vv[1])/esex
[ 21]  →('senao'igual⊃vv[1])/esen
[ 22]  →('fim{se}'igual⊃vv[1])/esef
[ 23]  →('fimse'igual⊃vv[1])/esef
[ 24]  →('enquanto'igual⊃vv[1])/eenq
[ 25]  →('fim{enquanto}'igual⊃vv[1])/eenf
[ 26]  →('fimenquanto'igual⊃vv[1])/eenf
[ 27]  →('repita'igual⊃vv[1])/erep
[ 28]  →('ate'igual⊃vv[1])/eate
[ 29]  →('para'igual⊃vv[1])/epar
[ 30]  →('fim{para}'igual⊃vv[1])/epaf
[ 31]  →('fimpara'igual⊃vv[1])/epaf
[ 32]  →('abandone'igual⊃vv[1])/eaba
[ 33]  →('saia'igual⊃vv[1])/esai
[ 34]  →('<-'igual⊃vv[2])/ecad
[ 35]  →('inteiro'igual⊃vv[1])/eint
[ 36]  →('real'igual⊃vv[1])/erea
[ 37]  →('logico'igual⊃vv[1])/elog
[ 38]  →('caracter'igual 8↑⊃vv[1])/ecar
[ 39]  →('vetor'igual⊃vv[1])/evet
[ 40]  →('vetora'igual⊃vv[1])/evaa
[ 41]  r←r,[1]1 70⍴70↑(3⍕i),' - comando desconhecido'
[ 42] soma:→(i=i←i+1)/t1
[ 43] ⍝--------------algoritmo--------------
[ 44] ealg:saida←saida,[1]1 70⍴70↑⊃vv[2]
[ 45]  →soma
[ 46] ealf:→fim
[ 47] ⍝--------------funcao-----------------
[ 48] efun:
[ 49]  →(2≥⍴vv)/naotem
[ 50]  coma←'RRRR←',(⊃vv[2]),' AAAA'
[ 51]  →vmesmo
[ 52] naotem:coma←'RRRR←',(⊃vv[2])
[ 53]  saida←saida,[1]1 70⍴70↑coma
```

```
[ 54]  nome←⊃vv[2]
[ 55]  →aca0
[ 56] vmesmo:
[ 57]  saida←saida,[1]1 70ρ70↑coma
[ 58]  nome←⊃vv[2]
[ 59]  j←1
[ 60] voi1:→(j>¯2+ρvv)/aca0
[ 61]  saida←saida,[1]1 70ρ70↑(⊃vv[j+2]),'←AAAA[',(3 0⍕j),']'
[ 62]  loca←loca,';',⊃vv[j+2]
[ 63]  →(j=j←j+1)/voi1
[ 64] aca0:→soma
[ 65] efuf:→fim
[ 66] ⍝---------------leia-----------------
[ 67] elei:saida←saida,[1]1 70ρ70↑aspa,'LEITURA DA VARIAVEL ',(⊃vv[2]),aspa
[ 68]  saida←saida,[1]1 70ρ70↑(⊃vv[2]),'←□'
[ 69]  →soma
[ 70] ⍝---------------imprima--------------
[ 71] eimp:→(3=ρvv)/temmsg
[ 72]  aaa←⊃vv[2]
[ 73]  →(aaa[ρaaa]=';')/juntaa
[ 74]  saida←saida,[1]1 70ρ70↑aaa
[ 75]  →soma
[ 76] juntaa:saida←saida,[1]1 70ρ70↑'□←⍕',¯1↓aaa
[ 77]  →soma
[ 78] temmsg:aaa←⊃vv[3]
[ 79]  →(aaa[ρaaa]=';')/juntab
[ 80]  saida←saida,[1]1 70ρ70↑(⊃vv[2]),' ',aaa
[ 81]  →soma
[ 82] juntab:saida←saida,[1]1 70ρ70↑'□←',(⊃vv[2]),' ,⍕',¯1↓aaa
[ 83]  →soma
[ 84] ⍝---------------atribuicao------------
[ 85] ecad:saida←saida,[1]1 70ρ70↑(⊃vv[1]),'←',,⊃2↓vv
[ 86]  aaa←⊃vv[1]
[ 87]  →('['∈aaa)/soma
[ 88]  →(∨/aaa≤loca)/soma
[ 89]  loca←loca,';',⊃vv[1]
[ 90]  →soma
[ 91] ⍝---------------se--------------------
[ 92] esex:saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[ 93]  saida←saida,[1]1 70ρ70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn←nnn+1
[ 94]  PILHA←(1 21ρ21↑'SE',('000'⍕nnn)),[1]PILHA
[ 95]  nnn←nnn+1
[ 96]  →soma
[ 97] ⍝--senao--
[ 98] esen:SALVA←PILHA[1;3 4 5] ⋄ PILHA←1 0↓PILHA
[ 99]  PILHA←(1 21ρ21↑'SE',('000'⍕nnn)),[1]PILHA
[100]  saida←saida,[1]1 70ρ70↑'→Δ','000'⍕nnn
[101]  nnn←nnn+1
[102]  saida←saida,[1]1 70ρ70↑'Δ',SALVA,':'
[103]  →soma
[104] ⍝--fim{se}--
[105] esef:saida←saida,[1]1 70ρ70↑'Δ',PILHA[1;3 4 5],':'
[106]  PILHA←1 0↓PILHA
[107]  →soma
[108] ⍝-------------enquanto--------------------
[109] eenq:saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),':'
[110]  PILHA←(1 21ρ21↑'EN','000'⍕nnn),[1]PILHA
[111]  nnn←nnn+1
[112]  PILHA←(1 21ρ21↑'EN','000'⍕nnn),[1]PILHA
[113]  nnn←nnn+1
[114]  saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[115]  nnn←nnn+1
[116]  saida←saida,[1]1 70ρ70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn-2
```

```
[117]  →soma
[118] ⍝----------fim{enquanto}-----------------
[119] eenf:SALVA←PILHA[1;3 4 5]
[120]  PILHA←1 0↓PILHA
[121]  saida←saida,[1]1 70⍴70↑'→Δ',PILHA[1;3 4 5]
[122]  PILHA←1 0↓PILHA
[123]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[124]  →soma
[125] ⍝----------repita-------------------------
[126] erep:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[127]  PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[128]  nnn←nnn+1
[129]  →soma
[130] ⍝-----------ate--------------------------
[131] eate:PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[132]  nnn←nnn+1
[133]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[134]  SALVA←PILHA[1;3 4 5]
[135]  PILHA←1 0↓PILHA
[136]  saida←saida,[1]1 70⍴70↑'→(Δ',('000'⍕nnn),')/Δ',SALVA
[137]  SALVA←PILHA[1;3 4 5]
[138]  PILHA←1 0↓PILHA
[139]  saida←saida,[1]1 70⍴70↑'→Δ',SALVA
[140]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn-1),':'
[141]  nnn←nnn+1 ⍝ inclusao desta linha em 19/04/06. Ainda nao suficientemente testada
[142]  →soma
[143] ⍝----------para-----------------------
[144] epar:saida←saida,[1]1 70⍴70↑(8↑⊃vv[2]),'←',8↑⊃vv[4]
[145]  PILHA←(1 21⍴21↑'PA','000'⍕nnn),[1]PILHA
[146]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[147]  nnn←nnn+1
[148]  →(8≤⍴vv)/tempasso
[149]  PILHA←(1 21⍴21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8↑8⍕1),[1]PILHA
[150]  →juntab
[151] tempasso:PILHA←(1 21⍴21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8 2⍕pn←⍎⊃vv[8]),[1]PILHA
[152] ⍝ 'pn=',⍕pn
[153]  pna←'≤≥'[1+pn<0] ⍝ alteracao a 22/06/06, para acertar passo negativo
[154] juntab:nnn←nnn+1
[155]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',(⊃vv[2]),pna,⍕⊃vv[6]
[156]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn),')/Δ','000'⍕nnn-1
[157]  nnn←nnn+1
[158]  →soma
[159] ⍝----------fim{para}-----------------
[160] epaf:saida←saida,[1]1 70⍴70↑PILHA[1;5+⍳8],'←',PILHA[1;5+⍳8],'+',PILHA[1;13+⍳8]
[161]  SALVA←PILHA[1;3 4 5]
[162]  PILHA←1 0↓PILHA
[163]  saida←saida,[1]1 70⍴70↑'→Δ',PILHA[1;3 4 5]
[164]  PILHA←1 0↓PILHA
[165]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[166]  →soma
[167] ⍝-----------abandone--------------------
[168] eaba:→soma
[169] ⍝-----------saia--------------------------
[170] esai:→soma
[171] ⍝-------- definicao de variaveis---------------
[172] eint:
[173]  saida←saida,[1]1 70⍴70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[174]  →soma
[175] erea:
[176]  saida←saida,[1]1 70⍴70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[177]  →soma
[178] elog:
[179]  saida←saida,[1]1 70⍴70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
```

```
[180]  →soma
[181] ecar:
[182]  saida←saida,[1]1 70⍴70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[183]  →soma
[184] ⍝----------definicao de vetores-----------------
[185] evet:
[186]  saida←saida,[1]1 70⍴70↑(1 parte(⊃vv[2])),'←',(2 parte(⊃vv[2])),'⍴0'
[187]  →soma
[188] evaa:
[189]  saida←saida,[1]1 70⍴70↑(1 parte(⊃vv[2])),'←',(2 parte(⊃vv[2])),'⍴',aspa,' ',aspa
[190]  →soma
[191] fim:
[192]  i←1
[193] tfim:→(i>nnn)/mesmo
[194]  loca←loca,';Δ','000'⍕i
[195]  →(i=i←i+1)/tfim
[196] mesmo:→(50>⍴loca)/blz1
[197]  saida←((1↑⍴saida),20+⍴loca)↑saida
[198]  saida[1;20+⍳⍴loca]←loca
[199]  →pula22
[200] blz1:saida[1;20+⍳50]←50↑loca
[201] pula22:r←'_ 'edit saida
[202]  →0
[203] erro90:'algoritmo nao e uma matriz'
[204]  →0
-----------------------------------------------------------
[0]  fazcasoh;lixo
[1]  x←gereh
[2]  lixo←⎕FX cpc tradhc x
[3]  AAA
[4]  ⍴tradhl x
-----------------------------------------------------------
[0]  r←gerach
[1]  r←('ABCDEF'[?6]),'←',('ABCDEF'[?6]),('+-'[?2]),('111111222233344'[?15])
-----------------------------------------------------------
[ 0]  r←geraifh
[ 1]  →(1=?2)/cara
[ 2] coroa:
[ 3]  r←'se ',('ABCDEF'[?6]),('><≤≥=≠'[?6]),('ABCDEF1234567890'[?16])
[ 4]  →fim
[ 5] cara:r←'se (',('ABCDEF'[?6]),('><≤≥=≠'[?6]),('ABCDEF1234567890'[?16]),')',('∧∨'[?2]),
      '(',('ABCDEF'[?6]),('><≤≥=≠'[?6]),('ABCDEF1234567890'[?16]),')'
[ 6] fim:
[ 7]  →(1≠?4)/blz
[ 8]  r←r[⍳3],'(~(',(3↓r),'))'
[ 9] blz:
-----------------------------------------------------------
[ 0]  r←gereh;PILHA
[ 1]  r←1 60⍴60↑inich
[ 2]  PILHA←0 60⍴' '
[ 3] t1:
[ 4]  →(15<1↑⍴r)/fim
[ 5]  →(0=1↑⍴PILHA)/vazia
[ 6]  →(1=?2)/vazia
[ 7] coroa1:
[ 8]  r←r,[1]PILHA[1;]
[ 9]  PILHA←1 0↓PILHA
[10]  →t1
[11] vazia:
[12]  →(1=?2)/cara2
[13] coroa2:
[14]  r←r,[1]1 60⍴60↑geraifh
[15]  →(1=?2)/cara3
```

```
[16] coroa3:
[17]  PILHA←(1 60⍴60⍑gerach,'◇fimse'),[1]PILHA
[18]  →(1≠⍰3)/oba
[19]  PILHA←(1 60⍴60⍑gerach,'◇',gerach,'◇senao'),[1]PILHA
[20]  →t1
[21] oba:
[22]  PILHA←(1 60⍴60⍑gerach,'◇senao'),[1]PILHA
[23]  →t1
[24] cara3:
[25]  PILHA←(1 60⍴60⍑gerach,'◇fimse'),[1]PILHA
[26]  →t1
[27] cara2:
[28]  r←r,[1]1 60⍴60⍑gerach
[29]  →t1
[30] fim:r←r,[1]PILHA
------------------------------------------------------------
[0]  r←a igual b;maior
[1]  maior←(1⍑⍴a)⌈1⍑⍴b
[2]  a←maior⍑a ◇ b←maior⍑b
[3]  r←maior=+/a=b
------------------------------------------------------------
[0]  r←inich
[1]  r←'A←',(1 0⍕⍰6),'◇B←',(1 0⍕⍰6),'◇C←',(1 0⍕⍰6),'◇D←',(1 0⍕⍰6),'◇E←',(1 0⍕⍰6),'◇F←',(1
       0⍕⍰6)
------------------------------------------------------------
[0]  r←pedemail x
[1]  →(40≠+/' '=x)/aindanao
[2]  r←80⍑'Por favor, informe seu e-mail: ⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_'
[3]  →junnao
[4] aindanao:r←80⍑'e-mail cadastrado: ⍀verb+',x,'+'
[5] junnao:
------------------------------------------------------------
[ 0]  r←quem replace depara;de;i;j;k;onde;para
[ 1] ⍝ forma de usar: texto replace 'strin-de' 'string para'
[ 2] ⍝ obviamente eles nao precisam ter o mesmo tamanho
[ 3]  de←,⊃depara[1] ◇ para←,⊃depara[2]
[ 4]  i←1 ◇ r←((1⍑⍴quem),200)⍴' '
[ 5] t1:→(i>1⍑⍴quem)/fim
[ 6]  →(0=∨/onde←de⍷quem[i;])/naotem
[ 7]  j←1 ◇ k←1
[ 8] t2:→(k>⍴quem[i;])/acabou
[ 9]  →(onde[k]=0)/soma
[10]  r[i;(j-1)+⍳⍴para]←para
[11]  j←j+⍴para
[12]  k←k+⍴de
[13]  →t2
[14] soma:r[i;j]←quem[i;k]
[15]  k←k+1
[16]  →(j=j←j+1)/t2
[17] naotem:r[i;]←200⍑quem[i;]
[18] acabou:→(i=i←i+1)/t1
[19] fim:r←trim4 r
------------------------------------------------------------
[ 0]  r←retra8 x
[ 1]  x←x replace'fimse ' '⍀ENDIF '
[ 2]  x←x replace'|' '⍀STATE '
[ 3]  x←x replace'se ' '⍀IF{'
[ 4]  x←x replace'entao' '}'
[ 5]  x←x replace'RRRR <- ' '⍀STATE escreva '
[ 6]  x←x replace'<-' '$⍀gets$'
[ 7]  x←x replace'<' '$<$'
[ 8]  x←x replace'∨' '$⍀lor$'
[ 9]  x←x replace'∧' '$⍀land$'
```

```
[10]  x←x replace'>' '$>$'
[11]  x←x replace'≥' '$⍀ge$'
[12]  x←x replace'≤' '$⍀le$'
[13]  x←x replace'≠' '$⍀neq$'
[14]  x←x replace'~' '$⍀til$'
[15]  x←x replace'⌈' '$⍀lceil$'
[16]  x←x replace'÷' '$⍀div$'
[17]  x←x replace'fimse' '⍀ENDIF'
[18]  x←x replace'senao' '⍀ELSE'
[19]  x←x replace'×' '$⍀times$'
[20]  x←((1↑⍴x),60)↑x
[21]  x[1;]←60↑'⍀begin{algorithmic}[1]'
[22]  x[1↑⍴x;]←60↑'⍀end{algorithmic}'
[23]  r←x
-------------------------------------------------------------
[0]  testa c;x
[1]  x←ajeita c
[2]  x[1]
[3]  ⎕FX cpc⊃x[2]
[4]  AAA
-------------------------------------------------------------
[ 0]  r←tradhc x;i;j;lin
[ 1]  i←1
[ 2]  r←1 60⍴60↑'funcao AAA'
[ 3] t1:
[ 4]  →(i>1↑⍴x)/fim
[ 5]  j←1
[ 6]  lin←''
[ 7] t2:
[ 8]  →(j>⍴trim x[i;])/aca
[ 9]  →(x[i;j]='←')/rec
[10]  →(x[i;j]='◇')/nl
[11]  lin←lin,x[i;j]
[12]  j←j+1
[13]  →t2
[14] rec:lin←lin,' <- '
[15]  j←j+1
[16]  →t2
[17] nl:
[18]  r←r,[1]1 60⍴60↑lin
[19]  lin←''
[20]  j←j+1
[21]  →t2
[22] aca:
[23]  r←r,[1]1 60⍴60↑lin
[24]  i←i+1
[25]  →t1
[26] fim:
[27]  r←r,[1]1 60⍴60↑'RRRR <- (A+B+C+D+E+F)'
[28]  r←r,[1]1 60⍴60↑'fimfuncao'
-------------------------------------------------------------
[ 0]  z←tradhl x;i;j;lin;r
[ 1]  i←1
[ 2]  r←1 80⍴80↑'⍀STATE funcao AAA'
[ 3]  x[1;]←'◇;'edit x[1;]
[ 4] t1:
[ 5]  →(i>1↑⍴x)/fim
[ 6]  j←1
[ 7]  lin←''
[ 8] t2:
[ 9]  →(j>⍴trim x[i;])/aca
[10]  →(x[i;j]='←')/rec
[11]  →(x[i;j]='◇')/nl
```

```
[12]  →(x[i;j]='∧')/le
[13]  →(x[i;j]='∨')/lou
[14]  →(x[i;j]='~')/lna
[15]  →(x[i;j]='≥')/l01
[16]  →(x[i;j]='≤')/l02
[17]  →(x[i;j]='>')/l03
[18]  →(x[i;j]='<')/l04
[19]  →(x[i;j]='≠')/l05
[20]  lin←lin,x[i;j]
[21]  j←j+1
[22]  →t2
[23] l01:
[24]  lin←lin,'$\ge$'
[25]  j←j+1
[26]  →t2
[27] l02:
[28]  lin←lin,'$\le$'
[29]  j←j+1
[30]  →t2
[31] l03:
[32]  lin←lin,'$>$'
[33]  j←j+1
[34]  →t2
[35] l04:
[36]  lin←lin,'$<$'
[37]  j←j+1
[38]  →t2
[39] l05:
[40]  lin←lin,'$\neq$'
[41]  j←j+1
[42]  →t2
[43] rec:lin←lin,'$\gets$'
[44]  j←j+1
[45]  →t2
[46] le:lin←lin,' $\land \ $'
[47]  j←j+1
[48]  →t2
[49] lou:lin←lin,' $\lor \ $'
[50]  j←j+1
[51]  →t2
[52] lna:lin←lin,' $\sim$ \ '
[53]  j←j+1
[54]  →t2
[55] nl:
[56]  r←r,[1]1 80ρ80↑lin
[57]  lin←''
[58]  j←j+1
[59]  →t2
[60] aca:
[61]  r←r,[1]1 80ρ80↑lin
[62]  i←i+1
[63]  →t1
[64] fim:
[65]  r←r,[1]1 80ρ80↑'\STATE escreva (A+B+C+D+E+F)'
[66]  r←r,[1]1 80ρ80↑'\STATE fimfuncao'
[67]  r←r replace('senao' '\ELSE')
[68]  r←r replace('fimse' '\ENDIF')
[69]  r←r replace('se' '\IF{')
[70] fimr:
[71]  z←((1↑ρr),80)ρ' '
[72]  i←1
[73] t7:→(i>1↑ρr)/finzao
[74]  →(r[i;1]='\')/ee
```

```
[75]  z[i;]←80↑'⍀STATE ',r[i;]
[76]  →soma
[77] ee:→(r[i;2]≠'I')/foi
[78]  z[i;]←80↑(trim r[i;]),'}'
[79]  →soma
[80] foi:z[i;]←80↑r[i;]
[81] soma:
[82]  i←i+1
[83]  →t7
[84] finzao:z←(1 80⍴80↑'⍀begin{algorithmic}[1]'),[1]z,[1]1 80⍴80↑'⍀end{algorithmic}'
------------------------------------------------------------
[0]  r←trim4 x;z
[1] ⍝f corta as colunas direitas que sao brancos
[2]  →(2≠⍴⍴x)/erro
[3]  z←+/[1]x=' '
[4]  r←(z≠1↑⍴x)/[2]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
------------------------------------------------------------
[ 0]  r←vetoriza x;i;rr;letra;aspa;nume
[ 1] ⍝ versao 1.07
[ 2]  aspa←''''' ⋄ nume←'0123456789'
[ 3]  letra←'abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ()',aspa
[ 4] ⍝ tira os brancos
[ 5]  i←1 ⋄ rr←1
[ 6] t2:→(i>¯2+⍴x)/vaiz
[ 7]  →((x[i+1]=' ')∧(x[i]∈letra)∧(x[i+2]∈nume))/mataz
[ 8]  →((x[i+1]=' ')∧(x[i]∈nume)∧(x[i+2]∈letra))/mataz
[ 9]  →((x[i]∈letra)∧(x[i+2]∈letra))/naopode
[10]  →(((x[1]='p')∨(x[1]='P'))∧(x[2]='a')∧(x[i]∈letra)∧((x[i+2]='-')∨(x[i+2]='¯')))/naopo
      de  ⍝ comando incluido para o passo negativo
[11] ⍝ →((x[i]∈letra)∧((x[i+2]='-')∨(x[i+2]='¯')))/naopode  ⍝ comando incluido para o pass
      o negativo
[12] ⍝ os 3 testes iniciais (p⍝) foram incluidos porque o comando acima estava
[13] ⍝ fazendo besteira: vetoriza 'A <- A -1' estava gerando 4 tokens e nao 3.
[14] ⍝ correcao em 13/03/12 - P.kantek
[15]  →(x[i+1]≠' ')/naopode
[16] pode:rr←rr,0
[17]  →(i=i←i+1)/t2
[18] mataz:x[i+1]←'!'
[19] naopode:rr←rr,1
[20]  →(i=i←i+1)/t2
[21] vaiz:rr←rr,1
[22]  x←rr/x
[23] ⍝ separa o sinal <-
[24]  →(2≠+/'<-'∈x)/faca
[25]  i←1 ⋄ rr←⍳0
[26] t1:→(i>¯1+⍴x)/vaix
[27]  →((x[i]='<')∧(x[i+1]='-'))/esim
[28]  rr←rr,1
[29]  →(i=i←i+1)/t1
[30] esim:rr←rr,0 1 1 0
[31]  →(i=i←i+2)/t1
[32] vaix:rr←rr,1
[33]  x←rr⍀x
[34] faca:x←'! 'edit x
[35]  r←(~' '=x)⊂x
------------------------------------------------------------
[  0]  opesq vivo016b n;CORRECAO;EVENTO;aa;aaa;acuja;bb;cab;cc;dhx;esse;f;lixo1;lixonol;rel
       at;resp;resu;upag;xixa;xk;xx;ylu
[  1]  →(0≠⎕NC'opesq')/qveio
[  2]  opesq←10⍴' '
[  3] qveio:
```

```
[  4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[  5]  CORRECAO←0 ⋄ EVENTO←'PL016b  '
[  6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
       4 5],⎕TS[6]+⎕TS[7]÷1000
[  7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[  8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍕⍳n
[  9]  FOLHALA016b←ajusta80 FOLHALA016b
[ 10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA016b)⍴' '
[ 11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[ 12]  xk←1 ⋄ resu←0 6⍴0
[ 13] testa:→(xk>1↑⍴ylu)/fim
[ 14]  esse←294 80⍴' '
[ 15]  f←FOLHALA016b
[ 16]  esse[1;]←80↑dhx[1;]
[ 17]  esse[2;]←80↑dhx[2;]
[ 18]  esse[3;]←80↑4 2⍕VERSAOb←1.04
[ 19]  esse[4;]←80↑ylu[xk;⍳6]
[ 20]  esse[5;]←80↑ylu[xk;6+⍳30]
[ 21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[ 22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[ 23] ⍝ esse[293;]←80↑pedemail ylu[xk;36+⍳40]
[ 24]  esse[293;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[ 25]  esse[294;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[ 26] inica:
[ 27]  xx←ajeita8 cor1
[ 28]  esse[7+⍳19;]←19 80↑⊃xx[1]
[ 29]  bb←⎕FX cpc⊃xx[2]
[ 30]  xixa←,⍪'AAA'
[ 31]  xx←ajeita8 cor2
[ 32]  esse[26+⍳19;]←19 80↑⊃xx[1]
[ 33]  bb←⎕FX cpc⊃xx[2]
[ 34]  xixa←xixa+⍪'AAA'
[ 35]  xx←ajeita8 cor3
[ 36]  esse[45+⍳19;]←19 80↑⊃xx[1]
[ 37]  bb←⎕FX cpc⊃xx[2]
[ 38]  xixa←xixa+⍪'AAA'
[ 39]  resp←resp,xixa
[ 40]  xx←ajeita8 cor4
[ 41]  esse[64+⍳19;]←19 80↑⊃xx[1]
[ 42]  bb←⎕FX cpc⊃xx[2]
[ 43]  xixa←,⍪'AAA'
[ 44]  xx←ajeita8 cor5
[ 45]  esse[83+⍳19;]←19 80↑⊃xx[1]
[ 46]  bb←⎕FX cpc⊃xx[2]
[ 47]  xixa←xixa+⍪'AAA'
[ 48]  xx←ajeita8 cor6
[ 49]  esse[102+⍳19;]←19 80↑⊃xx[1]
[ 50]  bb←⎕FX cpc⊃xx[2]
[ 51]  xixa←xixa+⍪'AAA'
[ 52]  resp←resp,xixa
[ 53]  xx←ajeita8 cor1
[ 54]  esse[121+⍳19;]←19 80↑⊃xx[1]
[ 55]  bb←⎕FX cpc⊃xx[2]
[ 56]  xixa←,⍪'AAA'
[ 57]  xx←ajeita8 cor2
[ 58]  esse[140+⍳19;]←19 80↑⊃xx[1]
[ 59]  bb←⎕FX cpc⊃xx[2]
[ 60]  xixa←xixa+⍪'AAA'
[ 61]  xx←ajeita8 cor3
[ 62]  esse[159+⍳19;]←19 80↑⊃xx[1]
[ 63]  bb←⎕FX cpc⊃xx[2]
[ 64]  xixa←xixa+⍪'AAA'
[ 65]  resp←resp,xixa
```

```
[ 66]  xx←ajeita8 cor4
[ 67]  esse[178+⍳19;]←19 80↑⊃xx[1]
[ 68]  bb←⎕FX cpc⊃xx[2]
[ 69]  xixa←⍝'AAA'
[ 70]  xx←ajeita8 cor5
[ 71]  esse[197+⍳19;]←19 80↑⊃xx[1]
[ 72]  bb←⎕FX cpc⊃xx[2]
[ 73]  xixa←xixa+⍝'AAA'
[ 74]  xx←ajeita8 cor6
[ 75]  esse[216+⍳19;]←19 80↑⊃xx[1]
[ 76]  bb←⎕FX cpc⊃xx[2]
[ 77]  xixa←xixa+⍝'AAA'
[ 78]  resp←resp,xixa
[ 79]  xx←ajeita8 cor1
[ 80]  esse[235+⍳19;]←19 80↑⊃xx[1]
[ 81]  bb←⎕FX cpc⊃xx[2]
[ 82]  xixa←⍝'AAA'
[ 83]  xx←ajeita8 cor2
[ 84]  esse[254+⍳19;]←19 80↑⊃xx[1]
[ 85]  bb←⎕FX cpc⊃xx[2]
[ 86]  xixa←xixa+,⍝'AAA'
[ 87]  xx←ajeita8 cor3
[ 88]  esse[273+⍳19;]←19 80↑⊃xx[1]
[ 89]  bb←⎕FX cpc⊃xx[2]
[ 90]  xixa←xixa+⍝'AAA'
[ 91]  resp←resp,xixa
[ 92]  resu←resu,[1]1 6⍴resp
[ 93]  acuja←(f[;2]='#')/⍳1↑⍴f
[ 94]  f[acuja;⍳80]←esse[⍝,f[acuja;3 4 5],' ';]
[ 95]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[ 96]  ⍞←(⍕xk←xk+1),'-'
[ 97]  →testa
[ 98] fim:upag←(1 0+⍴f)⍴' '
[ 99]  →(1=≡n)/elafa
[100]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[101]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[102]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←4 0 10 0 4 0 4 0 7 0 4 0)⍕resu
[103]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[104]  →terminando
[105] elafa:aaa←(ylu,10 0 4 0 4 0 7 0 4 0⍕0 1↓resu)
[106]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[107]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[108] terminando:
[109]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[110]  relat[1↑⍴relat;;]←upag
[111]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[112] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[113]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[114]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo016h n;CORRECAO;EVENTO;aa;aaa;acuja;bb;busao;cab;cc;dhx;esse;f;lixo1;lixon
      ol;relat;resp;resu;upag;xixa;xk;xx;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL016h  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA016h←ajusta80 FOLHALA016h
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA016h)⍴' '
```

```
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[12]  xk←1 ⋄ resu←0 10⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←324 80⍴' '
[15]  f←FOLHALA016h
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOh←1.04
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[323;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[324;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  xx←gereh
[27]  bb←⎕FX cpc tradhc xx
[28]  xixa←,⍪'AAA'
[29]  busao←(1 80⍴80↑'\paragraph{1.}'),[1]tradhl xx
[30]  xx←gereh
[31]  bb←⎕FX cpc tradhc xx
[32]  xixa←xixa,⍪'AAA'
[33]  busao←busao,[1](1 80⍴80↑'\paragraph{2.}'),[1]tradhl xx
[34]  xx←gereh
[35]  bb←⎕FX cpc tradhc xx
[36]  xixa←xixa,⍪'AAA'
[37]  busao←busao,[1](1 80⍴80↑'\paragraph{3.}'),[1]tradhl xx
[38]  xx←gereh
[39]  bb←⎕FX cpc tradhc xx
[40]  xixa←xixa,⍪'AAA'
[41]  busao←busao,[1](1 80⍴80↑'\paragraph{4.}'),[1]tradhl xx
[42]  xx←gereh
[43]  bb←⎕FX cpc tradhc xx
[44]  xixa←xixa,⍪'AAA'
[45]  busao←busao,[1](1 80⍴80↑'\paragraph{5.}'),[1]tradhl xx
[46]  xx←gereh
[47]  bb←⎕FX cpc tradhc xx
[48]  xixa←xixa,⍪'AAA'
[49]  busao←busao,[1](1 80⍴80↑'\paragraph{6.}'),[1]tradhl xx
[50]  xx←gereh
[51]  bb←⎕FX cpc tradhc xx
[52]  xixa←xixa,⍪'AAA'
[53]  busao←busao,[1](1 80⍴80↑'\paragraph{7.}'),[1]tradhl xx
[54]  xx←gereh
[55]  bb←⎕FX cpc tradhc xx
[56]  xixa←xixa,⍪'AAA'
[57]  busao←busao,[1](1 80⍴80↑'\paragraph{8.}'),[1]tradhl xx
[58]  xx←gereh
[59]  bb←⎕FX cpc tradhc xx
[60]  xixa←xixa,⍪'AAA'
[61]  busao←busao,[1](1 80⍴80↑'\paragraph{9.}'),[1]tradhl xx
[62]  →(315≥1↑⍴busao)/blzinha
[63]  '&'
[64]  →inica
[65] blzinha:
[66]  esse[7+⍳315;]←315 80↑busao
[67]  resp←resp,xixa
[68]  resu←resu,[1]1 10⍴resp
[69]  acuja←(f[;2]='#')/⍳1↑⍴f
[70]  f[acuja;⍳80]←esse[⍪,f[acuja;3 4 5],' ';]
[71]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[72]  ⍞←(⍕xk←xk+1),'-'
[73]  →testa
```

```
[74] fim:upag←(1 0+ρf)ρ' '
[75]  →(1=≡n)/elafa
[76]  upag[1;]←(1↓ρupag)↑'⍀begin{verbatim}'
[77]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[78]  upag[2+⍳1↑ρresu;⍳+/lixo1]←'¯-'edit(lixo1←4 0 10 0 4 0 4 0 6 0 4 0 4 0 6 0 4 0 4 0)⍒r
      esu
[79]  upag[3+1↑ρresu;]←(1↓ρupag)↑'⍀end{verbatim}'
[80]  →terminando
[81] elafa:aaa←(ylu,'¯-'edit 6 0 4 0 4 0 6 0 4 0 4 0 6 0 4 0 4 0⍒0 1↓resu)
[82]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[83]  '!!!!!  Arquivo GPA com ',(⍒1↑ρaaa),' linhas e ',(⍒1↓ρaaa),' colunas'
[84] terminando:
[85]  upag[1↑ρupag;]←(1↓ρupag)↑'⍀end{document}'
[86]  relat[1↑ρrelat;;]←upag
[87]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[88] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[89]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[90]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[0]  xx
-------------------------------------------------------------
```

vivo017

```
[ 0]  RRRR←EX7 AAAA;A;B;C;D;E;F;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ008;Δ009
[ 1]  A←AAAA[1]
[ 2]  B←AAAA[2]
[ 3]  C←AAAA[3]
[ 4]  D←AAAA[4]
[ 5]  E←AAAA[5]
[ 6]  F←AAAA[6]
[ 7]  Δ001←((A≥3)∨(~(B≥2)))
[ 8]  →(~Δ001)/Δ002
[ 9]  Δ003←((C≠4)∨(B>4))
[10]  →(~Δ003)/Δ004
[11]  A←E+5
[12]  →Δ005
[13] Δ004:
[14]  A←B×D
[15] Δ005:
[16]  C←D×2
[17]  →Δ006
[18] Δ002:
[19]  A←B-F
[20]  Δ007←((~(D≠2))∨(F≠5))
[21]  →(~Δ007)/Δ008
[22]  C←B×F
[23] Δ008:
[24] Δ006:
[25]  RRRR←A+B+C+D+E
-------------------------------------------------------------
[ 0]  RRRR←EX8 AAAA;A;B;C;D;E;F;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ008;Δ009
[ 1]  A←AAAA[1]
[ 2]  B←AAAA[2]
[ 3]  C←AAAA[3]
[ 4]  D←AAAA[4]
[ 5]  E←AAAA[5]
[ 6]  F←AAAA[6]
[ 7]  Δ001←(B<1)
[ 8]  →(~Δ001)/Δ002
[ 9]  Δ003←(((~(C≠4))∧(C≥2))∨(~(D≠4)))
[10]  →(~Δ003)/Δ004
```

```
[11]  D←F+2
[12]  →Δ005
[13] Δ004:
[14]  F←B+C
[15] Δ005:
[16]  C←F×D
[17]  →Δ006
[18] Δ002:
[19]  E←C×F
[20]  Δ007←((~(D=5))∨(B≥3))
[21]  →(~Δ007)/Δ008
[22]  A←D+3
[23] Δ008:
[24] Δ006:
[25]  RRRR←A+B+C+D+E
-------------------------------------------------------------
[ 0]  RRRR←EX9 AAAA;A;B;C;D;E;F;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ008;Δ009
[ 1]  A←AAAA[1]
[ 2]  B←AAAA[2]
[ 3]  C←AAAA[3]
[ 4]  D←AAAA[4]
[ 5]  E←AAAA[5]
[ 6]  F←AAAA[6]
[ 7]  Δ001←((B=5)∧(~(A<2)))
[ 8]  →(~Δ001)/Δ002
[ 9]  Δ003←(((F>4)∨(~(B≥1)))∨(D≥1))
[10]  →(~Δ003)/Δ004
[11]  B←C×4
[12]  →Δ005
[13] Δ004:
[14]  A←C-E
[15] Δ005:
[16]  F←F+3
[17]  →Δ006
[18] Δ002:
[19]  E←B-2
[20]  Δ007←((A≥4)∨(~(D<1)))
[21]  →(~Δ007)/Δ008
[22]  C←A-5
[23] Δ008:
[24] Δ006:
[25]  RRRR←A+B+C+D+E
-------------------------------------------------------------
[  0]  r←cpc algo;nome;PILHA;nnn;saida;aspa;vv;coma;SALVA;i;j;loca;aaa
[  1]  PILHA←0 21⍴' ' ⋄ nnn←1 ⋄ saida←0 70⍴' ' ⋄ r←0 70⍴' ' ⋄ aspa←'''' ⋄ loca←''
[  2]  i←1
[  3] t1:→(i>1↑⍴algo)/fim
[  4]  vv←vetoriza algo[i;]
[  5]  →('algoritmo'igual⊃vv[1])/ealg
[  6]  →('fimalgoritmo'igual⊃vv[1])/ealf
[  7]  →('funcao'igual⊃vv[1])/efun
[  8]  →('fimfuncao'igual⊃vv[1])/efuf
[  9]  →('leia'igual⊃vv[1])/elei
[ 10]  →('imprima'igual⊃vv[1])/eimp
[ 11]  →('devolva'igual⊃vv[1])/eimp  ⍝ em teste: sera que devolva = imprima neste contexto
       ???
[ 12]  →('se'igual⊃vv[1])/esex
[ 13]  →('senao'igual⊃vv[1])/esen
[ 14]  →('fimse'igual⊃vv[1])/esef
[ 15]  →('enquanto'igual⊃vv[1])/eenq
[ 16]  →('fimenquanto'igual⊃vv[1])/eenf
[ 17]  →('repita'igual⊃vv[1])/erep
[ 18]  →('ate'igual⊃vv[1])/eate
```

```
[ 19]  →('para'igual⊃vv[1])/epar
[ 20]  →('fimpara'igual⊃vv[1])/epaf
[ 21]  →('abandone'igual⊃vv[1])/eaba
[ 22]  →('saia'igual⊃vv[1])/esai
[ 23]  →('<-'igual⊃vv[2])/ecad
[ 24]  →('inteiro'igual⊃vv[1])/eint
[ 25]  →('real'igual⊃vv[1])/erea
[ 26]  →('logico'igual⊃vv[1])/elog
[ 27]  →('caracter'igual 8↑⊃vv[1])/ecar
[ 28]  →('vetor'igual⊃vv[1])/evet
[ 29]  r←r,[1]1 70ρ70↑(3⍕i),' - comando desconhecido'
[ 30] soma:→(i=i←i+1)/t1
[ 31] ⍝--------------algoritmo--------------
[ 32] ealg:saida←saida,[1]1 70ρ70↑⊃vv[2]
[ 33]  →soma
[ 34] ealf:→fim
[ 35] ⍝--------------funcao-----------------
[ 36] efun:
[ 37]  →(2≥ρvv)/naotem
[ 38]  coma←'RRRR←',(⊃vv[2]),' AAAA'
[ 39]  →vmesmo
[ 40] naotem:coma←'RRRR←',(⊃vv[2])
[ 41]  saida←saida,[1]1 70ρ70↑coma
[ 42]  nome←⊃vv[2]
[ 43]  →aca0
[ 44] vmesmo:
[ 45]  saida←saida,[1]1 70ρ70↑coma
[ 46]  nome←⊃vv[2]
[ 47]  j←1
[ 48] voi1:→(j>¯2+ρvv)/aca0
[ 49]  saida←saida,[1]1 70ρ70↑(⊃vv[j+2]),'←AAAA[',(3 0⍕j),']'
[ 50]  loca←loca,';',⊃vv[j+2]
[ 51]  →(j=j←j+1)/voi1
[ 52] aca0:→soma
[ 53] efuf:→fim
[ 54] ⍝---------------leia-----------------
[ 55] elei:saida←saida,[1]1 70ρ70↑aspa,'LEITURA DA VARIAVEL ',(⊃vv[2]),aspa
[ 56]  saida←saida,[1]1 70ρ70↑(⊃vv[2]),'←□'
[ 57]  →soma
[ 58] ⍝---------------imprima---------------
[ 59] eimp:→(3=ρvv)/temmsg
[ 60]  aaa←⊃vv[2]
[ 61]  →(aaa[ρaaa]=';')/juntaa
[ 62]  saida←saida,[1]1 70ρ70↑aaa
[ 63]  →soma
[ 64] juntaa:saida←saida,[1]1 70ρ70↑'□←⍕',¯1↓aaa
[ 65]  →soma
[ 66] temmsg:aaa←⊃vv[3]
[ 67]  →(aaa[ρaaa]=';')/juntab
[ 68]  saida←saida,[1]1 70ρ70↑(⊃vv[2]),' ',aaa
[ 69]  →soma
[ 70] juntab:saida←saida,[1]1 70ρ70↑'□←',(⊃vv[2]),' ,⍕',¯1↓aaa
[ 71]  →soma
[ 72] ⍝---------------atribuicao------------
[ 73] ecad:saida←saida,[1]1 70ρ70↑(⊃vv[1]),'←',⊃vv[3]
[ 74]  aaa←⊃vv[1]
[ 75]  →('['∈aaa)/soma
[ 76]  →(∨/aaa⍷loca)/soma
[ 77]  loca←loca,';',⊃vv[1]
[ 78]  →soma
[ 79] ⍝---------------se--------------------
[ 80] esex:saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[ 81]  saida←saida,[1]1 70ρ70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn←nnn+1
```

```
[ 82]  PILHA←(1 21⍴21↑'SE',('000'⍕nnn)),[1]PILHA
[ 83]  nnn←nnn+1
[ 84]  →soma
[ 85] ⍝--senao--
[ 86] esen:SALVA←PILHA[1;3 4 5] ⋄ PILHA←1 0↓PILHA
[ 87]  PILHA←(1 21⍴21↑'SE',('000'⍕nnn)),[1]PILHA
[ 88]  saida←saida,[1]1 70⍴70↑'→Δ','000'⍕nnn
[ 89]  nnn←nnn+1
[ 90]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[ 91]  →soma
[ 92] ⍝--fim{se}--
[ 93] esef:saida←saida,[1]1 70⍴70↑'Δ',PILHA[1;3 4 5],':'
[ 94]  PILHA←1 0↓PILHA
[ 95]  →soma
[ 96] ⍝------------enquanto--------------------
[ 97] eenq:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[ 98]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[ 99]  nnn←nnn+1
[100]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[101]  nnn←nnn+1
[102]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⍕vv[2]
[103]  nnn←nnn+1
[104]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn-2
[105]  →soma
[106] ⍝----------fim{enquanto}------------------
[107] eenf:SALVA←PILHA[1;3 4 5]
[108]  PILHA←1 0↓PILHA
[109]  saida←saida,[1]1 70⍴70↑'→Δ',PILHA[1;3 4 5]
[110]  PILHA←1 0↓PILHA
[111]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[112]  →soma
[113] ⍝----------repita-------------------------
[114] erep:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[115]  PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[116]  nnn←nnn+1
[117]  →soma
[118] ⍝-----------ate--------------------------
[119] eate:PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[120]  nnn←nnn+1
[121]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⍕vv[2]
[122]  SALVA←PILHA[1;3 4 5]
[123]  PILHA←1 0↓PILHA
[124]  saida←saida,[1]1 70⍴70↑'→(Δ',('000'⍕nnn),')/Δ',SALVA
[125]  SALVA←PILHA[1;3 4 5]
[126]  PILHA←1 0↓PILHA
[127]  saida←saida,[1]1 70⍴70↑'→Δ',SALVA
[128]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn-1),':'
[129]  nnn←nnn+1 ⍝ inclusao desta linha em 19/04/06. Ainda nao suficientemente testada
[130]  →soma
[131] ⍝----------para-----------------------
[132] epar:saida←saida,[1]1 70⍴70↑(8↑⍕vv[2]),'←',8↑⍕vv[4]
[133]  PILHA←(1 21⍴21↑'PA','000'⍕nnn),[1]PILHA
[134]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[135]  nnn←nnn+1
[136]  →(8=⍴vv)/tempasso
[137]  PILHA←(1 21⍴21↑'PA',('000'⍕nnn),(8↑⍕vv[2]),8↑8⍕1),[1]PILHA
[138]  →juntab
[139] tempasso:PILHA←(1 21⍴21↑'PA',('000'⍕nnn),(8↑⍕vv[2]),8 2⍕⍕vv[8]),[1]PILHA
[140] juntab:nnn←nnn+1
[141]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',(⍕vv[2]),'≤',⍕⍕vv[6]
[142]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn),')/Δ','000'⍕nnn-1
[143]  nnn←nnn+1
[144]  →soma
```

```
[145] ⍝----------fim{para}-----------------
[146] epaf:saida←saida,[1]1 70⍴70↑PILHA[1;5+⍳8],'←',PILHA[1;5+⍳8],'+',PILHA[1;13+⍳8]
[147]  SALVA←PILHA[1;3 4 5]
[148]  PILHA←1 0↓PILHA
[149]  saida←saida,[1]1 70⍴70↑'→Δ',PILHA[1;3 4 5]
[150]  PILHA←1 0↓PILHA
[151]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[152]  →soma
[153] ⍝----------abandone--------------------
[154] eaba:→soma
[155] esai:→soma
[156] eint:→soma
[157] erea:→soma
[158] elog:→soma
[159] ecar:→soma
[160] evet:
[161]  saida←saida,[1]1 70⍴70↑(1 parte(⊃vv[2])),'←',(2 parte(⊃vv[2])),'⍴0'
[162]  →soma
[163] fim:
[164]  i←1
[165] tfim:→(i>nnn)/mesmo
[166]  loca←loca,';Δ','000'⍕i
[167]  →(i=i←i+1)/tfim
[168] mesmo:→(50>⍴loca)/blz1
[169]  saida←((1↑⍴saida),20+⍴loca)↑saida
[170]  saida[1;20+⍳⍴loca]←loca
[171]  →pula22
[172] blz1:saida[1;20+⍳50]←50↑loca
[173] pula22:r←'_ 'edit saida
------------------------------------------------------------
[  0]  r←cpctrace algo;nome;PILHA;nnn;saida;aspa;vv;coma;SALVA;i;j;loca;aaa
[  1]  PILHA←0 21⍴' ' ⋄ nnn←1 ⋄ saida←0 70⍴' ' ⋄ r←0 70⍴' ' ⋄ aspa←'''' ⋄ loca←''
[  2]  i←1
[  3] t1:→(i>1↑⍴algo)/fim
[  4]  vv←vetoriza algo[i;]
[  5]  →('algoritmo'igual⊃vv[1])/ealg
[  6]  →('fimalgoritmo'igual⊃vv[1])/ealf
[  7]  →('funcao'igual⊃vv[1])/efun
[  8]  →('fimfuncao'igual⊃vv[1])/efuf
[  9]  →('leia'igual⊃vv[1])/elei
[ 10]  →('imprima'igual⊃vv[1])/eimp
[ 11]  →('devolva'igual⊃vv[1])/eimp  ⍝ em teste: sera que devolva = imprima neste contexto
      ???
[ 12]  →('se'igual⊃vv[1])/esex
[ 13]  →('senao'igual⊃vv[1])/esen
[ 14]  →('fimse'igual⊃vv[1])/esef
[ 15]  →('enquanto'igual⊃vv[1])/eenq
[ 16]  →('fimenquanto'igual⊃vv[1])/eenf
[ 17]  →('repita'igual⊃vv[1])/erep
[ 18]  →('ate'igual⊃vv[1])/eate
[ 19]  →('para'igual⊃vv[1])/epar
[ 20]  →('fimpara'igual⊃vv[1])/epaf
[ 21]  →('abandone'igual⊃vv[1])/eaba
[ 22]  →('saia'igual⊃vv[1])/esai
[ 23]  →('<-'igual⊃vv[2])/ecad
[ 24]  →('inteiro'igual⊃vv[1])/eint
[ 25]  →('real'igual⊃vv[1])/erea
[ 26]  →('logico'igual⊃vv[1])/elog
[ 27]  →('caracter'igual 8↑⊃vv[1])/ecar
[ 28]  →('vetor'igual⊃vv[1])/evet
[ 29]  r←r,[1]1 70⍴70↑(3⍕i),' - comando desconhecido'
[ 30] soma:→(i=i←i+1)/t1
[ 31] ⍝--------------algoritmo--------------
```

```
[ 32] ealg:saida←saida,[1]1 70⍴70↑⊃vv[2]
[ 33]  saida←saida,[1]1 70⍴70↑'TRACE←1 '
[ 34]  →soma
[ 35] ealf:→fim
[ 36] ⍝--------------funcao-----------------
[ 37] efun:
[ 38]  →(2≥⍴vv)/naotem
[ 39]  coma←'RRRR←',(⊃vv[2]),' AAAA'
[ 40]  →vmesmo
[ 41] naotem:coma←'RRRR←',(⊃vv[2])
[ 42]  saida←saida,[1]1 70⍴70↑coma
[ 43]  saida←saida,[1]1 70⍴70↑'TRACE←1'
[ 44]  nome←⊃vv[2]
[ 45]  →aca0
[ 46] vmesmo:
[ 47]  saida←saida,[1]1 70⍴70↑coma
[ 48]  saida←saida,[1]1 70⍴70↑'TRACE←1'
[ 49]  nome←⊃vv[2]
[ 50]  j←1
[ 51] voi1:→(j>¯2+⍴vv)/aca0
[ 52]  saida←saida,[1]1 70⍴70↑(⊃vv[j+2]),'←AAAA[',(3 0⍕j),']'
[ 53]  loca←loca,';',⊃vv[j+2]
[ 54]  →(j=j←j+1)/voi1
[ 55] aca0:→soma
[ 56] efuf:→fim
[ 57] ⍝---------------leia-----------------
[ 58] elei:saida←saida,[1]1 70⍴70↑aspa,'LEITURA DA VARIAVEL ',(⊃vv[2]),aspa
[ 59]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[ 60]  saida←saida,[1]1 70⍴70↑(⊃vv[2]),'←□'
[ 61]  →soma
[ 62] ⍝---------------imprima---------------
[ 63] eimp:
[ 64]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[ 65]  →(3=⍴vv)/temmsg
[ 66]  aaa←⊃vv[2]
[ 67]  →(aaa[⍴aaa]=';')/juntaa
[ 68]  saida←saida,[1]1 70⍴70↑aaa
[ 69]  →soma
[ 70] juntaa:saida←saida,[1]1 70⍴70↑'□←⍕',¯1↓aaa
[ 71]  →soma
[ 72] temmsg:aaa←⊃vv[3]
[ 73]  →(aaa[⍴aaa]=';')/juntab
[ 74]  saida←saida,[1]1 70⍴70↑(⊃vv[2]),' ',aaa
[ 75]  →soma
[ 76] juntab:saida←saida,[1]1 70⍴70↑'□←',(⊃vv[2]),' ,⍕',¯1↓aaa
[ 77]  →soma
[ 78] ⍝---------------atribuicao------------
[ 79] ecad:saida←saida,[1]1 70⍴70↑(⊃vv[1]),'←',⊃vv[3]
[ 80]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[ 81]  aaa←⊃vv[1]
[ 82]  →('['∊aaa)/soma
[ 83]  →(∨/aaa≤loca)/soma
[ 84]  loca←loca,';',⊃vv[1]
[ 85]  →soma
[ 86] ⍝---------------se--------------------
[ 87] esex:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[ 88]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[ 89]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn←nnn+1
[ 90]  PILHA←(1 21⍴21↑'SE',('000'⍕nnn)),[1]PILHA
[ 91]  nnn←nnn+1
[ 92]  →soma
[ 93] ⍝--senao--
[ 94] esen:SALVA←PILHA[1;3 4 5] ⋄ PILHA←1 0↓PILHA
```

```
[ 95]  PILHA←(1 21⍴21↑'SE',('000'⍕nnn)),[1]PILHA
[ 96]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[ 97]  saida←saida,[1]1 70⍴70↑'→Δ','000'⍕nnn
[ 98]  nnn←nnn+1
[ 99]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[100]  →soma
[101] ⍝--fim{se}--
[102] esef:saida←saida,[1]1 70⍴70↑'Δ',PILHA[1;3 4 5],':'
[103]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[104]  PILHA←1 0↓PILHA
[105]  →soma
[106] ⍝------------enquanto-------------------
[107] eenq:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[108]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[109]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[110]  nnn←nnn+1
[111]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[112]  nnn←nnn+1
[113]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[114]  nnn←nnn+1
[115]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn-2
[116]  →soma
[117] ⍝----------fim{enquanto}-----------------
[118] eenf:SALVA←PILHA[1;3 4 5]
[119]  PILHA←1 0↓PILHA
[120]  saida←saida,[1]1 70⍴70↑'→Δ',PILHA[1;3 4 5]
[121]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[122]  PILHA←1 0↓PILHA
[123]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[124]  →soma
[125] ⍝----------repita-------------------------
[126] erep:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[127]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[128]  PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[129]  nnn←nnn+1
[130]  →soma
[131] ⍝----------ate--------------------------
[132] eate:PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[133]  nnn←nnn+1
[134]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[135]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[136]  SALVA←PILHA[1;3 4 5]
[137]  PILHA←1 0↓PILHA
[138]  saida←saida,[1]1 70⍴70↑'→(Δ',('000'⍕nnn),')/Δ',SALVA
[139]  SALVA←PILHA[1;3 4 5]
[140]  PILHA←1 0↓PILHA
[141]  saida←saida,[1]1 70⍴70↑'→Δ',SALVA
[142]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn-1),':'
[143]  nnn←nnn+1 ⍝ inclusao desta linha em 19/04/06. Ainda nao suficientemente testada
[144]  →soma
[145] ⍝----------para----------------------
[146] epar:saida←saida,[1]1 70⍴70↑(8↑⊃vv[2]),'←',8↑⊃vv[4]
[147]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[148]  PILHA←(1 21⍴21↑'PA','000'⍕nnn),[1]PILHA
[149]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[150]  nnn←nnn+1
[151]  →(8=⍴vv)/tempasso
[152]  PILHA←(1 21⍴21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8↑8⍕1),[1]PILHA
[153]  →juntab
[154] tempasso:PILHA←(1 21⍴21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8 2⍕⊃vv[8]),[1]PILHA
[155] juntab:nnn←nnn+1
[156]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',(⊃vv[2]),'≤',⍕⊃vv[6]
[157]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn),')/Δ','000'⍕nnn-1
```

```
[158]  nnn←nnn+1
[159]  →soma
[160] ⍝----------fim{para}------------------
[161] epaf:saida←saida,[1]1 70⍴70↑PILHA[1;5+⍳8],'←',PILHA[1;5+⍳8],'+',PILHA[1;13+⍳8]
[162]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[163]  SALVA←PILHA[1;3 4 5]
[164]  PILHA←1 0↓PILHA
[165]  saida←saida,[1]1 70⍴70↑'→Δ',PILHA[1;3 4 5]
[166]  PILHA←1 0↓PILHA
[167]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[168]  →soma
[169] ⍝-----------abandone--------------------
[170] eaba:→soma
[171] esai:→soma
[172] eint:→soma
[173] erea:→soma
[174] elog:→soma
[175] ecar:→soma
[176] evet:
[177]  saida←saida,[1]1 70⍴70↑(1 parte(⊃vv[2])),'←',(2 parte(⊃vv[2])),'⍴0'
[178]  →soma
[179] fim:
[180]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[181]  i←1
[182] tfim:→(i>nnn)/mesmo
[183]  loca←loca,';Δ','000'⍕i
[184]  →(i=i←i+1)/tfim
[185] mesmo:→(50>⍴loca)/blz1
[186]  saida←((1↑⍴saida),20+⍴loca)↑saida
[187]  saida[1;20+⍳⍴loca]←loca
[188]  →pula22
[189] blz1:saida[1;20+⍳50]←50↑loca
[190] pula22:r←'_ 'edit saida
------------------------------------------------------------
[0]  r←geraatom
[1]  r←'(',('ABCDEF'[?6]),' ',('><=≠≥≤'[?6]),' ',('5'⍕?6),')'
[2]  →(7>?10)/0
[3]  r←'(~ ',r,')'
------------------------------------------------------------
[ 0]  r←geracond;x;aa;bb;cc;dd
[ 1] inicio:x←?6
[ 2]  →((x=1)∨(x=2)∨(x=3))/aaa
[ 3]  →((x=4)∨(x=5))/bbb
[ 4]  →(x=6)/ccc
[ 5]  'erro: gerado um estranho...'
[ 6]  →0
[ 7] aaa:aa←geraatom
[ 8]  bb←geraatom
[ 9]  r←aa geracone bb
[10]  →0
[11] bbb:r←geraatom
[12]  →0
[13] ccc:aa←geraatom
[14]  bb←geraatom
[15]  cc←geraatom
[16]  dd←aa geracone bb
[17]  r←dd geracone cc
[18] ⍝ r
[19] ⍝ r=' '
[20]  →(100>⍴r)/0
[21]  □←'*'
[22]  →inicio
------------------------------------------------------------
```

```
[0]  r←a geracone b
[1]  r←'(',a,' ',('∨∧'[?2]),' ',b,')'
-------------------------------------------------------------
[ 0]  r←gerafunc x
[ 1]  r←16 60⍴' '
[ 2]  r[1;]←60↑'funcao ','EX',('5'⍕x),' A B C D E F'
[ 3]  r[2;]←60↑'   se ',geracond
[ 4]  r[3;]←60↑'      se ',geracond
[ 5]  r[4;]←60↑'         ',gerasoma
[ 6]  r[5;]←60↑'      senao'
[ 7]  r[6;]←60↑'         ',gerasoma
[ 8]  r[7;]←60↑'      fimse'
[ 9]  r[8;]←60↑'      ',gerasoma
[10]  r[9;]←60↑'   senao'
[11]  r[10;]←60↑'      ',gerasoma
[12]  r[11;]←60↑'      se ',geracond
[13]  r[12;]←60↑'         ',gerasoma
[14]  r[13;]←60↑'      fimse'
[15]  r[14;]←60↑'   fimse'
[16]  r[15;]←60↑'   RRRR <- A + B + C + D + E'
[17]  r[16;]←60↑'fimfuncao'
-------------------------------------------------------------
[0]  r←gerasoma;aa;bb;ind
[1]  →(2>?2)/dois
[2]  ind←2?6
[3]  aa←'ABCDEF'[ind[1]]
[4]  bb←'ABCDEF'[ind[2]]
[5]  r←('ABCDEF'[?6]),' <- ',aa,' ',('+-×'[?3]),' ',bb
[6]  →0
[7] dois:r←('ABCDEF'[?6]),' <- ',('ABCDEF'[?6]),' ',('+-×'[?3]),' ','5'⍕1+?4
-------------------------------------------------------------
[0]  r←a igual b;maior
[1]  maior←(1↑⍴a)⌈1↑⍴b
[2]  a←maior↑a ⋄ b←maior↑b
[3]  r←maior=+/a=b
-------------------------------------------------------------
[ 0]  mostra;x;xx;zz;yy
[ 1]  x←1
[ 2] volta:xx←tradfunc gerafunc 1
[ 3]  yy←?6⍴9
[ 4]  zz←⎕FX xx
[ 5]  ⍎'EX1 ','555'⍕yy
[ 6]  →(x>100)/0
[ 7]  x←x+1
[ 8]  →volta
-------------------------------------------------------------
[0]  r←mostrax;aa;bb;cc;dd
[1]  aa←geraatom
[2]  bb←geraatom
[3]  cc←geraatom
[4]  dd←aa geracone bb
[5]  r←dd geracone cc
-------------------------------------------------------------
[0]  r←pedemail x
[1]  →(40≠+/' '=x)/aindanao
[2]  r←80↑'Por favor, informe seu e-mail: ⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_'
[3]  →junnao
[4] aindanao:r←80↑'e-mail cadastrado: ',x
[5] junnao:
-------------------------------------------------------------
[ 0]  r←tradcoma x;i;j
[ 1]  i←j←1 ⋄ r←100⍴' '
[ 2] t1:→(i>⍴x)/fim
```

```
[ 3]  →(i=⍴x)/pula
[ 4]  →((x[i]='<')∧(x[i+1]='-'))/recebe
[ 5] pula:→(x[i]='∨')/ou
[ 6]  →(x[i]='∧')/e
[ 7]  →(x[i]='~')/nao
[ 8]  →(x[i]='≠')/diferente
[ 9]  →(x[i]='≤')/menig
[10]  →(x[i]='≥')/maiig
[11]  →(x[i]='×')/vezes
[12]  →(x[i]='>')/maior
[13]  →(x[i]='<')/menor
[14] nada:r[j]←x[i]
[15]  i←i+1
[16]  j←j+1
[17]  →t1
[18] recebe:r[j+¯1+⍳7]←'$\gets$'
[19]  j←j+7
[20]  i←i+2
[21]  →t1
[22] ou:r[j+¯1+⍳6]←'$\lor$'
[23]  j←j+6
[24]  i←i+1
[25]  →t1
[26] nao:r[j+¯1+⍳6]←'$\sim$'
[27]  j←j+6
[28]  i←i+1
[29]  →t1
[30] e:r[j+¯1+⍳7]←'$\land$'
[31]  j←j+7
[32]  i←i+1
[33]  →t1
[34] diferente:r[j+¯1+⍳6]←'$\neq$'
[35]  j←j+6
[36]  i←i+1
[37]  →t1
[38] menig:r[j+¯1+⍳5]←'$\le$'
[39]  j←j+5
[40]  i←i+1
[41]  →t1
[42] maiig:r[j+¯1+⍳5]←'$\ge$'
[43]  j←j+5
[44]  i←i+1
[45]  →t1
[46] vezes:r[j+¯1+⍳8]←'$\times$'
[47]  j←j+8
[48]  i←i+1
[49]  →t1
[50] maior:r[j+¯1+⍳3]←'$>$'
[51]  j←j+3
[52]  i←i+1
[53]  →t1
[54] menor:r[j+¯1+⍳3]←'$<$'
[55]  j←j+3
[56]  i←i+1
[57]  →t1
[58] fim:r←trim r
------------------------------------------------------------
[ 0]  r←tradfunc3 aa;bb;cc
[ 1]  r←18 120⍴' ' ⋄ bb←1↓⍴aa
[ 2]  r[1;]←120↑'\begin{algorithmic}[1]'
[ 3]  r[2;]←120↑'\STATE \textbf{algoritmo} ',aa[1;7+⍳3]
[ 4]  r[3;]←120↑'\IF {',(tradcoma aa[2;6+⍳¯6+bb]),'}'
[ 5]  r[4;]←120↑'\IF {',(tradcoma aa[3;9+⍳¯9+bb]),'}'
```

```
[ 6]  r[5;]←120↑'⍀STATE ',tradcoma aa[4;]
[ 7]  r[6;]←120↑'⍀ELSE'
[ 8]  r[7;]←120↑'⍀STATE ',tradcoma aa[6;]
[ 9]  r[8;]←120↑'⍀ENDIF'
[10]  r[9;]←120↑'⍀STATE ',tradcoma aa[8;]
[11]  r[10;]←120↑'⍀ELSE'
[12]  r[11;]←120↑'⍀STATE ',tradcoma aa[10;]
[13]  r[12;]←120↑'⍀IF {',(tradcoma aa[11;9+⍳¯9+bb]),'}'
[14]  r[13;]←120↑'⍀STATE ',tradcoma aa[12;]
[15]  r[14;]←120↑'⍀ENDIF'
[16]  r[15;]←120↑'⍀ENDIF'
[17]  r[16;]←120↑'⍀STATE ⍀textbf{escreva} (A + B + C + D + E)'
[18]  r[17;]←120↑'⍀STATE ⍀textbf{fim algoritmo}'
[19]  r[18;]←120↑'⍀end{algorithmic} '
[20]  cc←+/∧⍀⌽(∧/[1]r=' ')
[21]  →(110<cc)/erro
[22]  r←(18,110)↑r
[23]  →0
[24] erro:'matriz maior que 80 colunas. corrigir'
-------------------------------------------------------------
[ 0]  r←vetoriza x;i;rr;letra;aspa;nume
[ 1]  aspa←'''' ⋄ nume←'0123456789'
[ 2]  letra←'abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ()',aspa
[ 3] ⍝ tira os brancos
[ 4]  i←1 ⋄ rr←1
[ 5] t2:→(i>¯2+⍴x)/vaiz
[ 6]  →((x[i+1]=' ')∧(x[i]∈letra)∧(x[i+2]∈nume))/mataz
[ 7]  →((x[i+1]=' ')∧(x[i]∈nume)∧(x[i+2]∈letra))/mataz
[ 8]  →((x[i]∈letra)∧(x[i+2]∈letra))/naopode
[ 9]  →(x[i+1]≠' ')/naopode
[10] pode:rr←rr,0
[11]  →(i=i←i+1)/t2
[12] mataz:x[i+1]←'!'
[13] naopode:rr←rr,1
[14]  →(i=i←i+1)/t2
[15] vaiz:rr←rr,1
[16]  x←rr/x
[17] ⍝ separa o sinal <-
[18]  →(2≠+/'<-'∈x)/faca
[19]  i←1 ⋄ rr←⍳0
[20] t1:→(i>¯1+⍴x)/vaix
[21]  →((x[i]='<')∧(x[i+1]='-'))/esim
[22]  rr←rr,1
[23]  →(i=i←i+1)/t1
[24] esim:rr←rr,0 1 1 0
[25]  →(i=i←i+2)/t1
[26] vaix:rr←rr,1
[27]  x←rr⍀x
[28] faca:x←'! 'edit x
[29]  r←(~' '=x)⊂x
-------------------------------------------------------------
[  0]  opesq vivo017b n;CORRECAO;EVENTO;aa;aaa;acuja;bb;cab;cc;dhx;esse;f;lixo1;lixonol;rel
       at;resp;resu;upag;xixo;xk;xx;ylu
[  1]  →(0≠⎕NC'opesq')/qveio
[  2]  opesq←10⍴' '
[  3] qveio:
[  4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[  5]  CORRECAO←6 ⋄ EVENTO←'PL017b  '
[  6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
       4 5],⎕TS[6]+⎕TS[7]÷1000
[  7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[  8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍕⍳n
[  9]  FOLHALA017b←ajusta80 FOLHALA017b
```

```
[ 10]  relat←((2+1↑⍴ylu),1 30+⍴FOLHALA017b)⍴' '
[ 11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[ 12]  xk←1 ⋄ resu←0 10⍴0
[ 13] testa:→(xk>1↑⍴ylu)/fim
[ 14]  esse←180 110⍴' '
[ 15]  f←((1↑⍴FOLHALA017b),110)↑FOLHALA017b
[ 16]  esse[1;]←110↑dhx[1;]
[ 17]  esse[2;]←110↑dhx[2;]
[ 18]  esse[3;]←110↑4 2⍕VERSAOb←3.16
[ 19]  esse[4;]←110↑ylu[xk;⍳6]
[ 20]  esse[5;]←110↑ylu[xk;6+⍳30]
[ 21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←110↑EVENTO
[ 22]  esse[7;]←110↑(3 0⍕resp←xk),' ',opesq
[ 23] ⍝ esse[179;]←110↑pedemail ylu[xk;36+⍳40]
[ 24]  esse[179;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[ 25]  esse[180;]←110↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[ 26] inica:
[ 27]  xx←gerafunc 1
[ 28]  aa←?6⍴6
[ 29]  bb←⎕FX cpc xx
[ 30]  resp←resp,⍪'EX1 ','555'⍕aa
[ 31]  esse[8;]←110↑¯1↓'555,'⍕aa
[ 32]  esse[8+⍳18;]←18 110↑tradfunc3 xx
[ 33]  xx←gerafunc 2
[ 34]  aa←?6⍴6
[ 35]  bb←⎕FX cpc xx
[ 36]  resp←resp,⍪'EX2 ','555'⍕aa
[ 37]  esse[27;]←110↑¯1↓'555,'⍕aa
[ 38]  esse[27+⍳18;]←18 110↑tradfunc3 xx
[ 39]  xx←gerafunc 3
[ 40]  aa←?6⍴6
[ 41]  bb←⎕FX cpc xx
[ 42]  resp←resp,⍪'EX3 ','555'⍕aa
[ 43]  esse[46;]←110↑¯1↓'555,'⍕aa
[ 44]  esse[46+⍳18;]←18 110↑tradfunc3 xx
[ 45]  xx←gerafunc 4
[ 46]  aa←?6⍴6
[ 47]  bb←⎕FX cpc xx
[ 48]  resp←resp,⍪'EX4 ','555'⍕aa
[ 49]  esse[65;]←110↑¯1↓'555,'⍕aa
[ 50]  esse[65+⍳18;]←18 110↑tradfunc3 xx
[ 51]  xx←gerafunc 5
[ 52]  aa←?6⍴6
[ 53]  bb←⎕FX cpc xx
[ 54]  resp←resp,⍪'EX5 ','555'⍕aa
[ 55]  esse[84;]←110↑¯1↓'555,'⍕aa
[ 56]  esse[84+⍳18;]←18 110↑tradfunc3 xx
[ 57]  xx←gerafunc 6
[ 58]  aa←?6⍴6
[ 59]  bb←⎕FX cpc xx
[ 60]  resp←resp,⍪'EX6 ','555'⍕aa
[ 61]  esse[103;]←110↑¯1↓'555,'⍕aa
[ 62]  esse[103+⍳18;]←18 110↑tradfunc3 xx
[ 63]  xx←gerafunc 7
[ 64]  aa←?6⍴6
[ 65]  bb←⎕FX cpc xx
[ 66]  resp←resp,⍪'EX7 ','555'⍕aa
[ 67]  esse[122;]←110↑¯1↓'555,'⍕aa
[ 68]  esse[122+⍳18;]←18 110↑tradfunc3 xx
[ 69]  xx←gerafunc 8
[ 70]  aa←?6⍴6
[ 71]  bb←⎕FX cpc xx
[ 72]  resp←resp,⍪'EX8 ','555'⍕aa
```

```
[ 73]  esse[141;]←110↑¯1↓'555,'⍕aa
[ 74]  esse[141+⍳18;]←18 110↑tradfunc3 xx
[ 75]  xx←gerafunc 9
[ 76]  aa←?6⍴6
[ 77]  bb←⎕FX cpc xx
[ 78]  resp←resp,⍪'EX9 ','555'⍕aa
[ 79]  esse[160;]←110↑¯1↓'555,'⍕aa
[ 80]  esse[160+⍳18;]←18 110↑tradfunc3 xx
[ 81]  resu←resu,[1]1 10⍴resp
[ 82]  acuja←(f[;2]='#')/⍳1↑⍴f
[ 83]  f[acuja;⍳110]←esse[⍪,f[acuja;3 4 5],' ';]
[ 84]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[ 85]  ⍞←(⍕xk←xk+1),'-'
[ 86]  →testa
[ 87] fim:upag←(1 0+⍴f)⍴' '
[ 88]  →(1=≡n)/elafa
[ 89]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[ 90]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[ 91]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←4 0 10 0 4 0 4 0 4 0 4 0 6 0 4 0 4 0 4 0)⍕r
       esu
[ 92]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[ 93]  →terminando
[ 94] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴'    '),'¯-'edit 4 0 4 0 4 0 4 0 4 0 6 0 4 0 4 0 4 0⍕0 1
       ↓resu)
[ 95]  aaa[1;35 36]←2 0⍕CORRECAO
[ 96]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[ 97]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[ 98] terminando:
[ 99]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[100]  relat[1↑⍴relat;;]←upag
[101]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[102] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[103]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[104]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[105]  lixonol←⎕EX 6 1⍴'ABCDEF'
[106]  lixonol←⎕EX 6 3⍴'EX1EX2EX3EX4EX5EX6'
[107]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[  0]  opesq vivo017t n;CORRECAO;EVENTO;aa;aaa;acuja;bb;cab;cc;dhx;esse;f;lixo;lixo1;lixono
       l;relat;resp;resu;upag;xixo;xk;xx;ylu
[  1]  →(0≠⎕NC'opesq')/qveio
[  2]  opesq←10⍴' '
[  3] qveio:
[  4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[  5]  CORRECAO←6 ⋄ EVENTO←'PL017t  '
[  6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
       4 5],⎕TS[6]+⎕TS[7]÷1000
[  7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[  8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍕⍳n
[  9]  FOLHALA017t←ajusta80 FOLHALA017t
[ 10]  relat←((2+1↑⍴ylu),1 30+⍴FOLHALA017t)⍴' '
[ 11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[ 12]  xk←1 ⋄ resu←0 7⍴0
[ 13] testa:→(xk>1↑⍴ylu)/fim
[ 14]  esse←123 110⍴' '
[ 15]  f←((1↑⍴FOLHALA017t),110)↑FOLHALA017t
[ 16]  esse[1;]←110↑dhx[1;]
[ 17]  esse[2;]←110↑dhx[2;]
[ 18]  esse[3;]←110↑4 2⍕VERSAOb←3.2
[ 19]  esse[4;]←110↑ylu[xk;⍳6]
[ 20]  esse[5;]←110↑ylu[xk;6+⍳30]
[ 21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←110↑EVENTO
[ 22]  esse[7;]←110↑(3 0⍕resp←xk),' ',opesq
```

```
[ 23]  esse[122;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[ 24]  esse[123;]←110↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[ 25] inica:
[ 26]  xx←gerafunc 1
[ 27]  aa←?6⍴9
[ 28]  bb←⎕FX cpctrace xx
[ 29]  lixo←⍕'EX1 ',⍕aa
[ 30]  resp←resp,¯48++/TRACE
[ 31]  esse[8;]←110↑¯1↓'555,'⍕aa
[ 32]  esse[8+⍳18;]←18 110↑tradfunc3 xx
[ 33]  xx←gerafunc 2
[ 34]  aa←?6⍴9
[ 35]  bb←⎕FX cpctrace xx
[ 36]  lixo←⍕'EX2 ',⍕aa
[ 37]  resp←resp,¯48++/TRACE
[ 38]  esse[27;]←110↑¯1↓'555,'⍕aa
[ 39]  esse[27+⍳18;]←18 110↑tradfunc3 xx
[ 40]  xx←gerafunc 3
[ 41]  aa←?6⍴9
[ 42]  bb←⎕FX cpctrace xx
[ 43]  lixo←⍕'EX3 ',⍕aa
[ 44]  resp←resp,¯48++/TRACE
[ 45]  esse[46;]←110↑¯1↓'555,'⍕aa
[ 46]  esse[46+⍳18;]←18 110↑tradfunc3 xx
[ 47]  xx←gerafunc 4
[ 48]  aa←?6⍴9
[ 49]  bb←⎕FX cpctrace xx
[ 50]  lixo←⍕'EX4 ',⍕aa
[ 51]  resp←resp,¯48++/TRACE
[ 52]  esse[65;]←110↑¯1↓'555,'⍕aa
[ 53]  esse[65+⍳18;]←18 110↑tradfunc3 xx
[ 54]  xx←gerafunc 5
[ 55]  aa←?6⍴9
[ 56]  bb←⎕FX cpctrace xx
[ 57]  lixo←⍕'EX5 ',⍕aa
[ 58]  resp←resp,¯48++/TRACE
[ 59]  esse[84;]←110↑¯1↓'555,'⍕aa
[ 60]  esse[84+⍳18;]←18 110↑tradfunc3 xx
[ 61]  xx←gerafunc 6
[ 62]  aa←?6⍴9
[ 63]  bb←⎕FX cpctrace xx
[ 64]  lixo←⍕'EX6 ',⍕aa
[ 65]  resp←resp,¯48++/TRACE
[ 66]  esse[103;]←110↑¯1↓'555,'⍕aa
[ 67]  esse[103+⍳18;]←18 110↑tradfunc3 xx
[ 68]  resu←resu,[1]1 7⍴resp
[ 69]  acuja←(f[;2]='#')/⍳1↑⍴f
[ 70]  f[acuja;⍳110]←esse[⍕,f[acuja;3 4 5],' ';]
[ 71]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[ 72]  ⍞←(⍕xk←xk+1),'-'
[ 73]  →testa
[ 74] fim:upag←(1 0+⍴f)⍴' '
[ 75]  →(1=≡n)/elafa
[ 76]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[ 77]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[ 78]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←4 0 10 0 4 0 4 0 4 0 4 0 6 0)⍕resu
[ 79]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[ 80]  →terminando
[ 81] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴'    '),'¯-'edit 4 0 4 0 4 0 4 0 4 0 6 0⍕0 1↓resu)
[ 82]  aaa[1;35 36]←2 0⍕CORRECAO
[ 83]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.gpa')
[ 84]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[ 85] terminando:
```

```
[ 86]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[ 87]  relat[1↑⍴relat;;]←upag
[ 88]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[ 89] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[ 90]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[ 91]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[ 92]  lixonol←⎕EX 6 1⍴'ABCDEF'
[ 93]  lixonol←⎕EX 6 3⍴'EX1EX2EX3EX4EX5EX6'
[ 94]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo018

```
[  0]  r←faztripa;i;resp;g;z;xt;xd;rt;rd
[  1] ⍝ g=1 fluxo e texto sao iguais. Portanto SAO IGUAIS
[  2] ⍝ g=2 nega as condicoes e inverte as alternativas. IGUAIS
[  3] ⍝ g=3 nega as condicoes e mantem as alternativas. DIFERENTES
[  4] ⍝ g=4 mantem as condicoes e inverte as alternativas. DIFERENTES
[  5] ⍝ esta funcao gera um caso para a folha
[  6]  i←1 ⋄ resp←8⍴0 ⋄ rt←0 30⍴' ' ⋄ rd←0 30⍴' '
[  7] t1:→(i>8)/fim
[  8]  z←geracaso
[  9]  g←(1 2 2 2 3 3 4 4)[?8]
[ 10]  →(i=1)/um
[ 11]  →(i=2)/dois
[ 12]  →(i=3)/tres
[ 13]  →(i=4)/quatro
[ 14]  →(i=5)/cinco
[ 15]  →(i=6)/seis
[ 16]  →(i=7)/sete
[ 17]  →(i=8)/oito
[ 18] um:
[ 19]  xd←9 30⍴' '
[ 20]  xt←9 30⍴' '
[ 21]  xd[1;]←z[1;]
[ 22]  xd[2 3 4;]←z[13 14 15;]
[ 23]  xd[5;]←xt[5;]←30↑'senao'
[ 24]  xd[6 7 8;]←z[16 17 18;]
[ 25]  xd[9;]←xt[9;]←30↑'fimse'
[ 26]  →(g=1)/um1
[ 27]  →(g=2)/um2
[ 28]  →(g=3)/um3
[ 29]  →(g=4)/um4
[ 30] um1:resp[i]←1
[ 31]  rd←rd,[1]xd ⋄ rt←rt,[1]xd
[ 32]  →soma
[ 33] um2:resp[i]←1
[ 34]  xt[1;]←z[3;]
[ 35]  xt[2 3 4;]←z[16 17 18;]
[ 36]  xt[6 7 8;]←z[13 14 15;]
[ 37]  rd←rd,[1]xd ⋄ rt←rt,[1]xt
[ 38]  →soma
[ 39] um3:resp[i]←0 ⍝ errado
[ 40]  xt[1;]←z[3;]
[ 41]  xt[2 3 4;]←z[13 14 15;]
[ 42]  xt[6 7 8;]←z[16 17 18;]
[ 43]  rd←rd,[1]xd ⋄ rt←rt,[1]xt
[ 44]  →soma
[ 45] um4:
[ 46]  resp[i]←0 ⍝ errado
[ 47]  xt[1;]←z[1;]
[ 48]  xt[2 3 4;]←z[16 17 18;]
```

```
[ 49]  xt[6 7 8;]←z[13 14 15;]
[ 50]  rd←rd,[1]xd ⋄ rt←rt,[1]xt
[ 51]  →soma
[ 52] dois:
[ 53]  xd←9 30⍴' '
[ 54]  xt←9 30⍴' '
[ 55]  xd[1;]←z[2;]
[ 56]  xd[2 3 4;]←z[13 14 15;]
[ 57]  xd[5;]←xt[5;]←30↑'senao'
[ 58]  xd[6 7 8;]←z[16 17 18;]
[ 59]  xd[9;]←xt[9;]←30↑'fimse'
[ 60]  →(g=1)/dois1
[ 61]  →(g=2)/dois2
[ 62]  →(g=3)/dois3
[ 63]  →(g=4)/dois4
[ 64] dois1:resp[i]←1
[ 65]  rd←rd,[1]xd ⋄ rt←rt,[1]xd
[ 66]  →soma
[ 67] dois2:resp[i]←1
[ 68]  xt[1;]←z[4;]
[ 69]  xt[2 3 4;]←z[16 17 18;]
[ 70]  xt[6 7 8;]←z[13 14 15;]
[ 71]  rd←rd,[1]xd ⋄ rt←rt,[1]xt
[ 72]  →soma
[ 73] dois3:resp[i]←0 ⍝ errado
[ 74]  xt[1;]←z[4;]
[ 75]  xt[2 3 4;]←z[13 14 15;]
[ 76]  xt[6 7 8;]←z[16 17 18;]
[ 77]  rd←rd,[1]xd ⋄ rt←rt,[1]xt
[ 78]  →soma
[ 79] dois4:
[ 80]  resp[i]←0 ⍝ errado
[ 81]  xt[1;]←z[2;]
[ 82]  xt[2 3 4;]←z[16 17 18;]
[ 83]  xt[6 7 8;]←z[13 14 15;]
[ 84]  rd←rd,[1]xd ⋄ rt←rt,[1]xt
[ 85]  →soma
[ 86] tres:
[ 87]  xd←xt←15 30⍴' '
[ 88]  xd[1;]←z[1;]
[ 89]  xd[2 3 4;]←z[13 14 15;]
[ 90]  xd[5;]←30↑'senao'
[ 91]  xd[6;]←z[5;]
[ 92]  xd[7 8 9;]←z[16 17 18;]
[ 93]  xd[10;]←xt[10;]←30↑'senao'
[ 94]  xd[11 12 13;]←z[19 20 21;]
[ 95]  xd[14;]←xd[15;]←xt[14;]←xt[15;]←30↑'fimse'
[ 96]  →(g=1)/tres1
[ 97]  →(g=2)/tres2
[ 98]  →(g=3)/tres3
[ 99]  →(g=4)/tres4
[100] tres1:resp[i]←1
[101]  rd←rd,[1]xd ⋄ rt←rt,[1]xd
[102]  →soma
[103] tres2:resp[i]←1
[104]  xt[1;]←z[3;]
[105]  xt[2;]←z[7;]
[106]  xt[3 4 5;]←z[19 20 21;]
[107]  xt[6;]←30↑'senao'
[108]  xt[7 8 9;]←z[16 17 18;]
[109]  xt[10;]←30↑'fimse'
[110]  xt[11;]←30↑'senao'
[111]  xt[12 13 14;]←z[13 14 15;]
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[112]  rd←rd,[1]xd ⋄ rt←rt,[1]xt
[113]  →soma
[114] tres3:resp[i]←0
[115]  xt[1;]←z[1;]
[116]  xt[2 3 4;]←z[13 14 15;]
[117]  xt[5;]←30↑'senao'
[118]  xt[6;]←z[7;]  ⍝ so este aqui esta diferente
[119]  xt[7 8 9;]←z[16 17 18;]
[120]  xt[11 12 13;]←z[19 20 21;]
[121]  rd←rd,[1]xd ⋄ rt←rt,[1]xt
[122]  →soma
[123] tres4:resp[i]←0
[124]  xt[1;]←z[1;]
[125]  xt[2;]←z[5;]
[126]  xt[3 4 5;]←z[19 20 21;]
[127]  xt[6;]←30↑'senao'
[128]  xt[7 8 9;]←z[16 17 18;]
[129]  xt[10;]←30↑'fimse'
[130]  xt[11;]←30↑'senao'
[131]  xt[12 13 14;]←z[13 14 15;]
[132]  rd←rd,[1]xd ⋄ rt←rt,[1]xt
[133]  →soma
[134] quatro:
[135]  xd←xt←21 30⍴' '
[136]  xd[1;]←z[1;]
[137]  xd[2;]←z[5;]
[138]  xd[3 4 5;]←z[13 14 15;]
[139]  xd[6;]←xt[6;]←30↑'senao'
[140]  xd[7 8 9;]←z[16 17 18;]
[141]  xd[10;]←xt[10;]←30↑'fimse'
[142]  xd[11;]←xt[11;]←30↑'senao'
[143]  xd[12;]←z[9;]
[144]  xd[13 14 15;]←z[19 20 21;]
[145]  xd[16;]←xt[16;]←30↑'senao'
[146]  xd[17 18 19;]←z[22 23 24;]
[147]  xd[20;]←xd[21;]←xt[20;]←xt[21;]←30↑'fimse'
[148]  →(g=1)/quatro1
[149]  →(g=2)/quatro2
[150]  →(g=3)/quatro3
[151]  →(g=4)/quatro4
[152] quatro1:resp[i]←1
[153]  rd←rd,[1]xd ⋄ rt←rt,[1]xd
[154]  →soma
[155] quatro2:resp[i]←1
[156]  xt[1;]←z[3;]
[157] ⍝ xt[2;]←z[11;]
[158] ⍝ era como estava ↑. Estava errado.
[159] ⍝ Ou se deixa o 9 em vez do 11
[160] ⍝ ou se troca 0 13,14,15 de lugar com o 16,17,18
[161] ⍝ escolhi a primeira
[162]  xt[2;]←z[9;]
[163]  xt[3 4 5;]←z[19 20 21;]
[164]  xt[7 8 9;]←z[22 23 24;]
[165]  xt[12;]←z[7;]
[166]  xt[13 14 15;]←z[16 17 18;]
[167]  xt[17 18 19;]←z[13 14 15;]
[168]  rd←rd,[1]xd ⋄ rt←rt,[1]xt
[169]  →soma
[170] quatro3:resp[i]←0
[171]  xt[1;]←z[3;]
[172]  xt[2;]←z[5;]
[173]  xt[3 4 5;]←z[13 14 15;]
[174]  xt[7 8 9;]←z[16 17 18;]
```

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[175]  xt[12;]←z[11;]
[176]  xt[13 14 15;]←z[19 20 21;]
[177]  xt[17 18 19;]←z[22 23 24;]
[178]  rd←rd,[1]xd ⋄ rt←rt,[1]xt
[179]  →soma
[180] quatro4:
[181]  resp[i]←0
[182]  xt[1;]←z[1;]
[183]  xt[2;]←z[5;]
[184]  xt[3 4 5;]←z[19 20 21;]
[185]  xt[7 8 9;]←z[22 23 24;]
[186]  xt[12;]←z[9;]
[187]  xt[13 14 15;]←z[16 17 18;]
[188]  xt[17 18 19;]←z[13 14 15;]
[189]  rd←rd,[1]xd ⋄ rt←rt,[1]xt
[190]  →soma
[191] cinco:
[192]  xd←xt←15 30⍴' '
[193]  xd[1;]←z[2;]
[194]  xd[2 3 4;]←z[13 14 15;]
[195]  xd[5;]←30↑'senao'
[196]  xd[6;]←z[5;]
[197]  xd[7 8 9;]←z[16 17 18;]
[198]  xd[10;]←xt[10;]←30↑'senao'
[199]  xd[11 12 13;]←z[19 20 21;]
[200]  xd[14;]←xd[15;]←xt[14;]←xt[15;]←30↑'fimse'
[201]  →(g=1)/cinco1
[202]  →(g=2)/cinco2
[203]  →(g=3)/cinco3
[204]  →(g=4)/cinco4
[205] cinco1:resp[i]←1
[206]  rd←rd,[1]xd ⋄ rt←rt,[1]xd
[207]  →soma
[208] cinco2:resp[i]←1
[209]  xt[1;]←z[4;]
[210]  xt[2;]←z[7;]
[211]  xt[3 4 5;]←z[19 20 21;]
[212]  xt[6;]←30↑'senao'
[213]  xt[7 8 9;]←z[16 17 18;]
[214]  xt[10;]←30↑'fimse'
[215]  xt[11;]←30↑'senao'
[216]  xt[12 13 14;]←z[13 14 15;]
[217]  rd←rd,[1]xd ⋄ rt←rt,[1]xt
[218]  →soma
[219] cinco3:resp[i]←0
[220]  xt[1;]←z[4;]
[221]  xt[2 3 4;]←z[13 14 15;]
[222]  xt[5;]←30↑'senao'
[223]  xt[6;]←z[7;]
[224]  xt[7 8 9;]←z[16 17 18;]
[225]  xt[11 12 13;]←z[19 20 21;]
[226]  rd←rd,[1]xd ⋄ rt←rt,[1]xt
[227]  →soma
[228] cinco4:resp[i]←0
[229]  xt[1;]←z[2;]
[230]  xt[2;]←z[5;]
[231]  xt[3 4 5;]←z[19 20 21;]
[232]  xt[6;]←30↑'senao'
[233]  xt[7 8 9;]←z[16 17 18;]
[234]  xt[10;]←30↑'fimse'
[235]  xt[11;]←30↑'senao'
[236]  xt[12 13 14;]←z[13 14 15;]
[237]  rd←rd,[1]xd ⋄ rt←rt,[1]xt
```

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[238]  →soma
[239] seis:
[240]  xd←xt←21 30⍴' '
[241]  xd[1;]←z[2;]
[242]  xd[2;]←z[5;]
[243]  xd[3 4 5;]←z[13 14 15;]
[244]  xd[6;]←xt[6;]←30↑'senao'
[245]  xd[7 8 9;]←z[16 17 18;]
[246]  xd[10;]←xt[10;]←30↑'fimse'
[247]  xd[11;]←xt[11;]←30↑'senao'
[248]  xd[12;]←z[9;]
[249]  xd[13 14 15;]←z[19 20 21;]
[250]  xd[16;]←xt[16;]←30↑'senao'
[251]  xd[17 18 19;]←z[22 23 24;]
[252]  xd[20;]←xd[21;]←xt[20;]←xt[21;]←30↑'fimse'
[253]  →(g=1)/seis1
[254]  →(g=2)/seis2
[255]  →(g=3)/seis3
[256]  →(g=4)/seis4
[257] seis1:resp[i]←1
[258]  rd←rd,[1]xd ⋄ rt←rt,[1]xd
[259]  →soma
[260] seis2:resp[i]←1
[261]  xt[1;]←z[4;]
[262]  xt[2;]←z[11;]
[263] ⍝ xt[3 4 5;]←z[19 20 21;]
[264] ⍝ xt[7 8 9;]←z[22 23 24;]
[265] ⍝ o acima esta errado. As linhas precisam ser trocadas
[266]  xt[3 4 5;]←z[22 23 24;]
[267]  xt[7 8 9;]←z[19 20 21;]
[268] ⍝ substituicao feita em 30/03/11
[269]  xt[12;]←z[7;]
[270]  xt[13 14 15;]←z[16 17 18;]
[271]  xt[17 18 19;]←z[13 14 15;]
[272]  rd←rd,[1]xd ⋄ rt←rt,[1]xt
[273]  →soma
[274] seis3:resp[i]←0
[275]  xt[1;]←z[4;]
[276]  xt[2;]←z[5;]
[277]  xt[3 4 5;]←z[13 14 15;]
[278]  xt[7 8 9;]←z[16 17 18;]
[279]  xt[12;]←z[11;]
[280]  xt[13 14 15;]←z[19 20 21;]
[281]  xt[17 18 19;]←z[22 23 24;]
[282]  rd←rd,[1]xd ⋄ rt←rt,[1]xt
[283]  →soma
[284] seis4:resp[i]←0
[285]  xt[1;]←z[2;]
[286]  xt[2;]←z[5;]
[287]  xt[3 4 5;]←z[19 20 21;]
[288]  xt[7 8 9;]←z[22 23 24;]
[289]  xt[12;]←z[9;]
[290]  xt[13 14 15;]←z[16 17 18;]
[291]  xt[17 18 19;]←z[13 14 15;]
[292]  rd←rd,[1]xd ⋄ rt←rt,[1]xt
[293]  →soma
[294] sete:
[295]  xd←xt←15 30⍴' '
[296]  xd[1;]←z[2;]
[297]  xd[2 3 4;]←z[13 14 15;]
[298]  xd[5;]←30↑'senao'
[299]  xd[6;]←z[6;]
[300]  xd[7 8 9;]←z[16 17 18;]
```

```
[301]  xd[10;]←xt[10;]←30↑'senao'
[302]  xd[11 12 13;]←z[19 20 21;]
[303]  xd[14;]←xd[15;]←xt[14;]←xt[15;]←30↑'fimse'
[304]  →(g=1)/sete1
[305]  →(g=2)/sete2
[306]  →(g=3)/sete3
[307]  →(g=4)/sete4
[308] sete1:resp[i]←1
[309]  rd←rd,[1]xd ⋄ rt←rt,[1]xd
[310]  →soma
[311] sete2:resp[i]←1
[312]  xt[1;]←z[4;]
[313]  xt[2;]←z[8;]
[314]  xt[3 4 5;]←z[19 20 21;]
[315]  xt[6;]←30↑'senao'
[316]  xt[7 8 9;]←z[16 17 18;]
[317]  xt[10;]←30↑'fimse'
[318]  xt[11;]←30↑'senao'
[319]  xt[12 13 14;]←z[13 14 15;]
[320]  rd←rd,[1]xd ⋄ rt←rt,[1]xt
[321]  →soma
[322] sete3:resp[i]←0
[323]  xt[1;]←z[4;]
[324]  xt[2 3 4;]←z[13 14 15;]
[325]  xt[5;]←30↑'senao'
[326]  xt[6;]←z[8;]
[327]  xt[7 8 9;]←z[16 17 18;]
[328]  xt[11 12 13;]←z[19 20 21;]
[329]  rd←rd,[1]xd ⋄ rt←rt,[1]xt
[330]  →soma
[331] sete4:resp[i]←0
[332]  xt[1;]←z[2;]
[333]  xt[2;]←z[6;]
[334]  xt[3 4 5;]←z[19 20 21;]
[335]  xt[6;]←30↑'senao'
[336]  xt[7 8 9;]←z[16 17 18;]
[337]  xt[10;]←30↑'fimse'
[338]  xt[11;]←30↑'senao'
[339]  xt[12 13 14;]←z[13 14 15;]
[340]  rd←rd,[1]xd ⋄ rt←rt,[1]xt
[341]  →soma
[342] oito:
[343]  xd←xt←21 30⍴' '
[344]  xd[1;]←z[2;]
[345]  xd[2;]←z[6;]
[346]  xd[3 4 5;]←z[13 14 15;]
[347]  xd[6;]←xt[6;]←30↑'senao'
[348]  xd[7 8 9;]←z[16 17 18;]
[349]  xd[10;]←xt[10;]←30↑'fimse'
[350]  xd[11;]←xt[11;]←30↑'senao'
[351]  xd[12;]←z[10;]
[352]  xd[13 14 15;]←z[19 20 21;]
[353]  xd[16;]←xt[16;]←30↑'senao'
[354]  xd[17 18 19;]←z[22 23 24;]
[355]  xd[20;]←xd[21;]←xt[20;]←xt[21;]←30↑'fimse'
[356]  →(g=1)/oito1
[357]  →(g=2)/oito2
[358]  →(g=3)/oito3
[359]  →(g=4)/oito4
[360] oito1:resp[i]←1
[361]  rd←rd,[1]xd ⋄ rt←rt,[1]xd
[362]  →soma
[363] oito2:resp[i]←1
```

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[364]  xt[1;]←z[4;]
[365]  xt[2;]←z[12;]
[366] ⍝ xt[3 4 5;]←z[19 20 21;]
[367] ⍝ xt[7 8 9;]←z[22 23 24;]
[368] ⍝ mesmo erro da q.6 acima
[369]  xt[3 4 5;]←z[22 23 24;]
[370]  xt[7 8 9;]←z[19 20 21;]
[371]  xt[12;]←z[8;]
[372]  xt[13 14 15;]←z[16 17 18;]
[373]  xt[17 18 19;]←z[13 14 15;]
[374]  rd←rd,[1]xd ⋄ rt←rt,[1]xt
[375]  →soma
[376] oito3:resp[i]←0
[377]  xt[1;]←z[4;]
[378]  xt[2;]←z[6;]
[379]  xt[3 4 5;]←z[13 14 15;]
[380]  xt[7 8 9;]←z[16 17 18;]
[381]  xt[12;]←z[12;]
[382]  xt[13 14 15;]←z[19 20 21;]
[383]  xt[17 18 19;]←z[22 23 24;]
[384]  rd←rd,[1]xd ⋄ rt←rt,[1]xt
[385]  →soma
[386] oito4:resp[i]←0
[387]  xt[1;]←z[2;]
[388]  xt[2;]←z[6;]
[389]  xt[3 4 5;]←z[19 20 21;]
[390]  xt[7 8 9;]←z[22 23 24;]
[391]  xt[12;]←z[10;]
[392]  xt[13 14 15;]←z[16 17 18;]
[393]  xt[17 18 19;]←z[13 14 15;]
[394]  rd←rd,[1]xd ⋄ rt←rt,[1]xt
[395]  →soma
[396] soma:
[397]  i←i+1
[398]  rd←rd,[1]30↑'-' ⋄ rt←rt,[1]30↑'='
[399]  →t1
[400] fim:rd←(30≠+/rd=' ')/[1]rd
[401]  rt←(30≠+/rt=' ')/[1]rt
[402]  r←resp rd rt
-------------------------------------------------------------
[0]  r←geracaso
[1]  r←24 30⍴' '
[2]  r[⍳4;]←geraconds'AB'
[3]  r[4+⍳4;]←geraconds'CD'
[4]  r[8+⍳4;]←geraconds'EF'
[5]  r[12+⍳3;]←geracomas'XYZT'
[6]  r[15+⍳3;]←geracomas'KLMN'
[7]  r[18+⍳3;]←geracomas'PRST'
[8]  r[21+⍳3;]←geracomas'GHJU'
-------------------------------------------------------------
[ 0]  r←geracomas letras;a
[ 1]  r←3 30⍴' '
[ 2]  a←?2
[ 3]  →(a>2)/tres
[ 4]  →(a>1)/dois
[ 5] um:r[1;]←30↑letras[?⍴letras],'<-',letras[?⍴letras],'+-×÷'[?4],1 0⍕?1+8
[ 6]  →0
[ 7] dois:r[1;]←30↑letras[?⍴letras],'<-',letras[?⍴letras],'+-×÷'[?4],1 0⍕1+?8
[ 8]  r[2;]←30↑letras[?⍴letras],'<-',letras[?⍴letras],'+-×÷'[?4],1 0⍕1+?8
[ 9]  →0
[10] tres:r[1;]←30↑letras[?⍴letras],'<-',letras[?⍴letras],'+-×÷'[?4],1 0⍕1+?8
[11]  r[2;]←30↑letras[?⍴letras],'<-',letras[?⍴letras],'+-×÷'[?4],1 0⍕1+?8
[12]  r[3;]←30↑letras[?⍴letras],'<-',letras[?⍴letras],'+-×÷'[?4],1 0⍕1+?8
```

```
------------------------------------------------------------
[0]  r←geraconds letras
[1]  r←4 30⍴' '
[2]  r[1;]←30↑'(',(letras[1],('><≥≤=≠'[?6]),1 0⍕?9),')'
[3]  r[2;]←30↑'(',(letras[1],('><≥≤=≠'[?6]),1 0⍕?9),')',('∧∨'[?2]),'(',(letras[2],('><≥≤=
      ≠'[?6]),1 0⍕?9),')'
[4]  r[3;]←30↑negaconds r[1;]
[5]  r[4;]←30↑negaconds r[2;]
------------------------------------------------------------
[ 0]  r←item manerad d;i;hs;cc
[ 1]  i←1 ⋄ r←0 80⍴' '
[ 2]  r←r,[1]1 80⍴80↑'⍀STRUCT{ex',('0'⍕item),'}{}{'
[ 3] t1:→(i>1↑⍴d)/aca
[ 4]  →(d[i;1]='-')/soma
[ 5]  →(d[i;1]='(')/se
[ 6]  →(d[i;1]='s')/senao
[ 7]  →(d[i;1]='f')/fimse
[ 8]  →((d[(i+1);1]='f')∨(d[(i+1);1]='s'))/poe
[ 9]  r←r,[1]1 80⍴80↑'⍀ACTION {',(tradcoma18 d[i;]),'}'
[10]  →soma
[11] poe:
[12]  r←r,[1]1 80⍴80↑'⍀ACTION {',(tradcoma18 d[i;]),'}}'
[13]  →soma
[14] se:
[15]  cc←'( 'edit') 'edit tradcoma18 d[i;]
[16]  r←r,[1]1 80⍴80↑'⍀IF {',cc,' } ⍀THEN {'
[17]  →soma
[18] senao:
[19]  r←r,[1]1 80⍴80↑'⍀ELSE {'
[20]  →soma
[21] fimse:
[22]  r←r,[1]1 80⍴80↑'⍀ENDIF }'
[23]  →soma
[24] soma:→(i=i←i+1)/t1
[25] aca:
------------------------------------------------------------
[ 0]  r←manerat d;i;hs
[ 1]  i←1 ⋄ hs←0 ⋄ r←0 80⍴' '
[ 2] t1:→(i>1↑⍴d)/aca
[ 3]  →(d[i;1]='=')/soma
[ 4]  →(d[i;1]='(')/se
[ 5]  →(d[i;1]='s')/senao
[ 6]  →(d[i;1]='f')/fimse
[ 7]  r←r,[1]1 80⍴80↑'⍀hspace{',('00'⍕hs),'pt}'
[ 8]  r←r,[1]1 80⍴80↑(tradcoma18 d[i;]),'⍀⍀'
[ 9]  →soma
[10] se:
[11]  r←r,[1]1 80⍴80↑'⍀hspace{',('00'⍕hs),'pt}'
[12]  r←r,[1]1 80⍴80↑'se ',(tradcoma18 d[i;]),' ent↑o ⍀⍀'
[13]  hs←hs+10
[14]  →soma
[15] senao:
[16]  hs←hs-10
[17]  r←r,[1]1 80⍴80↑'⍀hspace{',('00'⍕hs),'pt}'
[18]  r←r,[1]1 80⍴80↑'sen↑o⍀⍀'
[19]  hs←hs+10
[20]  →soma
[21] fimse:
[22]  hs←hs-10
[23]  r←r,[1]1 80⍴80↑'⍀hspace{',('00'⍕hs),'pt}'
[24]  r←r,[1]1 80⍴80↑'fimse⍀⍀'
[25]  →soma
[26] soma:→(i=i←i+1)/t1
```

```
[27] aca:
------------------------------------------------------------
[ 0]  r←ad montaff at;i;fi;in;item
[ 1]  r←0 80⍴' '
[ 2]  i←1 ⋄ item←1
[ 3] t1:
[ 4]  →(i≥1↑⍴ad)/acabou
[ 5]  fi←in←i
[ 6] t2:→(ad[fi;1]='-')/ach
[ 7]  fi←fi+1
[ 8]  →t2
[ 9] ach:
[10] ⍝ r←r,[1]1 80⍴80↑'\scriptsize'
[11]  r←r,[1]1 80⍴80↑'\setiftext{v}{}'
[12]  r←r,[1]1 80⍴80↑'\unitwidth=34pt'
[13]  r←r,[1]item manerad ad[(in-1)+⍳fi-in;]
[14] ⍝ r←r,[1]1 80⍴80↑'Funcao EX',('000'⍕item),'\\'
[15]  r←r,[1]1 80⍴80↑'\texttt{'
[16]  r←r,[1]1 80⍴80↑'\begin{tabbing}'
[17]  r←r,[1]manerat at[(in-1)+⍳fi-in;]
[18]  r←r,[1]1 80⍴80↑'\end{tabbing}'
[19]  r←r,[1]1 80⍴80↑'}'
[20]  item←item+1
[21] ⍝ r←r,[1]1 80⍴80↑'}'
[22]  i←fi+1
[23]  →t1
[24] acabou:
------------------------------------------------------------
[ 0]  r←ad montann at;i;fi;in;item
[ 1]  r←0 80⍴' '
[ 2]  i←1 ⋄ item←1
[ 3] t1:
[ 4]  →(i≥1↑⍴ad)/acabou
[ 5]  fi←in←i
[ 6] t2:→(ad[fi;1]='-')/ach
[ 7]  fi←fi+1
[ 8]  →t2
[ 9] ach:
[10] ⍝ r←r,[1]1 80⍴80↑'\scriptsize'
[11]  r←r,[1]1 80⍴80↑'\setiftext{v}{f}'
[12]  r←r,[1]1 80⍴80↑'\unitwidth=54pt'
[13]  r←r,[1]1 80⍴80↑'\nassiwidth=150pt'
[14]  r←r,[1]item manerad ad[(in-1)+⍳fi-in;]
[15] ⍝ r←r,[1]1 80⍴80↑'Funcao EX',('000'⍕item),'\\'
[16]  r←r,[1]1 80⍴80↑'\texttt{'
[17]  r←r,[1]1 80⍴80↑'\begin{tabbing}'
[18]  r←r,[1]manerat at[(in-1)+⍳fi-in;]
[19]  r←r,[1]1 80⍴80↑'\end{tabbing}'
[20]  r←r,[1]1 80⍴80↑'}'
[21]  item←item+1
[22] ⍝ r←r,[1]1 80⍴80↑'}'
[23]  i←fi+1
[24]  →t1
[25] acabou:
------------------------------------------------------------
[0]  r←negaconds x;mt
[1]  mt←8 2⍴'>≤<≥≤>≥<=≠≠=∧∨∨∧'
[2]  r←x
[3]  →(x[6]=' ')/simpl
[4] comp:r[3]←mt[mt[;1]⍳x[3];2]
[5]  r[6]←mt[mt[;1]⍳x[6];2]
[6]  r[9]←mt[mt[;1]⍳x[9];2]
[7]  →0
```

```
[8] simpl:r[3]←mt[mt[;1]⍳x[3];2]
------------------------------------------------------------
[0]  r←pedemail x
[1]  →(40≠+/' '=x)/aindanao
[2]  r←80⍴'Por favor, informe seu e-mail: ⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_'
[3]  →junnao
[4] aindanao:r←80⍴'e-mail cadastrado: ⍀verb+',x,'+'
[5] junnao:
------------------------------------------------------------
[0]  r←tirab x
[1]  r←(70≠(+/x=' '))/[1]x
------------------------------------------------------------
[ 0]  r←tradcoma18 x;i;j
[ 1]  i←j←1 ⋄ r←100⍴' '
[ 2] t1:→(i>⍴x)/fim
[ 3]  →(i=⍴x)/pula
[ 4]  →((x[i]='<')∧(x[i+1]='-'))/recebe
[ 5] pula:→(x[i]='∨')/ou
[ 6]  →(x[i]='∧')/e
[ 7]  →(x[i]='÷')/divi
[ 8]  →(x[i]='≠')/diferente
[ 9]  →(x[i]='≤')/menig
[10]  →(x[i]='≥')/maiig
[11]  →(x[i]='×')/vezes
[12]  →(x[i]='>')/maior
[13]  →(x[i]='<')/menor
[14] nada:r[j]←x[i]
[15]  i←i+1
[16]  j←j+1
[17]  →t1
[18] recebe:r[j+¯1+⍳7]←'$⍀gets$'
[19]  j←j+7
[20]  i←i+2
[21]  →t1
[22] ou:r[j+¯1+⍳6]←'$⍀lor$'
[23]  j←j+6
[24]  i←i+1
[25]  →t1
[26] divi:r[j+¯1+⍳6]←'$⍀div$'
[27]  j←j+6
[28]  i←i+1
[29]  →t1
[30] e:r[j+¯1+⍳7]←'$⍀land$'
[31]  j←j+7
[32]  i←i+1
[33]  →t1
[34] diferente:r[j+¯1+⍳6]←'$⍀neq$'
[35]  j←j+6
[36]  i←i+1
[37]  →t1
[38] menig:r[j+¯1+⍳5]←'$⍀le$'
[39]  j←j+5
[40]  i←i+1
[41]  →t1
[42] maiig:r[j+¯1+⍳5]←'$⍀ge$'
[43]  j←j+5
[44]  i←i+1
[45]  →t1
[46] vezes:r[j+¯1+⍳8]←'$⍀times$'
[47]  j←j+8
[48]  i←i+1
[49]  →t1
[50] maior:r[j+¯1+⍳3]←'$>$'
```

```
[51]  j←j+3
[52]  i←i+1
[53]  →t1
[54] menor:r[j+¯1+⍳3]←'$<$'
[55]  j←j+3
[56]  i←i+1
[57]  →t1
[58] fim:r←trim r
-------------------------------------------------------------
[ 0]  opesq vivo018f n;CORRECAO;EVENTO;aa;aaa;acuja;bb;cc;dhx;esse;f;lixo1;lixonol;relat;r
      esp;resu;upag;x;xixo;xk;xx;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←6 ⋄ EVENTO←'PL018f  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA018f←ajusta80 FOLHALA018f
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA018f)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOB18F'
[12]  xk←1 ⋄ resu←0 9⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←409 80⍴' '
[15]  f←FOLHALA018f
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←1.03
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23] ⍝ esse[408;]←80↑pedemail ylu[xk;36+⍳40]
[24]  esse[408;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[25]  esse[409;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[26] inica:x←faztripa
[27]  esse[7+⍳400;]←400 80↑(⊃x[2])montaff(⊃x[3])
[28]  resp←resp,(⊃x[1])⍝×1 2 4 8 16 32 64 128
[29]  resu←resu,[1]1 9⍴resp
[30]  acuja←(f[;2]='#')/⍳1↑⍴f
[31]  f[acuja;]←esse[⍬,f[acuja;3 4 5],' ';]
[32]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[33]  ⍞←(⍕xk←xk+1),'-'
[34]  →testa
[35] fim:upag←(1 0+⍴f)⍴' '
[36]  →(1=≡n)/elafa
[37]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[38]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[39]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←4 0 10 0,(6⍴2 0),(4 0),6⍴2 0)⍕resu
[40]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[41]  →terminando
[42] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴'    '),'¯-'edit((8⍴2 0),(4 0),6⍴2 0)⍕0 1↓resu)
[43]  aaa[1;35 36]←2 0⍕CORRECAO
[44]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[45]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[46] terminando:
[47]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[48]  relat[1↑⍴relat;;]←upag
[49]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[50] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[51]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
```

```
[52]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[ 0]  opesq vivo018n n;CORRECAO;EVENTO;aa;aaa;acuja;bb;cc;dhx;esse;f;lixo1;lixonol;relat;r
      esp;resu;upag;x;xixo;xk;xx;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←6 ⋄ EVENTO←'PL018n  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA018n←ajusta80 FOLHALA018n
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA018n)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOB18N'
[12]  xk←1 ⋄ resu←0 9⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←409 80⍴' '
[15]  f←FOLHALA018n
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←1.02
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23] ⍝ esse[408;]←80↑pedemail ylu[xk;36+⍳40]
[24]  esse[408;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[25]  esse[409;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[26] inica:x←faztripa
[27]  esse[7+⍳400;]←400 80↑(⊃x[2])montann(⊃x[3])
[28]  resp←resp,(⊃x[1])⍝×1 2 4 8 16 32 64 128
[29]  resu←resu,[1]1 9⍴resp
[30]  acuja←(f[;2]='#')/⍳1↑⍴f
[31]  f[acuja;]←esse[⍬,f[acuja;3 4 5],' ';]
[32]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[33]  ⎕←(⍕xk←xk+1),'-'
[34]  →testa
[35] fim:upag←(1 0+⍴f)⍴' '
[36]  →(1=≡n)/elafa
[37]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[38]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[39]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←4 0 10 0,(6⍴2 0),(4 0),6⍴2 0)⍕resu
[40]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[41]  →terminando
[42] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴'    '),'¯-'edit(4 0,(6⍴2 0),(4 0),6⍴2 0)⍕0 1↓resu)
[43]  aaa[1;35 36]←2 0⍕CORRECAO
[44]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[45]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[46] terminando:
[47]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[48]  relat[1↑⍴relat;;]←upag
[49]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[50] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[51]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[52]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo019

```
[0]  r←geraalf
```

```
[1]  r←4?4
------------------------------------------------------------
[0]  r←geradecol
[1]  r←(5+?80),(1000+100×?28),?39
------------------------------------------------------------
[0]  r←geraimpd
[1]  r←(6000+500×?40),(100×5×?6),¯1+?6
------------------------------------------------------------
[0]  r←geralinp
[1]  r←?6
------------------------------------------------------------
[0]  r←geramerf
[1]  r←(?400),(?6),17+?30
------------------------------------------------------------
[0]  r←geraprec
[1]  r←(30×?7),(?4),(?10)
------------------------------------------------------------
[0]  r←geraxj
[1]  r←(?6),(?600),(?4),100
------------------------------------------------------------
[ 0]  r←resolvealf abcd
[ 1] ⍝ 'ABCD'[⍋abcd]
[ 2]  →(abcd[1]≥3)/k1
[ 3]  abcd[4]←abcd[4]-2
[ 4]  →(abcd[2]≤2)/k2
[ 5]  abcd[3]←abcd[3]+1
[ 6]  →(abcd[4]≥2)/k3
[ 7]  abcd[1]←abcd[1]+1
[ 8]  abcd[2]←abcd[2]-2
[ 9]  →junta
[10] k2:
[11]  abcd[3]←abcd[3]-1
[12]  abcd[4]←abcd[4]+2
[13]  →junta
[14] k3:
[15]  abcd[1]←abcd[1]-2
[16]  abcd[2]←abcd[2]+1
[17]  →junta
[18] k1:
[19]  →(abcd[3]≥3)/k4
[20]  →(abcd[4]<3)/k5
[21]  abcd[2]←abcd[2]-1
[22]  abcd[1]←abcd[1]+2
[23]  →junta
[24] k4:
[25]  abcd[2]←abcd[2]+1
[26]  abcd[4]←abcd[4]-2
[27]  →junta
[28] k5:
[29]  abcd[2]←abcd[2]+1
[30]  abcd[1]←abcd[1]-1
[31] junta:
[32]  r←'ABCD'[⍋abcd]
------------------------------------------------------------
[ 0]  r←resolvedecol x;pav;cpi;tmb;res;a;b
[ 1]  pav←x[1] ⋄ cpi←x[2] ⋄ tmb←x[3]
[ 2]  a←pav×⌊((tmb+20)÷40)×1.0078
[ 3]  →(a≥40)/ufa1
[ 4]  b←2000
[ 5]  →junta2
[ 6] ufa1:
[ 7]  →(a≥80)/ufa2
[ 8]  b←2000+(⌊((a-40)÷40))×200
```

```
[ 9]  →junta2
[10] ufa2:
[11]  b←2000+(⌊((a-40)÷60))×180
[12] junta2:
[13]  →(b<cpi)/ufa3
[14]  res←0
[15]  →final
[16] ufa3:res←1
[17] final:
[18]  r←res
-------------------------------------------------------------
[ 0]  r←resolveimpd x;rb;ab;dp;vi
[ 1]  rb←x[1] ⋄ ab←x[2] ⋄ dp←x[3]
[ 2]  →(rb≤8000)/k36
[ 3]  →(rb≤15000)/r26
[ 4]  →(rb≤25000)/r15
[ 5]  →(ab≤10000)/r8
[ 6]  vi←0
[ 7]  →fina
[ 8] r8:→(dp≤4)/r11
[ 9]  vi←1500
[10]  →fina
[11] r11:vi←2000
[12]  →fina
[13] r15:→(ab≤5000)/r18
[14]  vi←0
[15]  →fina
[16] r18:
[17]  →(dp≤3)/r21
[18]  vi←800
[19]  →fina
[20] r21:
[21]  vi←1000
[22]  →fina
[23] r26:
[24]  →(ab≤2000)/r29
[25]  vi←0
[26]  →fina
[27] r29:
[28]  →(dp≤2)/r32
[29]  vi←300
[30]  →fina
[31] r32:
[32]  vi←500
[33]  →fina
[34] k36:
[35]  vi←0
[36]  →fina
[37] fina:r←vi
-------------------------------------------------------------
[ 0]  r←resolvelinp d;cor;msg
[ 1]  →(d>5)/vermrej
[ 2]  →(d>3)/amar3cl
[ 3]  cor←'azul'
[ 4]  →(d>1)/azul2cl
[ 5]  msg←'1.cl'
[ 6]  →final
[ 7] azul2cl:msg←'2.cl'
[ 8]  →final
[ 9] amar3cl:
[10]  cor←'amar'
[11]  msg←'3.cl'
[12]  →final
```

```
[13] vermrej:
[14]  cor←'verm'
[15]  msg←'reje'
[16] final:r←8⍴' '
[17]  r[⍳4]←cor
[18]  r[4+⍳4]←msg
------------------------------------------------------------
[ 0]  r←resolvemerf x;qts;bf;vlv;rc;id
[ 1]  qts←13
[ 2]  bf←0
[ 3]  vlv←x[1]
[ 4]  rc←x[2]
[ 5]  id←x[3]
[ 6]  →(vlv≤250)/cont1
[ 7]  →(rc>2)/ufa
[ 8]  qts←qts+5
[ 9]  bf←bf+3
[10]  →cont1
[11] ufa:qts←qts+3
[12] cont1:→((vlv≤100)∨(vlv>250))/ufa2
[13]  →(rc>4)/ufa3
[14]  qts←qts+4
[15]  bf←bf+2
[16]  →ufa2
[17] ufa3:qts←qts+2
[18] ufa2:
[19]  →(id≤40)/oja
[20]  bf←bf+3
[21] oja:
[22]  r←qts,bf
------------------------------------------------------------
[ 0]  r←resolveprec x;dcs;hap;qi;val
[ 1]  dcs←x[1] ⋄ hap←x[2] ⋄ qi←x[3]
[ 2]  →(dcs≤180)/ufa1
[ 3]  dcs←⌊dcs×0.75
[ 4] ufa1:→(dcs≤60)/ufa2
[ 5]  dcs←⌊dcs×0.9
[ 6] ufa2:
[ 7]  →((hap≠1)∧(hap≠4))/ufa3
[ 8]  →(qi≤3)/ufa4
[ 9]  val←dcs×qi×76
[10]  →junta
[11] ufa4:val←dcs×qi×86
[12]  →junta
[13] ufa3:
[14]  →(hap≠2)/ufa5
[15]  →(qi<3)/ufa6
[16]  val←dcs×qi×96
[17]  →junta
[18] ufa6:val←dcs×qi×106
[19]  →junta
[20] ufa5:
[21]  val←dcs×qi×126
[22] junta:r←val
------------------------------------------------------------
[ 0]  r←resolvetaxj x;ac;vf;po;trj;tc
[ 1]  ac←x[1] ⋄ vf←x[2] ⋄ po←x[3] ⋄ trj←x[4]
[ 2]  →(vf≤500)/ufa1
[ 3]  →(ac≤3)/ufa2
[ 4]  →(po≥3)/ufa3
[ 5]  tc←trj×1.1
[ 6]  →junta
[ 7] ufa3:tc←trj×1.2
```

```
[ 8]  →junta
[ 9] ufa2:tc←trj×1.3
[10]  →junta
[11] ufa1:
[12]  →(vf≤200)/ufa4
[13]  →(ac≤4)/ufa5
[14]  tc←trj×1.4
[15]  →junta
[16] ufa5:tc←trj×1.5
[17]  →junta
[18] ufa4:
[19]  →(vf≤50)/ufa6
[20]  →(po≤3)/ufa7
[21]  tc←trj×1.6
[22]  →junta
[23] ufa7:tc←trj×1.7
[24]  →junta
[25] ufa6:tc←trj×1.8
[26] junta:r←tc
-------------------------------------------------------------
[ 0]  opesq vivo019a n;CORRECAO;EVENTO;aa;aaa;acuja;bb;dhx;esse;f;lixo1;lixonol;num;relat;
      resp;resu;upag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←8 ⋄ EVENTO←'PL019   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA019←ajusta80 FOLHALA019
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA019)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[12]  xk←1 ⋄ resu←0 49⍴' '
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←30 80⍴' '
[15]  f←FOLHALA019
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←1.02
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[23]  resp←3 0⍎resp
[24]  esse[29;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[25]  esse[30;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[26] ini1:
[27]  bb←resolvelinp aa←geralinp
[28]  esse[8;]←80↑3 0⍎aa
[29]  resp←resp,'-',bb
[30]  bb←resolvemerf aa←geramerf
[31]  esse[9;]←80↑8 0⍎aa[1]
[32]  esse[10;]←80↑8 0⍎aa[2]
[33]  esse[11;]←80↑8 0⍎aa[3]
[34]  resp←resp,'-',3 0⍎bb[1]
[35]  resp←resp,3 0⍎bb[2]
[36]  bb←resolvetaxj aa←geratаxj
[37]  esse[12;]←80↑8 0⍎aa[1]
[38]  esse[13;]←80↑8 0⍎aa[2]
[39]  esse[14;]←80↑8 0⍎aa[3]
[40]  esse[15;]←80↑8 0⍎aa[4]
```

```
[41]  resp←resp,'-',5 1⍕bb
[42]  bb←resolveprec aa←geraprec
[43]  esse[16;]←80↑8 0⍕aa[1]
[44]  esse[17;]←80↑8 0⍕aa[2]
[45]  esse[18;]←80↑8 0⍕aa[3]
[46]  resp←resp,'-',8 0⍕bb
[47]  bb←resolvedecol aa←geradecol
[48]  esse[19;]←80↑8 0⍕aa[1]
[49]  esse[20;]←80↑8 0⍕aa[2]
[50]  esse[21;]←80↑8 0⍕aa[3]
[51]  resp←resp,'-',3 0⍕bb
[52]  bb←resolvealf aa←geraalf
[53]  esse[22;]←80↑8 0⍕aa[1]
[54]  esse[23;]←80↑8 0⍕aa[2]
[55]  esse[24;]←80↑8 0⍕aa[3]
[56]  esse[25;]←80↑8 0⍕aa[4]
[57]  resp←resp,'-',bb
[58]  bb←resolveimpd aa←geraimpd
[59]  esse[26;]←80↑8 0⍕aa[1]
[60]  esse[27;]←80↑8 0⍕aa[2]
[61]  esse[28;]←80↑8 0⍕aa[3]
[62]  resp←resp,'-',5 0⍕bb
[63]  resu←resu,[1]1 49⍴resp
[64]  acuja←(f[;2]='#')/⍳1↑⍴f
[65]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[66]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[67]  ⍞←(⍕xk←xk+1),'-'
[68]  →testa
[69] fim:upag←(1 0+⍴f)⍴' '
[70]  →(1=≡n)/elafa
[71]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[72]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[73]  upag[2+⍳1↑⍴resu;⍳49]←resu
[74]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[75]  →terminando
[76] elafa:aaa←(ylu,0 3↓resu)
[77]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[78]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[79] terminando:
[80]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[81]  relat[1↑⍴relat;;]←upag
[82]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[83] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[84]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[85]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo020

```
[ 0]  RRRR←E1;A;B;C;RRRR;Δ001;Δ002;Δ003
[ 1]  A←5
[ 2]  B←3
[ 3]  C←7
[ 4]  Δ001←((A>B))
[ 5]  →(~Δ001)/Δ002
[ 6]  A←A+C
[ 7]  B←B-1
[ 8] Δ002:
[ 9]  RRRR←A+B+C
-------------------------------------------------------------
[ 0]  RRRR←E2;A;B;C;RRRR;Δ001;Δ002;Δ003
[ 1]  A←6
```

```
[ 2]  B←4
[ 3]  C←8
[ 4]  Δ001←(((A+B)≥C)∨(A≠B))
[ 5]  →(~Δ001)/Δ002
[ 6]  A←B-C
[ 7]  B←B-2
[ 8] Δ002:
[ 9]  RRRR←A+B+C
-------------------------------------------------------------
[ 0]  RRRR←E3;A;B;C;RRRR;Δ001;Δ002;Δ003;Δ004
[ 1]  A←4
[ 2]  B←3
[ 3]  C←8
[ 4]  Δ001←((A>B)∨((B>A)∧(0=2|B)))
[ 5]  →(~Δ001)/Δ002
[ 6]  A←B-C
[ 7]  B←B-1
[ 8]  →Δ003
[ 9] Δ002:
[10]  A←C-4
[11]  B←A+1
[12] Δ003:
[13]  RRRR←A+B+C
-------------------------------------------------------------
[ 0]  RRRR←E4;A;B;C;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ008
[ 1]  A←3
[ 2]  B←3
[ 3]  C←5
[ 4]  Δ001←((A>B)∨((B>A)∧(0=2|B)))
[ 5]  →(~Δ001)/Δ002
[ 6]  Δ003←((B|A)≠C)
[ 7]  →(~Δ003)/Δ004
[ 8]  A←A+C
[ 9]  B←B-2
[10] Δ004:
[11]  →Δ005
[12] Δ002:
[13]  Δ006←((A>B)∨((B>A)∧(0=2|B)))
[14]  →(~Δ006)/Δ007
[15]  A←B-C
[16]  B←B-3
[17] Δ007:
[18] Δ005:
[19]  RRRR←A+B+C
-------------------------------------------------------------
[ 0]  RRRR←E5;A;B;C;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ008
[ 1]  A←3
[ 2]  B←4
[ 3]  C←7
[ 4]  Δ001←((0=2|A+B+C)∨((A+B)≠C))
[ 5]  →(~Δ001)/Δ002
[ 6]  A←B-C
[ 7]  Δ003←((A+B)≥C)
[ 8]  →(~Δ003)/Δ004
[ 9]  A←A+C
[10]  B←B-2
[11] Δ004:
[12]  B←B-3
[13]  →Δ005
[14] Δ002:
[15]  Δ006←(((A+B)≠C)∧(~(A=B)))
[16]  →(~Δ006)/Δ007
[17]  A←B-C
```

```
[18]  B←B-2
[19] Δ007:
[20]  A←C-4
[21]  B←A+2
[22] Δ005:
[23]  RRRR←A+B+C
-------------------------------------------------------------
[ 0]  r←condicao1;a;b;i
[ 1]  r←2⍴0
[ 2]  i←?7
[ 3]  →(i=1)/um
[ 4]  →(i=2)/dois
[ 5]  →(i=3)/tres
[ 6]  →(i=4)/quatro
[ 7]  →(i=5)/cinco
[ 8]  →(i=6)/seis
[ 9]  →(i=7)/sete
[10] um:a←'(A+B)≥C'
[11]  b←'((A + B) $⍀ge$ C)'
[12]  →fim
[13] dois:a←'(B|A)≠C'
[14]  b←'((A mod B) $⍀neq$ C)'
[15]  →fim
[16] tres:a←'(A+B)≠C'
[17]  b←'((A + B) $⍀neq$ C)'
[18]  →fim
[19] quatro:a←'(0=2|A+B+C)'
[20]  b←'((A + B + C) é par)'
[21]  →fim
[22] cinco:a←'(A>B)'
[23]  b←'(A $>$ B)'
[24]  →fim
[25] seis:a←'(A≠B)'
[26]  b←'(A $⍀neq$ B)'
[27]  →fim
[28] sete:a←'(A=B)'
[29]  b←'(A = B)'
[30]  →fim
[31] fim:r[1]←⊂74↑a
[32]  r[2]←⊂74↑b
-------------------------------------------------------------
[ 0]  r←condicao2;a;b;i
[ 1]  r←2⍴0
[ 2]  i←?7
[ 3]  →(i=1)/um
[ 4]  →(i=2)/dois
[ 5]  →(i=3)/tres
[ 6]  →(i=4)/quatro
[ 7]  →(i=5)/cinco
[ 8]  →(i=6)/seis
[ 9]  →(i=7)/sete
[10] um:a←'((A+B)≥C) ∨ (A ≠ B)'
[11]  b←'((A + B) $⍀ge$ C) $⍀lor$ (A $⍀neq$ B)'
[12]  →fim
[13] dois:a←'((B|A)≠C) ∧ (A ≤ C) '
[14]  b←'((A mod B) $⍀neq$ C) $⍀land$ (A $⍀le$ C)'
[15]  →fim
[16] tres:a←'((A+B)≠C) ∧ (~(A=B))'
[17]  b←'((A + B) $⍀neq$ C) $⍀land$ ($⍀sim$(A = B))'
[18]  →fim
[19] quatro:a←'(0=2|A+B+C) ∨ ((A+B) ≠ C)'
[20]  b←'((A + B + C) é par) $⍀lor$ ((A + B ) $⍀neq$ C)'
[21]  →fim
```

```
[22] cinco:a←'(A>B) ∨ ((B>A) ∧ (0=2|B))'
[23]  b←'(A $>$ B) $⍱lor$ ((B $>$ A) $⍱land$ (B é par))'
[24]  →fim
[25] seis:a←'(A≠B)∨((A+2)>C)'
[26]  b←'(A $⍱neq$ B) $⍱lor$ (A+2 $>$ C)'
[27]  →fim
[28] sete:a←'(A=B) ∧ ((C-3)<B)'
[29]  b←'(A = B) $⍱land$ ((C-3) $<$ B)'
[30]  →fim
[31] fim:r[1]←⊂74↑a
[32]  r[2]←⊂74↑b
-------------------------------------------------------------
[  0]  r←cpc algo;nome;PILHA;nnn;saida;aspa;vv;coma;SALVA;i;j;loca;aaa;pn;pna
[  1] ⍝ versao 1.10
[  2]  PILHA←0 21⍴' ' ⋄ nnn←1 ⋄ saida←0 70⍴' ' ⋄ r←0 70⍴' ' ⋄ aspa←'''' ⋄ loca←'' ⋄ pna←'≤'
[  3]  →(1=⍴⍴algo)/erro90
[  4]  i←1
[  5] t1:→(i>1↑⍴algo)/fim
[  6]  →(algo[i;1]≠'α')/oraviva
[  7]  saida←saida,[1]1 70⍴70↑1↓algo[i;]
[  8]  →(i=i←i+1)/t1
[  9] oraviva:vv←vetoriza algo[i;]
[ 10]  →('algoritmo'igual⊃vv[1])/ealg
[ 11]  →('fim{algoritmo}'igual⊃vv[1])/ealf
[ 12]  →('fimalgoritmo'igual⊃vv[1])/ealf
[ 13]  →('funcao'igual⊃vv[1])/efun
[ 14]  →('fim{funcao}'igual⊃vv[1])/efuf
[ 15]  →('fimfuncao'igual⊃vv[1])/efuf
[ 16]  →('leia'igual⊃vv[1])/elei
[ 17]  →('imprima'igual⊃vv[1])/eimp
[ 18]  →('escreva'igual⊃vv[1])/eimp ⍝ para compatibilizar com o VG = 19/06/08
[ 19]  →('devolva'igual⊃vv[1])/eimp  ⍝ em teste: sera que devolva = imprima neste contexto
       ???
[ 20]  →('se'igual⊃vv[1])/esex
[ 21]  →('senao'igual⊃vv[1])/esen
[ 22]  →('fim{se}'igual⊃vv[1])/esef
[ 23]  →('fimse'igual⊃vv[1])/esef
[ 24]  →('enquanto'igual⊃vv[1])/eenq
[ 25]  →('fim{enquanto}'igual⊃vv[1])/eenf
[ 26]  →('fimenquanto'igual⊃vv[1])/eenf
[ 27]  →('repita'igual⊃vv[1])/erep
[ 28]  →('ate'igual⊃vv[1])/eate
[ 29]  →('para'igual⊃vv[1])/epar
[ 30]  →('fim{para}'igual⊃vv[1])/epaf
[ 31]  →('fimpara'igual⊃vv[1])/epaf
[ 32]  →('abandone'igual⊃vv[1])/eaba
[ 33]  →('saia'igual⊃vv[1])/esai
[ 34]  →('<-'igual⊃vv[2])/ecad
[ 35]  →('inteiro'igual⊃vv[1])/eint
[ 36]  →('real'igual⊃vv[1])/erea
[ 37]  →('logico'igual⊃vv[1])/elog
[ 38]  →('caracter'igual 8↑⊃vv[1])/ecar
[ 39]  →('vetor'igual⊃vv[1])/evet
[ 40]  →('vetora'igual⊃vv[1])/evaa
[ 41]  r←r,[1]1 70⍴70↑(3⍕i),' - comando desconhecido'
[ 42] soma:→(i=i←i+1)/t1
[ 43] ⍝--------------algoritmo--------------
[ 44] ealg:saida←saida,[1]1 70⍴70↑⊃vv[2]
[ 45]  →soma
[ 46] ealf:→fim
[ 47] ⍝--------------funcao-----------------
[ 48] efun:
[ 49]  →(2≥⍴vv)/naotem
```

```
[ 50]  coma←'RRRR←',(⊃vv[2]),' AAAA'
[ 51]  →vmesmo
[ 52] naotem:coma←'RRRR←',(⊃vv[2])
[ 53]  saida←saida,[1]1 70⍴70↑coma
[ 54]  nome←⊃vv[2]
[ 55]  →aca0
[ 56] vmesmo:
[ 57]  saida←saida,[1]1 70⍴70↑coma
[ 58]  nome←⊃vv[2]
[ 59]  j←1
[ 60] voi1:→(j>¯2+⍴vv)/aca0
[ 61]  saida←saida,[1]1 70⍴70↑(⊃vv[j+2]),'←AAAA[',(3 0⍕j),']'
[ 62]  loca←loca,';',⊃vv[j+2]
[ 63]  →(j=j←j+1)/voi1
[ 64] aca0:→soma
[ 65] efuf:→fim
[ 66] ⍝---------------leia------------------
[ 67] elei:saida←saida,[1]1 70⍴70↑aspa,'LEITURA DA VARIAVEL ',(⊃vv[2]),aspa
[ 68]  saida←saida,[1]1 70⍴70↑(⊃vv[2]),'←□'
[ 69]  →soma
[ 70] ⍝---------------imprima---------------
[ 71] eimp:→(3=⍴vv)/temmsg
[ 72]  aaa←⊃vv[2]
[ 73]  →(aaa[⍴aaa]=';')/juntaa
[ 74]  saida←saida,[1]1 70⍴70↑aaa
[ 75]  →soma
[ 76] juntaa:saida←saida,[1]1 70⍴70↑'□←⍕',¯1↓aaa
[ 77]  →soma
[ 78] temmsg:aaa←⊃vv[3]
[ 79]  →(aaa[⍴aaa]=';')/juntab
[ 80]  saida←saida,[1]1 70⍴70↑(⊃vv[2]),' ',aaa
[ 81]  →soma
[ 82] juntab:saida←saida,[1]1 70⍴70↑'□←',(⊃vv[2]),' ,⍕',¯1↓aaa
[ 83]  →soma
[ 84] ⍝---------------atribuicao------------
[ 85] ecad:saida←saida,[1]1 70⍴70↑(⊃vv[1]),'←',,⊃2↓vv
[ 86]  aaa←⊃vv[1]
[ 87]  →('['∈aaa)/soma
[ 88]  →(∨/aaa≤loca)/soma
[ 89]  loca←loca,';',⊃vv[1]
[ 90]  →soma
[ 91] ⍝---------------se--------------------
[ 92] esex:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[ 93]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn←nnn+1
[ 94]  PILHA←(1 21⍴21↑'SE',('000'⍕nnn)),[1]PILHA
[ 95]  nnn←nnn+1
[ 96]  →soma
[ 97] ⍝--senao--
[ 98] esen:SALVA←PILHA[1;3 4 5] ⋄ PILHA←1 0↓PILHA
[ 99]  PILHA←(1 21⍴21↑'SE',('000'⍕nnn)),[1]PILHA
[100]  saida←saida,[1]1 70⍴70↑'→Δ','000'⍕nnn
[101]  nnn←nnn+1
[102]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[103]  →soma
[104] ⍝--fim{se}--
[105] esef:saida←saida,[1]1 70⍴70↑'Δ',PILHA[1;3 4 5],':'
[106]  PILHA←1 0↓PILHA
[107]  →soma
[108] ⍝-------------enquanto--------------------
[109] eenq:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[110]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[111]  nnn←nnn+1
[112]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
```

```
[113]  nnn←nnn+1
[114]  saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[115]  nnn←nnn+1
[116]  saida←saida,[1]1 70ρ70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn-2
[117]  →soma
[118] ⍝----------fim{enquanto}-----------------
[119] eenf:SALVA←PILHA[1;3 4 5]
[120]  PILHA←1 0↓PILHA
[121]  saida←saida,[1]1 70ρ70↑'→Δ',PILHA[1;3 4 5]
[122]  PILHA←1 0↓PILHA
[123]  saida←saida,[1]1 70ρ70↑'Δ',SALVA,':'
[124]  →soma
[125] ⍝----------repita-------------------------
[126] erep:saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),':'
[127]  PILHA←(1 21ρ21↑'RE','000'⍕nnn),[1]PILHA
[128]  nnn←nnn+1
[129]  →soma
[130] ⍝-----------ate--------------------------
[131] eate:PILHA←(1 21ρ21↑'RE','000'⍕nnn),[1]PILHA
[132]  nnn←nnn+1
[133]  saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[134]  SALVA←PILHA[1;3 4 5]
[135]  PILHA←1 0↓PILHA
[136]  saida←saida,[1]1 70ρ70↑'→(Δ',('000'⍕nnn),')/Δ',SALVA
[137]  SALVA←PILHA[1;3 4 5]
[138]  PILHA←1 0↓PILHA
[139]  saida←saida,[1]1 70ρ70↑'→Δ',SALVA
[140]  saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn-1),':'
[141]  nnn←nnn+1 ⍝ inclusao desta linha em 19/04/06. Ainda nao suficientemente testada
[142]  →soma
[143] ⍝----------para-----------------------
[144] epar:saida←saida,[1]1 70ρ70↑(8↑⊃vv[2]),'←',8↑⊃vv[4]
[145]  PILHA←(1 21ρ21↑'PA','000'⍕nnn),[1]PILHA
[146]  saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),':'
[147]  nnn←nnn+1
[148]  →(8≤ρvv)/tempasso
[149]  PILHA←(1 21ρ21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8↑8⍕1),[1]PILHA
[150]  →juntab
[151] tempasso:PILHA←(1 21ρ21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8 2⍕pn←⍎⊃vv[8]),[1]PILHA
[152] ⍝ 'pn=',⍕pn
[153]  pna←'≤≥'[1+pn<0] ⍝ alteracao a 22/06/06, para acertar passo negativo
[154] juntab:nnn←nnn+1
[155]  saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),'←',(⊃vv[2]),pna,⍕⊃vv[6]
[156]  saida←saida,[1]1 70ρ70↑'→(~Δ',('000'⍕nnn),')/Δ','000'⍕nnn-1
[157]  nnn←nnn+1
[158]  →soma
[159] ⍝----------fim{para}-----------------
[160] epaf:saida←saida,[1]1 70ρ70↑PILHA[1;5+⍳8],'←',PILHA[1;5+⍳8],'+',PILHA[1;13+⍳8]
[161]  SALVA←PILHA[1;3 4 5]
[162]  PILHA←1 0↓PILHA
[163]  saida←saida,[1]1 70ρ70↑'→Δ',PILHA[1;3 4 5]
[164]  PILHA←1 0↓PILHA
[165]  saida←saida,[1]1 70ρ70↑'Δ',SALVA,':'
[166]  →soma
[167] ⍝-----------abandone--------------------
[168] eaba:→soma
[169] ⍝-----------saia--------------------------
[170] esai:→soma
[171] ⍝-------- definicao de variaveis---------------
[172] eint:
[173]  saida←saida,[1]1 70ρ70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[174]  →soma
[175] erea:
```

```
[176]  saida←saida,[1]1 70ρ70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[177]  →soma
[178] elog:
[179]  saida←saida,[1]1 70ρ70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[180]  →soma
[181] ecar:
[182]  saida←saida,[1]1 70ρ70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[183]  →soma
[184] ⍝----------definicao de vetores-----------------
[185] evet:
[186]  saida←saida,[1]1 70ρ70↑(1 parte(⊃vv[2])),'←',(2 parte(⊃vv[2])),'ρ0'
[187]  →soma
[188] evaa:
[189]  saida←saida,[1]1 70ρ70↑(1 parte(⊃vv[2])),'←',(2 parte(⊃vv[2])),'ρ',aspa,' ',aspa
[190]  →soma
[191] fim:
[192]  i←1
[193] tfim:→(i>nnn)/mesmo
[194]  loca←loca,';Δ','000'⍕i
[195]  →(i=i←i+1)/tfim
[196] mesmo:→(50>ρloca)/blz1
[197]  saida←((1↑ρsaida),20+ρloca)↑saida
[198]  saida[1;20+⍳ρloca]←loca
[199]  →pula22
[200] blz1:saida[1;20+⍳50]←50↑loca
[201] pula22:r←'_ 'edit saida
[202]  →0
[203] erro90:'algoritmo nao e uma matriz'
[204]  →0
-------------------------------------------------------------
[ 0]  k1←sim docf ja;i
[ 1] ⍝fgera uma matriz de caracteres com a ⎕CR da funcao
[ 2] ⍝rse 1 docf 'funcao' gera uma matriz simples so numerada
[ 3] ⍝rse docf 'funcao' gera a matriz com ∇ acima e abaixo
[ 4] ⍝da matriz com ou sem ∇
[ 5]  k1←⎕CR ja
[ 6]  k1←(((1↑ρk1),6)ρ' '),k1
[ 7]  i←0
[ 8] testa:→(i≥1↑ρk1)/aca
[ 9]  →(i≥10)/mai1
[10]  k1[i+1;3 4 5]←'[',(1 0⍕i),']'
[11]  →soma
[12] mai1:→(i≥100)/mai2
[13]  k1[i+1;2 3 4 5]←'[',(2 0⍕i),']'
[14]  →soma
[15] mai2:k1[i+1;1 2 3 4 5]←'[',(3 0⍕i),']'
[16] soma:→(i=i←i+1)/testa
[17] aca:
[18]  →(0≠⎕NC'sim')/0
[19]  k1←((1,1↓ρk1)ρ1000↑'     ∇'),[1]k1
[20]  k1←k1,[1](1,1↓ρk1)ρ1000↑'     ∇'
-------------------------------------------------------------
[ 0]  r←gerase1;a;b;A;B;C;cc;e
[ 1]  r←2ρ0
[ 2]  a←10 74ρ' '
[ 3]  a[1;]←74↑'funcao E1'
[ 4]  a[2;]←74↑'A<-',1 0⍕A←2+?4
[ 5]  a[3;]←74↑'B<-',1 0⍕B←2+?3
[ 6]  a[4;]←74↑'C<-',1 0⍕C←4+?5
[ 7]  cc←condicao1
[ 8]  a[5;]←74↑'se (',(trim⊃cc[1]),') entao'
[ 9]  a[6;]←74↑'   A<-A+C'
[10]  a[7;]←74↑'   B<-B-',1 0⍕e←?3
```

```
[11]  a[8;]←74↑'fimse'
[12]  a[9;]←74↑'RRRR <- A+B+C'
[13]  a[10;]←74↑'fimfuncao'
[14]  r[1]←⊂a
[15]  b←10 74⍴' '
[16]  b[1;]←74↑'\begin{algorithmic}[1]'
[17]  b[2;]←74↑'\STATE A $\gets$ ',1 0⍕A
[18]  b[3;]←74↑'\STATE B $\gets$ ',1 0⍕B
[19]  b[4;]←74↑'\STATE C $\gets$ ',1 0⍕C
[20]  b[5;]←74↑'\IF{',(trim⊃cc[2]),'}'
[21]  b[6;]←74↑'\STATE A $\gets$ A+C'
[22]  b[7;]←74↑'\STATE B $\gets$ B-',1 0⍕e
[23]  b[8;]←74↑'\ENDIF'
[24]  b[9;]←74↑'\STATE escreva (A+B+C)'
[25]  b[10;]←74↑'\end{algorithmic}'
[26]  r[2]←⊂b
-------------------------------------------------------------
[ 0]  r←gerase2;a;b;A;B;C;cc;e
[ 1]  r←2⍴0
[ 2]  a←10 74⍴' '
[ 3]  a[1;]←74↑'funcao E2'
[ 4]  a[2;]←74↑'A<-',1 0⍕A←2+?4
[ 5]  a[3;]←74↑'B<-',1 0⍕B←2+?3
[ 6]  a[4;]←74↑'C<-',1 0⍕C←4+?5
[ 7]  cc←condicao2
[ 8]  a[5;]←74↑'se (',(trim⊃cc[1]),') entao'
[ 9]  a[6;]←74↑'   A<-B-C'
[10]  a[7;]←74↑'   B<-B-',1 0⍕e←?3
[11]  a[8;]←74↑'fimse'
[12]  a[9;]←74↑'RRRR <- A+B+C'
[13]  a[10;]←74↑'fimfuncao'
[14]  r[1]←⊂a
[15]  b←10 74⍴' '
[16]  b[1;]←74↑'\begin{algorithmic}[1]'
[17]  b[2;]←74↑'\STATE A $\gets$ ',1 0⍕A
[18]  b[3;]←74↑'\STATE B $\gets$ ',1 0⍕B
[19]  b[4;]←74↑'\STATE C $\gets$ ',1 0⍕C
[20]  b[5;]←74↑'\IF{',(trim⊃cc[2]),'}'
[21]  b[6;]←74↑'\STATE A $\gets$ B-C'
[22]  b[7;]←74↑'\STATE B $\gets$ B-',1 0⍕e
[23]  b[8;]←74↑'\ENDIF'
[24]  b[9;]←74↑'\STATE escreva (A+B+C)'
[25]  b[10;]←74↑'\end{algorithmic}'
[26]  r[2]←⊂b
-------------------------------------------------------------
[ 0]  r←gerase3;a;b;A;B;C;cc;e;f;g;t
[ 1]  r←2⍴0
[ 2]  a←13 74⍴' '
[ 3]  a[1;]←74↑'funcao E3'
[ 4]  a[2;]←74↑'A<-',1 0⍕A←2+?4
[ 5]  a[3;]←74↑'B<-',1 0⍕B←2+?3
[ 6]  a[4;]←74↑'C<-',1 0⍕C←4+?5
[ 7]  cc←condicao2
[ 8]  a[5;]←74↑'se (',(trim⊃cc[1]),') entao'
[ 9]  a[6;]←74↑'   A<-B',(t←'+-'[?2]),'C'
[10]  a[7;]←74↑'   B<-B-',1 0⍕e←?3
[11]  a[8;]←74↑'senao'
[12]  a[9;]←74↑'   A<-C-',1 0⍕f←?4
[13]  a[10;]←74↑'   B<-A+',1 0⍕g←?3
[14]  a[11;]←74↑'fimse'
[15]  a[12;]←74↑'RRRR <- A+B+C'
[16]  a[13;]←74↑'fimfuncao'
[17]  r[1]←⊂a
```

```
[18]  b←13 74ρ' '
[19]  b[1;]←74↑'\begin{algorithmic}[1]'
[20]  b[2;]←74↑'\STATE A $\gets$ ',1 0⍕A
[21]  b[3;]←74↑'\STATE B $\gets$ ',1 0⍕B
[22]  b[4;]←74↑'\STATE C $\gets$ ',1 0⍕C
[23]  b[5;]←74↑'\IF{',(trim⊃cc[2]),'}'
[24]  b[6;]←74↑'\STATE A $\gets$ B',t,'C'
[25]  b[7;]←74↑'\STATE B $\gets$ B-',1 0⍕e
[26]  b[8;]←74↑'\ELSE'
[27]  b[9;]←74↑'\STATE A $\gets$ C-',1 0⍕f
[28]  b[10;]←74↑'\STATE B $\gets$ A+',1 0⍕g
[29]  b[11;]←74↑'\ENDIF'
[30]  b[12;]←74↑'\STATE escreva (A+B+C)'
[31]  b[13;]←74↑'\end{algorithmic}'
[32]  r[2]←⊂b
-------------------------------------------------------------
[ 0]  r←gerase4;a;b;A;B;C;cc;e;f;g;t;x1;x2;x11;x12;x21;x22
[ 1]  r←2ρ0
[ 2]  a←17 74ρ' '
[ 3]  cc←condicao2
[ 4]  x1←gerase1
[ 5]  x2←gerase2
[ 6]  x11←⊃x1[1] ⋄ x12←⊃x1[2]
[ 7]  x21←⊃x2[1] ⋄ x22←⊃x2[2]
[ 8]  a[1;]←74↑'funcao E4'
[ 9]  a[2;]←74↑'A<-',1 0⍕A←2+?4
[10]  a[3;]←74↑'B<-',1 0⍕B←2+?3
[11]  a[4;]←74↑'C<-',1 0⍕C←4+?5
[12]  a[5;]←74↑'se (',(trim⊃cc[1]),') entao'
[13]  a[6 7 8 9;]←4 74↑x11[5 6 7 8;]
[14]  a[10;]←74↑'senao'
[15]  a[11 12 13 14;]←4 74↑x21[5 6 7 8;]
[16]  a[15;]←74↑'fimse'
[17]  a[16;]←74↑'RRRR <- A+B+C'
[18]  a[17;]←74↑'fimfuncao'
[19]  r[1]←⊂a
[20]  b←17 74ρ' '
[21]  b[1;]←74↑'\begin{algorithmic}[1]'
[22]  b[2;]←74↑'\STATE A $\gets$ ',1 0⍕A
[23]  b[3;]←74↑'\STATE B $\gets$ ',1 0⍕B
[24]  b[4;]←74↑'\STATE C $\gets$ ',1 0⍕C
[25]  b[5;]←74↑'\IF{',(trim⊃cc[2]),'}'
[26]  b[6 7 8 9;]←4 74↑x12[5 6 7 8;]
[27]  b[10;]←74↑'\ELSE'
[28]  b[11 12 13 14;]←4 74↑x22[5 6 7 8;]
[29]  b[15;]←74↑'\ENDIF'
[30]  b[16;]←74↑'\STATE escreva (A+B+C)'
[31]  b[17;]←74↑'\end{algorithmic}'
[32]  r[2]←⊂b
-------------------------------------------------------------
[ 0]  r←gerase5;a;b;A;B;C;cc;e;f;g;t;x1;x2;x11;x12;x21;x22
[ 1]  r←2ρ0
[ 2]  a←21 74ρ' '
[ 3]  cc←condicao2
[ 4]  x1←gerase1
[ 5]  x2←gerase2
[ 6]  x11←⊃x1[1] ⋄ x12←⊃x1[2]
[ 7]  x21←⊃x2[1] ⋄ x22←⊃x2[2]
[ 8]  a[1;]←74↑'funcao E5'
[ 9]  a[2;]←74↑'A<-',1 0⍕A←2+?4
[10]  a[3;]←74↑'B<-',1 0⍕B←2+?3
[11]  a[4;]←74↑'C<-',1 0⍕C←4+?5
[12]  a[5;]←74↑'se (',(trim⊃cc[1]),') entao'
```

```
[13]  a[6;]←74↑'   A<-B',(t←'+-'[?2]),'C'
[14]  a[7 8 9 10;]←4 74↑x11[5 6 7 8;]
[15]  a[11;]←74↑'   B<-B-',1 0⍕e←?3
[16]  a[12;]←74↑'senao'
[17]  a[13 14 15 16;]←4 74↑x21[5 6 7 8;]
[18]  a[17;]←74↑'   A<-C-',1 0⍕f←?4
[19]  a[18;]←74↑'   B<-A+',1 0⍕g←?3
[20]  a[19;]←74↑'fimse'
[21]  a[20;]←74↑'RRRR <- A+B+C'
[22]  a[21;]←74↑'fimfuncao'
[23]  r[1]←⊂a
[24]  b←21 74⍴' '
[25]  b[1;]←74↑'\begin{algorithmic}[1]'
[26]  b[2;]←74↑'\STATE A $\gets$ ',1 0⍕A
[27]  b[3;]←74↑'\STATE B $\gets$ ',1 0⍕B
[28]  b[4;]←74↑'\STATE C $\gets$ ',1 0⍕C
[29]  b[5;]←74↑'\IF{',(trim⊃cc[2]),'}'
[30]  b[6;]←74↑'\STATE A $\gets$ B',t,'C'
[31]  b[7 8 9 10;]←4 74↑x12[5 6 7 8;]
[32]  b[11;]←74↑'\STATE B $\gets$ B-',1 0⍕e
[33]  b[12;]←74↑'\ELSE'
[34]  b[13 14 15 16;]←4 74↑x22[5 6 7 8;]
[35]  b[17;]←74↑'\STATE A $\gets$ C-',1 0⍕f
[36]  b[18;]←74↑'\STATE B $\gets$ A+',1 0⍕g
[37]  b[19;]←74↑'\ENDIF'
[38]  b[20;]←74↑'\STATE escreva (A+B+C)'
[39]  b[21;]←74↑'\end{algorithmic}'
[40]  r[2]←⊂b
-------------------------------------------------------------
[0]  r←a igual b;maior
[1]  maior←(1↑⍴a)⌈1↑⍴b
[2]  a←maior↑a ⋄ b←maior↑b
[3]  r←maior=+/a=b
-------------------------------------------------------------
[ 0]  palito;j;n;seq;tv
[ 1]  n←0
[ 2] t1:→((n≥20)∧(n≤30))/ok1
[ 3]  'com quanto comecamos ?'
[ 4]  n←⍞
[ 5]  →t1
[ 6] ok1:seq←4|n
[ 7]  →(seq=1,2,3,0)/um,dois,tres,zero
[ 8] um:j←1
[ 9]  →vai
[10] dois:j←1
[11]  →vai
[12] tres:j←2
[13]  →vai
[14] zero:j←3
[15] vai:'eu joguei ',⍕j
[16]  n←n-j
[17]  'existem ',(⍕n),' palitos'
[18]  →(n>0)/ok2
[19]  'por incrivel que pareca, perdi...'
[20]  →0
[21] ok2:tv←0
[22] ok3:→((tv≥1)∧(tv≤3)∧((n-tv)≥0))/ok4
[23]  'jogue: '
[24]  tv←⍞
[25]  →ok3
[26] ok4:n←n-tv
[27]  'existem ',(⍕n),' palitos'
[28]  →(n>0)/ok1
```

```
[29]  'seu babaca, eu ganhei'
-------------------------------------------------------------
[ 0]  r←vetoriza x;i;rr;letra;aspa;nume
[ 1] ⍝ versao 1.07
[ 2]  aspa←'''' ⋄ nume←'0123456789'
[ 3]  letra←'abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ()',aspa
[ 4] ⍝ tira os brancos
[ 5]  i←1 ⋄ rr←1
[ 6] t2:→(i>¯2+⍴x)/vaiz
[ 7]  →((x[i+1]=' ')∧(x[i]∈letra)∧(x[i+2]∈nume))/mataz
[ 8]  →((x[i+1]=' ')∧(x[i]∈nume)∧(x[i+2]∈letra))/mataz
[ 9]  →((x[i]∈letra)∧(x[i+2]∈letra))/naopode
[10]  →(((x[1]='p')∨(x[1]='P'))∧(x[2]='a')∧(x[i]∈letra)∧((x[i+2]='-')∨(x[i+2]='¯')))/naopo
      de  ⍝ comando incluido para o passo negativo
[11] ⍝ →((x[i]∈letra)∧((x[i+2]='-')∨(x[i+2]='¯')))/naopode  ⍝ comando incluido para o pass
      o negativo
[12] ⍝ os 3 testes iniciais (pPa) foram incluidos porque o comando acima estava
[13] ⍝ fazendo besteira: vetoriza 'A <- A -1' estava gerando 4 tokens e nao 3.
[14] ⍝ correcao em 13/03/12 - P.kantek
[15]  →(x[i+1]≠' ')/naopode
[16] pode:rr←rr,0
[17]  →(i=i←i+1)/t2
[18] mataz:x[i+1]←'!'
[19] naopode:rr←rr,1
[20]  →(i=i←i+1)/t2
[21] vaiz:rr←rr,1
[22]  x←rr/x
[23] ⍝ separa o sinal <-
[24]  →(2≠+/'<-'∈x)/faca
[25]  i←1 ⋄ rr←⍳0
[26] t1:→(i>¯1+⍴x)/vaix
[27]  →((x[i]='<')∧(x[i+1]='-'))/esim
[28]  rr←rr,1
[29]  →(i=i←i+1)/t1
[30] esim:rr←rr,0 1 1 0
[31]  →(i=i←i+2)/t1
[32] vaix:rr←rr,1
[33]  x←rr⌿x
[34] faca:x←'! 'edit x
[35]  r←(~' '=x)⊂x
-------------------------------------------------------------
[  0]  opesq vivo020a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[  1] ⍝  )copy vivo020 grupo
[  2] ⍝  vars locais a mais=qlinha, nomes, ql39
[  3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[  4]  →(0≠⎕NC'opesq')/qveio
[  5]  opesq←10⍴' '
[  6] qveio:
[  7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[  8]  CORRECAO←1 ⋄ EVENTO←'PL020   '
[  9]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⌿apl2⌿',(5↑n),'.ALU' ⋄ EVENTO←n
[ 11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[ 13]  ylu←n grupo ylu
[ 14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[ 20]  esse←172 80⍴' '
[ 21]  f←FOLHALA020
[ 22]  esse[1;]←80↑dhx[1;]
[ 23]  esse[2;]←80↑dhx[2;]
[ 24]  esse[3;]←80↑4 2⍕VERSAOa←1.02
[ 25]  esse[4;]←80↑ylu[xk;⍳6]
[ 26] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[ 27]  →(36=1↓⍴ylu)/zebra
[ 28]  qlinha←(1=∧/[2]f[;⍳5]=((1↑⍴f),5)⍴'⍀#005')/⍳1↑⍴f
[ 29]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[ 30]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[ 31]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[ 32]  →maiszebra
[ 33] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[ 83]  aaa←⎕FX cpc⊃xx[1]
[ 84]  resp←resp,⍪aaa
[ 85]  esse[149+⍳21;]←21 80↑⊃xx[2]
[ 86]  resu←resu,[1]1 12⍴resp
[ 87]  acuja←(f[;2]='#')/⍳1↑⍴f
[ 88]  f[acuja;⍳80]←esse[⍪,f[acuja;3 4 5],' ';]
[ 89]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[ 90]  ⍞←(⍕xk←xk+1),'-'
[ 91]  →testa
[ 92] fim:upag←(1 0+⍴f)⍴' '
[ 93]  →(1=≡n)/elafa
[ 94]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[ 95]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO,'/',opesq
[ 96]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0,20⍴6 0)⍕resu
[ 97]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[ 98]  →terminando
[ 99] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[100] elafa:aaa←(ylu[;⍳36],6 0⍴0 1↓resu)
[101] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[102]  lixonol←aaa ⎕FM('c:\apl2\',((~⊖∧\⊖EVENTO=' ')/EVENTO),'.gpa')
[103]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[104] terminando:
[105]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[106]  relat[1↑⍴relat;;]←upag
[107]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[108] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[109]  lixonol←lixonol ⎕FM'c:\apl2\',((~⊖∧\⊖EVENTO=' ')/EVENTO),'.tex'
[110]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[111]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo021

```
[  0]  r←cpc algo;nome;PILHA;nnn;saida;aspa;vv;coma;SALVA;i;j;loca;aaa
[  1]  PILHA←0 21⍴' ' ⋄ nnn←1 ⋄ saida←0 70⍴' ' ⋄ r←0 70⍴' ' ⋄ aspa←'''' ⋄ loca←''
[  2]  i←1
[  3] t1:→(i>1↑⍴algo)/fim
[  4]  vv←vetoriza algo[i;]
[  5]  →('algoritmo'igual⊃vv[1])/ealg
[  6]  →('fim{algoritmo}'igual⊃vv[1])/ealf
[  7]  →('funcao'igual⊃vv[1])/efun
[  8]  →('fim{funcao}'igual⊃vv[1])/efuf
[  9]  →('leia'igual⊃vv[1])/elei
[ 10]  →('imprima'igual⊃vv[1])/eimp
[ 11]  →('devolva'igual⊃vv[1])/eimp  ⍝ em teste: sera que devolva = imprima neste contexto
       ???
[ 12]  →('se'igual⊃vv[1])/esex
[ 13]  →('senao'igual⊃vv[1])/esen
[ 14]  →('fim{se}'igual⊃vv[1])/esef
[ 15]  →('enquanto'igual⊃vv[1])/eenq
[ 16]  →('fim{enquanto}'igual⊃vv[1])/eenf
[ 17]  →('repita'igual⊃vv[1])/erep
[ 18]  →('ate'igual⊃vv[1])/eate
[ 19]  →('para'igual⊃vv[1])/epar
[ 20]  →('fim{para}'igual⊃vv[1])/epaf
[ 21]  →('abandone'igual⊃vv[1])/eaba
[ 22]  →('saia'igual⊃vv[1])/esai
[ 23]  →('<-'igual⊃vv[2])/ecad
[ 24]  →('inteiro'igual⊃vv[1])/eint
[ 25]  →('real'igual⊃vv[1])/erea
[ 26]  →('logico'igual⊃vv[1])/elog
[ 27]  →('caracter'igual 8↑⊃vv[1])/ecar
```

```
[ 28]  →('vetor'igual⊃vv[1])/evet
[ 29]  r←r,[1]1 70ρ70↑(3⍕i),' - comando desconhecido'
[ 30] soma:→(i=i←i+1)/t1
[ 31] ⍝--------------algoritmo--------------
[ 32] ealg:saida←saida,[1]1 70ρ70↑⊃vv[2]
[ 33]  →soma
[ 34] ealf:→fim
[ 35] ⍝--------------funcao-----------------
[ 36] efun:
[ 37]  →(2≥ρvv)/naotem
[ 38]  coma←'RRRR←',(⊃vv[2]),' AAAA'
[ 39]  →vmesmo
[ 40] naotem:coma←'RRRR←',(⊃vv[2])
[ 41]  saida←saida,[1]1 70ρ70↑coma
[ 42]  nome←⊃vv[2]
[ 43]  →aca0
[ 44] vmesmo:
[ 45]  saida←saida,[1]1 70ρ70↑coma
[ 46]  nome←⊃vv[2]
[ 47]  j←1
[ 48] voi1:→(j>¯2+ρvv)/aca0
[ 49]  saida←saida,[1]1 70ρ70↑(⊃vv[j+2]),'←AAAA[',(3 0⍕j),']'
[ 50]  loca←loca,';',⊃vv[j+2]
[ 51]  →(j=j←j+1)/voi1
[ 52] aca0:→soma
[ 53] efuf:→fim
[ 54] ⍝---------------leia-----------------
[ 55] elei:saida←saida,[1]1 70ρ70↑aspa,'LEITURA DA VARIAVEL ',(⊃vv[2]),aspa
[ 56]  saida←saida,[1]1 70ρ70↑(⊃vv[2]),'←⍞'
[ 57]  →soma
[ 58] ⍝---------------imprima--------------
[ 59] eimp:→(3=ρvv)/temmsg
[ 60]  aaa←⊃vv[2]
[ 61]  →(aaa[ρaaa]=';')/juntaa
[ 62]  saida←saida,[1]1 70ρ70↑aaa
[ 63]  →soma
[ 64] juntaa:saida←saida,[1]1 70ρ70↑'⍞←⍕',¯1↓aaa
[ 65]  →soma
[ 66] temmsg:aaa←⊃vv[3]
[ 67]  →(aaa[ρaaa]=';')/juntab
[ 68]  saida←saida,[1]1 70ρ70↑(⊃vv[2]),' ',aaa
[ 69]  →soma
[ 70] juntab:saida←saida,[1]1 70ρ70↑'⍞←',(⊃vv[2]),' ,⍕',¯1↓aaa
[ 71]  →soma
[ 72] ⍝---------------atribuicao------------
[ 73] ecad:saida←saida,[1]1 70ρ70↑(⊃vv[1]),'←',⊃vv[3]
[ 74]  aaa←⊃vv[1]
[ 75]  →('['∊aaa)/soma
[ 76]  →(∨/aaa∈loca)/soma
[ 77]  loca←loca,';',⊃vv[1]
[ 78]  →soma
[ 79] ⍝---------------se--------------------
[ 80] esex:saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[ 81]  saida←saida,[1]1 70ρ70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn←nnn+1
[ 82]  PILHA←(1 21ρ21↑'SE',('000'⍕nnn)),[1]PILHA
[ 83]  nnn←nnn+1
[ 84]  →soma
[ 85] ⍝--senao--
[ 86] esen:SALVA←PILHA[1;3 4 5] ⋄ PILHA←1 0↓PILHA
[ 87]  PILHA←(1 21ρ21↑'SE',('000'⍕nnn)),[1]PILHA
[ 88]  saida←saida,[1]1 70ρ70↑'→Δ','000'⍕nnn
[ 89]  nnn←nnn+1
[ 90]  saida←saida,[1]1 70ρ70↑'Δ',SALVA,':'
```

```
[ 91]  →soma
[ 92] ⍝--fim{se}--
[ 93] esef:saida←saida,[1]1 70⍴70↑'Δ',PILHA[1;3 4 5],':'
[ 94]  PILHA←1 0↓PILHA
[ 95]  →soma
[ 96] ⍝------------enquanto--------------------
[ 97] eenq:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[ 98]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[ 99]  nnn←nnn+1
[100]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[101]  nnn←nnn+1
[102]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[103]  nnn←nnn+1
[104]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn-2
[105]  →soma
[106] ⍝----------fim{enquanto}-----------------
[107] eenf:SALVA←PILHA[1;3 4 5]
[108]  PILHA←1 0↓PILHA
[109]  saida←saida,[1]1 70⍴70↑'→Δ',PILHA[1;3 4 5]
[110]  PILHA←1 0↓PILHA
[111]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[112]  →soma
[113] ⍝----------repita-------------------------
[114] erep:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[115]  PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[116]  nnn←nnn+1
[117]  →soma
[118] ⍝-----------ate--------------------------
[119] eate:PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[120]  nnn←nnn+1
[121]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[122]  SALVA←PILHA[1;3 4 5]
[123]  PILHA←1 0↓PILHA
[124]  saida←saida,[1]1 70⍴70↑'→(Δ',('000'⍕nnn),')/Δ',SALVA
[125]  SALVA←PILHA[1;3 4 5]
[126]  PILHA←1 0↓PILHA
[127]  saida←saida,[1]1 70⍴70↑'→Δ',SALVA
[128]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn-1),':'
[129]  →soma
[130] ⍝----------para-----------------------
[131] epar:saida←saida,[1]1 70⍴70↑(8↑⊃vv[2]),'←',8↑⊃vv[4]
[132]  PILHA←(1 21⍴21↑'PA','000'⍕nnn),[1]PILHA
[133]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[134]  nnn←nnn+1
[135]  →(8=⍴vv)/tempasso
[136]  PILHA←(1 21⍴21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8↑8⍕1),[1]PILHA
[137]  →juntab
[138] tempasso:PILHA←(1 21⍴21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8 2⍕⊃vv[8]),[1]PILHA
[139] juntab:nnn←nnn+1
[140]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',(⊃vv[2]),'≤',⍕⊃vv[6]
[141]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn),')/Δ','000'⍕nnn-1
[142]  nnn←nnn+1
[143]  →soma
[144] ⍝----------fim{para}-----------------
[145] epaf:saida←saida,[1]1 70⍴70↑PILHA[1;5+⍳8],'←',PILHA[1;5+⍳8],'+',PILHA[1;13+⍳8]
[146]  SALVA←PILHA[1;3 4 5]
[147]  PILHA←1 0↓PILHA
[148]  saida←saida,[1]1 70⍴70↑'→Δ',PILHA[1;3 4 5]
[149]  PILHA←1 0↓PILHA
[150]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[151]  →soma
[152] ⍝----------abandone--------------------
[153] eaba:→soma
```

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[154] esai:→soma
[155] eint:→soma
[156] erea:→soma
[157] elog:→soma
[158] ecar:→soma
[159] evet:
[160]  saida←saida,[1]1 70ρ70↑(1 parte(⊃vv[2])),'←',(2 parte(⊃vv[2])),'ρ0'
[161]  →soma
[162] fim:
[163]  i←1
[164] tfim:→(i>nnn)/mesmo
[165]  loca←loca,';Δ','000'⍕i
[166]  →(i=i←i+1)/tfim
[167] mesmo:→(50>ρloca)/blz1
[168]  saida←((1↑ρsaida),20+ρloca)↑saida
[169]  saida[1;20+ιρloca]←loca
[170]  →pula22
[171] blz1:saida[1;20+ι50]←50↑loca
[172] pula22:r←'_ 'edit saida
-------------------------------------------------------------
[0]  r←geraato2;aa;bb
[1]  →(2>⍰2)/vai
[2]  r←'(',('ABC'[⍰3]),' ',('><=≠≥≤>=<'[⍰9]),' ',('5'⍕⍰6),')'
[3]  →junta
[4] vai:r←'(',(aa←'ABC'[⍰3]),' ',('><=≠≥≤>=<'[⍰9]),' ',(bb←'ABC'[⍰3]),')'
[5]  →(aa=bb)/vai
[6] junta:
[7]  →(8>⍰10)/0
[8]  r←'(~ ',r,')'
-------------------------------------------------------------
[ 0]  rx←gerafun2
[ 1]  rx←28 60ρ' '
[ 2]  rx[1;]←60↑'funcao ','CALC'
[ 3]  rx[2;]←60↑'   inteiro A, B, C'
[ 4]  rx[3;]←60↑'   A <- ','5'⍕⍰9
[ 5]  rx[4;]←60↑'   B <- ','5'⍕⍰9
[ 6]  rx[5;]←60↑'   C <- ','5'⍕⍰9
[ 7]  rx[6;]←60↑'   se ',geraato2
[ 8]  rx[7;]←60↑'      se ',geraato2
[ 9]  rx[8;]←60↑'         se ',geraato2
[10]  rx[9;]←60↑'            ',gerasom2
[11]  rx[10;]←60↑'         senao'
[12]  rx[11;]←60↑'            ',gerasom2
[13]  rx[12;]←60↑'         fim{se}'
[14]  rx[13;]←60↑'      senao'
[15]  rx[14;]←60↑'         se ',geraato2
[16]  rx[15;]←60↑'            ',gerasom2
[17]  rx[16;]←60↑'         senao'
[18]  rx[17;]←60↑'            ',gerasom2
[19]  rx[18;]←60↑'         fim{se}'
[20]  rx[19;]←60↑'      fim{se}'
[21]  rx[20;]←60↑'   senao'
[22]  rx[21;]←60↑'      se ',geraato2
[23]  rx[22;]←60↑'         ',gerasom2
[24]  rx[23;]←60↑'      senao'
[25]  rx[24;]←60↑'         ',gerasom2
[26]  rx[25;]←60↑'      fim{se}'
[27]  rx[26;]←60↑'   fim{se}'
[28]  rx[27;]←60↑'   RRRR <- A, B, C'
[29]  rx[28;]←60↑'fim{funcao}'
-------------------------------------------------------------
[ 0]  r←gerasom2;aa;bb;ind
[ 1]  →(2>⍰2)/dois
```

```
[ 2]  →(2>⍰2)/mais2
[ 3]  ind←2⍰3
[ 4]  aa←'ABC'[ind[1]]
[ 5]  bb←'ABC'[ind[2]]
[ 6]  r←('ABC'[⍰3]),' <- ',aa,' ',('+-×'[⍰3]),' ',bb
[ 7]  →0
[ 8] mais2:ind←1⍰3
[ 9]  aa←'ABC'[ind]
[10]  r←('ABC'[ind]),' <- ',aa,' ',('++-×'[⍰4]),' ',aa
[11]  →0
[12] dois:r←('ABC'[⍰3]),' <- ',('ABC'[⍰3]),' ',('+-×'[⍰3]),' ','5'⍕1+⍰4
------------------------------------------------------------
[0]  r←a igual b;maior
[1]  maior←(1↑⍴a)⌈1↑⍴b
[2]  a←maior↑a ⋄ b←maior↑b
[3]  r←maior=+/a=b
------------------------------------------------------------
[0]  r←pedemail x
[1]  →(40≠+/' '=x)/aindanao
[2]  r←80↑'Por favor, informe seu e-mail: ⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_'
[3]  →junnao
[4] aindanao:r←80↑'e-mail cadastrado: ⍀verb+',x,'+'
[5] junnao:
------------------------------------------------------------
[ 0]  r←tradcoma x;i;j
[ 1]  i←j←1 ⋄ r←100⍴' '
[ 2] t1:→(i>⍴x)/fim
[ 3]  →(i=⍴x)/pula
[ 4]  →((x[i]='<')∧(x[i+1]='-'))/recebe
[ 5] pula:→(x[i]='∨')/ou
[ 6]  →(x[i]='∧')/e
[ 7]  →(x[i]='~')/nao
[ 8]  →(x[i]='≠')/diferente
[ 9]  →(x[i]='≤')/menig
[10]  →(x[i]='≥')/maiig
[11]  →(x[i]='×')/vezes
[12]  →(x[i]='>')/maior
[13]  →(x[i]='<')/menor
[14] nada:r[j]←x[i]
[15]  i←i+1
[16]  j←j+1
[17]  →t1
[18] recebe:r[j+¯1+⍳7]←'$⍀gets$'
[19]  j←j+7
[20]  i←i+2
[21]  →t1
[22] ou:r[j+¯1+⍳6]←'$⍀lor$'
[23]  j←j+6
[24]  i←i+1
[25]  →t1
[26] nao:r[j+¯1+⍳6]←'$⍀sim$'
[27]  j←j+6
[28]  i←i+1
[29]  →t1
[30] e:r[j+¯1+⍳7]←'$⍀land$'
[31]  j←j+7
[32]  i←i+1
[33]  →t1
[34] diferente:r[j+¯1+⍳6]←'$⍀neq$'
[35]  j←j+6
[36]  i←i+1
[37]  →t1
[38] menig:r[j+¯1+⍳5]←'$⍀le$'
```

```
[39]  j←j+5
[40]  i←i+1
[41]  →t1
[42] maiig:r[j+¯1+⍳5]←'$\ge$'
[43]  j←j+5
[44]  i←i+1
[45]  →t1
[46] vezes:r[j+¯1+⍳8]←'$\times$'
[47]  j←j+8
[48]  i←i+1
[49]  →t1
[50] maior:r[j+¯1+⍳3]←'$>$'
[51]  j←j+3
[52]  i←i+1
[53]  →t1
[54] menor:r[j+¯1+⍳3]←'$<$'
[55]  j←j+3
[56]  i←i+1
[57]  →t1
[58] fim:r←trim r
-------------------------------------------------------------
[ 0]  r←tradfun2 aa;a5
[ 1]  r←30 91⍴' '
[ 2]  r[1;]←91↑'\begin{algorithmic}[1]'
[ 3]  r[2;]←91↑'\STATE algoritmo CALC'
[ 4]  r[3;]←91↑'\STATE    inteiro A, B, C'
[ 5]  r[4;]←91↑'\STATE    A $\gets$ ',aa[3;9]
[ 6]  r[5;]←91↑'\STATE    B $\gets$ ',aa[4;9]
[ 7]  r[6;]←91↑'\STATE    C $\gets$ ',aa[5;9]
[ 8]  r[7;]←91↑'\IF {',(tradcoma aa[6;6+⍳20]),'}'
[ 9]  r[8;]←91↑'\IF {',(tradcoma aa[7;9+⍳20]),' }'
[10]  r[9;]←91↑'\IF {',(tradcoma aa[8;12+⍳20]),' }'
[11]  r[10;]←91↑'\STATE ',tradcoma aa[9;12+⍳20]
[12]  r[11;]←91↑'\ELSE'
[13]  r[12;]←91↑'\STATE ',tradcoma aa[11;12+⍳20]
[14]  r[13;]←91↑'\ENDIF'
[15]  r[14;]←91↑'\ELSE'
[16]  r[15;]←91↑'\IF {',(tradcoma aa[14;12+⍳20]),' }'
[17]  r[16;]←91↑'\STATE ',tradcoma aa[15;12+⍳20]
[18]  r[17;]←91↑'\ELSE'
[19]  r[18;]←91↑'\STATE ',tradcoma aa[17;12+⍳20]
[20]  r[19;]←91↑'\ENDIF'
[21]  r[20;]←91↑'\ENDIF'
[22]  r[21;]←91↑'\ELSE'
[23]  r[22;]←91↑'\IF {',(tradcoma aa[21;9+⍳20]),' }'
[24]  r[23;]←91↑'\STATE ',tradcoma aa[22;9+⍳20]
[25]  r[24;]←91↑'\ELSE'
[26]  r[25;]←91↑'\STATE ',tradcoma aa[24;9+⍳20]
[27]  r[26;]←91↑'\ENDIF'
[28]  r[27;]←91↑'\ENDIF'
[29]  r[28;]←91↑'\STATE imprima A, B, C'
[30]  r[29;]←91↑'\STATE fim algoritmo'
[31]  r[30;]←91↑'\end{algorithmic}'
[32]  a5←91-+/∧\0∧/[1]r=' '
[33] ⍝ o valor exato e a5, mas deixei 40 para ficar sempre bom
[34]  →(a5>40)/erro
[35]  r←(30,40)↑r
[36]  →0
[37] erro:'verifique a matriz. e muito grande'
-------------------------------------------------------------
[ 0]  r←vetoriza x;i;rr;letra;aspa;nume
[ 1]  aspa←'''' ⋄ nume←'0123456789'
[ 2]  letra←'abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ()',aspa
```

```
[ 3] ⍝ tira os brancos
[ 4]  i←1 ⋄ rr←1
[ 5] t2:→(i>¯2+⍴x)/vaiz
[ 6]  →((x[i+1]=' ')∧(x[i]∈letra)∧(x[i+2]∈nume))/mataz
[ 7]  →((x[i+1]=' ')∧(x[i]∈nume)∧(x[i+2]∈letra))/mataz
[ 8]  →((x[i]∈letra)∧(x[i+2]∈letra))/naopode
[ 9]  →(x[i+1]≠' ')/naopode
[10] pode:rr←rr,0
[11]  →(i=i←i+1)/t2
[12] mataz:x[i+1]←'!'
[13] naopode:rr←rr,1
[14]  →(i=i←i+1)/t2
[15] vaiz:rr←rr,1
[16]  x←rr/x
[17] ⍝ separa o sinal <-
[18]  →(2≠+/'<-'∈x)/faca
[19]  i←1 ⋄ rr←⍳0
[20] t1:→(i>¯1+⍴x)/vaix
[21]  →((x[i]='<')∧(x[i+1]='-'))/esim
[22]  rr←rr,1
[23]  →(i=i←i+1)/t1
[24] esim:rr←rr,0 1 1 0
[25]  →(i=i←i+2)/t1
[26] vaix:rr←rr,1
[27]  x←rr⌿x
[28] faca:x←'! 'edit x
[29]  r←(~' '=x)⊂x
------------------------------------------------------------
[  0]  opesq vivo021a n;CORRECAO;EVENTO;aa;aaa;acuja;antes;bb;cc;depois;dhx;esse;f;lixo1;li
       xonol;quais;qual;relat;resp;resu;upag;xixo;xk;xx;ylu
[  1]  →(0≠⎕NC'opesq')/qveio
[  2]  opesq←10⍴' '
[  3] qveio:
[  4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[  5]  CORRECAO←6 ⋄ EVENTO←'PL021   '
[  6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
       4 5],⎕TS[6]+⎕TS[7]÷1000
[  7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:⌿apl2⌿',(5↑n),'.ALU' ⋄ EVENTO←n
[  8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍎⍳n
[  9]  FOLHALA021←ajusta80 FOLHALA021
[ 10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA021)⍴' '
[ 11]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:⌿apl2⌿VIVOBLO1'
[ 12]  xk←1 ⋄ resu←0 9⍴0
[ 13] testa:→(xk>1↑⍴ylu)/fim
[ 14]  esse←257 80⍴' '
[ 15]  f←FOLHALA021
[ 16]  esse[1;]←80↑dhx[1;]
[ 17]  esse[2;]←80↑dhx[2;]
[ 18]  esse[3;]←80↑4 2⍎VERSAOa←3.14
[ 19]  esse[4;]←80↑ylu[xk;⍳6]
[ 20]  esse[5;]←80↑ylu[xk;6+⍳30]
[ 21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[ 22]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[ 23] ⍝ esse[256;]←80↑pedemail ylu[xk;36+⍳40]
[ 24]  esse[256;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[ 25]  esse[257;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[ 26] inica:
[ 27] g0:xx←gerafun2
[ 28]  antes←⍪xx[3;9],' ',xx[4;9],' 'xx[5;9]
[ 29]  bb←⎕FX cpc xx
[ 30]  depois←,⍪'CALC '
[ 31]  quais←(antes≠depois)/⍳3
[ 32]  →(0=⍴quais)/g0
```

```
[ 33]  qual←quais[?⍴quais]
[ 34]  resp←resp,depois[qual]
[ 35]  esse[248;]←80↑'ABC'[qual]
[ 36]  esse[7+⍳30;]←30 80↑tradfun2 xx
[ 37] g1:xx←gerafun2
[ 38]  antes←⍕xx[3;9],' ',xx[4;9],' 'xx[5;9]
[ 39]  bb←⎕FX cpc xx
[ 40]  depois←,⍕'CALC '
[ 41]  quais←(antes≠depois)/⍳3
[ 42]  →(0=⍴quais)/g1
[ 43]  qual←quais[?⍴quais]
[ 44]  resp←resp,depois[qual]
[ 45]  esse[249;]←80↑'ABC'[qual]
[ 46]  esse[37+⍳30;]←30 80↑tradfun2 xx
[ 47] g2:xx←gerafun2
[ 48]  antes←⍕xx[3;9],' ',xx[4;9],' 'xx[5;9]
[ 49]  bb←⎕FX cpc xx
[ 50]  depois←,⍕'CALC '
[ 51]  quais←(antes≠depois)/⍳3
[ 52]  →(0=⍴quais)/g2
[ 53]  qual←quais[?⍴quais]
[ 54]  resp←resp,depois[qual]
[ 55]  esse[250;]←80↑'ABC'[qual]
[ 56]  esse[67+⍳30;]←30 80↑tradfun2 xx
[ 57] g3:xx←gerafun2
[ 58]  antes←⍕xx[3;9],' ',xx[4;9],' 'xx[5;9]
[ 59]  bb←⎕FX cpc xx
[ 60]  depois←,⍕'CALC '
[ 61]  quais←(antes≠depois)/⍳3
[ 62]  →(0=⍴quais)/g3
[ 63]  qual←quais[?⍴quais]
[ 64]  resp←resp,depois[qual]
[ 65]  esse[251;]←80↑'ABC'[qual]
[ 66]  esse[97+⍳30;]←30 80↑tradfun2 xx
[ 67] g4:xx←gerafun2
[ 68]  antes←⍕xx[3;9],' ',xx[4;9],' 'xx[5;9]
[ 69]  bb←⎕FX cpc xx
[ 70]  depois←,⍕'CALC '
[ 71]  quais←(antes≠depois)/⍳3
[ 72]  →(0=⍴quais)/g4
[ 73]  qual←quais[?⍴quais]
[ 74]  resp←resp,depois[qual]
[ 75]  esse[252;]←80↑'ABC'[qual]
[ 76]  esse[127+⍳30;]←30 80↑tradfun2 xx
[ 77] g5:xx←gerafun2
[ 78]  antes←⍕xx[3;9],' ',xx[4;9],' 'xx[5;9]
[ 79]  bb←⎕FX cpc xx
[ 80]  depois←,⍕'CALC '
[ 81]  quais←(antes≠depois)/⍳3
[ 82]  →(0=⍴quais)/g5
[ 83]  qual←quais[?⍴quais]
[ 84]  resp←resp,depois[qual]
[ 85]  esse[253;]←80↑'ABC'[qual]
[ 86]  esse[157+⍳30;]←30 80↑tradfun2 xx
[ 87] g6:xx←gerafun2
[ 88]  antes←⍕xx[3;9],' ',xx[4;9],' 'xx[5;9]
[ 89]  bb←⎕FX cpc xx
[ 90]  depois←,⍕'CALC '
[ 91]  quais←(antes≠depois)/⍳3
[ 92]  →(0=⍴quais)/g6
[ 93]  qual←quais[?⍴quais]
[ 94]  resp←resp,depois[qual]
[ 95]  esse[254;]←80↑'ABC'[qual]
```

```
[ 96]  esse[187+⍳30;]←30 80↑tradfun2 xx
[ 97] g7:xx←gerafun2
[ 98]  antes←⍕xx[3;9],' ',xx[4;9],' 'xx[5;9]
[ 99]  bb←⎕FX cpc xx
[100]  depois←,⍕'CALC '
[101]  quais←(antes≠depois)/⍳3
[102]  →(0=⍴quais)/g7
[103]  qual←quais[?⍴quais]
[104]  resp←resp,depois[qual]
[105]  esse[255;]←80↑'ABC'[qual]
[106]  esse[217+⍳30;]←30 80↑tradfun2 xx
[107]  resu←resu,[1]1 9⍴resp
[108]  acuja←(f[;2]='#')/⍳1↑⍴f
[109]  f[acuja;]←esse[⍕,f[acuja;3 4 5],' ';]
[110]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[111]  ⎕←(⍕xk←xk+1),'-'
[112]  →testa
[113] fim:upag←(1 0+⍴f)⍴' '
[114]  →(1=≡n)/elafa
[115]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[116]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[117]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯'-'edit(lixo1←4 0 3 0 3 0 3 0 3 0 13 0 3 0 3 0 3 0)⍕resu
[118]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[119]  →terminando
[120] elafa:aaa←(ylu,'¯'-'edit 3 0 3 0 3 0 3 0 13 0 3 0 3 0 3 0⍕0 1↓resu)
[121]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[122]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[123] terminando:
[124]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[125]  relat[1↑⍴relat;;]←upag
[126]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[127] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[128]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[129]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[130]  lixonol←⎕EX 6 1⍴'ABCDEF'
[131]  lixonol←⎕EX 6 3⍴'EX1EX2EX3EX4EX5EX6'
[132]  lixonol←⎕EX'CALC'
[133]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo022

```
[ 0]  RRRR←A;A;B;C;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ008;Δ009;Δ010;Δ011;Δ012;Δ013;Δ
      014;Δ015
[ 1]  A←3
[ 2]  B←5
[ 3]  C←2
[ 4]  Δ001←((~(C>4))∨(A=6))
[ 5]  →(~Δ001)/Δ002
[ 6]  Δ003←((C>4)∨(B≥3))
[ 7]  →(~Δ003)/Δ004
[ 8]  Δ005←(B≠4)
[ 9]  →(~Δ005)/Δ006
[10]  C←C+1
[11]  A←C-2
[12]  C←B-2
[13] Δ006:
[14]  →Δ007
[15] Δ004:
[16]  Δ008←((A>4)∨(C=7))
[17]  →(~Δ008)/Δ009
[18]  A←A+1
```

```
[19]  →Δ010
[20] Δ009:
[21]  C←B-2
[22] Δ010:
[23] Δ007:
[24]  →Δ011
[25] Δ002:
[26]  Δ012←(B≤5)
[27]  →(~Δ012)/Δ013
[28]  B←C-2
[29]  →Δ014
[30] Δ013:
[31]  B←B-1
[32] Δ014:
[33] Δ011:
[34]  RRRR←A,B,C
-------------------------------------------------------------
[ 0]  AVISO
[ 1]  'demora e tem um limite de 70'
[ 2]  ' '
[ 3]  'questao: tem uma desconfianca sobre as cores. Se o aluno responder X e o gabarito'
[ 4]  ' indicar outra cor, AVALIAR'
[ 5]  ' Em funcao desta desconfianca em 12/04/2014 eu desabilitei a segunda parte do exerc
      icio'
[ 6]  ' 1 ja que ele detonava esta folha que e muito boa.'
[ 7]  ' SEndo assim, o geraex1 esta colocando brancos no caso, e aguarda-se em algum momen
      to'
[ 8]  ' o refazimento correto deste exercicio'
-------------------------------------------------------------
[ 0]  cavaleiro022a n;a;acuja;esse;f;lixo1;relat;resp;x;xk;xx
[ 1]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 2]  FOLHALA022←120 ajusta FOLHALA022
[ 3]  relat←ΔFM'c:⍀apl2⍀VIVOBLO1'
[ 4]  xk←1
[ 5] testa:→(xk>n)/fim
[ 6]  esse←97 120⍴' '
[ 7]  f←FOLHALA022
[ 8]  esse[1;⍳⍴x]←x←' -- Cavaleiros da Tavola Redonda'
[ 9]  esse[3;]←120↑4 2⍕1.09
[10]  esse[96;⍳8]←'@000000@'
[11] inica:
[12]  xx←geraex1
[13]  esse[7+⍳23;]←23 120↑⊃xx[2]
[14]  a←⊃xx[1]
[15]  esse[31;]←120↑'&',a[1;7],'&'a[1;8],'&'a[1;9],'&'a[1;10],'&'a[1;11],'&'a[1;12],'⍀⍀ ⍀h
      line'
[16]  esse[32;]←120↑'&',a[2;7],'&'a[2;8],'&'a[2;9],'&'a[2;10],'&'a[2;11],'&'a[2;12],'⍀⍀ ⍀h
      line'
[17]  esse[33;]←120↑'&',a[3;7],'&'a[3;8],'&'a[3;9],'&'a[3;10],'&'a[3;11],'&'a[3;12],'⍀⍀ ⍀h
      line'
[18]  resp←(,a[⍳3;12+⍳8]),'-'
[19]  a←⊃xx[3]
[20]  esse[34;]←120↑'⍀IF{',(tradcoma200 a[1;⍳60]),'}'
[21]  esse[35;]←120↑'⍀IF{',(tradcoma200 a[2;⍳60]),'}'
[22]  esse[36;]←120↑'⍀IF{',(tradcoma200 a[3;⍳60]),'}'
[23]  esse[37;]←120↑'⍀IF{',(tradcoma200 a[4;⍳60]),'}'
[24]  resp←resp,,a[⍳4;60+⍳8],' '
[25]  xx←geraex2
[26]  esse[37+⍳23;]←23 120↑⊃xx[2]
[27]  a←⊃xx[1]
[28]  esse[60+⍳6;⍳19]←((6 1⍴a[;1]),'&',(6 1⍴a[;2]),'&',(6 1⍴a[;3])),6 14⍴'⍀⍀ ⍀cline{2-4}'
[29]  resp←resp,'-',3 0⍕,+/[2]6 3⍴⍏,(0 1 1 0 1 1 0 1 1)⍀[2]a[;3+⍳6]
[30]  xx←geraex2
```

```
[31]  esse[66+⍳23;]←23 120↑⊃xx[2]
[32]  a←⊃xx[1]
[33]  esse[89+⍳6;⍳19]←((6 1⍴a[;1]),'&',(6 1⍴a[;2]),'&',(6 1⍴a[;3])),6 14⍴'⍀⍀ ⍀cline{2-4}'
[34]  resp←resp,'-',3 0⍕,+/[2]6 3⍴≠,(0 1 1 0 1 1 0 1 1)⍀[2]a[;3+⍳6]
[35]  acuja←(f[;2]='#')/⍳1↑⍴f
[36]  f[acuja;⍳120]←esse[≠,f[acuja;3 4],' ';]
[37]  □←(⍕xk←xk+1),'-'
[38]  f←(((1↑⍴relat),1↓⍴f)↑relat),[1]f
[39]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'⍀end{document}'
[40]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'%',resp
[41]  lixo1←f ΔFM'c:⍀apl2⍀CA022a',('00'⍕xk-1),'.tex'
[42]  →testa
[43] fim:
------------------------------------------------------------
[  0]  r←cpc algo;nome;PILHA;nnn;saida;aspa;vv;coma;SALVA;i;j;loca;aaa;pn;pna
[  1] ⍝ versao 1.09
[  2]  PILHA←0 21⍴' ' ⋄ nnn←1 ⋄ saida←0 70⍴' ' ⋄ r←0 70⍴' ' ⋄ aspa←'''' ⋄ loca←'' ⋄ pna←'≤'
[  3]  →(1=⍴⍴algo)/erro90
[  4]  i←1
[  5] t1:→(i>1↑⍴algo)/fim
[  6]  →(algo[i;1]≠'α')/oraviva
[  7]  saida←saida,[1]1 70⍴70↑1↓algo[i;]
[  8]  →(i=i←i+1)/t1
[  9] oraviva:vv←vetoriza algo[i;]
[ 10]  →('algoritmo'igual⊃vv[1])/ealg
[ 11]  →('fim{algoritmo}'igual⊃vv[1])/ealf
[ 12]  →('fimalgoritmo'igual⊃vv[1])/ealf
[ 13]  →('funcao'igual⊃vv[1])/efun
[ 14]  →('fim{funcao}'igual⊃vv[1])/efuf
[ 15]  →('fimfuncao'igual⊃vv[1])/efuf
[ 16]  →('leia'igual⊃vv[1])/elei
[ 17]  →('imprima'igual⊃vv[1])/eimp
[ 18]  →('escreva'igual⊃vv[1])/eimp ⍝ para compatibilizar com o VG = 19/06/08
[ 19]  →('devolva'igual⊃vv[1])/eimp  ⍝ em teste: sera que devolva = imprima neste contexto
       ???
[ 20]  →('se'igual⊃vv[1])/esex
[ 21]  →('senao'igual⊃vv[1])/esen
[ 22]  →('fim{se}'igual⊃vv[1])/esef
[ 23]  →('fimse'igual⊃vv[1])/esef
[ 24]  →('enquanto'igual⊃vv[1])/eenq
[ 25]  →('fim{enquanto}'igual⊃vv[1])/eenf
[ 26]  →('fimenquanto'igual⊃vv[1])/eenf
[ 27]  →('repita'igual⊃vv[1])/erep
[ 28]  →('ate'igual⊃vv[1])/eate
[ 29]  →('para'igual⊃vv[1])/epar
[ 30]  →('fim{para}'igual⊃vv[1])/epaf
[ 31]  →('fimpara'igual⊃vv[1])/epaf
[ 32]  →('abandone'igual⊃vv[1])/eaba
[ 33]  →('saia'igual⊃vv[1])/esai
[ 34]  →('<-'igual⊃vv[2])/ecad
[ 35]  →('inteiro'igual⊃vv[1])/eint
[ 36]  →('real'igual⊃vv[1])/erea
[ 37]  →('logico'igual⊃vv[1])/elog
[ 38]  →('caracter'igual 8↑⊃vv[1])/ecar
[ 39]  →('vetor'igual⊃vv[1])/evet
[ 40]  →('vetora'igual⊃vv[1])/evaa
[ 41]  r←r,[1]1 70⍴70↑(3⍕i),' - comando desconhecido'
[ 42] soma:→(i=i←i+1)/t1
[ 43] ⍝--------------algoritmo--------------
[ 44] ealg:saida←saida,[1]1 70⍴70↑⊃vv[2]
[ 45]  →soma
[ 46] ealf:→fim
[ 47] ⍝--------------funcao-----------------
```

```
[ 48] efun:
[ 49]  →(2≥ρvv)/naotem
[ 50]  coma←'RRRR←',(⊃vv[2]),' AAAA'
[ 51]  →vmesmo
[ 52] naotem:coma←'RRRR←',(⊃vv[2])
[ 53]  saida←saida,[1]1 70ρ70↑coma
[ 54]  nome←⊃vv[2]
[ 55]  →aca0
[ 56] vmesmo:
[ 57]  saida←saida,[1]1 70ρ70↑coma
[ 58]  nome←⊃vv[2]
[ 59]  j←1
[ 60] voi1:→(j>¯2+ρvv)/aca0
[ 61]  saida←saida,[1]1 70ρ70↑(⊃vv[j+2]),'←AAAA[',(3 0⍕j),']'
[ 62]  loca←loca,';',⊃vv[j+2]
[ 63]  →(j=j←j+1)/voi1
[ 64] aca0:→soma
[ 65] efuf:→fim
[ 66] ⍝---------------leia-----------------
[ 67] elei:saida←saida,[1]1 70ρ70↑aspa,'LEITURA DA VARIAVEL ',(⊃vv[2]),aspa
[ 68]  saida←saida,[1]1 70ρ70↑(⊃vv[2]),'←⍞'
[ 69]  →soma
[ 70] ⍝---------------imprima--------------
[ 71] eimp:→(3=ρvv)/temmsg
[ 72]  aaa←⊃vv[2]
[ 73]  →(aaa[ρaaa]=';')/juntaa
[ 74]  saida←saida,[1]1 70ρ70↑aaa
[ 75]  →soma
[ 76] juntaa:saida←saida,[1]1 70ρ70↑'⍞←⍕',¯1↓aaa
[ 77]  →soma
[ 78] temmsg:aaa←⊃vv[3]
[ 79]  →(aaa[ρaaa]=';')/juntab
[ 80]  saida←saida,[1]1 70ρ70↑(⊃vv[2]),' ',aaa
[ 81]  →soma
[ 82] juntab:saida←saida,[1]1 70ρ70↑'⍞←',(⊃vv[2]),' ,⍕',¯1↓aaa
[ 83]  →soma
[ 84] ⍝---------------atribuicao------------
[ 85] ecad:saida←saida,[1]1 70ρ70↑(⊃vv[1]),'←',,⊃2↓vv
[ 86]  aaa←⊃vv[1]
[ 87]  →('['∈aaa)/soma
[ 88]  →(∨/aaa⍷loca)/soma
[ 89]  loca←loca,';',⊃vv[1]
[ 90]  →soma
[ 91] ⍝---------------se--------------------
[ 92] esex:saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[ 93]  saida←saida,[1]1 70ρ70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn←nnn+1
[ 94]  PILHA←(1 21ρ21↑'SE',('000'⍕nnn)),[1]PILHA
[ 95]  nnn←nnn+1
[ 96]  →soma
[ 97] ⍝--senao--
[ 98] esen:SALVA←PILHA[1;3 4 5] ⋄ PILHA←1 0↓PILHA
[ 99]  PILHA←(1 21ρ21↑'SE',('000'⍕nnn)),[1]PILHA
[100]  saida←saida,[1]1 70ρ70↑'→Δ','000'⍕nnn
[101]  nnn←nnn+1
[102]  saida←saida,[1]1 70ρ70↑'Δ',SALVA,':'
[103]  →soma
[104] ⍝--fim{se}--
[105] esef:saida←saida,[1]1 70ρ70↑'Δ',PILHA[1;3 4 5],':'
[106]  PILHA←1 0↓PILHA
[107]  →soma
[108] ⍝-------------enquanto--------------------
[109] eenq:saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),':'
[110]  PILHA←(1 21ρ21↑'EN','000'⍕nnn),[1]PILHA
```

```
[111]  nnn←nnn+1
[112]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[113]  nnn←nnn+1
[114]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[115]  nnn←nnn+1
[116]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn-2
[117]  →soma
[118] ⍝----------fim{enquanto}-----------------
[119] eenf:SALVA←PILHA[1;3 4 5]
[120]  PILHA←1 0↓PILHA
[121]  saida←saida,[1]1 70⍴70↑'→Δ',PILHA[1;3 4 5]
[122]  PILHA←1 0↓PILHA
[123]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[124]  →soma
[125] ⍝----------repita-------------------------
[126] erep:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[127]  PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[128]  nnn←nnn+1
[129]  →soma
[130] ⍝-----------ate--------------------------
[131] eate:PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[132]  nnn←nnn+1
[133]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[134]  SALVA←PILHA[1;3 4 5]
[135]  PILHA←1 0↓PILHA
[136]  saida←saida,[1]1 70⍴70↑'→(Δ',('000'⍕nnn),')/Δ',SALVA
[137]  SALVA←PILHA[1;3 4 5]
[138]  PILHA←1 0↓PILHA
[139]  saida←saida,[1]1 70⍴70↑'→Δ',SALVA
[140]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn-1),':'
[141]  nnn←nnn+1 ⍝ inclusao desta linha em 19/04/06. Ainda nao suficientemente testada
[142]  →soma
[143] ⍝----------para-----------------------
[144] epar:saida←saida,[1]1 70⍴70↑(8↑⊃vv[2]),'←',8↑⊃vv[4]
[145]  PILHA←(1 21⍴21↑'PA','000'⍕nnn),[1]PILHA
[146]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[147]  nnn←nnn+1
[148]  →(8=⍴vv)/tempasso
[149]  PILHA←(1 21⍴21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8↑8⍕1),[1]PILHA
[150]  →juntab
[151] tempasso:PILHA←(1 21⍴21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8 2⍕pn←⍎⊃vv[8]),[1]PILHA
[152] ⍝ 'pn=',⍕pn
[153]  pna←'≤≥'[1+pn<0] ⍝ alteracao a 22/06/06, para acertar passo negativo
[154] juntab:nnn←nnn+1
[155]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',(⊃vv[2]),pna,⍕⊃vv[6]
[156]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn),')/Δ','000'⍕nnn-1
[157]  nnn←nnn+1
[158]  →soma
[159] ⍝----------fim{para}-----------------
[160] epaf:saida←saida,[1]1 70⍴70↑PILHA[1;5+⍳8],'←',PILHA[1;5+⍳8],'+',PILHA[1;13+⍳8]
[161]  SALVA←PILHA[1;3 4 5]
[162]  PILHA←1 0↓PILHA
[163]  saida←saida,[1]1 70⍴70↑'→Δ',PILHA[1;3 4 5]
[164]  PILHA←1 0↓PILHA
[165]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[166]  →soma
[167] ⍝-----------abandone--------------------
[168] eaba:→soma
[169] ⍝-----------saia--------------------------
[170] esai:→soma
[171] ⍝-------- definicao de variaveis---------------
[172] eint:
[173]  saida←saida,[1]1 70⍴70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
```

```
[174]  →soma
[175] erea:
[176]  saida←saida,[1]1 70ρ70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[177]  →soma
[178] elog:
[179]  saida←saida,[1]1 70ρ70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[180]  →soma
[181] ecar:
[182]  saida←saida,[1]1 70ρ70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[183]  →soma
[184] ⍝----------definicao de vetores-----------------
[185] evet:
[186]  saida←saida,[1]1 70ρ70↑(1 parte(⊃vv[2])),'←',(2 parte(⊃vv[2])),'ρ0'
[187]  →soma
[188] evaa:
[189]  saida←saida,[1]1 70ρ70↑(1 parte(⊃vv[2])),'←',(2 parte(⊃vv[2])),'ρ',aspa,' ',aspa
[190]  →soma
[191] fim:
[192]  i←1
[193] tfim:→(i>nnn)/mesmo
[194]  loca←loca,';Δ','000'⍕i
[195]  →(i=i←i+1)/tfim
[196] mesmo:→(50>ρloca)/blz1
[197]  saida←((1↑ρsaida),20+ρloca)↑saida
[198]  saida[1;20+⍳ρloca]←loca
[199]  →pula22
[200] blz1:saida[1;20+⍳50]←50↑loca
[201] pula22:r←'_ 'edit saida
[202]  →0
[203] erro90:'algoritmo nao e uma matriz'
[204]  →0
------------------------------------------------------------
[ 0]  r←var geracc sim;ii;jj;rel;cara;x;z
[ 1]  ii←2?ρvar
[ 2]  jj←2?ρsim
[ 3]  rel←'vvvvv∧∧'
[ 4]  x←?3
[ 5]  →(x≠3)/moleza
[ 6] temnao:
[ 7]  cara←?2
[ 8]  →(cara=2)/dep
[ 9] ant:z←'(~(',var[ii[1]],sim[jj[1]],(1 0⍕2+?5),'))',rel[?ρrel],'(',var[ii[2]],sim[jj[2]
      ],(1 0⍕1+?7),')'
[10]  →sai
[11] dep:z←'(',var[ii[1]],sim[jj[1]],(1 0⍕1+?7),')',rel[?ρrel],'(~(',var[ii[2]],sim[jj[2]]
      ,(1 0⍕2+?5),'))'
[12]  →sai
[13] moleza:z←'(',var[ii[1]],sim[jj[1]],(1 0⍕2+?5),')',rel[?ρrel],'(',var[ii[2]],sim[jj[2]
      ],(1 0⍕1+?7),')'
[14] sai:r←20↑'(',(trim z),')'
------------------------------------------------------------
[0]  r←geracomandosi al;rec;sai;op;val
[1]  r←2ρ0
[2]  rec←al[?ρal]
[3]  sai←al[?ρal]
[4]  op←'+-'[?2]
[5]  val←1 0⍕?2
[6]  r[1]←⊂rec,' <- ',sai,op,val
[7]  r[2]←⊂rec,'$⍀gets$',sai,op,val
------------------------------------------------------------
[ 0]  r←var geracs sim;ii;jj;rel;cara;x;z
[ 1]  ii←?ρvar
[ 2]  jj←?ρsim
```

```
[ 3]  x←?3
[ 4]  →(x≠3)/moleza
[ 5] temnao:
[ 6]  cara←?2
[ 7]  →(cara=2)/dep
[ 8] ant:z←'(~(',var[ii],sim[jj],(1 0⍕2+?5),'))'
[ 9]  →sai
[10] dep:z←'(',var[ii],sim[jj],(1 0⍕1+?7),')'
[11]  →sai
[12] moleza:z←'(',var[ii],sim[jj],(1 0⍕2+?5),')'
[13] sai:r←20↑z
------------------------------------------------------------
[  0]  r←geraex1;AA;aspa;cara;cor;e;i;ic;indc;is;pg;resp;sir;t;tab2;tc;ts;valores;vals;vars
[  1]  cor←(10↑'azul'),(10↑'creme'),(10↑'verde'),(10↑'roxa'),(10↑'incolor')
[  2]  cor←cor,(10↑'ocre'),(10↑'laranja'),(10↑'tijolo'),(10↑'preta')
[  3]  cor←cor,(10↑'zebrada'),(10↑'marrom')
[  4]  cor←10 10⍴cor
[  5] iniciaremos:
[  6]  indc←6?10
[  7]  vars←'ABCDFG'
[  8]  sir←'=><≥≤≠'
[  9]  tc←6 60⍴' '
[ 10]  t←21 60⍴' '
[ 11]  e←21 60⍴' '
[ 12]  aspa←''''
[ 13]  i←1
[ 14] t1:→(i>6)/f1
[ 15]  tc[i;⍳20]←vars geracc sir
[ 16]  tc[i;20+⍳20]←20↑negacc tc[i;⍳20]
[ 17]  tc[i;40+⍳20]←20↑meiabocacc tc[i;⍳20]
[ 18]  i←i+1
[ 19]  →t1
[ 20] f1:
[ 21]  ts←6 60⍴' '
[ 22]  i←1
[ 23] t2:→(i>6)/f2
[ 24]  ts[i;⍳20]←vars geracs sir
[ 25]  ts[i;20+⍳20]←20↑negacs ts[i;⍳20]
[ 26]  ts[i;40+⍳20]←20↑meiabocacs ts[i;⍳20]
[ 27]  i←i+1
[ 28]  →t2
[ 29] f2:
[ 30]  ic←3?6 ⋄ is←2?6
[ 31]  t[1;]←60↑'se ',(trim tc[ic[1];⍳20]),' entao'
[ 32]  e[1;]←60↑'⍀IF{',(trim tc[ic[1];⍳20]),'}'
[ 33]  t[2;]←60↑'   se ',(trim tc[ic[2];⍳20]),' entao'
[ 34]  e[2;]←60↑'⍀IF{',(trim tc[ic[2];⍳20]),'}'
[ 35]  t[3;]←60↑'      se ',(trim ts[is[1];⍳20]),' entao'
[ 36]  e[3;]←60↑'⍀IF{',(trim ts[is[1];⍳20]),'}'
[ 37]  t[4;]←60↑'         bola <- ',aspa,(trim cor[indc[1];]),aspa
[ 38]  e[4;]←60↑'⍀STATE bola $⍀gets$',aspa,(trim cor[indc[1];]),aspa
[ 39]  t[5;]←60↑'      senao' ⋄ e[5;]←60↑'⍀ELSE'
[ 40]  t[6;]←60↑'         bola <- ',aspa,(trim cor[indc[2];]),aspa
[ 41]  e[6;]←60↑'⍀STATE bola $⍀gets$',aspa,(trim cor[indc[2];]),aspa
[ 42]  t[7;]←60↑'      fimse' ⋄ e[7;]←60↑'⍀ENDIF'
[ 43]  t[8;]←60↑'   senao' ⋄ e[8;]←60↑'⍀ELSE'
[ 44]  t[9;]←60↑'      se ',(trim tc[ic[3];⍳20]),' entao'
[ 45]  e[9;]←60↑'⍀IF{',(trim tc[ic[3];⍳20]),'}'
[ 46]  t[10;]←60↑'         bola <- ',aspa,(trim cor[indc[3];]),aspa
[ 47]  e[10;]←60↑'⍀STATE bola $⍀gets$ ',aspa,(trim cor[indc[3];]),aspa
[ 48]  t[11;]←60↑'      senao' ⋄ e[11;]←60↑'⍀ELSE'
[ 49]  t[12;]←60↑'         bola <- ',aspa,(trim cor[indc[4];]),aspa
[ 50]  e[12;]←60↑'⍀STATE bola $⍀gets$ ',aspa,(trim cor[indc[4];]),aspa
```

```
[ 51]  t[13;]←60↑'      fimse' ⋄ e[13;]←60↑'⍀ENDIF'
[ 52]  t[14;]←60↑'   fimse' ⋄ e[14;]←60↑'⍀ENDIF'
[ 53]  t[15;]←60↑'senao' ⋄ e[15;]←60↑'⍀ELSE'
[ 54]  t[16;]←60↑'   se ',(trim ts[is[2];⍳20]),' entao'
[ 55]  e[16;]←60↑'⍀IF{',(trim ts[is[2];⍳20]),'}'
[ 56]  t[17;]←60↑'      bola <- ',aspa,(trim cor[indc[5];]),aspa
[ 57]  e[17;]←60↑'⍀STATE bola $⍀gets$ ',aspa,(trim cor[indc[5];]),aspa
[ 58]  t[18;]←60↑'   senao' ⋄ e[18;]←60↑'⍀ELSE'
[ 59]  t[19;]←60↑'      bola <- ',aspa,(trim cor[indc[6];]),aspa
[ 60]  e[19;]←60↑'⍀STATE bola $⍀gets$ ',aspa,(trim cor[indc[6];]),aspa
[ 61]  t[20;]←60↑'   fimse' ⋄ e[20;]←60↑'⍀ENDIF'
[ 62]  t[21;]←60↑'fimse' ⋄ e[21;]←60↑'⍀ENDIF'
[ 63] ⍝----------------- aqui comeca a encrenca (ha desconfianca de mal funcionamento)----
      ---
[ 64]  resp←6 70⍴' '
[ 65]  resp[;60+⍳10]←cor[indc;]
[ 66]  resp[1;⍳60]←60↑(trim tc[ic[1];⍳20]),'^',(trim tc[ic[2];⍳20]),'^',trim ts[is[1];⍳20]
[ 67]  resp[2;⍳60]←60↑(trim tc[ic[1];⍳20]),'^',(trim tc[ic[2];⍳20]),'^',trim ts[is[1];20+⍳2
      0]
[ 68]  resp[3;⍳60]←60↑(trim tc[ic[1];⍳20]),'^',(trim tc[ic[2];20+⍳20]),'^',trim tc[ic[3];⍳2
      0]
[ 69]  resp[4;⍳60]←60↑(trim tc[ic[1];⍳20]),'^',(trim tc[ic[2];⍳20]),'^',trim tc[ic[3];20+⍳2
      0]
[ 70]  resp[5;⍳60]←60↑(trim tc[ic[1];20+⍳20]),'^',(trim ts[is[2];⍳20])
[ 71]  resp[6;⍳60]←60↑(trim tc[ic[1];20+⍳20]),'^',(trim ts[is[2];20+⍳20])
[ 72]  cara←?2  ⍝ detonando as linhas 1 e 2 (que vao parar em qualquer lugar depois)...
[ 73]  →blz ⍝ esta desabilitando a zona em 2 linhas (que dariam resposta X)
[ 74]  →(cara=2)/blz
[ 75]  resp[1;⍳60]←60↑(trim tc[ic[1];⍳20]),'^',(trim tc[ic[2];40+⍳20]),'^',trim ts[is[1];⍳2
      0]
[ 76] ⍝                                                          ↑↑
[ 77]  resp[1;60+⍳10]←10↑'X'
[ 78]  resp[2;⍳60]←60↑(trim tc[ic[1];⍳20]),'v',(trim tc[ic[2];⍳20]),'^',trim ts[is[1];20+⍳2
      0]
[ 79] ⍝                                      ↑
[ 80]  resp[2;60+⍳10]←10↑'X'
[ 81] blz:
[ 82]  resp←resp[6?6;]
[ 83]  i←1
[ 84]  tab2←6 26⍴' '
[ 85] t3:→(i>6)/fim
[ 86]  vals←6 60⍴' '
[ 87]  vals[;1]←6 1⍴vars
[ 88]  vals[;2 3 4 5]←6 4⍴' <- '
[ 89]  vals[;6]←6 1⍴1 0⍕valores←6?9
[ 90]  tab2[i;⍳6]←vars
[ 91]  tab2[i;6+⍳6]←1 0⍕valores
[ 92]  pg←30 60⍴' '
[ 93]  pg[1;]←60↑'funcao A'
[ 94]  pg[1+⍳6;]←vals
[ 95]  pg[7+⍳21;]←t
[ 96]  pg[29;]←60↑' RRRR <- bola'
[ 97]  pg[30;]←60↑'fimfuncao'
[ 98]  AA←⎕FX cpc pg
[ 99]  tab2[i;12+⍳10]←10↑A
[100]  i←i+1
[101]  →t3
[102] fim:
[103]  →(3≤⍴tiradups tab2[;13])/oko
[104]  ⎕←'~'
[105]  →iniciaremos
[106] oko:
[107]  r←3⍴0
```

```
[108]  r[1]←⊂tab2[(,tab2[;13])⍳tiradups tab2[;13];]
[109]  r[2]←⊂trc e
[110]  r[3]←⊂resp
------------------------------------------------------------
[  0]  r←geraex2;AA;aspa;cara;cor;e;i;ic;indc;is;pg;resp;sir;t;tab2;tc;ts;valores;vals;vars
      ;za
[  1] iniciaremos:
[  2]  indc←6?10
[  3]  vars←'ABC'
[  4]  sir←'=><≥≤≠'
[  5]  tc←6 60⍴' '
[  6]  t←21 60⍴' '
[  7]  e←21 60⍴' '
[  8]  aspa←''''
[  9]  i←1
[ 10] t1:→(i>6)/f1
[ 11]  tc[i;⍳20]←vars geracc sir
[ 12]  tc[i;20+⍳20]←20↑negacc tc[i;⍳20]
[ 13]  tc[i;40+⍳20]←20↑meiabocacc tc[i;⍳20]
[ 14]  i←i+1
[ 15]  →t1
[ 16] f1:ts←6 60⍴' '
[ 17]  i←1
[ 18] t2:→(i>6)/f2
[ 19]  ts[i;⍳20]←vars geracs sir
[ 20]  ts[i;20+⍳20]←20↑negacs ts[i;⍳20]
[ 21]  ts[i;40+⍳20]←20↑meiabocacs ts[i;⍳20]
[ 22]  i←i+1
[ 23]  →t2
[ 24] f2:
[ 25]  ic←3?6 ⋄ is←2?6
[ 26]  t[1;]←60↑'se ',(trim tc[ic[1];⍳20]),' entao'
[ 27]  e[1;]←60↑'⍀IF{',(trim tc[ic[1];⍳20]),'}'
[ 28]  t[2;]←60↑'   se ',(trim tc[ic[2];⍳20]),' entao'
[ 29]  e[2;]←60↑'⍀IF{',(trim tc[ic[2];⍳20]),'}'
[ 30]  t[3;]←60↑'      se ',(trim ts[is[1];⍳20]),' entao'
[ 31]  e[3;]←60↑'⍀IF{',(trim ts[is[1];⍳20]),'}'
[ 32]  za←geracomandosi vars
[ 33]  t[4;]←60↑'         ',⊃za[1]
[ 34]  e[4;]←60↑'⍀STATE ',⊃za[2]
[ 35]  cara←?2
[ 36]  →(cara=2)/aka1
[ 37]  za←geracomandosi vars
[ 38]  t[5;]←60↑(10⍴' '),⊃za[1]
[ 39]  e[5;]←60↑'⍀STATE ',⊃za[2]
[ 40]  →aka2
[ 41] aka1:
[ 42]  t[5;]←60↑'      senao' ⋄ e[5;]←60↑'⍀ELSE'
[ 43] aka2:
[ 44]  za←geracomandosi vars
[ 45]  t[6;]←60↑'         ',⊃za[1]
[ 46]  e[6;]←60↑'⍀STATE ',⊃za[2]
[ 47]  t[7;]←60↑'      fimse' ⋄ e[7;]←60↑'⍀ENDIF'
[ 48]  t[8;]←60↑'   senao' ⋄ e[8;]←60↑'⍀ELSE'
[ 49]  t[9;]←60↑'      se ',(trim tc[ic[3];⍳20]),' entao'
[ 50]  e[9;]←60↑'⍀IF{',(trim tc[ic[3];⍳20]),'}'
[ 51]  za←geracomandosi vars
[ 52]  t[10;]←60↑'         ',⊃za[1]
[ 53]  e[10;]←60↑'⍀STATE ',⊃za[2]
[ 54]  cara←?2
[ 55]  →(cara=2)/jav1
[ 56]  t[11;]←60↑'      senao' ⋄ e[11;]←60↑'⍀ELSE'
[ 57]  →jav2
```

```
[ 58] jav1:
[ 59]  za←geracomandosi vars
[ 60]  t[11;]←60↑(10ρ' '),⊃za[1]
[ 61]  e[11;]←60↑'↚STATE ',⊃za[2]
[ 62] jav2:
[ 63]  za←geracomandosi vars
[ 64]  t[12;]←60↑'         ',⊃za[1]
[ 65]  e[12;]←60↑'↚STATE ',⊃za[2]
[ 66]  t[13;]←60↑'      fimse' ⋄ e[13;]←60↑'↚ENDIF'
[ 67]  t[14;]←60↑'   fimse' ⋄ e[14;]←60↑'↚ENDIF'
[ 68]  t[15;]←60↑'senao' ⋄ e[15;]←60↑'↚ELSE'
[ 69]  t[16;]←60↑'   se ',(trim ts[is[2];⍳20]),' entao'
[ 70]  e[16;]←60↑'↚IF{',(trim ts[is[2];⍳20]),'}'
[ 71]  za←geracomandosi vars
[ 72]  t[17;]←60↑(10ρ' '),⊃za[1]
[ 73]  e[17;]←60↑'↚STATE ',⊃za[2]
[ 74]  cara←?2
[ 75]  →(cara=2)/kuy1
[ 76]  t[18;]←60↑'   senao' ⋄ e[18;]←60↑'↚ELSE'
[ 77]  →kuy2
[ 78] kuy1:
[ 79]  za←geracomandosi vars
[ 80]  t[18;]←60↑(10ρ' '),⊃za[1]
[ 81]  e[18;]←60↑'↚STATE ',⊃za[2]
[ 82] kuy2:
[ 83]  za←geracomandosi vars
[ 84]  t[19;]←60↑(10ρ' '),⊃za[1]
[ 85]  e[19;]←60↑'↚STATE ',⊃za[2]
[ 86]  t[20;]←60↑'   fimse' ⋄ e[20;]←60↑'↚ENDIF'
[ 87]  t[21;]←60↑'fimse' ⋄ e[21;]←60↑'↚ENDIF'
[ 88]  i←1
[ 89]  tab2←6 9ρ' '
[ 90] t3:→(i>6)/fim
[ 91]  vals←3 60ρ' '
[ 92]  vals[;1]←3 1ρvars
[ 93]  vals[;2 3 4 5]←3 4ρ' <- '
[ 94]  vals[;6]←3 1ρ1 0⍕valores←1+3?5
[ 95]  tab2[i;⍳3]←1 0⍕valores
[ 96]  pg←27 60ρ' '
[ 97]  pg[1;]←60↑'funcao A'
[ 98]  pg[1+⍳3;]←vals
[ 99]  pg[4+⍳21;]←t
[100]  pg[26;]←60↑' RRRR <- A, B, C'
[101]  pg[27;]←60↑'fimfuncao'
[102]  AA←⎕FX cpc pg
[103]  →(0≤⌊/A)/lila
[104]  ⎕←'o'
[105]  →iniciaremos
[106] lila:
[107]  tab2[i;3+⍳6]←2 0⍕A
[108]  i←i+1
[109]  →t3
[110] fim:
[111]  r←3ρ0
[112]  r[1]←⊂tab2
[113]  r[2]←⊂trc e
-------------------------------------------------------------
[0]  r←a igual b;maior
[1]  maior←(1↑ρa)⌈1↑ρb
[2]  a←maior↑a ⋄ b←maior↑b
[3]  r←maior=+/a=b
-------------------------------------------------------------
[ 0]  r←meiabocacc x;i;mi
```

```
[ 1]  i←1
[ 2]  r←''
[ 3]  mi←6 2⍴'<>><==≠≠≥>≤<'
[ 4] t1:→(i>⍴x)/f1
[ 5]  →(x[i]='~')/nao
[ 6]  →(x[i]='∨')/ou
[ 7]  →(x[i]='∧')/e
[ 8]  →(x[i]∈mi[;1])/inverte
[ 9]  r←r,x[i]
[10]  →soma
[11] nao:i←i+2
[12] t2:→(x[i]=')')/soma
[13]  r←r,x[i]
[14]  i←i+1
[15]  →t2
[16] ou:r←r,'∧'
[17]  →soma
[18] e:r←r,'∨'
[19]  →soma
[20] inverte:
[21]  r←r,mi[(,mi[;1])⍳x[i];2]
[22]  →soma
[23] soma:i←i+1
[24]  →t1
[25] f1:
```

```
----------------------------------------------------------
[ 0]  r←meiabocacs x;i;mi
[ 1]  i←1
[ 2]  r←''
[ 3]  mi←6 2⍴'<>><==≠≠><>'
[ 4] t1:→(i>⍴x)/f1
[ 5]  →(x[i]='~')/nao
[ 6]  →(x[i]∈mi[;1])/inverte
[ 7]  r←r,x[i]
[ 8]  →soma
[ 9] nao:i←i+2
[10] t2:→(x[i]=')')/soma
[11]  r←r,x[i]
[12]  i←i+1
[13]  →t2
[14] inverte:
[15]  r←r,mi[(,mi[;1])⍳x[i];2]
[16]  →soma
[17] soma:i←i+1
[18]  →t1
[19] f1:
```

```
----------------------------------------------------------
[ 0]  r←negacc x;i;mi
[ 1]  i←1
[ 2]  r←''
[ 3]  mi←6 2⍴'<≥>≤=≠≠=≥<≤>'
[ 4] t1:→(i>⍴x)/f1
[ 5]  →(x[i]='~')/nao
[ 6]  →(x[i]='∨')/ou
[ 7]  →(x[i]='∧')/e
[ 8]  →(x[i]∈mi[;1])/inverte
[ 9]  r←r,x[i]
[10]  →soma
[11] nao:i←i+2
[12] t2:→(x[i]=')')/soma
[13]  r←r,x[i]
[14]  i←i+1
[15]  →t2
```

```
[16] ou:r←r,'∧'
[17]  →soma
[18] e:r←r,'∨'
[19]  →soma
[20] inverte:
[21]  r←r,mi[(,mi[;1])⍳x[i];2]
[22]  →soma
[23] soma:i←i+1
[24]  →t1
[25] f1:
------------------------------------------------------------
[ 0]  r←negacs x;i;mi
[ 1]  i←1
[ 2]  r←''
[ 3]  mi←6 2⍴'<≥>≤=≠≠=≥<≤>'
[ 4] t1:→(i>⍴x)/f1
[ 5]  →(x[i]='~')/nao
[ 6]  →(x[i]∈mi[;1])/inverte
[ 7]  r←r,x[i]
[ 8]  →soma
[ 9] nao:i←i+2
[10] t2:→(x[i]=')')/soma
[11]  r←r,x[i]
[12]  i←i+1
[13]  →t2
[14] inverte:
[15]  r←r,mi[(,mi[;1])⍳x[i];2]
[16]  →soma
[17] soma:i←i+1
[18]  →t1
[19] f1:
------------------------------------------------------------
[0]  r←tiradups x
[1]  r←((x⍳x)=⍳⍴x)/x←,x
------------------------------------------------------------
[ 0]  r←tradcoma x;i;j
[ 1]  i←j←1 ⋄ r←100⍴' '
[ 2] t1:→(i>⍴x)/fim
[ 3]  →(i=⍴x)/pula
[ 4]  →((x[i]='<')∧(x[i+1]='-'))/recebe
[ 5] pula:→(x[i]='∨')/ou
[ 6]  →(x[i]='∧')/e
[ 7]  →(x[i]='~')/nao
[ 8]  →(x[i]='≠')/diferente
[ 9]  →(x[i]='≤')/menig
[10]  →(x[i]='≥')/maiig
[11]  →(x[i]='×')/vezes
[12]  →(x[i]='>')/maior
[13]  →(x[i]='<')/menor
[14] nada:r[j]←x[i]
[15]  i←i+1
[16]  j←j+1
[17]  →t1
[18] recebe:r[j+¯1+⍳7]←'$⍀gets$'
[19]  j←j+7
[20]  i←i+2
[21]  →t1
[22] ou:r[j+¯1+⍳6]←'$⍀lor$'
[23]  j←j+6
[24]  i←i+1
[25]  →t1
[26] nao:r[j+¯1+⍳6]←'$⍀sim$'
[27]  j←j+6
```

```
[28]  i←i+1
[29]  →t1
[30] e:r[j+¯1+⍳7]←'$⍀land$'
[31]  j←j+7
[32]  i←i+1
[33]  →t1
[34] diferente:r[j+¯1+⍳6]←'$⍀neq$'
[35]  j←j+6
[36]  i←i+1
[37]  →t1
[38] menig:r[j+¯1+⍳5]←'$⍀le$'
[39]  j←j+5
[40]  i←i+1
[41]  →t1
[42] maiig:r[j+¯1+⍳5]←'$⍀ge$'
[43]  j←j+5
[44]  i←i+1
[45]  →t1
[46] vezes:r[j+¯1+⍳8]←'$⍀times$'
[47]  j←j+8
[48]  i←i+1
[49]  →t1
[50] maior:r[j+¯1+⍳3]←'$>$'
[51]  j←j+3
[52]  i←i+1
[53]  →t1
[54] menor:r[j+¯1+⍳3]←'$<$'
[55]  j←j+3
[56]  i←i+1
[57]  →t1
[58] fim:r←trim r
------------------------------------------------------------
[ 0]  r←tradcoma200 x;i;j
[ 1]  i←1 ⋄ r←200⍴' '
[ 2]  r[1]←'$'
[ 3]  j←2
[ 4] t1:→(i>⍴x)/fim
[ 5]  →(i=⍴x)/pula
[ 6]  →((x[i]='<')∧(x[i+1]='-'))/recebe
[ 7] pula:→(x[i]='∨')/ou
[ 8]  →(x[i]='∧')/e
[ 9]  →(x[i]='~')/nao
[10]  →(x[i]='≠')/diferente
[11]  →(x[i]='≤')/menig
[12]  →(x[i]='≥')/maiig
[13]  →(x[i]='×')/vezes
[14]  →(x[i]='>')/maior
[15]  →(x[i]='<')/menor
[16] nada:r[j]←x[i]
[17]  i←i+1
[18]  j←j+1
[19]  →t1
[20] recebe:r[j+¯1+⍳6]←'⍀gets '
[21]  j←j+6
[22]  i←i+2
[23]  →t1
[24] ou:r[j+¯1+⍳5]←'⍀lor '
[25]  j←j+5
[26]  i←i+1
[27]  →t1
[28] nao:r[j+¯1+⍳5]←'⍀sim '
[29]  j←j+5
[30]  i←i+1
```

```
[31]  →t1
[32] e:r[j+¯1+⍳6]←'\land '
[33]  j←j+6
[34]  i←i+1
[35]  →t1
[36] diferente:r[j+¯1+⍳5]←'\neq '
[37]  j←j+5
[38]  i←i+1
[39]  →t1
[40] menig:r[j+¯1+⍳4]←'\le '
[41]  j←j+4
[42]  i←i+1
[43]  →t1
[44] maiig:r[j+¯1+⍳4]←'\ge '
[45]  j←j+4
[46]  i←i+1
[47]  →t1
[48] vezes:r[j+¯1+⍳7]←'\times '
[49]  j←j+7
[50]  i←i+1
[51]  →t1
[52] maior:r[j+¯1+⍳2]←'> '
[53]  j←j+2
[54]  i←i+1
[55]  →t1
[56] menor:r[j+¯1+⍳2]←'< '
[57]  j←j+2
[58]  i←i+1
[59]  →t1
[60] fim:
[61]  r←trim r
[62]  r←r,'$'
-------------------------------------------------------------
[0]  r←trc x;i
[1]  r←((2+1↑⍴x),78)⍴' '
[2]  i←1
[3] t1:→(i>1↑⍴x)/fim
[4]  r[i+1;]←78↑tradcoma x[i;]
[5]  i←i+1
[6]  →t1
[7] fim:r[1;]←78↑'\begin{algorithmic}[1]'
[8]  r[1↑⍴r;]←78↑'\end{algorithmic}'
-------------------------------------------------------------
[ 0]  r←vetoriza x;i;rr;letra;aspa;nume
[ 1] ⍝ versao 1.07
[ 2]  aspa←''''' ⋄ nume←'0123456789'
[ 3]  letra←'abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ()',aspa
[ 4] ⍝ tira os brancos
[ 5]  i←1 ⋄ rr←1
[ 6] t2:→(i>¯2+⍴x)/vaiz
[ 7]  →((x[i+1]=' ')∧(x[i]∈letra)∧(x[i+2]∈nume))/mataz
[ 8]  →((x[i+1]=' ')∧(x[i]∈nume)∧(x[i+2]∈letra))/mataz
[ 9]  →((x[i]∈letra)∧(x[i+2]∈letra))/naopode
[10]  →(((x[1]='p')∨(x[1]='P'))∧(x[2]='a')∧(x[i]∈letra)∧(x[i+2]='-'))/naopode  ⍝ comando i
      ncluido para o passo negativo
[11] ⍝ os 3 testes iniciais (pPa) foram incluidos porque o comando acima estava
[12] ⍝ fazendo besteira: vetoriza 'A <- A -1' estava gerando 4 tokens e nao 3.
[13] ⍝ correcao em 13/03/12 - P.kantek
[14]  →(x[i+1]≠' ')/naopode
[15] pode:rr←rr,0
[16]  →(i=i←i+1)/t2
[17] mataz:x[i+1]←'!'
[18] naopode:rr←rr,1
```

```
[19]  →(i=i←i+1)/t2
[20] vaiz:rr←rr,1
[21]  x←rr/x
[22] ⍝ separa o sinal <-
[23]  →(2≠+/'<-'∈x)/faca
[24]  i←1 ⋄ rr←⍳0
[25] t1:→(i>¯1+⍴x)/vaix
[26]  →((x[i]='<')∧(x[i+1]='-'))/esim
[27]  rr←rr,1
[28]  →(i=i←i+1)/t1
[29] esim:rr←rr,0 1 1 0
[30]  →(i=i←i+2)/t1
[31] vaix:rr←rr,1
[32]  x←rr⌿x
[33] faca:x←'! 'edit x
[34]  r←(~' '=x)⊂x
------------------------------------------------------------
[ 0]  opesq vivo022a n;CORRECAO;EVENTO;a;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qli
      nha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo022 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PL022   '
[ 9]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⌿apl2⌿',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[44]  a←⊃xx[1]
[45]  esse[31;]←120↑'&',a[1;7],'&'a[1;8],'&'a[1;9],'&'a[1;10],'&'a[1;11],'&'a[1;12],'⍀⍀ ⍀h
      line'
[46]  esse[32;]←120↑'&',a[2;7],'&'a[2;8],'&'a[2;9],'&'a[2;10],'&'a[2;11],'&'a[2;12],'⍀⍀ ⍀h
      line'
[47]  esse[33;]←120↑'&',a[3;7],'&'a[3;8],'&'a[3;9],'&'a[3;10],'&'a[3;11],'&'a[3;12],'⍀⍀ ⍀h
      line'
[48]  resp←3 0⍕resp
[49]  resp←resp,'=',(,a[⍳3;12+⍳8]),'-'
[50]  a←⊃xx[3]
[51]  esse[34;]←120↑'⍀IF{',(tradcoma200 a[1;⍳60]),'}'
[52]  esse[35;]←120↑'⍀IF{',(tradcoma200 a[2;⍳60]),'}'
[53]  esse[36;]←120↑'⍀IF{',(tradcoma200 a[3;⍳60]),'}'
[54]  esse[37;]←120↑'⍀IF{',(tradcoma200 a[4;⍳60]),'}'
[55]  resp←resp,,a[⍳4;60+⍳8],' '
[56]  xx←geraex2
[57]  esse[37+⍳23;]←23 120↑⊃xx[2]
[58]  a←⊃xx[1]
[59]  esse[60+⍳6;⍳19]←((6 1⍴a[;1]),'&',(6 1⍴a[;2]),'&',(6 1⍴a[;3])),6 14⍴'⍀⍀ ⍀cline{2-4}'
[60]  resp←resp,'-',3 0⍕,+/[2]6 3⍴≢,(0 1 1 0 1 1 0 1 1)⍀[2]a[;3+⍳6]
[61]  xx←geraex2
[62]  esse[66+⍳23;]←23 120↑⊃xx[2]
[63]  a←⊃xx[1]
[64]  esse[89+⍳6;⍳19]←((6 1⍴a[;1]),'&',(6 1⍴a[;2]),'&',(6 1⍴a[;3])),6 14⍴'⍀⍀ ⍀cline{2-4}'
[65]  resp←resp,'-',3 0⍕,+/[2]6 3⍴≢,(0 1 1 0 1 1 0 1 1)⍀[2]a[;3+⍳6]
[66]  resu←resu,[1]1 103⍴resp
[67]  acuja←(f[;2]='#')/⍳1↑⍴f
[68]  f[acuja;⍳120]←esse[≢,f[acuja;3 4],' ';]
[69]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[70]  ⎕←(⍕xk←xk+1),'-'
[71]  →testa
[72] fim:upag←(1 0+⍴f)⍴' '
[73]  →(1=≡n)/elafa
[74]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[75]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[76]  upag[2+⍳1↑⍴presu;⍳103]←resu
[77]  upag[3+1↑⍴presu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[78]  →terminando
[79] ∆∆∆∆∆∆∆∆∆∆↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[80] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[81] ∆∆∆∆∆∆∆∆∆∆↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[82]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.gpa')
[83]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[84] terminando:
[85]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[86]  relat[1↑⍴relat;;]←upag
[87]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[88] ∆ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[89]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.tex'
[90]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[91]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo023

```
[ 0]  RRRR←aaa;m;r;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007
[ 1]  m←4
[ 2]  r←0⍴0
[ 3] Δ001:
[ 4]  Δ003←m<16
[ 5]  →(~Δ003)/Δ002
[ 6]  Δ004←0=2|m
```

```
[ 7]  →(~Δ004)/Δ005
[ 8]  r←r,m
[ 9]  →Δ006
[10] Δ005:
[11]  r←r,3×m
[12] Δ006:
[13]  m←m+3
[14]  →Δ001
[15] Δ002:
[16]  RRRR←r
-------------------------------------------------------------
[ 0]  RRRR←bbb;j;r;k;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ008;Δ009;Δ010
[ 1]  j←2
[ 2]  r←0ρ0
[ 3] Δ001:
[ 4]  Δ003←j<13
[ 5]  →(~Δ003)/Δ002
[ 6]  k←7
[ 7] Δ004:
[ 8]  Δ006←k<9
[ 9]  →(~Δ006)/Δ005
[10]  Δ007←0=2|k
[11]  →(~Δ007)/Δ008
[12]  r←r,k-j
[13]  →Δ009
[14] Δ008:
[15]  r←r,k+j
[16] Δ009:
[17]  k←k+3
[18]  →Δ004
[19] Δ005:
[20]  j←j+2
[21]  →Δ001
[22] Δ002:
[23]  RRRR←r
-------------------------------------------------------------
[ 0]  cavaleiro023a n;relat;xk;esse;f;xx;x;resp;lixo1;acuja
[ 1]  □RL←⌊(□TS[7]+□TS[6]+□TS[5])*2.7364736473
[ 2]  FOLHALA023←80 ajusta FOLHALA023
[ 3]  relat←ΔFM'c:⍀apl2⍀VIVOBLO1'
[ 4]  xk←1
[ 5] testa:→(xk>n)/fim
[ 6]  esse←145 80ρ' '
[ 7]  f←FOLHALA023
[ 8]  esse[1;⍳ρx]←x←' -- Cavaleiros da Tavola Redonda'
[ 9]  esse[3;]←80↑4 2⍕1.12
[10]  esse[144;⍳8]←'@OOOOOO@'
[11] inica:
[12]  xx←ga geraa
[13]  esse[7+⍳9;]←9 80↑'¯-'edit⊃xx[2]
[14]  resp←¯1↑⊃xx[3]
[15]  xx←gb gerab
[16]  esse[16+⍳7;]←7 80↑'¯-'edit⊃xx[2]
[17]  resp←resp,¯1↑⊃xx[3]
[18]  xx←gc gerac
[19]  esse[23+⍳11;]←11 80↑'¯-'edit⊃xx[2]
[20]  resp←resp,¯1↑⊃xx[3]
[21]  xx←gd gerad
[22]  esse[34+⍳13;]←13 80↑'¯-'edit⊃xx[2]
[23]  resp←resp,¯1↑⊃xx[3]
[24]  xx←ge gerae
[25]  esse[47+⍳17;]←17 80↑'¯-'edit⊃xx[2]
[26]  resp←resp,¯1↑⊃xx[3]
```

```
[27]  xx←gf geraf
[28]  esse[64+⍳9;]←9 80↑'¯'-'edit⊃xx[2]
[29]  resp←resp,¯1↑⊃xx[3]
[30]  xx←gg gerag
[31]  esse[73+⍳13;]←13 80↑'¯'-'edit⊃xx[2]
[32]  resp←resp,¯1↑⊃xx[3]
[33]  xx←ga geraa
[34]  esse[86+⍳9;]←9 80↑'¯'-'edit⊃xx[2]
[35]  esse[88;23+⍳2]←'8 '
[36]  resp←resp,¯1↑⊃xx[3]
[37]  xx←gb gerab
[38]  esse[95+⍳7;]←7 80↑'¯'-'edit⊃xx[2]
[39]  esse[97;23+⍳2]←'9 '
[40]  resp←resp,¯1↑⊃xx[3]
[41]  xx←gc gerac
[42]  esse[102+⍳11;]←11 80↑'¯'-'edit⊃xx[2]
[43]  esse[104;23+⍳2]←'10'
[44]  resp←resp,¯1↑⊃xx[3]
[45]  xx←gd gerad
[46]  esse[113+⍳13;]←13 80↑'¯'-'edit⊃xx[2]
[47]  esse[115;23+⍳2]←'11'
[48]  resp←resp,¯1↑⊃xx[3]
[49]  xx←ge gerae
[50]  esse[126+⍳17;]←17 80↑'¯'-'edit⊃xx[2]
[51]  esse[128;23+⍳2]←'12'
[52]  resp←resp,¯1↑⊃xx[3]
[53]  acuja←(f[;2]='#')/⍳1↑⍴f
[54]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4 5],' ';]
[55]  □←(⍕xk←xk+1),'-'
[56]  f←(((1↑⍴relat),1↓⍴f)↑relat),[1]f
[57]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'\end{document}'
[58]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'%',⍕resp
[59]  lixo1←f ΔFM'c:\apl2\CA023a',('00'⍕xk-1),'.tex'
[60]  →testa
[61] fim:
-------------------------------------------------------------
[ 0]  RRRR←ccc;r;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007
[ 1]  r←0⍴0
[ 2]  i←4
[ 3] Δ001:
[ 4]  Δ003←i≤12
[ 5]  →(~Δ003)/Δ002
[ 6]  k←6
[ 7] Δ004:
[ 8]  Δ006←k≤8
[ 9]  →(~Δ006)/Δ005
[10]  r←r,i+k
[11]  k←k+4
[12]  →Δ004
[13] Δ005:
[14]  i←i+2
[15]  →Δ001
[16] Δ002:
[17]  RRRR←r
-------------------------------------------------------------
[  0]  r←cpc algo;nome;PILHA;nnn;saida;aspa;vv;coma;SALVA;i;j;loca;aaa;pn;pna
[  1] ⍝ versao 1.09
[  2]  PILHA←0 21⍴' ' ⋄ nnn←1 ⋄ saida←0 70⍴' ' ⋄ r←0 70⍴' ' ⋄ aspa←'''' ⋄ loca←'' ⋄ pna←'≤'
[  3]  →(1=⍴⍴algo)/erro90
[  4]  i←1
[  5] t1:→(i>1↑⍴algo)/fim
[  6]  →(algo[i;1]≠'α')/oraviva
[  7]  saida←saida,[1]1 70⍴70↑1↓algo[i;]
```

```
[  8]  →(i=i←i+1)/t1
[  9] oraviva:vv←vetoriza algo[i;]
[ 10]  →('algoritmo'igual⊃vv[1])/ealg
[ 11]  →('fim{algoritmo}'igual⊃vv[1])/ealf
[ 12]  →('fimalgoritmo'igual⊃vv[1])/ealf
[ 13]  →('funcao'igual⊃vv[1])/efun
[ 14]  →('fim{funcao}'igual⊃vv[1])/efuf
[ 15]  →('fimfuncao'igual⊃vv[1])/efuf
[ 16]  →('leia'igual⊃vv[1])/elei
[ 17]  →('imprima'igual⊃vv[1])/eimp
[ 18]  →('escreva'igual⊃vv[1])/eimp ⍝ para compatibilizar com o VG = 19/06/08
[ 19]  →('devolva'igual⊃vv[1])/eimp  ⍝ em teste: sera que devolva = imprima neste contexto
       ???
[ 20]  →('se'igual⊃vv[1])/esex
[ 21]  →('senao'igual⊃vv[1])/esen
[ 22]  →('fim{se}'igual⊃vv[1])/esef
[ 23]  →('fimse'igual⊃vv[1])/esef
[ 24]  →('enquanto'igual⊃vv[1])/eenq
[ 25]  →('fim{enquanto}'igual⊃vv[1])/eenf
[ 26]  →('fimenquanto'igual⊃vv[1])/eenf
[ 27]  →('repita'igual⊃vv[1])/erep
[ 28]  →('ate'igual⊃vv[1])/eate
[ 29]  →('para'igual⊃vv[1])/epar
[ 30]  →('fim{para}'igual⊃vv[1])/epaf
[ 31]  →('fimpara'igual⊃vv[1])/epaf
[ 32]  →('abandone'igual⊃vv[1])/eaba
[ 33]  →('saia'igual⊃vv[1])/esai
[ 34]  →('<-'igual⊃vv[2])/ecad
[ 35]  →('inteiro'igual⊃vv[1])/eint
[ 36]  →('real'igual⊃vv[1])/erea
[ 37]  →('logico'igual⊃vv[1])/elog
[ 38]  →('caracter'igual 8↑⊃vv[1])/ecar
[ 39]  →('vetor'igual⊃vv[1])/evet
[ 40]  →('vetora'igual⊃vv[1])/evaa
[ 41]  r←r,[1]1 70⍴70↑(3⍕i),' - comando desconhecido'
[ 42] soma:→(i=i←i+1)/t1
[ 43] ⍝--------------algoritmo--------------
[ 44] ealg:saida←saida,[1]1 70⍴70↑⊃vv[2]
[ 45]  →soma
[ 46] ealf:→fim
[ 47] ⍝--------------funcao-----------------
[ 48] efun:
[ 49]  →(2≥⍴vv)/naotem
[ 50]  coma←'RRRR←',(⊃vv[2]),' AAAA'
[ 51]  →vmesmo
[ 52] naotem:coma←'RRRR←',(⊃vv[2])
[ 53]  saida←saida,[1]1 70⍴70↑coma
[ 54]  nome←⊃vv[2]
[ 55]  →aca0
[ 56] vmesmo:
[ 57]  saida←saida,[1]1 70⍴70↑coma
[ 58]  nome←⊃vv[2]
[ 59]  j←1
[ 60] voi1:→(j>¯2+⍴vv)/aca0
[ 61]  saida←saida,[1]1 70⍴70↑(⊃vv[j+2]),'←AAAA[',(3 0⍕j),']'
[ 62]  loca←loca,';',⊃vv[j+2]
[ 63]  →(j=j←j+1)/voi1
[ 64] aca0:→soma
[ 65] efuf:→fim
[ 66] ⍝---------------leia-----------------
[ 67] elei:saida←saida,[1]1 70⍴70↑aspa,'LEITURA DA VARIAVEL ',(⊃vv[2]),aspa
[ 68]  saida←saida,[1]1 70⍴70↑(⊃vv[2]),'←□'
[ 69]  →soma
```

```
[ 70] ⍝---------------imprima---------------
[ 71] eimp:→(3=⍴vv)/temmsg
[ 72]  aaa←⊃vv[2]
[ 73]  →(aaa[⍴aaa]=';')/juntaa
[ 74]  saida←saida,[1]1 70⍴70↑aaa
[ 75]  →soma
[ 76] juntaa:saida←saida,[1]1 70⍴70↑'□←⍕',¯1↓aaa
[ 77]  →soma
[ 78] temmsg:aaa←⊃vv[3]
[ 79]  →(aaa[⍴aaa]=';')/juntab
[ 80]  saida←saida,[1]1 70⍴70↑(⊃vv[2]),' ',aaa
[ 81]  →soma
[ 82] juntab:saida←saida,[1]1 70⍴70↑'□←',(⊃vv[2]),' ,⍕',¯1↓aaa
[ 83]  →soma
[ 84] ⍝---------------atribuicao------------
[ 85] ecad:saida←saida,[1]1 70⍴70↑(⊃vv[1]),'←',,⊃2↓vv
[ 86]  aaa←⊃vv[1]
[ 87]  →('['∊aaa)/soma
[ 88]  →(∨/aaa⍷loca)/soma
[ 89]  loca←loca,';',⊃vv[1]
[ 90]  →soma
[ 91] ⍝---------------se--------------------
[ 92] esex:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[ 93]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn←nnn+1
[ 94]  PILHA←(1 21⍴21↑'SE',('000'⍕nnn)),[1]PILHA
[ 95]  nnn←nnn+1
[ 96]  →soma
[ 97] ⍝--senao--
[ 98] esen:SALVA←PILHA[1;3 4 5] ⋄ PILHA←1 0↓PILHA
[ 99]  PILHA←(1 21⍴21↑'SE',('000'⍕nnn)),[1]PILHA
[100]  saida←saida,[1]1 70⍴70↑'→Δ','000'⍕nnn
[101]  nnn←nnn+1
[102]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[103]  →soma
[104] ⍝--fim{se}--
[105] esef:saida←saida,[1]1 70⍴70↑'Δ',PILHA[1;3 4 5],':'
[106]  PILHA←1 0↓PILHA
[107]  →soma
[108] ⍝-------------enquanto--------------------
[109] eenq:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[110]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[111]  nnn←nnn+1
[112]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[113]  nnn←nnn+1
[114]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[115]  nnn←nnn+1
[116]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn-2
[117]  →soma
[118] ⍝----------fim{enquanto}-----------------
[119] eenf:SALVA←PILHA[1;3 4 5]
[120]  PILHA←1 0↓PILHA
[121]  saida←saida,[1]1 70⍴70↑'→Δ',PILHA[1;3 4 5]
[122]  PILHA←1 0↓PILHA
[123]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[124]  →soma
[125] ⍝----------repita-------------------------
[126] erep:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[127]  PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[128]  nnn←nnn+1
[129]  →soma
[130] ⍝-----------ate--------------------------
[131] eate:PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[132]  nnn←nnn+1
```

```
[133]  saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[134]  SALVA←PILHA[1;3 4 5]
[135]  PILHA←1 0↓PILHA
[136]  saida←saida,[1]1 70ρ70↑'→(Δ',('000'⍕nnn),')/Δ',SALVA
[137]  SALVA←PILHA[1;3 4 5]
[138]  PILHA←1 0↓PILHA
[139]  saida←saida,[1]1 70ρ70↑'→Δ',SALVA
[140]  saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn-1),':'
[141]  nnn←nnn+1 ⍝ inclusao desta linha em 19/04/06. Ainda nao suficientemente testada
[142]  →soma
[143] ⍝----------para-----------------------
[144] epar:saida←saida,[1]1 70ρ70↑(8↑⊃vv[2]),'←',8↑⊃vv[4]
[145]  PILHA←(1 21ρ21↑'PA','000'⍕nnn),[1]PILHA
[146]  saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),':'
[147]  nnn←nnn+1
[148]  →(8=ρvv)/tempasso
[149]  PILHA←(1 21ρ21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8↑8⍕1),[1]PILHA
[150]  →juntab
[151] tempasso:PILHA←(1 21ρ21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8 2⍕pn←⍎⊃vv[8]),[1]PILHA
[152] ⍝ 'pn=',⍕pn
[153]  pna←'≤≥'[1+pn<0] ⍝ alteracao a 22/06/06, para acertar passo negativo
[154] juntab:nnn←nnn+1
[155]  saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),'←',(⊃vv[2]),pna,⍕⊃vv[6]
[156]  saida←saida,[1]1 70ρ70↑'→(~Δ',('000'⍕nnn),')/Δ','000'⍕nnn-1
[157]  nnn←nnn+1
[158]  →soma
[159] ⍝----------fim{para}------------------
[160] epaf:saida←saida,[1]1 70ρ70↑PILHA[1;5+⍳8],'←',PILHA[1;5+⍳8],'+',PILHA[1;13+⍳8]
[161]  SALVA←PILHA[1;3 4 5]
[162]  PILHA←1 0↓PILHA
[163]  saida←saida,[1]1 70ρ70↑'→Δ',PILHA[1;3 4 5]
[164]  PILHA←1 0↓PILHA
[165]  saida←saida,[1]1 70ρ70↑'Δ',SALVA,':'
[166]  →soma
[167] ⍝-----------abandone--------------------
[168] eaba:→soma
[169] ⍝-----------saia--------------------------
[170] esai:→soma
[171] ⍝-------- definicao de variaveis---------------
[172] eint:
[173]  saida←saida,[1]1 70ρ70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[174]  →soma
[175] erea:
[176]  saida←saida,[1]1 70ρ70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[177]  →soma
[178] elog:
[179]  saida←saida,[1]1 70ρ70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[180]  →soma
[181] ecar:
[182]  saida←saida,[1]1 70ρ70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[183]  →soma
[184] ⍝----------definicao de vetores-----------------
[185] evet:
[186]  saida←saida,[1]1 70ρ70↑(1 parte(⊃vv[2])),'←',(2 parte(⊃vv[2])),'ρ0'
[187]  →soma
[188] evaa:
[189]  saida←saida,[1]1 70ρ70↑(1 parte(⊃vv[2])),'←',(2 parte(⊃vv[2])),'ρ',aspa,' ',aspa
[190]  →soma
[191] fim:
[192]  i←1
[193] tfim:→(i>nnn)/mesmo
[194]  loca←loca,';Δ','000'⍕i
[195]  →(i=i←i+1)/tfim
```

```
[196] mesmo:→(50>⍴loca)/blz1
[197]  saida←((1↑⍴saida),20+⍴loca)↑saida
[198]  saida[1;20+⍳⍴loca]←loca
[199]  →pula22
[200] blz1:saida[1;20+⍳50]←50↑loca
[201] pula22:r←'_ 'edit saida
[202]  →0
[203] erro90:'algoritmo nao e uma matriz'
[204]  →0
------------------------------------------------------------
[ 0]  RRRR←ddd;r;j;k;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007
[ 1]  r←0⍴0
[ 2]  j←3
[ 3] Δ001:
[ 4]  Δ003←j<14
[ 5]  →(~Δ003)/Δ002
[ 6]  k←11
[ 7] Δ004:
[ 8]  Δ006←k>6
[ 9]  →(~Δ006)/Δ005
[10]  r←r,j+k
[11]  k←k-4
[12]  →Δ004
[13] Δ005:
[14]  j←j+4
[15]  →Δ001
[16] Δ002:
[17]  RRRR←r
------------------------------------------------------------
[ 0]  funcao aaa
[ 1]  m<-4
[ 2]  r<-0⍴0
[ 3]  enquanto m<17
[ 4]  se 0=3|m entao
[ 5]  r<-r,m
[ 6]  senao
[ 7]  r<-r,4×m
[ 8]  fimse
[ 9]  m<-m+4
[10]  fimenquanto
[11]  RRRR<-r
[12]  fimfuncao
------------------------------------------------------------
[ 0]  r←ga xx;termos;ra;rb;rc;lixo
[ 1]  termos←xx
[ 2] com0:r←3⍴0
[ 3]  ra←ca
[ 4]  rb←la
[ 5]  ra[2;6]←rb[3;18]←1 0⍕termos[1]
[ 6]  ra[4;14 15]←rb[4;15 16]←2 0⍕termos[2]
[ 7]  ra[6;9]←rb[6;21]←1 0⍕termos[3]
[ 8]  RA←ra
[ 9]  RB←rb
[10]  lixo←⎕FX cpc ra
[11]  rc←±lixo
[12]  →(10>⍴rc)/ok
[13]  ⎕←'*'
[14]  termos←geraa
[15]  →com0
[16] ok:
[17]  r[1]←⊂ra
[18]  r[2]←⊂rb
[19]  r[3]←⊂rc
```

```
∇r←gb xx;termos;ra;rb;rc;lixo
[ 1]  termos←xx
[ 2] com0:r←3⍴0
[ 3]  ra←cb
[ 4]  rb←lb
[ 5]  ra[3;11]←rb[3;12]←1 0⍉termos[1]
[ 6]  ra[3;17 18]←rb[3;18 19]←2 0⍉termos[2]
[ 7]  ra[3;26]←rb[3;27]←1 0⍉termos[3]
[ 8]  RA←ra
[ 9]  RB←rb
[10]  lixo←⎕FX cpc ra
[11]  rc←⍎lixo
[12]  →(10>⍴rc)/ok
[13]  ⎕←'*'
[14]  termos←gerab
[15]  →com0
[16] ok:
[17]  r[1]←⊂ra
[18]  r[2]←⊂rb
[19]  r[3]←⊂rc
∇
∇r←gc xx;termos;ra;rb;rc;lixo
[ 1]  termos←xx
[ 2] com0:r←3⍴0
[ 3]  ra←cc
[ 4]  rb←lc
[ 5]  ra[2;6]←rb[3;18]←1 0⍉termos[1]
[ 6]  ra[4;14 15]←rb[4;15 16]←2 0⍉termos[2]
[ 7]  ra[5;14]←rb[5;12]←1 0⍉termos[3]
[ 8]  ra[5;20]←rb[5;18]←1 0⍉termos[4]
[ 9]  ra[5;28]←rb[5;26]←1 0⍉termos[5]
[10]  ra[8;12]←rb[8;21]←1 0⍉termos[6]
[11]  RA←ra
[12]  RB←rb
[13]  lixo←⎕FX cpc ra
[14]  rc←⍎lixo
[15]  →(10>⍴rc)/ok
[16]  ⎕←'*'
[17]  termos←gerac
[18]  →com0
[19] ok:
[20]  r[1]←⊂ra
[21]  r[2]←⊂rb
[22]  r[3]←⊂rc
∇
∇r←gd xx;termos;ra;rb;rc;lixo
[ 1]  termos←xx
[ 2] com0:r←3⍴0
[ 3]  ra←cd
[ 4]  rb←ld
[ 5]  ra[2;6]←rb[3;18]←1 0⍉termos[1]
[ 6]  ra[4;14 15]←rb[4;15 16]←2 0⍉termos[2]
[ 7]  ra[5;6]←rb[5;24]←1 0⍉termos[3]
[ 8]  ra[8;12]←rb[8;27]←1 0⍉termos[4]
[ 9]  ra[10;9]←rb[10;22]←1 0⍉termos[5]
[10]  RA←ra
[11]  RB←rb
[12]  lixo←⎕FX cpc ra
[13]  rc←⍎lixo
[14]  →(10>⍴rc)/ok
[15]  ⎕←'*'
[16]  termos←gerad
```

```
[17]  →com0
[18] ok:
[19]  r[1]←⊂ra
[20]  r[2]←⊂rb
[21]  r[3]←⊂rc
-------------------------------------------------------------
[ 0]  r←ge xxx;termos;ra;rb;rc;lixo
[ 1]  termos←xxx
[ 2] com0:r←3⍴0
[ 3]  ra←ce
[ 4]  rb←le
[ 5]  ra[2;6]←rb[3;18]←1 0⍕termos[1]
[ 6]  ra[4;14 15]←rb[4;15 16]←2 0⍕termos[2]
[ 7]  ra[5;9]←rb[5;18]←1 0⍕termos[3]
[ 8]  ra[6;17 18]←rb[6;15 16]←2 0⍕termos[4]
[ 9]  ra[7;12]←rb[7;12]←1 0⍕termos[5]
[10]  ra[12;16]←rb[12;22]←1 0⍕termos[6]
[11]  ra[14;13]←rb[14;22]←1 0⍕termos[7]
[12]  RA←ra
[13]  RB←rb
[14]  lixo←⎕FX cpc ra
[15]  rc←⍎lixo
[16]  →(10>⍴rc)/ok0
[17]  ⎕←'*'
[18]  termos←gerae
[19]  →com0
[20] ok0:
[21]  r[1]←⊂ra
[22]  r[2]←⊂rb
[23]  r[3]←⊂rc
-------------------------------------------------------------
[0]  termos←geraa
[1]  termos←(4+?4),(25+?5),(2+?3)
-------------------------------------------------------------
[0]  termos←gerab
[1]  termos←(4+?4),(25+?5),(2+?4)
-------------------------------------------------------------
[0]  termos←gerac
[1]  termos←(4+?4),(15+?5),(2+?3),(6+?3),(1+?2),(2+?3)
-------------------------------------------------------------
[0]  termos←gerad
[1]  termos←(1+?3),(15+?5),(1+?2),(1+?3),1+?3
-------------------------------------------------------------
[0]  termos←gerae
[1]  termos←(1+?3),(11+?5),(5+?2),(7+?3),(?3),(1+?3),1+?3
-------------------------------------------------------------
[0]  termos←geraf
[1]  termos←(1+?3),(11+?5),(1+?3),(4+?3),(7+?3),1+?3
-------------------------------------------------------------
[0]  r←gerag
[1]  r←(1+?3),(11+?5),(10+?3),(5+?3),(1+?3),1+?3
-------------------------------------------------------------
[ 0]  r←gf xxx;termos;ra;rb;rc;lixo
[ 1]  termos←xxx
[ 2] t0:
[ 3]  r←3⍴0
[ 4]  ra←cf
[ 5]  rb←lf
[ 6]  ra[3;11]←rb[3;13]←1 0⍕termos[1]
[ 7]  ra[3;15 16]←rb[3;17 18]←'00'⍕termos[2]
[ 8]  ra[3;24]←rb[3;26]←1 0⍕termos[3]
[ 9]  ra[4;14]←rb[4;13]←1 0⍕termos[4]
[10]  ra[4;18 19]←rb[4;17 18]←'00'⍕termos[5]
```

```
[11]  ra[4;27]←rb[4;26]←1 0⍕termos[6]
[12]  RA←ra
[13]  RB←rb
[14]  lixo←⎕FX cpc ra
[15]  rc←⍎lixo
[16]  →(10>⍴rc)/ok
[17]  ⎕←'*'
[18]  termos←geraf
[19]  →t0
[20] ok:
[21]  r[1]←⊂ra
[22]  r[2]←⊂rb
[23]  r[3]←⊂rc
------------------------------------------------------------
[ 0]  r←gg xxx;ra;rb;rc;lixo;termos
[ 1]  termos←xxx
[ 2] t0:
[ 3]  r←3⍴0
[ 4]  ra←cg
[ 5]  rb←lg
[ 6]  ra[3;6]←rb[3;18]←1 0⍕termos[1]
[ 7]  ra[4;14 15]←rb[4;15 16]←'00'⍕termos[2]
[ 8]  ra[5;9 10]←rb[5;18 19]←'00'⍕termos[3]
[ 9]  ra[6;17]←rb[6;15]←1 0⍕termos[4]
[10]  ra[8;16]←rb[8;22]←1 0⍕termos[5]
[11]  ra[10;13]←rb[10;22]←1 0⍕termos[6]
[12]  RA←ra
[13]  RB←rb
[14]  lixo←⎕FX cpc ra
[15]  rc←⍎lixo
[16]  →(10>⍴rc)/ok
[17]  ⎕←'*'
[18]  termos←gerag
[19]  →t0
[20] ok:
[21]  r[1]←⊂ra
[22]  r[2]←⊂rb
[23]  r[3]←⊂rc
------------------------------------------------------------
[0]  r←a igual b;maior
[1]  maior←(1↑⍴a)⌈1↑⍴b
[2]  a←maior↑a ⋄ b←maior↑b
[3]  r←maior=+/a=b
------------------------------------------------------------
[0]  r←ltrim a
[1]  r←(~∧⍀a=' ')/a
------------------------------------------------------------
[ 0]  r←a ondeta b;i;j;k
[ 1]  b←,b
[ 2]  i←1
[ 3] t1:→(i>1↑⍴a)/fim
[ 4]  j←1
[ 5] t2:→(j>1↓⍴a)/upa
[ 6]  →(a[i;j]≠b[1])/soma
[ 7]  k←1
[ 8] t3:→(k>⍴b)/achou
[ 9]  →(a[i;j+k-1]=b[k])/ainda
[10]  →soma
[11] ainda:k←k+1
[12]  →t3
[13] achou:'Localizado em ',(⍕i),' ',(⍕j)
[14]  j←j+⍴b
[15]  →t2
```

```
[16] soma:j←j+1
[17]  →t2
[18] upa:i←i+1
[19]  →t1
[20] fim:
------------------------------------------------------------
[0]  ra
------------------------------------------------------------
[ 0]  r←quem replace depara;de;i;j;k;onde;para
[ 1] ⍝ forma de usar: texto replace 'strin-de' 'string para'
[ 2] ⍝ obviamente eles nao precisam ter o mesmo tamanho
[ 3]  de←,⊃depara[1] ⋄ para←,⊃depara[2]
[ 4]  i←1 ⋄ r←((1↑⍴quem),200)⍴' '
[ 5] t1:→(i>1↑⍴quem)/fim
[ 6]  →(0=∨/onde←de⍷quem[i;])/naotem
[ 7]  j←1 ⋄ k←1
[ 8] t2:→(k>⍴quem[i;])/acabou
[ 9]  →(onde[k]=0)/soma
[10]  r[i;(j-1)+⍳⍴para]←para
[11]  j←j+⍴para
[12]  k←k+⍴de
[13]  →t2
[14] soma:r[i;j]←quem[i;k]
[15]  k←k+1
[16]  →(j=j←j+1)/t2
[17] naotem:r[i;]←200↑quem[i;]
[18] acabou:→(i=i←i+1)/t1
[19] fim:r←trim⍤1 r
------------------------------------------------------------
[ 0]  r←tradcoma x;i;j
[ 1] ⍝ v 1.06 - traduz um comando de cpc para latex
[ 2]  i←j←1 ⋄ r←100⍴' '
[ 3] t1:→(i>⍴x)/fim
[ 4]  →(i=⍴x)/pula
[ 5]  →((x[i]='<')∧(x[i+1]='-'))/recebe
[ 6] pula:→(x[i]='∨')/ou
[ 7]  →(x[i]='∧')/e
[ 8]  →(x[i]='~')/nao
[ 9]  →(x[i]='≠')/diferente
[10]  →(x[i]='≤')/menig
[11]  →(x[i]='≥')/maiig
[12]  →(x[i]='×')/vezes
[13]  →(x[i]='>')/maior
[14]  →(x[i]='<')/menor
[15]  →(x[i]='⍝')/coment
[16] nada:r[j]←x[i]
[17]  i←i+1
[18]  j←j+1
[19]  →t1
[20] coment:
[21]  r[j]←' '
[22]  i←i+1
[23]  j←j+1
[24]  →t1
[25] recebe:r[j+¯1+⍳7]←'$\gets$'
[26]  j←j+7
[27]  i←i+2
[28]  →t1
[29] ou:r[j+¯1+⍳6]←'$\lor$'
[30]  j←j+6
[31]  i←i+1
[32]  →t1
[33] nao:r[j+¯1+⍳6]←'$\sim$'
```

```
[34]  j←j+6
[35]  i←i+1
[36]  →t1
[37] e:r[j+¯1+⍳7]←'$\land$'
[38]  j←j+7
[39]  i←i+1
[40]  →t1
[41] diferente:r[j+¯1+⍳6]←'$\neq$'
[42]  j←j+6
[43]  i←i+1
[44]  →t1
[45] menig:r[j+¯1+⍳5]←'$\le$'
[46]  j←j+5
[47]  i←i+1
[48]  →t1
[49] maiig:r[j+¯1+⍳5]←'$\ge$'
[50]  j←j+5
[51]  i←i+1
[52]  →t1
[53] vezes:r[j+¯1+⍳8]←'$\times$'
[54]  j←j+8
[55]  i←i+1
[56]  →t1
[57] maior:r[j+¯1+⍳3]←'$>$'
[58]  j←j+3
[59]  i←i+1
[60]  →t1
[61] menor:r[j+¯1+⍳3]←'$<$'
[62]  j←j+3
[63]  i←i+1
[64]  →t1
[65] fim:r←trim r
-------------------------------------------------------------
[ 0]  r←tradfunca fun;y;aaa;i
[ 1]  y←'({'edit')}'edit fun
[ 2]  y←y replace'fimse' '\ENDIF'
[ 3]  y←y replace'fim{se}' '\ENDIF'
[ 4]  y←y replace'se ' '\IF {'
[ 5]  y←y replace'fim{enquanto}' '\ENDWHILE'
[ 6]  y←y replace'fimenquanto' '\ENDWHILE'
[ 7]  y←y replace'enquanto ' '\WHILE {'
[ 8]  y←y replace'repita' '\REPEAT'
[ 9]  y←y replace'senao' '\ELSE'
[10]  y←y replace'ate' '\UNTIL {'
[11]  y←y replace'fim{para}' '\ENDFOR'
[12]  y←y replace'fimpara' '\ENDFOR'
[13]  y←y replace'para' '\FOR {'
[14]  y←y replace'fim{funcao}' 'fimfuncao'
[15]  y←y replace'RRRR<-' 'escreva '
[16]  y←((1↑⍴y),60)↑y
[17]  y←((1,1↓⍴y)⍴100↑'\begin{algorithmic}[1]'),[1]y
[18]  y←y,[1](1,1↓⍴y)⍴100↑'\end{algorithmic}'
[19]  i←1
[20]  r←((1↑⍴y),100)⍴' '
[21] t1:→(i>1↑⍴r)/fim
[22]  aaa←100↑⎕ltrim tradcoma y[i;]
[23]  →(aaa[1]='\')/blz
[24]  aaa←100↑'\STATE ',aaa
[25] blz:r[i;]←aaa
[26]  →(i=i←i+1)/t1
[27] fim:i←1
[28] test34:→(i>1↑⍴r)/acabou
[29]  →(5=+/r[i;⍳5]='\IF {')/poe
```

```
[30]  →(5=+/r[i;⍳5]='⍀WHIL')/poe
[31]  →(5=+/r[i;⍳5]='⍀UNTI')/poe
[32]  →(5=+/r[i;⍳5]='⍀FOR ')/poe
[33]  →(i=i←i+1)/test34
[34] poe:
[35]  r[i;]←100↑(trim r[i;]),'}'
[36]  →(i=i←i+1)/test34
[37] acabou:r←trim4 r
-------------------------------------------------------------
[0]  r←trim4 x;z
[1] ⍝f corta as colunas direitas que sao brancos
[2]  →(2≠⍴⍴x)/erro
[3]  z←+/[1]x=' '
[4]  r←(z≠1↑⍴x)/[2]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
-------------------------------------------------------------
[ 0]  r←vetoriza x;i;rr;letra;aspa;nume
[ 1] ⍝ versao 1.07
[ 2]  aspa←'''' ⋄ nume←'0123456789'
[ 3]  letra←'abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ()',aspa
[ 4] ⍝ tira os brancos
[ 5]  i←1 ⋄ rr←1
[ 6] t2:→(i>¯2+⍴x)/vaiz
[ 7]  →((x[i+1]=' ')∧(x[i]∈letra)∧(x[i+2]∈nume))/mataz
[ 8]  →((x[i+1]=' ')∧(x[i]∈nume)∧(x[i+2]∈letra))/mataz
[ 9]  →((x[i]∈letra)∧(x[i+2]∈letra))/naopode
[10]  →(((x[1]='p')∨(x[1]='P'))∧(x[2]='a')∧(x[i]∈letra)∧(x[i+2]='-'))/naopode  ⍝ comando i
      ncluido para o passo negativo
[11] ⍝ os 3 testes iniciais (pPa) foram incluidos porque o comando acima estava
[12] ⍝ fazendo besteira: vetoriza 'A <- A -1' estava gerando 4 tokens e nao 3.
[13] ⍝ correcao em 13/03/12 - P.kantek
[14]  →(x[i+1]≠' ')/naopode
[15] pode:rr←rr,0
[16]  →(i=i←i+1)/t2
[17] mataz:x[i+1]←'!'
[18] naopode:rr←rr,1
[19]  →(i=i←i+1)/t2
[20] vaiz:rr←rr,1
[21]  x←rr/x
[22] ⍝ separa o sinal <-
[23]  →(2≠+/'<-'∈x)/faca
[24]  i←1 ⋄ rr←⍳0
[25] t1:→(i>¯1+⍴x)/vaix
[26]  →((x[i]='<')∧(x[i+1]='-'))/esim
[27]  rr←rr,1
[28]  →(i=i←i+1)/t1
[29] esim:rr←rr,0 1 1 0
[30]  →(i=i←i+2)/t1
[31] vaix:rr←rr,1
[32]  x←rr⌿x
[33] faca:x←'! 'edit x
[34]  r←(~' '=x)⊂x
-------------------------------------------------------------
[  0]  opesq vivo023a n;CORRECAO;EVENTO;aaa1;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlin
       ha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[  1] ⍝  )copy vivo023 grupo
[  2] ⍝  vars locais a mais=qlinha, nomes, ql39
[  3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[  4]  →(0≠⎕NC'opesq')/qveio
[  5]  opesq←10⍴' '
[  6] qveio:
[  7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
```

```
[  8]  EVENTO←'PL023   '
[  9]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
       4 5],⎕TS[6]+⎕TS[7]÷1000
[ 10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[ 13]  ylu←n grupo ylu
[ 14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[ 70]  xx←gb gerab
[ 71]  esse[95+ι7;]←7 80↑'¯-'edit⊃xx[2]
[ 72]  esse[97;23+ι2]←'9 '
[ 73]  resp←resp,¯1↑⊃xx[3]
[ 74]  xx←gc gerac
[ 75]  esse[102+ι11;]←11 80↑'¯-'edit⊃xx[2]
[ 76]  esse[104;23+ι2]←'10'
[ 77]  resp←resp,¯1↑⊃xx[3]
[ 78]  xx←gd gerad
[ 79]  esse[113+ι13;]←13 80↑'¯-'edit⊃xx[2]
[ 80]  esse[115;23+ι2]←'11'
[ 81]  resp←resp,¯1↑⊃xx[3]
[ 82]  xx←ge gerae
[ 83]  esse[126+ι17;]←17 80↑'¯-'edit⊃xx[2]
[ 84]  esse[128;23+ι2]←'12'
[ 85]  resp←resp,¯1↑⊃xx[3]
[ 86]  resu←resu,[1]1 13⍴resp
[ 87]  acuja←(f[;2]='#')/ι1↑⍴f
[ 88]  f[acuja;ι80]←esse[⍋,f[acuja;3 4 5],' ';]
[ 89]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[ 90]  ⍞←(⍕xk←xk+1),'-'
[ 91]  →testa
[ 92] fim:upag←(1 0+⍴f)⍴' '
[ 93]  →(1=≡n)/elafa
[ 94]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[ 95]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[ 96]  lixo1←5 0 7 0 4 0 4 0 4 0 4 0 4 0 7 0 4 0 4 0 4 0 4 0 4 0
[ 97]  upag[2+ι1↑⍴resu;ι+/lixo1]←'¯-'edit lixo1⍕resu
[ 98]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[ 99]  →terminando
[100] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[101] elafa:aaa1←ylu,'¯-'edit 4 0⍕0 1↓resu
[102] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[103]  lixonol←aaa1 ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[104]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa1),' linhas e ',(⍕1↓⍴aaa),' colunas'
[105] terminando:
[106]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[107]  relat[1↑⍴relat;;]←upag
[108]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[109] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[110]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[111]  lixonol←⍞EX 2 10⍴'quantos   matriz    '
[112]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo024

```
[0]  r←achaexemplohoje hoje;w;z;z1;q
[1]  w←(hoje[1]×1000000)+(hoje[2]×10000)+hoje[3]
[2]  z←7101997
[3]  z1←(DTS=z)/ιρDTS
[4]  q←(DTS=w)/ιρDTS
[5]  r←w,q-z1
------------------------------------------------------------
[ 0]  r←bol10 x;p9;p10;y;w;z
[ 1]  p9←2 1 2 1 2 1 2 1 2 ⋄ p10←1 2 1 2 1 2 1 2 1 2
[ 2]  →(10=⍴x)/edez
[ 3]  →(9≠⍴x)/erro
[ 4]  y←p9×⍋(18⍴1 0)\x
[ 5]  y←y-(y>9)×9
[ 6]  z←+/y
[ 7]  →junta
```

```
[ 8] edez:y←p10×⍎(20⍴1 0)↓x
[ 9]  y←y-(y>9)×9
[10]  z←+/y
[11] junta:w←10|z
[12]  →(w=0)/ezero
[13]  r←10-w
[14]  →0
[15] ezero:r←0
[16]  →0
[17] erro:'tamanho invalido'
-------------------------------------------------------------
[ 0]  r←bol11 x;pesos;y;z;w
[ 1]  pesos←4 3 2 9 8 7 6 5 4 3 2 9 8 7 6 5 4 3 2 9 8 7 6 5 4 3 2 9 8 7 6
      5 4 3 2
[ 2]  →((⍴pesos)≠(⍴x))/erro
[ 3]  y←⍎((2×⍴x)⍴1 0)↓x
[ 4]  z←+/y×pesos
[ 5]  w←11|z
[ 6]  →((w=0)∨(w=1)∨(1=10))/eum
[ 7]  r←11-w
[ 8]  →0
[ 9] eum:r←1
[10]  →0
[11] erro:'tamanho errado'
-------------------------------------------------------------
[ 0]  r←cgc z;z1;r1;z2;d1;z3;d2
[ 1]  z1←,(12⍴10)⊤z
[ 2]  r1←mod10 7↑z1
[ 3]  →(r1=z1[8])/ok1
[ 4]  'erro: o oitavo digito (',(1 0⍕z1[8]),') nao e mod10 (',(1 0⍕r1),')'
[ 5] ok1:
[ 6]  z2←+/z1×5 4 3 2 9 8 7 6 5 4 3 2
[ 7]  d1←11|z2
[ 8]  →((d1=0)∨(d1=1))/ok10
[ 9]  d1←11-d1
[10]  →vai
[11] ok10:d1←0
[12] vai:z1←z1,d1
[13]  z3←+/z1×6 5 4 3 2 9 8 7 6 5 4 3 2
[14]  d2←11|z3
[15]  →((d2=0)∨(d2=1))/ok20
[16]  d2←11-d2
[17]  →anda
[18] ok20:d2←0
[19] anda:
[20]  r←d1,d2
-------------------------------------------------------------
[ 0]  r←cnpjprova a;d1;d2;d3;s2;s3;nf
[ 1]  nf←a[⍳5]×2 1 2 1 2
[ 2]  nf←nf-9×nf>9
[ 3]  d1←10-10|+/nf
[ 4]  →(d1<10)/ufa
[ 5]  d1←0
[ 6] ufa:
[ 7]  s2←+/(a[⍳5]×9 8 7 6 5),(d1×4),a[5+⍳2]×3 2
[ 8]  d2←11|s2
[ 9]  →(d2<2)/botazero
[10]  d2←11-d2
[11]  →pula
[12] botazero:d2←0
[13] pula:
[14]  s3←+/(a[⍳5]×2 9 8 7 6),(d1×5),(a[5+⍳2]×4 3),d2×2
[15]  d3←11|s3
```

```
[16]  →(d3<2)/bota3
[17]  d3←11-d3
[18]  →pula3
[19] bota3:d3←0
[20] pula3:r←d1,d2,d3
-------------------------------------------------------------
[ 0]  r←cpf x;y;z;d1;y1;z1;d2
[ 1]  y←10 10 10 10 10 10 10 10 10⍴x
[ 2]  z←+/y×10 9 8 7 6 5 4 3 2
[ 3]  d1←11|z
[ 4]  →((d1=0)∨(d1=1))/ok1
[ 5]  d1←11-d1
[ 6]  →vai
[ 7] ok1:d1←0
[ 8] vai:y1←y,d1
[ 9]  z1←+/y1×11 10 9 8 7 6 5 4 3 2
[10]  d2←11|z1
[11]  →((d2=0)∨(d2=1))/ok2
[12]  d2←11-d2
[13]  →anda
[14] ok2:d2←0
[15] anda:
[16]  r←d1,d2
-------------------------------------------------------------
[ 0]  r←dvcc x;z;i
[ 1] ⍝ x e um vetor de 15 digitos
[ 2]  z←x×2 1 2 1 2 1 2 1 2 1 2 1 2 1 2
[ 3]  i←1
[ 4] f1:→(i>15)/fim
[ 5]  →(z[i]<10)/soma1
[ 6]  z[i]←10|z[i]+⌊z[i]÷10
[ 7] soma1:→(i=i←i+1)/f1
[ 8] fim:r←10-10|+/z
-------------------------------------------------------------
[0]  r←ean13 x;y;z
[1]  'x deve ser um numero de 12 digitos'
[2]  y←⍎(24⍴1 0)⍀⍕x
[3]  z←10-10|+/1 3 1 3 1 3 1 3 1 3 1 3×y
[4]  r←z×z<10
-------------------------------------------------------------
[0]  r←geracnpj;x;xx;d1;fi
[1]  ⎕PP←14
[2]  x←xx+?9999999-xx←2345678
[3]  d1←mod10(7⍴10)⍴x
[4]  fi←,'0000'⍕?99
[5]  r←⍎(7 0⍕x),(1 0⍕d1),fi
-------------------------------------------------------------
[0]  r←geracpf;xx
[1]  r←xx+?999999999-xx←354222222
-------------------------------------------------------------
[ 0]  r←geragaba;x;mat;y;som;y1;y2
[ 1]  mat←25 60⍴' '
[ 2]  mat[1;]←60↑'Gabarito dos cpfs e cnpjs da folha'
[ 3]  'entre com os 9 digitos do 1. cpf sem espaco entre eles:'
[ 4]  x←9↑⍞
[ 5]  y←cpf⍎x
[ 6]  som←+/y
[ 7]  mat[4;]←60↑((18⍴1 0)⍀x),'  -',3 0⍕y
[ 8]  'entre com os 9 digitos do 2. cpf sem espaco entre eles:'
[ 9]  x←9↑⍞
[10]  y←cpf⍎x
[11]  mat[5;]←60↑((18⍴1 0)⍀x),'  -',3 0⍕y
[12]  som←som++/y
```

```
[13]  'entre com os 11 digitos do 1. cnpj sem espaco entre eles:'
[14]  x←11↑⎕
[15]  y1←mod10≜(14⍴1 0)⍀(7↑x)
[16]  y2←cgc≜x[⍳7],(1 0⍕y1),x[7+⍳4]
[17]  mat[7;]←60↑((22⍴1 0)⍀x),'  -',(3 0⍕y1),'  /  ',3 0⍕y2
[18]  som←som++/y1,y2
[19]  'entre com os 11 digitos do 2. cnpj sem espaco entre eles:'
[20]  x←11↑⎕
[21]  y1←mod10≜(14⍴1 0)⍀(7↑x)
[22]  y2←cgc≜x[⍳7],(1 0⍕y1),x[7+⍳4]
[23]  mat[8;]←60↑((22⍴1 0)⍀x),'  -',(3 0⍕y1),'  /  ',3 0⍕y2
[24]  som←som++/y1,y2
[25]  mat[10;]←60↑'A soma e ',5 0⍕som
[26]  r←mat
-------------------------------------------------------------
[ 0]  r←mod10 z;z1;s1;s2
[ 1]  →(7=⍴z)/blz
[ 2]  'erro: nao foram entrados 7 digitos separados'
[ 3] blz:
[ 4]  s1←2 1 2 1 2 1 2×z
[ 5]  s2←s1-(s1>9)×9
[ 6]  r←10-10|(+/s2)
[ 7]  →(r=10)/viva
[ 8]  →0
[ 9] viva:r←0
-------------------------------------------------------------
[0]  r←pedemail x
[1]  →(40≠+/' '=x)/aindanao
[2]  r←80↑'Por favor, informe seu e-mail: ⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_'
[3]  →junnao
[4] aindanao:r←80↑'e-mail cadastrado: ⍀verb+',x,'+'
[5] junnao:
-------------------------------------------------------------
[ 0]  opesq vivo024b n;CORRECAO;EVENTO;a1;a2;aaa;acuja;dhx;esse;f;ip;lixo1;lixonol;qto;rel
      at;resp;resu;upag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←1 ⋄ EVENTO←'PL024b  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA024b←ajusta80 FOLHALA024b
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA024b)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[12]  xk←1 ⋄ resu←0 11⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←15 80⍴' '
[15]  f←FOLHALA024b
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.21
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[14;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[15;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25]  esse[8;⍳30]←30↑2 0 2 0 2 0 3 0 2 0 2 0 3 0 2 0 2 0⍕(9⍴10)⊤a1←geracpf
[26]  resp←resp,cpf a1
[27]  esse[9;⍳30]←30↑2 0 2 0 2 0 3 0 2 0 2 0 3 0 2 0 2 0⍕(9⍴10)⊤a1←geracpf
```

```
[28]  resp←resp,cpf a1
[29]  a2←((12ρ10)⍉a1←geracnpj)[8]
[30]  esse[10;⍳30]←30↑2 0 3 0 2 0 2 0 3 0 2 0 2 0⍕7↑(12ρ10)⍉a1
[31]  esse[11;⍳30]←30↑2 0 2 0 2 0 2 0⍕((12ρ10)⍉a1)[9 10 11 12]
[32]  resp←resp,a2,cgc a1
[33]  a2←((12ρ10)⍉a1←geracnpj)[8]
[34]  esse[12;⍳30]←30↑2 0 3 0 2 0 2 0 3 0 2 0 2 0⍕7↑(12ρ10)⍉a1
[35]  esse[13;⍳30]←30↑2 0 2 0 2 0 2 0⍕((12ρ10)⍉a1)[9 10 11 12]
[36]  resp←resp,a2,cgc a1
[37] ⍝ 'resp=',⍕resp
[38]  resu←resu,[1]1 11ρresp[1],1↓resp
[39]  acuja←(f[;2]='#')/⍳1↑ρf
[40]  f[acuja;⍳80]←esse[⌽,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\newpage'
[42]  ⍞←(⍕xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+ρf)ρ' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[48]  upag[2+⍳1↑ρresu;⍳+/lixo1]←(lixo1←5 0 8 0 1 0 3 0 1 0 3 0 1 0 1 0 3 0 1 0 1 0)⍕resu
[49]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu,8 0 1 0 3 0 1 0 3 0 1 0 1 0 3 0 1 0 1 0⍕0 1↓resu)
[52]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[54] terminando:
[55] ⍝ upag[1↑ρupag;]←(1↓ρupag)↑'\end{document}'
[56]  relat[1↑ρrelat;;]←upag
[57]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[58]  lixonol←lixonol,[1]1 80ρ80↑'\end{document}'
[59] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[60]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[61]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[62]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo024e n;CORRECAO;EVENTO;a1;a2;aaa;acuja;dhx;esse;f;ip;lixo1;lixonol;qto;rel
      at;resp;resu;upag;ww;xixo;xk;xx;xx1;xx2;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←1 ⋄ EVENTO←'PL024e  '
[ 6]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)ρ4 0⍕⍳n
[ 9]  FOLHALA024e←ajusta80 FOLHALA024e
[10]  relat←((2+1↑ρylu),1 0+ρFOLHALA024e)ρ' '
[11]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLO1'
[12]  xk←1 ⋄ resu←0 4ρ0
[13] testa:→(xk>1↑ρylu)/fim
[14]  esse←14 80ρ' '
[15]  f←FOLHALA024e
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←1.02
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[13;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[14;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
```

```
[25]  xx←achaexemplohoje ⎕TS[3 2 1]
[26]  esse[8;]←80↑6 0⍕xx[2]
[27]  esse[9;]←80↑'99/99/9999'⍕xx[1]
[28]  zz←10142+xx[2]+60+?30
[29]  ww←DTS[zz]
[30]  esse[10;]←80↑'99/99/9999'⍕ww
[31]  resp←resp,zz-10142
[32]  xx1←'0123456789'[?(8+?2)⍴10]
[33]  esse[11;]←80↑xx1
[34]  resp←resp,bol10 xx1
[35]  xx2←'0123456789'[?43⍴10]
[36]  esse[12;]←80↑xx2
[37]  resp←resp,bol11 xx2
[38]  resu←resu,[1]1 4⍴resp
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[42]  ⍞←(⍕xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 8 0 3 0 3 0)⍕resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu,8 0 3 0 3 0⍕0 1↓resu)
[52]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴paaa),' linhas e ',(⍕1↓⍴paaa),' colunas'
[54] terminando:
[55] ⍝ upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol,[1]1 80⍴80↑'\end{document}'
[59] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[60]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[61]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[62]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo027

```
[0]  r←base conv102b x
[1] ⍝   →(1=  ⌈/x>base)/erro1
[2]  r←(20⍴base)⊤x
[3]  r←(~∨\r=0)/r
[4]  →0
[5] ⍝ erro1:'erro de operador'
[6] ⍝   →0
-------------------------------------------------------------
[0]  r←ba convb210 x;alfa
[1]  alfa←'0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ'
[2]  r←+/(¯1+alfa⍳x)×ba*⍳¯1+⍴x
-------------------------------------------------------------
[ 0]  r←geracaso;i;b1;op1;op2
[ 1]  r←20 17⍴' '
[ 2]  i←1
[ 3] v1:→(i>5)/p1
[ 4]  b1←10+?22
[ 5]  op1←200+?1000
[ 6]  r[i;⍳5]←,5↑junta b1 conv102b op1
[ 7]  r[i;5+⍳2]←,'00'⍕b1
```

```
[ 8]  r[i;7+⍳5]←,'00000'⍕op1
[ 9]  →(i=i←i+1)/v1
[10] p1:→(i>10)/p2
[11]  b1←10+?22
[12]  op1←200+?1000
[13]  r[i;⍳5]←,'00000'⍕op1
[14]  r[i;5+⍳5]←,5↑junta b1 conv102b op1
[15]  r[i;10+⍳2]←,'00'⍕b1
[16]  →(i=i←i+1)/p1
[17] p2:→(i>15)/p3
[18]  b1←10+?22
[19]  op1←100+?500
[20]  op2←100+?500
[21]  r[i;⍳5]←5↑junta b1 conv102b op1
[22]  r[i;5+⍳5]←5↑junta b1 conv102b op2
[23]  r[i;10+⍳2]←,'00'⍕b1
[24]  r[i;12+⍳5]←5↑junta b1 conv102b op1+op2
[25]  →(i=i←i+1)/p2
[26] p3:→(i>20)/fim
[27]  b1←10+?22
[28]  op1←100+?500
[29]  op2←100+?500
[30]  →(op1<op2)/p3
[31]  r[i;⍳5]←5↑junta b1 conv102b op1
[32]  r[i;5+⍳5]←5↑junta b1 conv102b op2
[33]  r[i;10+⍳2]←,'00'⍕b1
[34]  r[i;12+⍳5]←5↑junta b1 conv102b op1-op2
[35]  →(i=i←i+1)/p3
[36] fim:
------------------------------------------------------------
[ 0]  r←geraplus;alfa;i;c;cs;bs
[ 1]  alfa←'0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ'
[ 2]  r←4 39⍴' '
[ 3]  r[;13 26]←'-'
[ 4]  i←1
[ 5] volta:→(i>4)/fim
[ 6]  c←10000+?2⍴10000
[ 7]  c←c[⍒c]
[ 8]  →(i>2)/subt
[ 9] soma:
[10]  cs←c[1]+c[2]
[11]  →ufa
[12] subt:
[13]  cs←c[1]-c[2]
[14] ufa:bs←5+?3⍴30
[15]  →(∨/10=bs)/ufa
[16]  →((bs[1]=bs[2])∨(bs[1]=bs[3])∨(bs[2]=bs[3]))/ufa
[17]  r[i;⍳10]←10↑alfa[1+bs[1]conv102b c[1]]
[18]  r[i;10+⍳2]←'00'⍕bs[1]
[19]  r[i;13+⍳10]←10↑alfa[1+bs[2]conv102b c[2]]
[20]  r[i;23+⍳2]←'00'⍕bs[2]
[21]  r[i;26+⍳10]←10↑alfa[1+bs[3]conv102b cs]
[22]  r[i;36+⍳2]←'00'⍕bs[3]
[23]  i←i+1
[24]  →volta
[25] fim:
------------------------------------------------------------
[0]  r←junta a
[1]  r←'0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ'[a+1]
------------------------------------------------------------
[0]  r←pedemail x
[1]  →(40≠+/' '=x)/aindanao
[2]  r←80↑'Por favor, informe seu e-mail: ⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_'
```

```
[3]  →junnao
[4] aindanao:r←80↑'e-mail cadastrado: ',x
[5] junnao:
------------------------------------------------------------
[ 0]  testa i;a;b;j;xx
[ 1]  j←1
[ 2] t1:→(j>i)/0
[ 3]  xx←geraplus
[ 4]  a←((⍪xx[1;10+⍳2])convb210 tirabra xx[1;⍳10])+((⍪xx[1;23+⍳2])convb210 tirabra xx[1;13
      +⍳10])
[ 5]  b←((⍪xx[1;36+⍳2])convb210 tirabra xx[1;26+⍳10])
[ 6]  a=b
[ 7]  a←((⍪xx[2;10+⍳2])convb210 tirabra xx[2;⍳10])+((⍪xx[2;23+⍳2])convb210 tirabra xx[2;13
      +⍳10])
[ 8]  b←((⍪xx[2;36+⍳2])convb210 tirabra xx[2;26+⍳10])
[ 9]  a=b
[10]  a←((⍪xx[3;10+⍳2])convb210 tirabra xx[3;⍳10])-((⍪xx[3;23+⍳2])convb210 tirabra xx[3;13
      +⍳10])
[11]  b←((⍪xx[3;36+⍳2])convb210 tirabra xx[3;26+⍳10])
[12]  a=b
[13]  a←((⍪xx[4;10+⍳2])convb210 tirabra xx[4;⍳10])-((⍪xx[4;23+⍳2])convb210 tirabra xx[4;13
      +⍳10])
[14]  b←((⍪xx[4;36+⍳2])convb210 tirabra xx[4;26+⍳10])
[15]  a=b
[16]  j←j+1
[17]  →t1
------------------------------------------------------------
[0]  r←tirabra x
[1]  r←(x≠' ')/x
------------------------------------------------------------
[ 0]  opesq vivo027a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;xxx
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL027   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA027←ajusta80 FOLHALA027
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA027)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[12]  xk←1 ⋄ resu←0 89⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←49 80⍴' '
[15]  f←FOLHALA027
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←3.18
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[23] ⍝ esse[28;]←pedemail ylu[xk;36+⍳40]
[24]  esse[48;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[25]  esse[49;⍳17]←esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[5+⍳5]
[26] inica:
[27]  ULTIMO←xxx←geracaso
[28]  esse[8 9;⍳60]←2 60↑xxx[1 2;⍳5]
[29]  esse[26 27;⍳60]←2 60↑xxx[1 2;5+⍳2]
[30]  resp←(5 0⍎resp),' ',(,xxx[1 2;7+⍳5]),' '
```

```
[31]  esse[10 12;⍳60]←2 60↑xxx[6 7;⍳5]
[32]  esse[11 13;⍳60]←2 60↑xxx[6 7;10+⍳2]
[33]  resp←resp,,xxx[6 7;5+⍳5]
[34]  esse[14 17;⍳60]←2 60↑xxx[11 12;⍳5]
[35]  esse[16 19;⍳60]←2 60↑xxx[11 12;5+⍳5]
[36]  esse[15 18;⍳60]←2 60↑xxx[11 12;11 12]
[37]  resp←resp,,xxx[11 12;12+⍳5]
[38]  esse[20 23;⍳60]←2 60↑xxx[16 17;⍳5]
[39]  esse[22 25;⍳60]←2 60↑xxx[16 17;5+⍳5]
[40]  esse[21 24;⍳60]←2 60↑xxx[16 17;11 12]
[41]  resp←resp,,xxx[16 17;12+⍳5]
[42]  ULTIMOPLUS←xxx←geraplus
[43]  esse[28 33 38 43;]←4 80↑xxx[;⍳10]
[44]  esse[29 34 39 44;⍳2]←xxx[;10+⍳2]
[45]  esse[30 35 40 45;]←4 80↑xxx[;13+⍳10]
[46]  esse[31 36 41 46;⍳2]←xxx[;23+⍳2]
[47]  esse[32 37 42 47;⍳2]←xxx[;36+⍳2]
[48]  resp←resp,(,xxx[1 2;26+⍳10]),,xxx[3 4;26+⍳10]
[49]  resu←resu,[1]1 89⍴resp
[50]  acuja←(f[;2]='#')/⍳1↑⍴f
[51]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[52]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[53]  ⍞←(⍕xk←xk+1),'-'
[54]  →testa
[55] fim:
[56]  upag←(1 0+⍴f)⍴' '
[57]  →(1=≡n)/elafa
[58]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[59]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[60]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑resu
[61]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[62]  →terminando
[63] elafa:aaa←(ylu,0 5↓resu)
[64]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[65]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[66] terminando:
[67] ⍝ upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[68]  relat[1↑⍴relat;;]←upag
[69]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[70]  lixonol←lixonol,[1](ajusta80 INSTRUC027),[1]1 80⍴80↑'\end{document}'
[71] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[72]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[73]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[74]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo028

```
[ 0]  RRRR←AAA;A;B;C;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ008;Δ009;Δ010;Δ011;Δ012
[ 1]  A←9
[ 2]  B←7
[ 3]  C←4
[ 4]  Δ001←((A≤6)∨(~(B=6)))∨(C=6)
[ 5]  →(~Δ001)/Δ002
[ 6]  Δ003←B≥5
[ 7]  →(~Δ003)/Δ004
[ 8]  Δ005←C>5
[ 9]  →(~Δ005)/Δ006
[10]  Δ007←A<6
[11]  →(~Δ007)/Δ008
[12]  Δ009←B=6
[13]  →(~Δ009)/Δ010
```

```
[14]  C←C+4
[15]  B←B+(A×4)
[16] Δ010:
[17] Δ008:
[18]  C←A-4
[19]  B←A-3
[20] Δ006:
[21]  C←B×5
[22] Δ004:
[23]  →Δ011
[24] Δ002:
[25]  C←C+(B-5)
[26]  C←C+(B-5)
[27] Δ011:
[28]  RRRR←A+B+C
-------------------------------------------------------------
[ 0]  AVISO
[ 1]  'limitado a 70 folhas (ou por ai)'
[ 2]  ' '
[ 3]  'atencao:'
[ 4]  ' existe uma global chamada PRAC que pode conter 0 ou 1'
[ 5]  ' se ela eh igual a 0, tudo segue igual a antes'
[ 6]  ' se ela eh 1, os exercicios serao gerados no formato C'
[ 7]  ''
[ 8]  ' no momento PRAC=1, so funciona para o modelo n, pois nos demais '
[ 9]  ' ha problemas na geracao do pacote algorithmic... '
[10]  ' nao seria o caso de refazer tudo ? pois ha problemas tambem no comprimento das lin
      has'
[11]  '   ha encavalamento na hora da impressao...'
-------------------------------------------------------------
[ 0]  r←q atribui28 z;i;j;ult;ra
[ 1]  ra←0 70⍴' '
[ 2]  j←1
[ 3]  ult←1
[ 4] t2:→(j>9)/oba
[ 5]  →(q[j]='X')/else
[ 6]  →(q[j]='Y')/endif
[ 7]  →((q[j]='1')∨(q[j]='2')∨(q[j]='3'))/num
[ 8] ebranco:j←j+1
[ 9]  →t2
[10] else:
[11]  ra←ra,[1]1 70⍴70↑'senao'
[12]  →soma
[13] endif:
[14]  ra←ra,[1]1 70⍴70↑'fim{se}'
[15]  →soma
[16] num:
[17]  ra←ra,[1]1 70⍴70↑z[ult←⍎q[j];]
[18]  ult←ult+1
[19]  →soma
[20] soma:
[21]  j←j+1
[22]  →t2
[23] oba:
[24]  →(ult>6)/fim
[25]  ra←z[ult;]embaralha28 ra
[26]  ult←ult+1
[27]  →oba
[28] fim:
[29]  r←ra
-------------------------------------------------------------
[ 0]  r←q atribui28n z;i;j;ult;ra
[ 1]  ra←0 70⍴' '
```

```
[ 2]  j←1
[ 3]  ult←1
[ 4] t2:→(j>15)/oba
[ 5]  →(q[j]='X')/else
[ 6]  →(q[j]='Y')/endif
[ 7]  →((q[j]='1')∨(q[j]='2')∨(q[j]='3')∨(q[j]='4')∨(q[j]='5'))/num
[ 8] ebranco:j←j+1
[ 9]  →t2
[10] else:
[11]  ra←ra,[1]1 70⍴70↑'senao'
[12]  →soma
[13] endif:
[14]  ra←ra,[1]1 70⍴70↑'fim{se}'
[15]  →soma
[16] num:
[17]  ra←ra,[1]1 70⍴70↑z[ult←⍎q[j];]
[18]  ult←ult+1
[19]  →soma
[20] soma:
[21]  j←j+1
[22]  →t2
[23] oba:
[24]  →(ult>6)/fim
[25]  ra←z[ult;]embaralha28 ra
[26]  ult←ult+1
[27]  →oba
[28] fim:
[29]  r←ra
-------------------------------------------------------------
[ 0]  r←q atribui28q z;i;j;ult;ra
[ 1]  ra←0 70⍴' '
[ 2]  j←1
[ 3]  ult←1
[ 4] t2:→(j>12)/oba
[ 5]  →(q[j]='X')/else
[ 6]  →(q[j]='Y')/endif
[ 7]  →((q[j]='1')∨(q[j]='2')∨(q[j]='3')∨(q[j]='4'))/num
[ 8] ebranco:j←j+1
[ 9]  →t2
[10] else:
[11]  ra←ra,[1]1 70⍴70↑'senao'
[12]  →soma
[13] endif:
[14]  ra←ra,[1]1 70⍴70↑'fim{se}'
[15]  →soma
[16] num:
[17]  ra←ra,[1]1 70⍴70↑z[ult←⍎q[j];]
[18]  ult←ult+1
[19]  →soma
[20] soma:
[21]  j←j+1
[22]  →t2
[23] oba:
[24]  →(ult>5)/fim
[25]  ra←z[ult;]embaralha28 ra
[26]  ult←ult+1
[27]  →oba
[28] fim:
[29]  r←ra
-------------------------------------------------------------
[0]  r←cortalin x
[1]  r←((1↓⍴x)≠+/[2]x=' ')/[1]x
-------------------------------------------------------------
```

```
[  0]  r←cpc algo;nome;PILHA;nnn;saida;aspa;vv;coma;SALVA;i;j;loca;aaa;pn;pna
[  1] ⍝ versao 1.10
[  2]  PILHA←0 21⍴' ' ⋄ nnn←1 ⋄ saida←0 70⍴' ' ⋄ r←0 70⍴' ' ⋄ aspa←'''' ⋄ loca←'' ⋄ pna←'≤'
[  3]  →(1=⍴⍴algo)/erro90
[  4]  i←1
[  5] t1:→(i>1↑⍴algo)/fim
[  6]  →(algo[i;1]≠'α')/oraviva
[  7]  saida←saida,[1]1 70⍴70↑1↓algo[i;]
[  8]  →(i=i←i+1)/t1
[  9] oraviva:vv←vetoriza algo[i;]
[ 10]  →('algoritmo'igual⊃vv[1])/ealg
[ 11]  →('fim{algoritmo}'igual⊃vv[1])/ealf
[ 12]  →('fimalgoritmo'igual⊃vv[1])/ealf
[ 13]  →('funcao'igual⊃vv[1])/efun
[ 14]  →('fim{funcao}'igual⊃vv[1])/efuf
[ 15]  →('fimfuncao'igual⊃vv[1])/efuf
[ 16]  →('leia'igual⊃vv[1])/elei
[ 17]  →('imprima'igual⊃vv[1])/eimp
[ 18]  →('escreva'igual⊃vv[1])/eimp ⍝ para compatibilizar com o VG = 19/06/08
[ 19]  →('devolva'igual⊃vv[1])/eimp  ⍝ em teste: sera que devolva = imprima neste contexto
       ???
[ 20]  →('se'igual⊃vv[1])/esex
[ 21]  →('senao'igual⊃vv[1])/esen
[ 22]  →('fim{se}'igual⊃vv[1])/esef
[ 23]  →('fimse'igual⊃vv[1])/esef
[ 24]  →('enquanto'igual⊃vv[1])/eenq
[ 25]  →('fim{enquanto}'igual⊃vv[1])/eenf
[ 26]  →('fimenquanto'igual⊃vv[1])/eenf
[ 27]  →('repita'igual⊃vv[1])/erep
[ 28]  →('ate'igual⊃vv[1])/eate
[ 29]  →('para'igual⊃vv[1])/epar
[ 30]  →('fim{para}'igual⊃vv[1])/epaf
[ 31]  →('fimpara'igual⊃vv[1])/epaf
[ 32]  →('abandone'igual⊃vv[1])/eaba
[ 33]  →('saia'igual⊃vv[1])/esai
[ 34]  →('<-'igual⊃vv[2])/ecad
[ 35]  →('inteiro'igual⊃vv[1])/eint
[ 36]  →('real'igual⊃vv[1])/erea
[ 37]  →('logico'igual⊃vv[1])/elog
[ 38]  →('caracter'igual 8↑⊃vv[1])/ecar
[ 39]  →('vetor'igual⊃vv[1])/evet
[ 40]  →('vetora'igual⊃vv[1])/evaa
[ 41]  r←r,[1]1 70⍴70↑(3⍕i),' - comando desconhecido'
[ 42] soma:→(i=i←i+1)/t1
[ 43] ⍝--------------algoritmo--------------
[ 44] ealg:saida←saida,[1]1 70⍴70↑⊃vv[2]
[ 45]  →soma
[ 46] ealf:→fim
[ 47] ⍝--------------funcao-----------------
[ 48] efun:
[ 49]  →(2≥⍴vv)/naotem
[ 50]  coma←'RRRR←',(⊃vv[2]),' AAAA'
[ 51]  →vmesmo
[ 52] naotem:coma←'RRRR←',(⊃vv[2])
[ 53]  saida←saida,[1]1 70⍴70↑coma
[ 54]  nome←⊃vv[2]
[ 55]  →aca0
[ 56] vmesmo:
[ 57]  saida←saida,[1]1 70⍴70↑coma
[ 58]  nome←⊃vv[2]
[ 59]  j←1
[ 60] voi1:→(j>¯2+⍴vv)/aca0
[ 61]  saida←saida,[1]1 70⍴70↑(⊃vv[j+2]),'←AAAA[',(3 0⍕j),']'
```

```
[ 62]  loca←loca,';',⊃vv[j+2]
[ 63]  →(j=j←j+1)/voi1
[ 64] aca0:→soma
[ 65] efuf:→fim
[ 66] ⍝---------------leia-----------------
[ 67] elei:saida←saida,[1]1 70⍴70↑aspa,'LEITURA DA VARIAVEL ',(⊃vv[2]),aspa
[ 68]  saida←saida,[1]1 70⍴70↑(⊃vv[2]),'←⍞'
[ 69]  →soma
[ 70] ⍝---------------imprima--------------
[ 71] eimp:→(3=⍴vv)/temmsg
[ 72]  aaa←⊃vv[2]
[ 73]  →(aaa[⍴aaa]=';')/juntaa
[ 74]  saida←saida,[1]1 70⍴70↑aaa
[ 75]  →soma
[ 76] juntaa:saida←saida,[1]1 70⍴70↑'⍞←⍕',¯1↓aaa
[ 77]  →soma
[ 78] temmsg:aaa←⊃vv[3]
[ 79]  →(aaa[⍴aaa]=';')/juntab
[ 80]  saida←saida,[1]1 70⍴70↑(⊃vv[2]),' ',aaa
[ 81]  →soma
[ 82] juntab:saida←saida,[1]1 70⍴70↑'⍞←',(⊃vv[2]),' ,⍕',¯1↓aaa
[ 83]  →soma
[ 84] ⍝---------------atribuicao------------
[ 85] ecad:saida←saida,[1]1 70⍴70↑(⊃vv[1]),'←',,⊃2↓vv
[ 86]  aaa←⊃vv[1]
[ 87]  →('['∈aaa)/soma
[ 88]  →(∨/aaa≤loca)/soma
[ 89]  loca←loca,';',⊃vv[1]
[ 90]  →soma
[ 91] ⍝---------------se--------------------
[ 92] esex:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[ 93]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn←nnn+1
[ 94]  PILHA←(1 21⍴21↑'SE',('000'⍕nnn)),[1]PILHA
[ 95]  nnn←nnn+1
[ 96]  →soma
[ 97] ⍝--senao--
[ 98] esen:SALVA←PILHA[1;3 4 5] ⋄ PILHA←1 0↓PILHA
[ 99]  PILHA←(1 21⍴21↑'SE',('000'⍕nnn)),[1]PILHA
[100]  saida←saida,[1]1 70⍴70↑'→Δ','000'⍕nnn
[101]  nnn←nnn+1
[102]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[103]  →soma
[104] ⍝--fim{se}--
[105] esef:saida←saida,[1]1 70⍴70↑'Δ',PILHA[1;3 4 5],':'
[106]  PILHA←1 0↓PILHA
[107]  →soma
[108] ⍝-------------enquanto--------------------
[109] eenq:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[110]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[111]  nnn←nnn+1
[112]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[113]  nnn←nnn+1
[114]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[115]  nnn←nnn+1
[116]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn-2
[117]  →soma
[118] ⍝----------fim{enquanto}-----------------
[119] eenf:SALVA←PILHA[1;3 4 5]
[120]  PILHA←1 0↓PILHA
[121]  saida←saida,[1]1 70⍴70↑'→Δ',PILHA[1;3 4 5]
[122]  PILHA←1 0↓PILHA
[123]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[124]  →soma
```

```
[125] ⍝----------repita-------------------------
[126] erep:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[127]  PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[128]  nnn←nnn+1
[129]  →soma
[130] ⍝-----------ate--------------------------
[131] eate:PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[132]  nnn←nnn+1
[133]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[134]  SALVA←PILHA[1;3 4 5]
[135]  PILHA←1 0↓PILHA
[136]  saida←saida,[1]1 70⍴70↑'→(Δ',('000'⍕nnn),')/Δ',SALVA
[137]  SALVA←PILHA[1;3 4 5]
[138]  PILHA←1 0↓PILHA
[139]  saida←saida,[1]1 70⍴70↑'→Δ',SALVA
[140]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn-1),':'
[141]  nnn←nnn+1 ⍝ inclusao desta linha em 19/04/06. Ainda nao suficientemente testada
[142]  →soma
[143] ⍝----------para-----------------------
[144] epar:saida←saida,[1]1 70⍴70↑(8↑⊃vv[2]),'←',8↑⊃vv[4]
[145]  PILHA←(1 21⍴21↑'PA','000'⍕nnn),[1]PILHA
[146]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[147]  nnn←nnn+1
[148]  →(8≤⍴vv)/tempasso
[149]  PILHA←(1 21⍴21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8↑8⍕1),[1]PILHA
[150]  →juntab
[151] tempasso:PILHA←(1 21⍴21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8 2⍕pn←⍎⊃vv[8]),[1]PILHA
[152] ⍝ 'pn=',⍕pn
[153]  pna←'≤≥'[1+pn<0] ⍝ alteracao a 22/06/06, para acertar passo negativo
[154] juntab:nnn←nnn+1
[155]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',(⊃vv[2]),pna,⍕⊃vv[6]
[156]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn),')/Δ','000'⍕nnn-1
[157]  nnn←nnn+1
[158]  →soma
[159] ⍝----------fim{para}------------------
[160] epaf:saida←saida,[1]1 70⍴70↑PILHA[1;5+⍳8],'←',PILHA[1;5+⍳8],'+',PILHA[1;13+⍳8]
[161]  SALVA←PILHA[1;3 4 5]
[162]  PILHA←1 0↓PILHA
[163]  saida←saida,[1]1 70⍴70↑'→Δ',PILHA[1;3 4 5]
[164]  PILHA←1 0↓PILHA
[165]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[166]  →soma
[167] ⍝-----------abandone--------------------
[168] eaba:→soma
[169] ⍝-----------saia--------------------------
[170] esai:→soma
[171] ⍝-------- definicao de variaveis---------------
[172] eint:
[173]  saida←saida,[1]1 70⍴70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[174]  →soma
[175] erea:
[176]  saida←saida,[1]1 70⍴70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[177]  →soma
[178] elog:
[179]  saida←saida,[1]1 70⍴70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[180]  →soma
[181] ecar:
[182]  saida←saida,[1]1 70⍴70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[183]  →soma
[184] ⍝----------definicao de vetores-----------------
[185] evet:
[186]  saida←saida,[1]1 70⍴70↑(1 parte(⊃vv[2])),'←',(2 parte(⊃vv[2])),'⍴0'
[187]  →soma
```

```
[188] evaa:
[189]  saida←saida,[1]1 70ρ70↑(1 parte(⊃vv[2])),'←',(2 parte(⊃vv[2])),'ρ',aspa,' ',aspa
[190]  →soma
[191] fim:
[192]  i←1
[193] tfim:→(i>nnn)/mesmo
[194]  loca←loca,';Δ','000'⍕i
[195]  →(i=i←i+1)/tfim
[196] mesmo:→(50>ρloca)/blz1
[197]  saida←((1↑ρsaida),20+ρloca)↑saida
[198]  saida[1;20+ιρloca]←loca
[199]  →pula22
[200] blz1:saida[1;20+ι50]←50↑loca
[201] pula22:r←'_ 'edit saida
[202]  →0
[203] erro90:'algoritmo nao e uma matriz'
[204]  →0
------------------------------------------------------------
[0]  r←coma embaralha28 matr;i;in;ix
[1] ⍝ embaralha o comando em alguma linha da matriz e devolve-a
[2]  i←1+1↑ρmatr
[3]  in←iρ1
[4]  in[ix←?i]←0
[5]  r←in⌷[1]matr
[6]  r[ix;]←coma
------------------------------------------------------------
[ 0]  r←gera028b;z;qual;prox;resto;k;rx;resultado;lixo;zz
[ 1]  resultado←0ρ0
[ 2]  r←8ρ0
[ 3]  rx←30 70ρ' '
[ 4]  rx[1;]←70↑'funcao AAA'
[ 5]  rx[2;]←70↑'A <- ',⍕1+?8
[ 6]  rx[3;]←70↑'B <- ',⍕1+?8
[ 7]  rx[4;]←70↑'C <- ',⍕1+?8
[ 8]  rx[5;]←70↑'se A ',('><≤≥=≠'[?6]),' ',(⍕4+?5),' entao '
[ 9]  rx[6;]←70↑'se B ',('><≤≥=≠'[?6]),' ',(⍕4+?5),' entao '
[10]  rx[7;]←70↑'se C ',('><≤≥=≠'[?6]),' ',(⍕4+?5),' entao '
[11]  rx[8;]←70↑('ABC'[?3]),(' <- '),('ABC'[?3]),' ',('+-×'[?3]),' ',⍕1+?4
[12]  z←6 70ρ' '
[13]  z[1;]←70↑('ABC'[?3]),(' <- '),('ABC'[?3]),' ',('+-×'[?3]),' ',⍕1+?4
[14]  z[2;]←70↑('ABC'[?3]),(' <- '),('ABC'[?3]),' ',('+-×'[?3]),' ',⍕1+?4
[15]  z[3;]←70↑('ABC'[?3]),(' <- '),('ABC'[?3]),' ',('+-×'[?3]),' ',⍕1+?4
[16]  z[4;]←70↑('ABC'[?3]),(' <- '),('ABC'[?3]),' ',('+-×'[?3]),' ',⍕1+?4
[17]  z[5;]←70↑('ABC'[?3]),(' <- '),('ABC'[?3]),' ',('+-×'[?3]),' ',⍕1+?4
[18]  z[6;]←70↑('ABC'[?3]),(' <- '),('ABC'[?3]),' ',('+-×'[?3]),' ',⍕1+?4
[19]  qual←3?8
[20]  k←1
[21] t3:→(k>3)/uga
[22]  rx[8+ι22;]←' '
[23]  resto←CASOS[qual[k];]atribui28 z
[24]  rx[8+ιprox←1↑presto;]←resto
[25]  rx[prox+9;]←70↑'RRRR<- A+B+C'
[26]  rx[prox+10;]←70↑'fim{funcao}'
[27]  r[k]←⊂cortalin rx
[28]  lixo←⎕FX cpc rx
[29]  resultado←resultado,⍪'AAA'
[30]  k←k+1
[31]  →t3
[32] uga:
[33]  r[4]←⊂cortalin tradfunca⊃r[1]
[34]  zz←cortalin tralitera⊃r[1]
[35]  zz←((1↑ρzz),60)↑zz
[36]  zz[1↑ρzz;40+ι15]←15↑'\end{verbatim}'
```

```
[37]  r[5]←⊂zz
[38]  zz←cortalin tralitera⊃r[2]
[39]  zz←((1↑⍴zz),60)↑zz
[40]  zz[1↑⍴zz;40+⍳15]←15↑'\end{verbatim}'
[41]  r[6]←⊂zz
[42]  zz←cortalin tralitera⊃r[3]
[43]  zz←((1↑⍴zz),60)↑zz
[44]  zz[1↑⍴zz;40+⍳15]←15↑'\end{verbatim}'
[45]  r[7]←⊂zz
[46]  r[8]←⊂resultado
-------------------------------------------------------------
[ 0]  r←gera028e;k;lixo;prox;qual;resto;resultado;rx;z;zz
[ 1]  resultado←0⍴0
[ 2]  r←8⍴0
[ 3]  rx←30 70⍴' '
[ 4]  rx[1;]←70↑'funcao AAA'
[ 5]  rx[2;]←70↑'A <- ',⍕1+?8
[ 6]  rx[3;]←70↑'B <- ',⍕1+?8
[ 7]  rx[4;]←70↑'C <- ',⍕1+?8
[ 8]  rx[5;]←70↑'se ',(geracomcon'ABC'),' entao'
[ 9]  rx[6;]←70↑'se ',(geracomcon'ABC'),' entao'
[10]  rx[7;]←70↑'se ',(geracomcon'ABC'),' entao'
[11]  rx[8;]←70↑('ABC'[?3]),(' <- '),('ABC'[?3]),' ',('+-×'[?3]),' ',⍕1+?4
[12]  z←6 70⍴' '
[13]  z[1;]←70↑('ABC'[?3]),(' <- '),('ABC'[?3]),' ',('+-×'[?3]),' ',⍕1+?4
[14]  z[2;]←70↑('ABC'[?3]),(' <- '),('ABC'[?3]),' ',('+-×'[?3]),' ',⍕1+?4
[15]  z[3;]←70↑('ABC'[?3]),(' <- '),('ABC'[?3]),' ',('+-×'[?3]),' ',⍕1+?4
[16]  z[4;]←70↑('ABC'[?3]),(' <- '),('ABC'[?3]),' ',('+-×'[?3]),' ',⍕1+?4
[17]  z[5;]←70↑('ABC'[?3]),(' <- '),('ABC'[?3]),' ',('+-×'[?3]),' ',⍕1+?4
[18]  z[6;]←70↑('ABC'[?3]),(' <- '),('ABC'[?3]),' ',('+-×'[?3]),' ',⍕1+?4
[19]  qual←3?8
[20]  k←1
[21] t3:→(k>3)/uga
[22]  rx[8+⍳22;]←' '
[23]  resto←CASOS[qual[k];]atribui28 z
[24]  rx[8+⍳prox←1↑⍴resto;]←resto
[25]  rx[prox+9;]←70↑'RRRR<- A+B+C'
[26]  rx[prox+10;]←70↑'fim{funcao}'
[27]  r[k]←⊂cortalin rx
[28]  lixo←⎕FX cpc rx
[29]  resultado←resultado,⊂'AAA'
[30]  k←k+1
[31]  →t3
[32] uga:
[33]  r[4]←⊂cortalin tradfunca⊃r[1]
[34]  zz←cortalin tralitera⊃r[1]
[35]  zz←((1↑⍴zz),60)↑zz
[36]  zz[1↑⍴zz;40+⍳15]←15↑'\end{verbatim}'
[37]  r[5]←⊂zz
[38]  zz←cortalin tralitera⊃r[2]
[39]  zz←((1↑⍴zz),60)↑zz
[40]  zz[1↑⍴zz;40+⍳15]←15↑'\end{verbatim}'
[41]  r[6]←⊂zz
[42]  zz←cortalin tralitera⊃r[3]
[43]  zz←((1↑⍴zz),60)↑zz
[44]  zz[1↑⍴zz;40+⍳15]←15↑'\end{verbatim}'
[45]  r[7]←⊂zz
[46]  r[8]←⊂resultado
-------------------------------------------------------------
[ 0]  r←gera028k;z;qual;prox;resto;k;rx;resultado;lixo;letra;outras;zz
[ 1]  resultado←0⍴0
[ 2]  r←8⍴0
[ 3]  rx←30 70⍴' '
```

```
[ 4]  rx[1;]←70↑'funcao AAA'
[ 5]  rx[2;]←70↑'A <- ',⍕1+?8
[ 6]  rx[3;]←70↑'B <- ',⍕1+?8
[ 7]  rx[4;]←70↑'C <- ',⍕1+?8
[ 8]  rx[5;]←70↑'se ',(geracomcon'ABC'),' entao'
[ 9]  rx[6;]←70↑'se B ',('><≤≥=≠'[?6]),' ',(⍕4+?5),' entao '
[10]  rx[7;]←70↑'se C ',('><≤≥=≠'[?6]),' ',(⍕4+?4),' entao '
[11]  rx[8;]←70↑'se ',('ABC'[?3]),' ',('><≤≥=≠'[?6]),' ',(⍕4+?4),' entao '
[12]  rx[9;]←70↑('ABC'[?3]),(' <- '),('ABC'[?3]),' ',('+-×'[?3]),' ',⍕1+?4
[13]  z←5 70⍴' '
[14]  letra←'ABC'[?3]
[15]  outras←('ABC'≠letra)/'ABC'
[16]  z[1;]←70↑letra,' <- ',letra,' + (',(outras[?2]),' ',('+-×'[?3]),' ',(⍕1+?4),')'
[17]  letra←'ABC'[?3]
[18]  outras←('ABC'≠letra)/'ABC'
[19]  z[2;]←70↑letra,' <- ',letra,' + (',(outras[?2]),' ',('+-×'[?3]),' ',(⍕1+?4),')'
[20]  letra←'ABC'[?3]
[21]  outras←('ABC'≠letra)/'ABC'
[22]  z[3;]←70↑letra,' <- ',letra,' + (',(outras[?2]),' ',('+-×'[?3]),' ',(⍕1+?4),')'
[23]  z[4;]←70↑('ABC'[?3]),(' <- '),('ABC'[?3]),' ',('+-×'[?3]),' ',⍕1+?4
[24]  z[5;]←70↑('ABC'[?3]),(' <- '),('ABC'[?3]),' ',('+-×'[?3]),' ',⍕1+?4
[25]  qual←3?16
[26]  qual←qual[⍋qual]
[27]  k←1
[28] t3:→(k>3)/uga
[29]  rx[9+⍳21;]←' '
[30]  resto←CASOS4[qual[k];]atribui28q z
[31]  rx[9+⍳prox←1↑⍴resto;]←resto
[32]  rx[prox+10;]←70↑'RRRR<- A+B+C'
[33]  rx[prox+11;]←70↑'fim{funcao}'
[34]  r[k]←⊂cortalin rx
[35]  lixo←⎕FX cpc rx
[36]  resultado←resultado,⊂'AAA'
[37]  k←k+1
[38]  →t3
[39] uga:
[40]  r[4]←⊂cortalin tradfunca⊃r[1]
[41]  zz←cortalin tralitera4⊃r[1]
[42]  zz←((1↑⍴zz),60)↑zz
[43]  zz[1↑⍴zz;40+⍳15]←15↑'\end{verbatim}'
[44]  r[5]←⊂zz
[45]  zz←cortalin tralitera4⊃r[2]
[46]  zz←((1↑⍴zz),60)↑zz
[47]  zz[1↑⍴zz;40+⍳15]←15↑'\end{verbatim}'
[48]  r[6]←⊂zz
[49]  zz←cortalin tralitera4⊃r[3]
[50]  zz←((1↑⍴zz),60)↑zz
[51]  zz[1↑⍴zz;40+⍳15]←15↑'\end{verbatim}'
[52]  r[7]←⊂zz
[53]  r[8]←⊂resultado
-------------------------------------------------------------
[ 0]  r←gera028n;k;letra;lixo;outras;prox;qual;resto;resultado;rx;z;zz
[ 1]  resultado←0⍴0
[ 2]  r←5⍴0
[ 3]  rx←32 70⍴' '
[ 4]  rx[1;]←70↑'funcao AAA'
[ 5]  rx[2;]←70↑'A <- ',⍕1+?8
[ 6]  rx[3;]←70↑'B <- ',⍕1+?8
[ 7]  rx[4;]←70↑'C <- ',⍕1+?8
[ 8]  rx[5;]←70↑'se ',(geracomcon'ABC'),' entao '
[ 9]  rx[6;]←70↑'se B ',('><≤≥=≠'[?6]),' ',(⍕4+?5),' entao '
[10]  rx[7;]←70↑'se C ',('><≤≥=≠'[?6]),' ',(⍕4+?4),' entao '
[11]  rx[8;]←70↑'se ',('ABC'[?3]),' ',('><≤≥=≠'[?6]),' ',(⍕4+?4),' entao '
```

```
[12]  rx[9;]←70↑'se ',('ABC'[?3]),' ',('><≤≥=≠'[?6]),' ',(⍕4+?4),' entao '
[13]  rx[10;]←70↑('ABC'[?3]),(' <- '),('ABC'[?3]),' ',('+-×'[?3]),' ',⍕1+?4
[14]  z←6 70⍴' '
[15]  letra←'ABC'[?3]
[16]  outras←('ABC'≠letra)/'ABC'
[17]  z[1;]←70↑letra,' <- ',letra,' + (',(outras[?2]),' ',('+-×'[?3]),' ',(⍕1+?4),')'
[18]  letra←'ABC'[?3]
[19]  outras←('ABC'≠letra)/'ABC'
[20]  z[2;]←70↑letra,' <- ',letra,' + (',(outras[?2]),' ',('+-×'[?3]),' ',(⍕1+?4),')'
[21]  letra←'ABC'[?3]
[22]  outras←('ABC'≠letra)/'ABC'
[23]  z[3;]←70↑letra,' <- ',letra,' + (',(outras[?2]),' ',('+-×'[?3]),' ',(⍕1+?4),')'
[24]  z[4;]←70↑('ABC'[?3]),(' <- '),('ABC'[?3]),' ',('+-×'[?3]),' ',⍕1+?4
[25]  z[5;]←70↑('ABC'[?3]),(' <- '),('ABC'[?3]),' ',('+-×'[?3]),' ',⍕1+?4
[26]  z[6;]←70↑('ABC'[?3]),(' <- '),('ABC'[?3]),' ',('+-×'[?3]),' ',⍕1+?4
[27]  qual←2?32
[28]  qual←qual[⍋qual]
[29]  k←1
[30] t3:→(k>2)/uga
[31]  rx[10+⍳21;]←' '
[32]  resto←CASOS5[qual[k];]atribui28n z
[33]  rx[10+⍳prox←1↑⍴resto;]←resto
[34]  rx[prox+11;]←70↑'RRRR<- A+B+C'
[35]  rx[prox+12;]←70↑'fim{funcao}'
[36]  r[k]←⊂cortalin rx
[37]  lixo←⎕FX cpc rx
[38]  resultado←resultado,⍪'AAA'
[39]  k←k+1
[40]  →t3
[41] uga:
[42]  zz←cortalin tralitera5⊃r[1]
[43]  zz←((1↑⍴zz),60)↑zz
[44]  zz[1↑⍴zz;40+⍳15]←15↑'\end{verbatim}'
[45]  r[3]←⊂zz
[46]  zz←cortalin tralitera5⊃r[2]
[47]  zz←((1↑⍴zz),60)↑zz
[48]  zz[1↑⍴zz;40+⍳15]←15↑'\end{verbatim}'
[49]  r[4]←⊂zz
[50]  r[5]←⊂resultado
------------------------------------------------------------
[ 0]  r←geracasos;x
[ 1]  r←0 50⍴' '
[ 2]  x←tresifs,[1]CASOS[1;]atribui28 seiscomandossimples
[ 3]  r←r,[1]1 50⍴50↑'------------ caso 1-a'
[ 4]  r←r,[1]((1↑⍴x),50)↑x
[ 5]  x←tresifs,[1]CASOS[2;]atribui28 seiscomandossimples
[ 6]  r←r,[1]1 50⍴50↑'------------ caso 2-b'
[ 7]  r←r,[1]((1↑⍴x),50)↑x
[ 8]  x←tresifs,[1]CASOS[3;]atribui28 seiscomandossimples
[ 9]  r←r,[1]1 50⍴50↑'------------ caso 3-c'
[10]  r←r,[1]((1↑⍴x),50)↑x
[11]  x←tresifs,[1]CASOS[4;]atribui28 seiscomandossimples
[12]  r←r,[1]1 50⍴50↑'------------ caso 4-d'
[13]  r←r,[1]((1↑⍴x),50)↑x
[14]  x←tresifs,[1]CASOS[5;]atribui28 seiscomandossimples
[15]  r←r,[1]1 50⍴50↑'------------ caso 5-e'
[16]  r←r,[1]((1↑⍴x),50)↑x
[17]  x←tresifs,[1]CASOS[6;]atribui28 seiscomandossimples
[18]  r←r,[1]1 50⍴50↑'------------ caso 6-f'
[19]  r←r,[1]((1↑⍴x),50)↑x
[20]  x←tresifs,[1]CASOS[7;]atribui28 seiscomandossimples
[21]  r←r,[1]1 50⍴50↑'------------ caso 7-g'
[22]  r←r,[1]((1↑⍴x),50)↑x
```

```
[23]  x←tresifs,[1]CASOS[8;]atribui28 seiscomandossimples
[24]  r←r,[1]1 50⍴50↑'------------ caso 8-h'
[25]  r←r,[1]((1↑⍴x),50)↑x
[26]  →0
[27]  x←tresifs,[1]CASOS[9;]atribui28 seiscomandossimples
[28]  r←r,[1]1 50⍴50↑'------------ caso 9-i'
[29]  r←r,[1]((1↑⍴x),50)↑x
[30]  x←tresifs,[1]CASOS[10;]atribui28 seiscomandossimples
[31]  r←r,[1]1 50⍴50↑'------------ caso 10-j'
[32]  r←r,[1]((1↑⍴x),50)↑x
[33]  x←tresifs,[1]CASOS[11;]atribui28 seiscomandossimples
[34]  r←r,[1]1 50⍴50↑'------------ caso 11-k'
[35]  r←r,[1]((1↑⍴x),50)↑x
-------------------------------------------------------------
[ 0]  r←geracasos4;x;j
[ 1]  r←0 50⍴' '
[ 2]  j←1
[ 3] t1:→(j>16)/fim
[ 4]  x←quatroifs,[1]CASOS4[j;]atribui28q cincocomandossimples
[ 5]  r←r,[1]1 50⍴50↑'------------ caso ',⍕j
[ 6]  r←r,[1]((1↑⍴x),50)↑x
[ 7]  j←j+1
[ 8]  →t1
[ 9] fim:
-------------------------------------------------------------
[ 0]  r←geracasos5;x;j
[ 1]  r←0 50⍴' '
[ 2]  j←1
[ 3] t1:→(j>32)/fim
[ 4]  x←cincoifs,[1]CASOS5[j;]atribui28n seiscomandossimples
[ 5]  r←r,[1]1 50⍴50↑'------------ caso ',⍕j
[ 6]  r←r,[1]((1↑⍴x),50)↑x
[ 7]  j←j+1
[ 8]  →t1
[ 9] fim:
-------------------------------------------------------------
[ 0]  r←geracomcon letras;j;k
[ 1]  letras←letras,letras,letras
[ 2]  r←letras[1],('><≤≥=≠'[?6]),⍕1+?6
[ 3]  →(2<?3)/oba
[ 4]  r←'~(',r,')'
[ 5] oba:
[ 6]  j←letras[2],('><≤≥=≠'[?6]),⍕1+?6
[ 7]  →(2<?4)/oba2
[ 8]  j←'~(',j,')'
[ 9] oba2:
[10]  r←'(',r,')',('∨∧'[?2]),'(',j,')'
[11] fim:
[12]  →(4>?6)/fui
[13]  k←letras[3],('><≤≥=≠'[?6]),⍕1+?6
[14]  →(2<?5)/oba3
[15]  k←'~(',k,')'
[16] oba3:
[17]  r←'(',r,')',('∨∧'[?2]),'(',k,')'
[18] fui:
-------------------------------------------------------------
[0]  r←a igual b;maior
[1]  maior←(1↑⍴a)⌈1↑⍴b
[2]  a←maior↑a ⋄ b←maior↑b
[3]  r←maior=+/a=b
-------------------------------------------------------------
[0]  r←ltrim a
[1]  r←(~∧\a=' ')/a
```

```
------------------------------------------------------------
[ 0]  r←quem replace depara;de;i;j;k;onde;para
[ 1] ⍝ forma de usar: texto replace 'strin-de' 'string para'
[ 2] ⍝ obviamente eles nao precisam ter o mesmo tamanho
[ 3]  de←,⊃depara[1] ⋄ para←,⊃depara[2]
[ 4]  i←1 ⋄ r←((1↑⍴quem),200)⍴' '
[ 5] t1:→(i>1↑⍴quem)/fim
[ 6]  →(0=∨/onde←de⍷quem[i;])/naotem
[ 7]  j←1 ⋄ k←1
[ 8] t2:→(k>⍴quem[i;])/acabou
[ 9]  →(onde[k]=0)/soma
[10]  r[i;(j-1)+⍳⍴para]←para
[11]  j←j+⍴para
[12]  k←k+⍴de
[13]  →t2
[14] soma:r[i;j]←quem[i;k]
[15]  k←k+1
[16]  →(j=j←j+1)/t2
[17] naotem:r[i;]←200↑quem[i;]
[18] acabou:→(i=i←i+1)/t1
[19] fim:r←trim4 r
------------------------------------------------------------
[ 0]  testatamanhos;j;x;lixo;z
[ 1]  j←0
[ 2] in:→(j>10)/vivo
[ 3]  x←gera028n
[ 4] ⍝ ⍴⊃x[4]
[ 5]  z←⍴⊃x[5]
[ 6]  z←z⌈⍴⊃x[6]
[ 7]  z←z⌈⍴⊃x[7]
[ 8]  lixo←⊃x[8]
[ 9]  z
[10]  j←j+1
[11]  →in
[12] vivo:
------------------------------------------------------------
[ 0]  r←tradcoma x;i;j
[ 1] ⍝ v 1.06 - traduz um comando de cpc para latex
[ 2]  x←trim x
[ 3]  i←j←1 ⋄ r←100⍴' '
[ 4] t1:→(i>⍴x)/fim
[ 5]  →(i=⍴x)/pula
[ 6]  →((x[i]='<')∧(x[i+1]='-'))/recebe
[ 7] pula:→(x[i]='∨')/ou
[ 8]  →(x[i]='∧')/e
[ 9]  →(x[i]='~')/nao
[10]  →(x[i]='≠')/diferente
[11]  →(x[i]='≤')/menig
[12]  →(x[i]='≥')/maiig
[13]  →(x[i]='×')/vezes
[14]  →(x[i]='>')/maior
[15]  →(x[i]='<')/menor
[16]  →(x[i]='⍝')/coment
[17] nada:r[j]←x[i]
[18]  i←i+1
[19]  j←j+1
[20]  →t1
[21] coment:
[22]  r[j]←' '
[23]  i←i+1
[24]  j←j+1
[25]  →t1
[26] recebe:r[j+¯1+⍳7]←'$\gets$'
```

```
[27]  j←j+7
[28]  i←i+2
[29]  →t1
[30] ou:r[j+¯1+⍳6]←'$\lor$'
[31]  j←j+6
[32]  i←i+1
[33]  →t1
[34] nao:r[j+¯1+⍳6]←'$\sim$'
[35]  j←j+6
[36]  i←i+1
[37]  →t1
[38] e:r[j+¯1+⍳7]←'$\land$'
[39]  j←j+7
[40]  i←i+1
[41]  →t1
[42] diferente:r[j+¯1+⍳6]←'$\neq$'
[43]  j←j+6
[44]  i←i+1
[45]  →t1
[46] menig:r[j+¯1+⍳5]←'$\le$'
[47]  j←j+5
[48]  i←i+1
[49]  →t1
[50] maiig:r[j+¯1+⍳5]←'$\ge$'
[51]  j←j+5
[52]  i←i+1
[53]  →t1
[54] vezes:r[j+¯1+⍳8]←'$\times$'
[55]  j←j+8
[56]  i←i+1
[57]  →t1
[58] maior:r[j+¯1+⍳3]←'$>$'
[59]  j←j+3
[60]  i←i+1
[61]  →t1
[62] menor:r[j+¯1+⍳3]←'$<$'
[63]  j←j+3
[64]  i←i+1
[65]  →t1
[66] fim:r←trim r
------------------------------------------------------------
[ 0]  r←tradfunca fun;y;aaa;i
[ 1]  y←'({'edit')}'edit fun
[ 2]  y←y replace'fimse' '\ENDIF'
[ 3]  y←y replace'fim{se}' '\ENDIF'
[ 4]  y←y replace'se ' '\IF {'
[ 5]  y←y replace'fim{enquanto}' '\ENDWHILE'
[ 6]  y←y replace'fimenquanto' '\ENDWHILE'
[ 7]  y←y replace'enquanto ' '\WHILE {'
[ 8]  y←y replace'repita' '\REPEAT'
[ 9]  y←y replace'senao' '\ELSE'
[10]  y←y replace'ate' '\UNTIL {'
[11]  y←y replace'fim{para}' '\ENDFOR'
[12]  y←y replace'fimpara' '\ENDFOR'
[13]  y←y replace'para' '\FOR {'
[14]  y←y replace'fim{funcao}' 'fimfuncao'
[15]  y←y replace'RRRR<-' 'escreva '
[16]  y←((1↑⍴y),60)↑y
[17]  y←((1,1↓⍴y)⍴100↑'\begin{algorithmic}[1]'),[1]y
[18]  y←y,[1](1,1↓⍴y)⍴100↑'\end{algorithmic}'
[19]  i←1
[20]  r←((1↑⍴y),100)⍴' '
[21] t1:→(i>1↑⍴r)/fim
```

```
[22]  aaa←100↑ltrim tradcoma y[i;]
[23]  →(aaa[1]='↓')/blz
[24]  aaa←100↑'↓STATE ',aaa
[25] blz:r[i;]←aaa
[26]  →(i=i←i+1)/t1
[27] fim:i←1
[28] test34:→(i>1↑⍴r)/acabou
[29]  →(5=+/r[i;⍳5]='↓IF {')/poe
[30]  →(5=+/r[i;⍳5]='↓WHIL')/poe
[31]  →(5=+/r[i;⍳5]='↓UNTI')/poe
[32]  →(5=+/r[i;⍳5]='↓FOR ')/poe
[33]  →(i=i←i+1)/test34
[34] poe:
[35]  r[i;]←100↑(trim r[i;]),'}'
[36]  →(i=i←i+1)/test34
[37] acabou:r←trim4 r
-------------------------------------------------------------
[ 0]  r←traduzprac x;i;sai;t;z;z1;z2
[ 1]  →(PRAC≠1)/nada
[ 2]  i←1
[ 3]  t←⍴x
[ 4]  sai←t⍴0
[ 5]  sai[t]←x[t]
[ 6] t1:→(i>t-1)/fim
[ 7]  z←⊃x[i]
[ 8]  z[1;]←(1↓⍴z)↑'int main() {'
[ 9]  z1←z replace'fim{se}' '}      '
[10]  z2←z1 replace'entao' '{    '
[11]  z2←z2 replace'senao ' '}else{'
[12]  z2←z2 replace'fim{funcao}' '}          '
[13]  z2←z2 replace'se ' 'if '
[14]  z2←z2 replace'imprima' 'cout<<'
[15]  z2←z2 replace')E(' ')&&('
[16]  z2←z2 replace')OU(' ')||('
[17]  z2←z2 replace'NAO' '!'
[18]  z2←z2 replace'<>' '!='
[19]  sai[i]←⊂z2
[20]  i←i+1
[21]  →t1
[22] fim:r←sai
[23]  →0
[24] nada:r←x
[25]  →0
-------------------------------------------------------------
[ 0]  r←tralitera x;i;aa
[ 1]  aa←x
[ 2]  aa←aa replace'=' '@'
[ 3]  aa←aa replace'≥' '>='
[ 4]  aa←aa replace'≤' '<='
[ 5]  aa←aa replace'≠' '<>'
[ 6]  aa←aa replace'←' '='
[ 7]  aa←aa replace'×' '*'
[ 8]  aa←aa replace'∧' 'E'
[ 9]  aa←aa replace'∨' 'OU'
[10]  aa←aa replace'~' 'NAO'
[11]  aa←aa replace'@' '=='
[12]  aa←aa replace'RRRR= A+B+C' 'imprima (A+B+C)'
[13]  r←aa
-------------------------------------------------------------
[ 0]  r←tralitera4 x;i;aa;vv
[ 1]  vv←(1↑⍴x)⍴1
[ 2]  vv[3 4]←0
[ 3]  x←x replace'=' '@'
```

```
[ 4]  aa←vv/[1]x
[ 5]  aa[2;]←(1↓⍴x)↑x[2;1],',',x[3;1],',',x[4;1],'=',x[2;6],',',x[3;6],',',x[4;6]
[ 6]  aa←aa replace'≥' '>='
[ 7]  aa←aa replace'≤' '<='
[ 8]  aa←aa replace'≠' '<>'
[ 9]  aa←aa replace'<-' '='
[10]  aa←aa replace'×' '*'
[11]  aa←aa replace'∧' 'E'
[12]  aa←aa replace'∨' 'OU'
[13]  aa←aa replace'~' 'NAO'
[14]  aa←aa replace'@' '=='
[15]  aa←aa replace'RRRR= A+B+C' 'imprima (A+B+C)'
[16]  r←aa
-------------------------------------------------------------
[ 0]  r←tralitera5 x;i;aa;vv
[ 1]  vv←(1↑⍴x)⍴1
[ 2]  vv[3 4]←0
[ 3]  x←x replace'=' '@'
[ 4]  aa←vv/[1]x
[ 5]  aa[2;]←(1↓⍴x)↑x[2;1],',',x[3;1],',',x[4;1],'=',x[2;6],',',x[3;6],',',x[4;6]
[ 6]  aa←aa replace'≥' '>='
[ 7]  aa←aa replace'≤' '<='
[ 8]  aa←aa replace'≠' '<>'
[ 9]  aa←aa replace'<-' '='
[10]  aa←aa replace'×' '*'
[11]  aa←aa replace'∧' 'E'
[12]  aa←aa replace'∨' 'OU'
[13]  aa←aa replace'~' 'NAO'
[14]  aa←aa replace'@' '=='
[15]  aa←aa replace'RRRR= A+B+C' 'imprima (A+B+C)'
[16]  r←aa
-------------------------------------------------------------
[0]  r←trim4 x;z
[1] ⍝f corta as colunas direitas que sao brancos
[2]  →(2≠⍴⍴x)/erro
[3]  z←+/[1]x=' '
[4]  r←(z≠1↑⍴x)/[2]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
-------------------------------------------------------------
[ 0]  r←vetoriza x;i;rr;letra;aspa;nume
[ 1] ⍝ versao 1.07
[ 2]  aspa←'''' ⋄ nume←'0123456789'
[ 3]  letra←'abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ()',aspa
[ 4] ⍝ tira os brancos
[ 5]  i←1 ⋄ rr←1
[ 6] t2:→(i>¯2+⍴x)/vaiz
[ 7]  →((x[i+1]=' ')∧(x[i]∈letra)∧(x[i+2]∈nume))/mataz
[ 8]  →((x[i+1]=' ')∧(x[i]∈nume)∧(x[i+2]∈letra))/mataz
[ 9]  →((x[i]∈letra)∧(x[i+2]∈letra))/naopode
[10]  →(((x[1]='p')∨(x[1]='P'))∧(x[2]='a')∧(x[i]∈letra)∧((x[i+2]='-')∨(x[i+2]='¯')))/naopo
      de  ⍝ comando incluido para o passo negativo
[11] ⍝ →((x[i]∈letra)∧((x[i+2]='-')∨(x[i+2]='¯')))/naopode  ⍝ comando incluido para o pass
      o negativo
[12] ⍝ os 3 testes iniciais (pPa) foram incluidos porque o comando acima estava
[13] ⍝ fazendo besteira: vetoriza 'A <- A -1' estava gerando 4 tokens e nao 3.
[14] ⍝ correcao em 13/03/12 - P.kantek
[15]  →(x[i+1]≠' ')/naopode
[16] pode:rr←rr,0
[17]  →(i=i←i+1)/t2
[18] mataz:x[i+1]←'!'
[19] naopode:rr←rr,1
[20]  →(i=i←i+1)/t2
```

```
[21] vaiz:rr←rr,1
[22]  x←rr/x
[23] ⍝ separa o sinal <-
[24]  →(2≠+/'<-'∈x)/faca
[25]  i←1 ⋄ rr←⍳0
[26] t1:→(i>¯1+⍴x)/vaix
[27]  →((x[i]='<')∧(x[i+1]='-'))/esim
[28]  rr←rr,1
[29]  →(i=i←i+1)/t1
[30] esim:rr←rr,0 1 1 0
[31]  →(i=i←i+2)/t1
[32] vaix:rr←rr,1
[33]  x←rr⍀x
[34] faca:x←'! 'edit x
[35]  r←(~' '=x)⊂x
-------------------------------------------------------------
[ 0]  opesq vivo028b n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL028b  '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA028b←ajusta80 FOLHALA028b
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA028b)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 7⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←172 80⍴' '
[16]  f←FOLHALA028b
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOb←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[171;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[172;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←traduzprac gera028b
[35]  esse[7+⍳23;]←23 80↑⊃xx[5]
[36]  esse[30+⍳25;]←25 80↑⊃xx[4]
[37]  esse[55+⍳23;]←23 80↑⊃xx[6]
[38]  esse[78+⍳23;]←23 80↑⊃xx[7]
[39]  resp←resp,,⊃xx[8]
[40]  xx←traduzprac gera028b
[41]  esse[101+⍳23;]←23 80↑⊃xx[5]
[42]  esse[124+⍳23;]←23 80↑⊃xx[6]
[43]  esse[147+⍳23;]←23 80↑⊃xx[7]
[44]  resp←resp,,⊃xx[8]
```

```
[45]  resu←resu,[1]1 7⍴resp
[46]  acuja←(f[;2]='#')/⍳1↑⍴f
[47]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4 5],' ';]
[48]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[49]  ⎕←(⍕xk←xk+1),'-'
[50]  →testa
[51] fim:upag←(1 0+⍴f)⍴' '
[52]  →(1=≡n)/elafa
[53]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[54]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[55]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'⍠-'edit(lixo1←5 0 10 0 6 0 6 0 8 0 6 0 6 0)⍕resu
[56]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[57]  →terminando
[58] elafa:aaa←(ylu[;⍳36],'⍠-'edit 9 0⍕0 1↓resu)
[59]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[60]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[61] terminando:
[62]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[63]  relat[1↑⍴relat;;]←upag
[64]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[65]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[66]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[67]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo028e n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL028e  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA028e←ajusta80 FOLHALA028e
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA028e)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 7⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←172 80⍴' '
[16]  f←FOLHALA028e
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOe←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[171;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[172;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←traduzprac gera028e
[35]  esse[7+⍳23;]←23 80↑⊃xx[5]
[36]  esse[30+⍳25;]←25 80↑⊃xx[4]
```

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[37]  esse[55+⍳23;]←23 80↑⊃xx[6]
[38]  esse[78+⍳23;]←23 80↑⊃xx[7]
[39]  resp←resp,,⊃xx[8]
[40]  xx←traduzprac gera028e
[41]  esse[101+⍳23;]←23 80↑⊃xx[5]
[42]  esse[124+⍳23;]←23 80↑⊃xx[6]
[43]  esse[147+⍳23;]←23 80↑⊃xx[7]
[44]  resp←resp,,⊃xx[8]
[45]  resu←resu,[1]1 7⍴resp
[46]  acuja←(f[;2]='#')/⍳1↑⍴f
[47]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4 5],' ';]
[48]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[49]  ⍞←(⍕xk←xk+1),'-'
[50]  →testa
[51] fim:upag←(1 0+⍴f)⍴' '
[52]  →(1=≡n)/elafa
[53]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[54]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[55]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←5 0 10 0 6 0 6 0 8 0 6 0 6 0)⍕resu
[56]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[57]  →terminando
[58] elafa:aaa←(ylu[;⍳36],'¯-'edit 9 0⍕0 1↓resu)
[59]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[60]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[61] terminando:
[62]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[63]  relat[1↑⍴relat;;]←upag
[64]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[65]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[66]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[67]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo028k n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL028k  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA028k←ajusta80 FOLHALA028k
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA028k)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 7⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←172 80⍴' '
[16]  f←FOLHALA028k
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOk←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
```

```
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[171;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[172;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←traduzprac gera028k
[35]  esse[7+⍳23;]←23 80↑⊃xx[5]
[36]  esse[30+⍳27;]←27 80↑⊃xx[4]
[37]  esse[57+⍳22;]←22 80↑⊃xx[6]
[38]  esse[79+⍳22;]←22 80↑⊃xx[7]
[39]  resp←resp,,⊃xx[8]
[40]  xx←traduzprac gera028k
[41]  esse[101+⍳23;]←23 80↑⊃xx[5]
[42]  esse[124+⍳23;]←23 80↑⊃xx[6]
[43]  esse[147+⍳23;]←23 80↑⊃xx[7]
[44]  resp←resp,,⊃xx[8]
[45]  resu←resu,[1]1 7⍴resp
[46]  acuja←(f[;2]='#')/⍳1↑⍴f
[47]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4 5],' ';]
[48]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[49]  ⍞←(⍕xk←xk+1),'-'
[50]  →testa
[51] fim:upag←(1 0+⍴f)⍴' '
[52]  →(1=≡n)/elafa
[53]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[54]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[55]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯'-'edit(lixo1←5 0 10 0 6 0 6 0 8 0 6 0 6 0)⍕resu
[56]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[57]  →terminando
[58] elafa:aaa←(ylu[;⍳36],'¯'-'edit 9 0⍕0 1↓resu)
[59]  lixonol←aaa ΔFM('c:\apl2\',((~⊖∧\⊖EVENTO=' ')/EVENTO),'.gpa')
[60]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[61] terminando:
[62]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[63]  relat[1↑⍴relat;;]←upag
[64]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[65]  lixonol←lixonol ΔFM'c:\apl2\',((~⊖∧\⊖EVENTO=' ')/EVENTO),'.tex'
[66]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[67]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[ 0]  opesq vivo028n n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL028n  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA028n←ajusta80 FOLHALA028n
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA028n)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 8⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←191 80⍴' '
[16]  f←FOLHALA028n
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOn←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
```

```
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[190;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[191;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←traduzprac gera028n
[35]  esse[7+⍳26;]←26 80↑⊃xx[3]
[36]  esse[33+⍳26;]←26 80↑⊃xx[4]
[37]  resp←resp,,⊃xx[5]
[38]  xx←traduzprac gera028n
[39]  esse[59+⍳26;]←26 80↑⊃xx[3]
[40]  esse[85+⍳26;]←26 80↑⊃xx[4]
[41]  resp←resp,,⊃xx[5]
[42]  xx←traduzprac gera028n
[43]  esse[111+⍳26;]←26 80↑⊃xx[3]
[44]  esse[137+⍳26;]←26 80↑⊃xx[4]
[45]  resp←resp,,⊃xx[5]
[46]  xx←traduzprac gera028n
[47]  esse[163+⍳26;]←26 80↑⊃xx[3]
[48] ⍝ esse[137+⍳26;]←26 80↑⊃xx[4]
[49]  resp←resp,,(⊃xx[5])[1]
[50]  resu←resu,[1]1 8⍴resp
[51]  acuja←(f[;2]='#')/⍳1↑⍴f
[52]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4 5],' ';]
[53]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[54]  ⍞←(⍕xk←xk+1),'-'
[55]  →testa
[56] fim:upag←(1 0+⍴f)⍴' '
[57]  →(1=≡n)/elafa
[58]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[59]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[60]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←5 0 10 0 4 0 6 0 4 0 6 0 4 0 6 0)⍕resu
[61]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[62]  →terminando
[63] elafa:aaa←(ylu[;⍳36],'¯-'edit 5 0⍕0 1↓resu)
[64]  lixonol←aaa ⍙FM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[65]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[66] terminando:
[67]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[68]  relat[1↑⍴relat;;]←upag
[69]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[70]  lixonol←lixonol ⍙FM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[71]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[72]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo029

```
[0]  AVISO
[1]  'Este ws esta limitado a 70 casos'
------------------------------------------------------------
[ 0]  cavaleiro029a n;xk;esse;f;xx;x;resp;acuja;lixo1;relat
[ 1]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 2]  FOLHALA029←110 ajusta FOLHALA029
```

```
[ 3]  relat←ΔFM'c:⍀apl2⍀VIVOBLO1'
[ 4]  xk←1
[ 5] testa:→(xk>n)/fim
[ 6]  esse←151 110⍴' '
[ 7]  f←FOLHALA029
[ 8]  esse[1;⍳⍴x]←x←'  -- Cavaleiros da Tavola Redonda'
[ 9]  esse[3;]←110↑4 2⍕1.06
[10]  esse[150;⍳8]←'@000000@'
[11] inica:
[12]  xx←geracaso 1
[13]  esse[7+⍳71;]←71 110↑⊃xx[1]
[14]  resp←⊃xx[2]
[15]  xx←geracaso 2
[16]  esse[78+⍳71;]←71 110↑⊃xx[1]
[17]  resp←resp,'/',⊃xx[2]
[18]  acuja←(f[;2]='#')/⍳1↑⍴f
[19]  f[acuja;⍳110]←esse[⍤,f[acuja;3 4 5],' ';]
[20]  ⎕←(⍕xk←xk+1),'-'
[21]  f←(((1↑⍴relat),1↓⍴f)↑relat),[1]f
[22]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'⍀end{document}'
[23]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'%',resp
[24]  lixo1←f ΔFM'c:⍀apl2⍀CA029a',('00'⍕xk-1),'.tex'
[25]  →testa
[26] fim:
------------------------------------------------------------
[  0]  rt←geracaso n;carac;i;ia;ic;ix;linha;ta;tc;tx;vv;q;r;res
[  1]  ta←⍤'TA',⍕n ⋄ tc←⍤'TC',⍕n ⋄ tx←⍤'TX',⍕n
[  2]  r←0 80⍴' ' ⋄ res←'' ⋄ q←1
[  3]  vv←7?7 ⋄ i←1
[  4] t1:→(i>7)/aca
[  5]  →(vv[i]=1)/eum
[  6]  →(vv[i]=2)/edois
[  7]  →(vv[i]=3)/etres
[  8]  →(vv[i]=4)/equatro
[  9]  →(vv[i]=5)/ecinco
[ 10]  →(vv[i]=6)/eseis
[ 11]  →(vv[i]=7)/esete
[ 12]  'deu xabu...'
[ 13]  →0
[ 14] eum:res←res,';' ⋄ r←r,[1]1 80⍴80↑(⍕q),'.',20⍴'-' ⋄ q←q+1
[ 15]  ic←?1↑⍴tc ⋄ ia←?1↑⍴ta
[ 16]  r←r,[1]1 80⍴80↑'se ',(trim,tc[ic;]),' entço'
[ 17]  r←r,[1]1 80⍴80↑'   ',trim,ta[ia;]
[ 18]  r←r,[1]1 80⍴80↑'fimse'
[ 19]  carac←?2
[ 20]  →(carac=2)/pum
[ 21]  r←r,[1]1 80⍴80↑(trim,tc[ic;]),'. Que açto ocorre ?'
[ 22]  res←res,utrim,ta[ia;]
[ 23]  →soma
[ 24] pum:
[ 25]  r←r,[1]1 80⍴80↑'nço ',(trim,tc[ic;]),'. Que açto ocorre ?'
[ 26]  res←res,utrim,'indeterminado'
[ 27]  →soma
[ 28] ⍝---------------------------------------
[ 29] edois:res←res,';' ⋄ r←r,[1]1 80⍴80↑(⍕q),'.',20⍴'-' ⋄ q←q+1
[ 30]  ic←?1↑⍴tc ⋄ ia←2?1↑⍴ta
[ 31]  r←r,[1]1 80⍴80↑'se ',(trim,tc[ic;]),' entço'
[ 32]  r←r,[1]1 80⍴80↑'   ',trim,ta[ia[1];]
[ 33]  r←r,[1]1 80⍴80↑'senço'
[ 34]  r←r,[1]1 80⍴80↑'   ',trim,ta[ia[2];]
[ 35]  r←r,[1]1 80⍴80↑'fimse'
[ 36]  carac←?2
[ 37]  →(carac=2)/pdois
```

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[ 38]  r←r,[1]1 80ρ80↑(trim,tc[ic;]),'. Que açto ocorre ?'
[ 39]  res←res,utrim,ta[ia[1];]
[ 40]  →soma
[ 41] pdois:
[ 42]  r←r,[1]1 80ρ80↑'nao ',(trim,tc[ic;]),'. Que açto ocorre ?'
[ 43]  res←res,utrim,ta[ia[2];]
[ 44]  →soma
[ 45] ⍝-----------------------------------
[ 46] etres:res←res,';' ⋄ r←r,[1]1 80ρ80↑(⍕q),'.',20ρ'-' ⋄ q←q+1
[ 47]  ic←2?1↑ρtc ⋄ ia←2?1↑ρta
[ 48]  r←r,[1]1 80ρ80↑'se ',(trim,tc[ic[1];]),' e ',(trim,tc[ic[2];]),' entto'
[ 49]  r←r,[1]1 80ρ80↑'   ',trim,ta[ia[1];]
[ 50]  r←r,[1]1 80ρ80↑'senᵀo'
[ 51]  r←r,[1]1 80ρ80↑'   ',trim,ta[ia[2];]
[ 52]  r←r,[1]1 80ρ80↑'fimse'
[ 53]  carac←?4
[ 54]  →(carac=1)/tresum
[ 55]  →(carac=2)/tresdois
[ 56]  →(carac=3)/trestres
[ 57]  →tresquatro
[ 58] tresum:
[ 59]  linha←(trim,tc[ic[1];]),' e ',(trim,tc[ic[2];]),'. ?'
[ 60]  r←r,[1]1 80ρ80↑linha
[ 61]  res←res,utrim,ta[ia[1];]
[ 62]  →soma
[ 63] tresdois:
[ 64]  linha←(trim,tc[ic[1];]),' e nᵀo ',(trim,tc[ic[2];]),'.  ?'
[ 65]  r←r,[1]1 80ρ80↑linha
[ 66]  res←res,utrim,ta[ia[2];]
[ 67]  →soma
[ 68] trestres:
[ 69]  linha←'nᵀo ',(trim,tc[ic[1];]),' e ',(trim,tc[ic[2];]),'.  ?'
[ 70]  r←r,[1]1 80ρ80↑linha
[ 71]  res←res,utrim,ta[ia[2];]
[ 72]  →soma
[ 73] tresquatro:
[ 74]  linha←'Nenhuma das condiçᗅes é verdadeira. E daí ?'
[ 75]  r←r,[1]1 80ρ80↑linha
[ 76]  res←res,utrim,ta[ia[2];]
[ 77]  →soma
[ 78] ⍝-----------------------------------
[ 79] equatro:res←res,';' ⋄ r←r,[1]1 80ρ80↑(⍕q),'.',20ρ'-' ⋄ q←q+1
[ 80]  ic←2?1↑ρtc ⋄ ia←2?1↑ρta
[ 81]  r←r,[1]1 80ρ80↑'se ',(trim,tc[ic[1];]),' ou ',(trim,tc[ic[2];]),' entto'
[ 82]  r←r,[1]1 80ρ80↑'   ',trim,ta[ia[1];]
[ 83]  r←r,[1]1 80ρ80↑'senᵀo'
[ 84]  r←r,[1]1 80ρ80↑'   ',trim,ta[ia[2];]
[ 85]  r←r,[1]1 80ρ80↑'fimse'
[ 86]  carac←?4
[ 87]  →(carac=1)/quatroum
[ 88]  →(carac=2)/quatrodois
[ 89]  →(carac=3)/quatrotres
[ 90]  →quatroquatro
[ 91] quatroum:
[ 92]  linha←(trim,tc[ic[1];]),' e ',(trim,tc[ic[2];]),'.  ?'
[ 93]  r←r,[1]1 80ρ80↑linha
[ 94]  res←res,utrim,ta[ia[1];]
[ 95]  →soma
[ 96] quatrodois:
[ 97]  linha←(trim,tc[ic[1];]),' e nᵀo ',(trim,tc[ic[2];]),'.  ?'
[ 98]  r←r,[1]1 80ρ80↑linha
[ 99]  res←res,utrim,ta[ia[1];]
[100]  →soma
```

```
[101] quatrotres:
[102]  linha←'Nto ',(trim,tc[ic[1];]),' e ',(trim,tc[ic[2];]),'. ?'
[103]  r←r,[1]1 80ρ80↑linha
[104]  res←res,utrim,ta[ia[1];]
[105]  →soma
[106] quatroquatro:
[107]  linha←'Nenhuma das condiçAes é verdadeira. Que ocorre ?'
[108]  r←r,[1]1 80ρ80↑linha
[109]  res←res,utrim,ta[ia[2];]
[110]  →soma
[111] A--------------------------------------
[112] ecinco:
[113]  res←res,';' ⋄ r←r,[1]1 80ρ80↑(⍕q),'.',20ρ'-' ⋄ q←q+1
[114]  ic←2?1↑ρtc ⋄ ia←3?1↑ρta ⋄ ix←2?1↑ρtx
[115]  r←r,[1]1 80ρ80↑tx[ix[1];]
[116]  r←r,[1]1 80ρ80↑'se ',(trim,tc[ic[1];]),' entto'
[117]  r←r,[1]1 80ρ80↑'   se ',(trim,tc[ic[2];]),' entto'
[118]  r←r,[1]1 80ρ80↑'      ',trim,ta[ia[1];]
[119]  r←r,[1]1 80ρ80↑'   sento'
[120]  r←r,[1]1 80ρ80↑'      ',trim,ta[ia[2];]
[121]  r←r,[1]1 80ρ80↑'   fimse'
[122]  r←r,[1]1 80ρ80↑'   ',tx[ix[2];]
[123]  r←r,[1]1 80ρ80↑'sento'
[124]  r←r,[1]1 80ρ80↑'   ',trim,ta[ia[3];]
[125]  r←r,[1]1 80ρ80↑'fimse'
[126]  carac←?4
[127]  →(carac=1)/cincoum
[128]  →(carac=2)/cincodois
[129]  →(carac=3)/cincotres
[130]  →cincoquatro
[131] cincoum:
[132]  linha←(trim,tc[ic[1];]),' e ',(trim,tc[ic[2];]),'.  ?'
[133]  r←r,[1]1 80ρ80↑linha
[134]  res←res,(utrim,ta[ia[1];]),'+',utrim,tx[ix[2];]
[135]  →soma
[136] cincodois:
[137]  linha←(trim,tc[ic[1];]),' e nto ',(trim,tc[ic[2];]),'. E ?'
[138]  r←r,[1]1 80ρ80↑linha
[139]  res←res,(utrim,ta[ia[2];]),'+',utrim,tx[ix[2];]
[140]  →soma
[141] cincotres:
[142]  linha←'Nto ',(trim,tc[ic[1];]),' e ',(trim,tc[ic[2];]),'. E ?'
[143]  r←r,[1]1 80ρ80↑linha
[144]  res←res,(utrim,ta[ia[3];]),'+',utrim,tx[ix[1];]
[145]  →soma
[146] cincoquatro:
[147]  linha←'Nenhuma das condiçAes é verdadeira. E ?'
[148]  r←r,[1]1 80ρ80↑linha
[149]  res←res,(utrim,ta[ia[3];]),'+',utrim,tx[ix[1];]
[150]  →soma
[151] eseis:
[152]  res←res,';' ⋄ r←r,[1]1 80ρ80↑(⍕q),'.',20ρ'-' ⋄ q←q+1
[153]  ic←2?1↑ρtc ⋄ ia←3?1↑ρta ⋄ ix←2?1↑ρtx
[154]  r←r,[1]1 80ρ80↑tx[ix[1];]
[155]  r←r,[1]1 80ρ80↑'se ',(trim,tc[ic[1];]),' entto'
[156]  r←r,[1]1 80ρ80↑'   ',trim,ta[ia[1];]
[157]  r←r,[1]1 80ρ80↑'sento'
[158]  r←r,[1]1 80ρ80↑'   se ',(trim,tc[ic[2];]),' entto'
[159]  r←r,[1]1 80ρ80↑'      ',trim,ta[ia[2];]
[160]  r←r,[1]1 80ρ80↑'      ',tx[ix[2];]
[161]  r←r,[1]1 80ρ80↑'   sento'
[162]  r←r,[1]1 80ρ80↑'      ',trim,ta[ia[3];]
[163]  r←r,[1]1 80ρ80↑'   fimse'
```

```
[164]  r←r,[1]1 80ρ80↑'fimse'
[165]  carac←?4
[166]  →(carac=1)/seisum
[167]  →(carac=2)/seisdois
[168]  →(carac=3)/seistres
[169]  →seisquatro
[170] seisum:
[171]  linha←(trim,tc[ic[1];]),' e ',(trim,tc[ic[2];]),'.  ?'
[172]  r←r,[1]1 80ρ80↑linha
[173]  res←res,(utrim,ta[ia[1];]),'+',utrim,tx[ix[1];]
[174]  →soma
[175] seisdois:
[176]  linha←(trim,tc[ic[1];]),' e nↂo ',(trim,tc[ic[2];]),'.  ?'
[177]  r←r,[1]1 80ρ80↑linha
[178]  res←res,(utrim,ta[ia[1];]),'+',utrim,tx[ix[1];]
[179]  →soma
[180] seistres:
[181]  linha←'Nↂo ',(trim,tc[ic[1];]),' e ',(trim,tc[ic[2];]),'.  ?'
[182]  r←r,[1]1 80ρ80↑linha
[183]  res←res,(utrim,ta[ia[2];]),'+',utrim,tx[ix[1];]
[184]  →soma
[185] seisquatro:
[186]  linha←'Nenhuma das condiçAes é verdadeira. E daí ?'
[187]  r←r,[1]1 80ρ80↑linha
[188]  res←res,(utrim,ta[ia[3];]),'+',utrim,tx[ix[2];]
[189]  →soma
[190] esete:
[191]  res←res,';' ⋄ r←r,[1]1 80ρ80↑(⍕q),'.',20ρ'-' ⋄ q←q+1
[192]  ic←3?1↑ρtc ⋄ ia←4?1↑ρta ⋄ ix←2?1↑ρtx
[193]  r←r,[1]1 80ρ80↑tx[ix[1];]
[194]  r←r,[1]1 80ρ80↑'se ',(trim,tc[ic[1];]),' entↂo'
[195]  r←r,[1]1 80ρ80↑'   se ',(trim,tc[ic[2];]),' entↂo'
[196]  r←r,[1]1 80ρ80↑'      ',trim,ta[ia[1];]
[197]  r←r,[1]1 80ρ80↑'   senↂo'
[198]  r←r,[1]1 80ρ80↑'      ',trim,ta[ia[2];]
[199]  r←r,[1]1 80ρ80↑'   fimse'
[200]  r←r,[1]1 80ρ80↑'   ',tx[ix[2];]
[201]  r←r,[1]1 80ρ80↑'senↂo'
[202]  r←r,[1]1 80ρ80↑'   se ',(trim,tc[ic[3];]),' entↂo'
[203]  r←r,[1]1 80ρ80↑'      ',trim,ta[ia[3];]
[204]  r←r,[1]1 80ρ80↑'   senↂo'
[205]  r←r,[1]1 80ρ80↑'      ',trim,ta[ia[4];]
[206]  r←r,[1]1 80ρ80↑'   fimse'
[207]  r←r,[1]1 80ρ80↑'fimse'
[208]  carac←?8
[209]  →(carac=1)/seteum
[210]  →(carac=2)/setedois
[211]  →(carac=3)/setetres
[212]  →(carac=4)/setequatro
[213]  →(carac=5)/setecinco
[214]  →(carac=6)/seteseis
[215]  →(carac=7)/setesete
[216]  →seteoito
[217] seteum:
[218]  linha←(trim,tc[ic[1];]),' e ',(trim,tc[ic[2];])
[219]  r←r,[1]1 80ρ80↑linha
[220]  linha←' e ',(trim tc[ic[3];]),'. E daí ?'
[221]  r←r,[1]1 80ρ80↑linha
[222]  res←res,(utrim,ta[ia[1];]),'+',utrim,tx[ix[2];]
[223]  →soma
[224] setedois:
[225]  linha←(trim,tc[ic[1];]),' e ',(trim,tc[ic[2];])
[226]  r←r,[1]1 80ρ80↑linha
```

```
[227]  linha←' e nto ',(trim tc[ic[3];]),'. E daí ?'
[228]  r←r,[1]1 80ρ80↑linha
[229]  res←res,(utrim,ta[ia[1];]),'+',utrim,tx[ix[2];]
[230]  →soma
[231] setetres:
[232]  linha←(trim,tc[ic[1];]),' e nto ',(trim,tc[ic[2];])
[233]  r←r,[1]1 80ρ80↑linha
[234]  linha←' e ',(trim tc[ic[3];]),'. E daí ?'
[235]  r←r,[1]1 80ρ80↑linha
[236]  res←res,(utrim,ta[ia[2];]),'+',utrim,tx[ix[2];]
[237]  →soma
[238] setequatro:
[239]  linha←(trim,tc[ic[1];]),' e nto ',(trim,tc[ic[2];])
[240]  r←r,[1]1 80ρ80↑linha
[241]  linha←' e nto ',(trim tc[ic[3];]),'. E daí ?'
[242]  r←r,[1]1 80ρ80↑linha
[243]  res←res,(utrim,ta[ia[2];]),'+',utrim,tx[ix[2];]
[244]  →soma
[245] setecinco:
[246]  linha←'Nto ',(trim,tc[ic[1];]),' e ',(trim,tc[ic[2];])
[247]  r←r,[1]1 80ρ80↑linha
[248]  linha←' e ',(trim tc[ic[3];]),'. E daí ?'
[249]  r←r,[1]1 80ρ80↑linha
[250]  res←res,(utrim,ta[ia[3];]),'+',utrim,tx[ix[1];]
[251]  →soma
[252] seteseis:
[253]  linha←'Nto ',(trim,tc[ic[1];]),' e ',(trim,tc[ic[2];])
[254]  r←r,[1]1 80ρ80↑linha
[255]  linha←' e nto ',(trim tc[ic[3];]),'. E daí ?'
[256]  r←r,[1]1 80ρ80↑linha
[257]  res←res,(utrim,ta[ia[4];]),'+',utrim,tx[ix[1];]
[258]  →soma
[259] setesete:
[260]  linha←'Nto ',(trim,tc[ic[1];]),' e nto ',(trim,tc[ic[2];])
[261]  r←r,[1]1 80ρ80↑linha
[262]  linha←' e ',(trim tc[ic[3];]),'. E daí ?'
[263]  r←r,[1]1 80ρ80↑linha
[264]  res←res,(utrim,ta[ia[3];]),'+',utrim,tx[ix[1];]
[265]  →soma
[266] seteoito:
[267]  linha←'Nto ',(trim,tc[ic[1];]),' e nto ',(trim,tc[ic[2];])
[268]  r←r,[1]1 80ρ80↑linha
[269]  linha←' e nto ',(trim tc[ic[3];]),'. E daí ?'
[270]  r←r,[1]1 80ρ80↑linha
[271]  res←res,(utrim,ta[ia[4];]),'+',utrim,tx[ix[1];]
[272]  →soma
[273] soma:i←i+1
[274]  →t1
[275] aca:rt←2ρ0
[276]  rt[1]←⊂r
[277]  rt[2]←⊂1↓res
-------------------------------------------------------------
[0]  r←utrim x;z
[1]  x←trim x
[2]  z←x≠' '
[3]  r←4↑(⊖∧⍀⊖z)/x
-------------------------------------------------------------
[ 0]  opesq vivo029a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo029 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
```

```
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PL029   '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[67]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[68]  relat[1↑⍴relat;;]←upag
[69]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[70] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[71]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[72]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[73]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo030

```
[0]  AVISO
[1]  'Limitado a 80 exercicios'
------------------------------------------------------------
[  0]  r←g1 erro
[  1]  r←((1↑⍴F1),78)↑F1
[  2]  →(erro=0)/eze
[  3]  →(erro=1)/eum
[  4]  →(erro=2)/edo
[  5]  →(erro=3)/etr
[  6]  →(erro=4)/equ
[  7]  →(erro=5)/eci
[  8]  →(erro=6)/ess
[  9]  →(erro=7)/est
[ 10]  →(erro=8)/eoi
[ 11]  →(erro=9)/eno
[ 12]  'erro:'
[ 13]  →0
[ 14] eze:
[ 15]  r←r,[1]1 78⍴78↑'main() {'
[ 16]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 17]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[ 18]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f",&F,&J,&K,&N,&M);'
[ 19]  r←r,[1]1 78⍴78↑'   printf("%i\n",FAA23(F,J,K));'
[ 20]  r←r,[1]1 78⍴78↑'}'
[ 21]  →0
[ 22] eum:
[ 23]  r←r,[1]1 78⍴78↑'main() {'
[ 24]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 25]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i",&F,&J,&K);'
[ 26]  r←r,[1]1 78⍴78↑'   printf("%i\n",FAA23(F,J));'
[ 27]  r←r,[1]1 78⍴78↑'}'
[ 28]  →0
[ 29] edo:
[ 30]  r←r,[1]1 78⍴78↑'main() {'
[ 31]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 32]  r←r,[1]1 78⍴78↑'   float L, M, N;'
[ 33]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f %f",&F,&J,&K,&L,&M,&N);'
[ 34]  r←r,[1]1 78⍴78↑'   printf("%i\n",FAA23(F,J,M));'
[ 35]  r←r,[1]1 78⍴78↑'}'
[ 36]  →0
[ 37] etr:
[ 38]  r←r,[1]1 78⍴78↑'main() {'
[ 39]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 40]  r←r,[1]1 78⍴78↑'   float L, M, N;'
[ 41]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f %f",&F,&J,&K,&L,&M,&N);'
[ 42]  r←r,[1]1 78⍴78↑'   FAA23(F,J,K);'
[ 43]  r←r,[1]1 78⍴78↑'   printf("%f %f %f\n",L,M,N);'
[ 44]  r←r,[1]1 78⍴78↑'}'
[ 45]  →0
[ 46] equ:
[ 47]  r←r,[1]1 78⍴78↑'main() {'
```

```
[ 48]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 49]  r←r,[1]1 78⍴78↑'   float L, M, N;'
[ 50]  r←r,[1]1 78⍴78↑'   float FAA23;'
[ 51]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f %f",&F,&J,&K,&L,&M,&N);'
[ 52]  r←r,[1]1 78⍴78↑'   printf("%i\n",FAA23(F,J,K));'
[ 53]  r←r,[1]1 78⍴78↑'}'
[ 54]  →0
[ 55] eci:
[ 56]  r←r,[1]1 78⍴78↑'main() {'
[ 57]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 58]  r←r,[1]1 78⍴78↑'   float L, M, N;'
[ 59]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f %f",&F,&J,&K,&L,&M,&N);'
[ 60]  r←r,[1]1 78⍴78↑'   printf("%i\n",FAA23(F,J,K));'
[ 61]  r←r,[1]1 78⍴78↑'   printf("%i\n",A);'
[ 62]  r←r,[1]1 78⍴78↑'}'
[ 63]  →0
[ 64] ess:
[ 65]  r←r,[1]1 78⍴78↑'main() {'
[ 66]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 67]  r←r,[1]1 78⍴78↑'   float L, M, N;'
[ 68]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f %f",&F,&J,&K,&L,&M,&N);'
[ 69]  r←r,[1]1 78⍴78↑'   printf("%i\n",FA23(F,J,K));'
[ 70]  r←r,[1]1 78⍴78↑'}'
[ 71]  →0
[ 72] est:
[ 73]  r[4;6+⍳20]←20↑'X := A + B; }'
[ 74]  r[6;6+⍳20]←20↑'Y := A - B; }'
[ 75]  r←r,[1]1 78⍴78↑'main() {'
[ 76]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 77]  r←r,[1]1 78⍴78↑'   float L, M, N;'
[ 78]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f %f",&F,&J,&K,&L,&M,&N);'
[ 79]  r←r,[1]1 78⍴78↑'   printf("%i\n",FAA23(F,J,K));'
[ 80]  r←r,[1]1 78⍴78↑'}'
[ 81]  →0
[ 82] eoi:
[ 83]  r[4;6+⍳20]←20↑'return (C+L); }'
[ 84]  r[6;6+⍳20]←20↑'return (A+M); }'
[ 85]  r←r,[1]1 78⍴78↑'main() {'
[ 86]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 87]  r←r,[1]1 78⍴78↑'   float L, M, N;'
[ 88]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f %f",&F,&J,&K,&L,&M,&N);'
[ 89]  r←r,[1]1 78⍴78↑'   printf("%i\n",FAA23(F,J,K));'
[ 90]  r←r,[1]1 78⍴78↑'}'
[ 91]  →0
[ 92] eno:
[ 93]  r←r,[1]1 78⍴78↑'main() {'
[ 94]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 95]  r←r,[1]1 78⍴78↑'   float L, M, N;'
[ 96]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f %f",&F,&J,&K,&L,&M,&N);'
[ 97]  r←r,[1]1 78⍴78↑'   FAA23:=13;'
[ 98]  r←r,[1]1 78⍴78↑'   printf("%i\n",FAA23(F,J,K));'
[ 99]  r←r,[1]1 78⍴78↑'}'
[100]  →0
------------------------------------------------------------
[  0]  r←g2 erro
[  1]  r←((1↑⍴F2),78)↑F2
[  2]  →(erro=0)/eze
[  3]  →(erro=1)/eum
[  4]  →(erro=2)/edo
[  5]  →(erro=3)/etr
[  6]  →(erro=4)/equ
[  7]  →(erro=5)/eci
[  8]  →(erro=6)/ess
```

```
[  9]  →(erro=7)/est
[ 10]  →(erro=8)/eoi
[ 11]  →(erro=9)/eno
[ 12]  'erro:'
[ 13]  →0
[ 14] eze:
[ 15]  r←r,[1]1 78⍴78↑'main() {'
[ 16]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 17]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[ 18]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f",&F,&J,&K,&N,&M);'
[ 19]  r←r,[1]1 78⍴78↑'   printf("%i⍀n",FBC45(F,W,M));'
[ 20]  r←r,[1]1 78⍴78↑'}'
[ 21]  →0
[ 22] eum:
[ 23]  r←r,[1]1 78⍴78↑'main() {'
[ 24]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 25]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[ 26]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f",&F,&J,&K,&N,&M);'
[ 27]  r←r,[1]1 78⍴78↑'   printf("%i⍀n",FBC45(F,N));'
[ 28]  r←r,[1]1 78⍴78↑'}'
[ 29]  →0
[ 30] edo:
[ 31]  r←r,[1]1 78⍴78↑'main() {'
[ 32]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 33]  r←r,[1]1 78⍴78↑'   float L, M, N;'
[ 34]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f %f",&F,&J,&K,&L,&M,&N);'
[ 35]  r←r,[1]1 78⍴78↑'   printf("%i⍀n",FBC45(F,J,M));'
[ 36]  r←r,[1]1 78⍴78↑'}'
[ 37]  →0
[ 38] etr:
[ 39]  r←r,[1]1 78⍴78↑'main() {'
[ 40]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 41]  r←r,[1]1 78⍴78↑'   float L, M, N;'
[ 42]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f %f",&F,&J,&K,&L,&M,&N);'
[ 43]  r←r,[1]1 78⍴78↑'   FBC45(F,M,N);'
[ 44]  r←r,[1]1 78⍴78↑'   printf("%f %f %f⍀n",L,M,N);'
[ 45]  r←r,[1]1 78⍴78↑'}'
[ 46]  →0
[ 47] equ:
[ 48]  r←r,[1]1 78⍴78↑'main() {'
[ 49]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 50]  r←r,[1]1 78⍴78↑'   float L, M, N;'
[ 51]  r←r,[1]1 78⍴78↑'   float FBC45;'
[ 52]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f %f",&F,&J,&K,&L,&M,&N);'
[ 53]  r←r,[1]1 78⍴78↑'   printf("%i⍀n",FBC45(F,L,M));'
[ 54]  r←r,[1]1 78⍴78↑'}'
[ 55]  →0
[ 56] eci:
[ 57]  r←r,[1]1 78⍴78↑'main() {'
[ 58]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 59]  r←r,[1]1 78⍴78↑'   float L, M, N;'
[ 60]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f %f",&F,&J,&K,&L,&M,&N);'
[ 61]  r←r,[1]1 78⍴78↑'   printf("%i⍀n",FBC45(F,M,L));'
[ 62]  r←r,[1]1 78⍴78↑'   printf("%i⍀n",W);'
[ 63]  r←r,[1]1 78⍴78↑'}'
[ 64]  →0
[ 65] ess:
[ 66]  r←r,[1]1 78⍴78↑'main() {'
[ 67]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 68]  r←r,[1]1 78⍴78↑'   float L, M, N;'
[ 69]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f %f",&F,&J,&K,&L,&M,&N);'
[ 70]  r←r,[1]1 78⍴78↑'   printf("%i⍀n",FCB45(F,M,N));'
[ 71]  r←r,[1]1 78⍴78↑'}'
```

```
[ 72]  →0
[ 73] est:
[ 74]  r[4;3+⍳20]←20↑'X := A + 0.5; }'
[ 75]  r←r,[1]1 78⍴78↑'main() {'
[ 76]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 77]  r←r,[1]1 78⍴78↑'   float L, M, N;'
[ 78]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f %f",&F,&J,&K,&L,&M,&N);'
[ 79]  r←r,[1]1 78⍴78↑'   printf("%i⍀n",FBC45(F,M,N));'
[ 80]  r←r,[1]1 78⍴78↑'}'
[ 81]  →0
[ 82] eoi:
[ 83]  r[4;3+⍳50]←50↑'return (C+N); '  ⍝ antigamente tinha ; } - eu tirei
[ 84]  r←r,[1]1 78⍴78↑'main() {'
[ 85]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 86]  r←r,[1]1 78⍴78↑'   float L, M, N;'
[ 87]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f %f",&F,&J,&K,&L,&M,&N);'
[ 88]  r←r,[1]1 78⍴78↑'   printf("%i⍀n",FBC45(F,M,N));'
[ 89]  r←r,[1]1 78⍴78↑'}'
[ 90]  →0
[ 91] eno:
[ 92]  r←r,[1]1 78⍴78↑'main() {'
[ 93]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 94]  r←r,[1]1 78⍴78↑'   float L, M, N;'
[ 95]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f %f",&F,&J,&K,&L,&M,&N);'
[ 96]  r←r,[1]1 78⍴78↑'   FBC45:=13;'
[ 97]  r←r,[1]1 78⍴78↑'   printf("%i⍀n",FBC45(F,L,N));'
[ 98]  r←r,[1]1 78⍴78↑'}'
[ 99]  →0
------------------------------------------------------------
[  0]  r←g3 erro
[  1]  r←((1↑⍴F3),78)↑F3
[  2]  →(erro=0)/eze
[  3]  →(erro=1)/eum
[  4]  →(erro=2)/edo
[  5]  →(erro=3)/etr
[  6]  →(erro=4)/equ
[  7]  →(erro=5)/eci
[  8]  →(erro=6)/ess
[  9]  →(erro=7)/est
[ 10]  →(erro=8)/eoi
[ 11]  →(erro=9)/eno
[ 12]  'erro:'
[ 13]  →0
[ 14] eze:
[ 15]  r←r,[1]1 78⍴78↑'main() {'
[ 16]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 17]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[ 18]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f",&F,&J,&K,&N,&M);'
[ 19]  r←r,[1]1 78⍴78↑'   printf("%f⍀n",FVX66(W,F,K));'
[ 20]  r←r,[1]1 78⍴78↑'}'
[ 21]  →0
[ 22] eum:
[ 23]  r←r,[1]1 78⍴78↑'main() {'
[ 24]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 25]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[ 26]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f",&F,&J,&K,&N,&M);'
[ 27]  r←r,[1]1 78⍴78↑'   printf("%f⍀n",FVX66(W,K));'
[ 28]  r←r,[1]1 78⍴78↑'}'
[ 29]  →0
[ 30] edo:
[ 31]  r←r,[1]1 78⍴78↑'main() {'
[ 32]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 33]  r←r,[1]1 78⍴78↑'   float W, N, M;'
```

```
[ 34]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f",&F,&J,&K,&N,&M);'
[ 35]  r←r,[1]1 78⍴78↑'   printf("%f⍀n",FVX66(J,F,K));'
[ 36]  r←r,[1]1 78⍴78↑'}'
[ 37]  →0
[ 38] etr:
[ 39]  r←r,[1]1 78⍴78↑'main() {'
[ 40]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 41]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[ 42]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f",&F,&J,&K,&N,&M);'
[ 43]  r←r,[1]1 78⍴78↑'   FVX66(W,F,K);'
[ 44]  r←r,[1]1 78⍴78↑'   printf("⍀n");'
[ 45]  r←r,[1]1 78⍴78↑'}'
[ 46]  →0
[ 47] equ:
[ 48]  r←r,[1]1 78⍴78↑'main() {'
[ 49]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 50]  r←r,[1]1 78⍴78↑'   float W, N, M, FVX66;'
[ 51]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f",&F,&J,&K,&N,&M);'
[ 52]  r←r,[1]1 78⍴78↑'   printf("%f⍀n",FVX66(W,F,K));'
[ 53]  r←r,[1]1 78⍴78↑'}'
[ 54]  →0
[ 55] eci:
[ 56]  r←r,[1]1 78⍴78↑'main() {'
[ 57]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 58]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[ 59]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f",&F,&J,&K,&N,&M);'
[ 60]  r←r,[1]1 78⍴78↑'   printf("%f %f⍀n",T,FVX66(W,F,K));'
[ 61]  r←r,[1]1 78⍴78↑'}'
[ 62]  →0
[ 63] ess:
[ 64]  r←r,[1]1 78⍴78↑'main() {'
[ 65]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 66]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[ 67]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f",&F,&J,&K,&N,&M);'
[ 68]  r←r,[1]1 78⍴78↑'   printf("%f⍀n",FXV66(W,F,K));'
[ 69]  r←r,[1]1 78⍴78↑'}'
[ 70]  →0
[ 71] est:
[ 72]  r[5;6+⍳20]←20↑'T := A + 6; }'
[ 73]  r[7;6+⍳20]←20↑'Q := B - 7; }'
[ 74]  r←r,[1]1 78⍴78↑'main() {'
[ 75]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 76]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[ 77]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f",&F,&J,&K,&N,&M);'
[ 78]  r←r,[1]1 78⍴78↑'   printf("%f⍀n",FVX66(W,F,K));'
[ 79]  r←r,[1]1 78⍴78↑'}'
[ 80]  →0
[ 81] eoi:
[ 82]  r←1 1 1 0 1 1 1 1 1⍀[1]r
[ 83]  r[4;3+⍳20]←20↑'M := D + 1;'
[ 84]  r←r,[1]1 78⍴78↑'main() {'
[ 85]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 86]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[ 87]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f",&F,&J,&K,&N,&M);'
[ 88]  r←r,[1]1 78⍴78↑'   printf("%f⍀n",FVX66(W,F,K));'
[ 89]  r←r,[1]1 78⍴78↑'}'
[ 90]  →0
[ 91] eno:
[ 92]  r←r,[1]1 78⍴78↑'main() {'
[ 93]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 94]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[ 95]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f",&F,&J,&K,&N,&M);'
[ 96]  r←r,[1]1 78⍴78↑'   FVX66:=90;'
```

```
[ 97]  r←r,[1]1 78⍴78↑'   printf("%f\n",FVX66(W,F,K));'
[ 98]  r←r,[1]1 78⍴78↑'}'
[ 99]  →0
------------------------------------------------------------
[  0]  r←g4 erro
[  1]  r←((1↑⍴F4),78)↑F4
[  2]  →(erro=0)/eze
[  3]  →(erro=1)/eum
[  4]  →(erro=2)/edo
[  5]  →(erro=3)/etr
[  6]  →(erro=4)/equ
[  7]  →(erro=5)/eci
[  8]  →(erro=6)/ess
[  9]  →(erro=7)/est
[ 10]  →(erro=8)/eoi
[ 11]  →(erro=9)/eno
[ 12]  'erro:'
[ 13]  →0
[ 14] eze:
[ 15]  r←r,[1]1 78⍴78↑'main() {'
[ 16]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 17]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[ 18]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f",&F,&J,&K,&N,&M);'
[ 19]  r←r,[1]1 78⍴78↑'   FHJ12(K,N,J);'
[ 20]  r←r,[1]1 78⍴78↑'}'
[ 21]  →0
[ 22] eum:
[ 23]  r←r,[1]1 78⍴78↑'main() {'
[ 24]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 25]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[ 26]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f",&F,&J,&K,&N,&M);'
[ 27]  r←r,[1]1 78⍴78↑'   FHJ12(K,J);'
[ 28]  r←r,[1]1 78⍴78↑'}'
[ 29]  →0
[ 30] edo:
[ 31]  r←r,[1]1 78⍴78↑'main() {'
[ 32]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 33]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[ 34]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f",&F,&J,&K,&N,&M);'
[ 35]  r←r,[1]1 78⍴78↑'   FHJ12(W,N,J);'
[ 36]  r←r,[1]1 78⍴78↑'}'
[ 37]  →0
[ 38] etr:
[ 39]  r[1;⍳4]←'int '
[ 40]  r[5;]←78↑'   return(A);'
[ 41]  r←r,[1]1 78⍴78↑'}'
[ 42]  r←r,[1]1 78⍴78↑'main() {'
[ 43]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 44]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[ 45]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f",&F,&J,&K,&N,&M);'
[ 46]  r←r,[1]1 78⍴78↑'   FHJ12(K,N,J)'
[ 47]  r←r,[1]1 78⍴78↑'}'
[ 48]  →0
[ 49] equ:
[ 50]  r←r,[1]1 78⍴78↑'main() {'
[ 51]  r←r,[1]1 78⍴78↑'   int   F, J, K, FHJ12;'
[ 52]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[ 53]  r←r,[1]1 78⍴78↑'   float FH, FJ, FHJ12;'
[ 54]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f",&F,&J,&K,&N,&M);'
[ 55]  r←r,[1]1 78⍴78↑'   FHJ12(K,N,J);'
[ 56]  r←r,[1]1 78⍴78↑'}'
[ 57]  →0
[ 58] eci:
```

```
[ 59]  r←r,[1]1 78⍴78↑'main() {'
[ 60]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 61]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[ 62]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f",&F,&J,&K,&N,&M);'
[ 63]  r←r,[1]1 78⍴78↑'   FHJ12(K,N,J);'
[ 64]  r←r,[1]1 78⍴78↑'   printf("%i%",X+Y);'
[ 65]  r←r,[1]1 78⍴78↑'}'
[ 66]  →0
[ 67] ess:
[ 68]  r←r,[1]1 78⍴78↑'main() {'
[ 69]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 70]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[ 71]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f",&F,&J,&K,&N,&M);'
[ 72]  r←r,[1]1 78⍴78↑'   FHJ21(K,N,J);'
[ 73]  r←r,[1]1 78⍴78↑'}'
[ 74]  →0
[ 75] est:
[ 76]  r←r,[1]1 78⍴78↑'main() {'
[ 77]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 78]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[ 79]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f",&F,&J,&K,&N,&M);'
[ 80]  r←r,[1]1 78⍴78↑'   F := FHJ12(K,N,J);'
[ 81]  r←r,[1]1 78⍴78↑'}'
[ 82]  →0
[ 83] eoi:
[ 84]  r←1 1 1 0 1 1⍀[1]r
[ 85]  r[4;]←78↑'   Y := K + 1;'
[ 86]  r←r,[1]1 78⍴78↑'main() {'
[ 87]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 88]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[ 89]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f",&F,&J,&K,&N,&M);'
[ 90]  r←r,[1]1 78⍴78↑'   FHJ12(K,N,J);'
[ 91]  r←r,[1]1 78⍴78↑'}'
[ 92]  →0
[ 93] eno:
[ 94]  r←r,[1]1 78⍴78↑'main() {'
[ 95]  r←r,[1]1 78⍴78↑'   int   F, J, K, FHJ12;'
[ 96]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[ 97]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f",&F,&J,&K,&N,&M);'
[ 98]  r←r,[1]1 78⍴78↑'   FHJ12(K,N,J);'
[ 99]  r←r,[1]1 78⍴78↑'}'
[100]  →0
-------------------------------------------------------------
[ 0]  r←g5 erro
[ 1]  r←((1↑⍴F5),78)↑F5
[ 2]  →(erro=0)/eze
[ 3]  →(erro=1)/eum
[ 4]  →(erro=2)/edo
[ 5]  →(erro=3)/etr
[ 6]  →(erro=4)/equ
[ 7]  →(erro=5)/eci
[ 8]  →(erro=6)/ess
[ 9]  →(erro=7)/est
[10]  →(erro=8)/eoi
[11]  →(erro=9)/eno
[12]  'erro:'
[13]  →0
[14] eze:
[15]  r←r,[1]1 78⍴78↑'main() {'
[16]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[17]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[18]  r←r,[1]1 78⍴78↑'   printf("%i⍀n",FKI73());'
[19]  r←r,[1]1 78⍴78↑'}'
```

```
[20]  →0
[21] eum:
[22]  r←r,[1]1 78⍴78↑'main() {'
[23]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[24]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[25]  r←r,[1]1 78⍴78↑'   printf("%i\n",FKI73(F));'
[26]  r←r,[1]1 78⍴78↑'}'
[27]  →0
[28] edo:
[29]  r←1 1⍴'*'
[30]  →0
[31] etr:
[32]  r←r,[1]1 78⍴78↑'main() {'
[33]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[34]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[35]  r←r,[1]1 78⍴78↑'   FKI73();'
[36]  r←r,[1]1 78⍴78↑'}'
[37]  →0
[38] equ:
[39]  r←r,[1]1 78⍴78↑'main() {'
[40]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[41]  r←r,[1]1 78⍴78↑'   float W, FKI73, N, M;'
[42]  r←r,[1]1 78⍴78↑'   printf("%i\n",FKI73());'
[43]  r←r,[1]1 78⍴78↑'}'
[44]  →0
[45] eci:
[46]  r←r,[1]1 78⍴78↑'main() {'
[47]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[48]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[49]  r←r,[1]1 78⍴78↑'   printf("%i\n",A);'
[50]  r←r,[1]1 78⍴78↑'   printf("%i\n",FKI73());'
[51]  r←r,[1]1 78⍴78↑'}'
[52]  →0
[53] ess:
[54]  r←r,[1]1 78⍴78↑'main() {'
[55]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[56]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[57]  r←r,[1]1 78⍴78↑'   printf("%i\n",FIK73());'
[58]  r←r,[1]1 78⍴78↑'}'
[59]  →0
[60] est:
[61]  r[1;⍳4]←'void'
[62]  r[4;3+⍳20]←20↑'B := A;'
[63]  r←r,[1]1 78⍴78↑'main() {'
[64]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[65]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[66]  r←r,[1]1 78⍴78↑'   printf("%i\n",FKI73());'
[67]  r←r,[1]1 78⍴78↑'}'
[68]  →0
[69] eoi:
[70]  r[4;3+⍳20]←20↑'return(J);'
[71]  r←r,[1]1 78⍴78↑'main() {'
[72]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[73]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[74]  r←r,[1]1 78⍴78↑'   printf("%i\n",FKI73());'
[75]  r←r,[1]1 78⍴78↑'}'
[76]  →0
[77] eno:
[78]  r←r,[1]1 78⍴78↑'main() {'
[79]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[80]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[81]  r←r,[1]1 78⍴78↑'   FKI73:=9;'
[82]  r←r,[1]1 78⍴78↑'   printf("%i\n",FKI73());'
```

```
[83]  r←r,[1]1 78⍴78↑'}'
[84]  →0
------------------------------------------------------------
[  0]  r←g6 erro
[  1]  r←((1↑⍴F6),78)↑F6
[  2]  →(erro=0)/eze
[  3]  →(erro=1)/eum
[  4]  →(erro=2)/edo
[  5]  →(erro=3)/etr
[  6]  →(erro=4)/equ
[  7]  →(erro=5)/eci
[  8]  →(erro=6)/ess
[  9]  →(erro=7)/est
[ 10]  →(erro=8)/eoi
[ 11]  →(erro=9)/eno
[ 12]  'erro:'
[ 13]  →0
[ 14] eze:
[ 15]  r←r,[1]1 78⍴78↑'main() {'
[ 16]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 17]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[ 18]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f",&F,&J,&K,&N,&M);'
[ 19]  r←r,[1]1 78⍴78↑'   printf("%i\n",FAJ68(K,N,J,M));'
[ 20]  r←r,[1]1 78⍴78↑'}'
[ 21]  →0
[ 22] eum:
[ 23]  r←r,[1]1 78⍴78↑'main() {'
[ 24]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 25]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[ 26]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f",&F,&J,&K,&N,&M);'
[ 27]  r←r,[1]1 78⍴78↑'   printf("%i\n",FAJ68(K));'
[ 28]  r←r,[1]1 78⍴78↑'}'
[ 29]  →0
[ 30] edo:
[ 31]  r←r,[1]1 78⍴78↑'main() {'
[ 32]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 33]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[ 34]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f",&F,&J,&K,&N,&M);'
[ 35]  r←r,[1]1 78⍴78↑'   printf("%i\n",FAJ68(N,K,J,M));'
[ 36]  r←r,[1]1 78⍴78↑'}'
[ 37]  →0
[ 38] etr:
[ 39]  r←r,[1]1 78⍴78↑'main() {'
[ 40]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 41]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[ 42]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f",&F,&J,&K,&N,&M);'
[ 43]  r←r,[1]1 78⍴78↑'   FAJ68(K,N,J,M);'
[ 44]  r←r,[1]1 78⍴78↑'}'
[ 45]  →0
[ 46] equ:
[ 47]  r←r,[1]1 78⍴78↑'main() {'
[ 48]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 49]  r←r,[1]1 78⍴78↑'   float W, FAJ68, N, M;'
[ 50]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f",&F,&J,&K,&N,&M);'
[ 51]  r←r,[1]1 78⍴78↑'   printf("%i\n",FAJ68(K,N,J,M));'
[ 52]  r←r,[1]1 78⍴78↑'}'
[ 53]  →0
[ 54] eci:
[ 55]  r←r,[1]1 78⍴78↑'main() {'
[ 56]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 57]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[ 58]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f",&F,&J,&K,&N,&M);'
[ 59]  r←r,[1]1 78⍴78↑'   M := Q + X;'
```

```
[ 60]  r←r,[1]1 78⍴78↑'   printf("%i⍀n",FAJ68(K,N,J,M));'
[ 61]  r←r,[1]1 78⍴78↑'}'
[ 62]  →0
[ 63] ess:
[ 64]  r←r,[1]1 78⍴78↑'main() {'
[ 65]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 66]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[ 67]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f",&F,&J,&K,&N,&M);'
[ 68]  r←r,[1]1 78⍴78↑'   printf("%i⍀n",FAJ69(K,N,J,M));'
[ 69]  r←r,[1]1 78⍴78↑'}'
[ 70]  →0
[ 71] est:
[ 72]  r[4;]←78↑'   printf("%i %f ⍀n",A,B);'
[ 73]  r←r,[1]1 78⍴78↑'main() {'
[ 74]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 75]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[ 76]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f",&F,&J,&K,&N,&M);'
[ 77]  r←r,[1]1 78⍴78↑'   printf("%i⍀n",FAJ68(K,N,J,M));'
[ 78]  r←r,[1]1 78⍴78↑'}'
[ 79]  →0
[ 80] eoi:
[ 81]  r←1 1 1 0 1 1⍀[1]r
[ 82]  r[4;]←78↑'   Q := M + 2;'
[ 83]  r←r,[1]1 78⍴78↑'main() {'
[ 84]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 85]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[ 86]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f",&F,&J,&K,&N,&M);'
[ 87]  r←r,[1]1 78⍴78↑'   printf("%i⍀n",FAJ68(K,N,J,M));'
[ 88]  r←r,[1]1 78⍴78↑'}'
[ 89]  →0
[ 90] eno:
[ 91]  r←r,[1]1 78⍴78↑'main() {'
[ 92]  r←r,[1]1 78⍴78↑'   int   F, J, K;'
[ 93]  r←r,[1]1 78⍴78↑'   float W, N, M;'
[ 94]  r←r,[1]1 78⍴78↑'   float FAJ68 := 0;'
[ 95]  r←r,[1]1 78⍴78↑'   scanf("%i %i %i %f %f",&F,&J,&K,&N,&M);'
[ 96]  r←r,[1]1 78⍴78↑'   printf("%i⍀n",FAJ68(K,N,J,M));'
[ 97]  r←r,[1]1 78⍴78↑'}'
[ 98]  →0
------------------------------------------------------------
[ 0]  r1←geracaso030;r;res;i;f;e;vv;alfa
[ 1]  r1←2⍴0
[ 2]  r←0 78⍴' '
[ 3]  res←⍳0
[ 4]  i←1
[ 5] t1:→(i>10)/fim
[ 6]  f←?6
[ 7]  →(1=?4)/zer
[ 8]  e←?9
[ 9]  →junta
[10] zer:
[11]  e←0
[12] junta:
[13]  vv←(⍮('g',1 0⍕f),2 0⍕e)
[14]  →(vv[1;1]='*')/denovo
[15]  alfa←vv[1;]
[16]  vv[1;]←78↑(2 0⍕i),') ',alfa
[17]  r←r,[1]vv
[18]  res←res,e
[19]  i←i+1
[20]  →t1
[21] denovo:
[22]  →t1
```

```
[23] fim:
[24]  r←r,[1]1 78ρ78↑'\end{verbatim}'
[25]  r1[1]←⊂r
[26]  r1[2]←⊂res
-------------------------------------------------------------
[ 0]  opesq vivo030a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo030 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10ρ' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PL030   '
[ 9]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[56]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[57]  →terminando
[58] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[59] elafa:aaa←(ylu[;⍳36],3 0⍴0 1↓resu)
[60] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[61]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[62]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[63] terminando:
[64]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[65]  relat[1↑⍴relat;;]←upag
[66]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[67] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[68]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[69]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[70]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo031

```
[ 0]  AVISO
[ 1]  'para gabarito, chame geragaba aaaa'
[ 2]  ' na sala execute vejas031 e vejap031'
[ 3]  ' '
[ 4]  'no ws as funcoes calenda, calendalatex e etc = geram como era antigamente'
[ 5]  'as funcoes calenda2, calendalatex2 e ...2 = geram sem o numero do feriado'
[ 6]  ' esteticamente parece melhor'
[ 7]  '    faca calenda 2013 ou calenda2 2013 ou calendalatex calenda2 2013'
[ 8]  'x←calendalatex2 2010'
[ 9]  'para gerar o calendario latex colorido, faca calendalatex2 2010'
[10]  ' se quiser meter a mao no colorido, faca y←esticaca calendalatex2 2011, e depois'
[11]  '   edite y'
[12]  ''
[13]  'Criada a funcao gerameslat que cria uma tabela latex com o '
[14]  'calendario mensal em pe. Para chamar faca: x←gerameslat 1 2011'
[15]  ' e depois x ΔFM nome-arquivo'
[16]  ''
[17]  ' criada geradiaslat 21 11 2011 6 => lista 6 semanas, a partir de'
[18]  '  21 de nov de 2011'
[19]  ' '
[20]  'Criei a funcao poecoment que visa comentar cada linha da saida de'
[21]  ' esticaca -> o objetivo e facilitar a inclusao de cores diferentes'
[22]  ' em cada dia. Ha alguns defeitos no contorno dessa funcao, mas no'
[23]  ' geral ela ajuda. Faca x←poecoment esticaca calendalatex2 2013'
[24]  ' '
[25]  ' a funcao minhoca estica o calendario (calenda e calenda2) na'
[26]  ' vertical, ao inves das 2 colunas, fica uma so'
[27]  ' '
[28]  ' para obter um calendario anual em 2 folhas, deixando a segunda'
[29]  ' coluna livre para apontamentos, faca x←calendaminlat 2013'
[30]  ' e depois altere x para incluir os apontamentos desejados'
[31]  ' se quiser, faca y← esticaca calendaminlat 2013'
[32]  ''
[33]  'Para rodar na sala durante a apresentacao, chame'
[34]  'DMAexplicado d m a       E/OU      PASCOAexplicado 2014'
[35]  ''
[36]  'existem 2 variaveis: FOLHALA031s (pseudo-codigo) e '
[37]  '  FOLHALA031p (python). Qual vc jogar em FOLHALA031 vai valer'
------------------------------------------------------------
[ 0]  r←DMA data;A;B;C;D;E;F;G;H;I
[ 1] ⍝data e um vetor de 3: dd,mm,aa com 4 digitos
[ 2]  A←⌊(12-data[2])÷10
[ 3]  B←data[3]-A
```

```
[ 4]  C←data[2]+12×A
[ 5]  D←⌊B÷100
[ 6]  E←⌊D÷4
[ 7]  F←E+2-D
[ 8]  G←⌊365.25×B
[ 9]  H←⌊30.6001×C+1
[10]  I←F+G+H+data[1]+5
[11]  r←7|I
------------------------------------------------------------
[ 0]  r←DMAexplicado data;A;B;C;D;E;F;G;H;I
[ 1] ⍝data e um vetor de 3: dd,mm,aa com 4 digitos
[ 2]  'A=',⍕A←⌊(12-data[2])÷10
[ 3]  'B=',⍕B←data[3]-A
[ 4]  'C=',⍕C←data[2]+12×A
[ 5]  'D=',⍕D←⌊B÷100
[ 6]  'E=',⍕E←⌊D÷4
[ 7]  'F=',⍕F←E+2-D
[ 8]  'G=',⍕G←⌊365.25×B
[ 9]  'H=',⍕H←⌊30.6001×C+1
[10]  'I=',⍕I←F+G+H+data[1]+5
[11]  'r=',⍕r←7|I
------------------------------------------------------------
[ 0]  r←PASCOA x;A;B;C;D;E;F;G;H;I;J;K;L;M;P;Q;xx;yy;ww;dc
[ 1]  A←19|x
[ 2]  B←⌊x÷100
[ 3]  C←100|x
[ 4]  D←⌊B÷4
[ 5]  E←4|B
[ 6]  F←⌊(B+8)÷25
[ 7]  G←⌊(1+B-F)÷3
[ 8]  H←30|(19×A)+B+15-(D+G)
[ 9]  I←⌊C÷4
[10]  K←4|C
[11]  L←7|32+(2×E)+(2×I)-(H+K)
[12]  M←⌊(A+(11×H)+(22×L))÷451
[13]  P←⌊(H+L+114-7×M)÷31
[14]  Q←31|H+L+114-7×M
[15] ⍝pa  ←(P  ×100)+Q+1   ⍝ este aqui e o dia da pascoa
[16]  dc←ddmm2dc(Q+1),P,x
[17]  ww←dc-2
[18]  xx←dc-47
[19]  yy←dc+60
[20]  r←multa dc2ddmm ww,x   ⍝ sexta feira santa
[21]  r←r,multa dc2ddmm xx,x   ⍝ carnaval
[22]  r←r,multa dc2ddmm yy,x   ⍝  corpus cristhi
------------------------------------------------------------
[ 0]  r←PASCOAexplicado x;A;B;C;D;E;F;G;H;I;J;K;L;M;P;Q;xx;yy;ww;dc
[ 1]  'A=',⍕A←19|x
[ 2]  'B=',⍕B←⌊x÷100
[ 3]  'C=',⍕C←100|x
[ 4]  'D=',⍕D←⌊B÷4
[ 5]  'E=',⍕E←4|B
[ 6]  'F=',⍕F←⌊(B+8)÷25
[ 7]  'G=',⍕G←⌊(1+B-F)÷3
[ 8]  'H=',⍕H←30|(19×A)+B+15-(D+G)
[ 9]  'I=',⍕I←⌊C÷4
[10]  'K=',⍕K←4|C
[11]  'L=',⍕L←7|32+(2×E)+(2×I)-(H+K)
[12]  'M=',⍕M←⌊(A+(11×H)+(22×L))÷451
[13]  'P=',⍕P←⌊(H+L+114-7×M)÷31
[14]  'Q=',⍕Q←31|H+L+114-7×M
[15] ⍝pa  ←(P  ×100)+Q+1   ⍝ este aqui e o dia da pascoa
[16]  dc←ddmm2dc(Q+1),P,x
```

```
[17]  ww←dc-2
[18]  xx←dc-47
[19]  yy←dc+60
[20]  r←multa dc2ddmm ww,x   ⍝ sexta feira santa
[21]  r←r,multa dc2ddmm xx,x   ⍝ carnaval
[22]  r←r,multa dc2ddmm yy,x   ⍝  corpus cristhi
[23]  'Carnaval ',(⍕100|r[2]),'/',⍕⌊r[2]÷100
[24]  'Sexta S  ',(⍕100|r[1]),'/',⍕⌊r[1]÷100
[25]  'Corpus C ',(⍕100|r[3]),'/',⍕⌊r[3]÷100
------------------------------------------------------------
[0]  r←a ajunta b;tvv
[1]  tvv←+/⍬∧≠⍬,a[1↑⍴a;]=' '
[2] ⍝'tvv=',⍕tvv
[3]  →(2≥tvv)/nada
[4]  r←a[⍳¯1+1↑⍴a;],[1](1 21⍴(((21-tvv)↑,a[1↑⍴a;]),(-tvv)↑,b[1;])),[1]b[1+⍳¯1+1↑⍴b;]
[5]  →0
[6] nada:
[7]  r←a,[1]b
------------------------------------------------------------
[0]  r←calendaminlat ano i;x
[1]  r←150 99↑x←minhoca calenda2 ano
[2]  r[1;]←99↑'\begin{tabular}{|c|c|c|c|c|c|c|p{7cm}}\\'
[3]  i←1
[4] t1:→(i>12)/oba1
[5]  r[(10×i-1)+3;]←99↑'\multicolumn{7}{c}{{\huge ',x[(10×i-1)+3;25+⍳12],'}}\\'
[6]  i←i+1
[7]  →t1
[8] oba1:
------------------------------------------------------------
[ 0]  r←calenda ano;mes;bis;i;aa
[ 1]  r←66 77⍴' '
[ 2]  mes←meses
[ 3]  bis←gerabis ano
[ 4]  r[1;30+⍳30]←30↑'CALENDARIO de ',4 0⍕ano
[ 5]  r[2;58+⍳16]←16↑'(c)pkantek-v.1.1'
[ 6]  i←1
[ 7] ll1:→(i>6)/fim
[ 8]  r[(10×i-1)+5;16+⍳9]←mes[1+2×i-1;]
[ 9]  r[(10×i-1)+7;1+⍳35]←SEM
[10]  r[(10×i-1)+7+⍳6;⍳35]←(bis[1+2×i-1],aa)geram DMA aa←1,(1+2×i-1),ano
[11]  r[(10×i-1)+5;57+⍳9]←mes[2+2×i-1;]
[12]  r[(10×i-1)+7;42+⍳35]←SEM
[13]  r[(10×i-1)+7+⍳6;41+⍳35]←(bis[2+2×i-1],aa)geram DMA aa←1,(2+2×i-1),ano
[14]  i←i+1
[15]  →ll1
[16] fim:
------------------------------------------------------------
[ 0]  r←calenda2 ano;mes;bis;i;aa
[ 1]  r←66 77⍴' '
[ 2]  mes←meses
[ 3]  bis←gerabis ano
[ 4]  r[2;30+⍳30]←30↑'CALENDARIO de ',4 0⍕ano
[ 5]  r[2;70+⍳6]←6↑'v.1.1'
[ 6]  i←1
[ 7] ll1:→(i>6)/fim
[ 8]  r[(10×i-1)+5;16+⍳9]←mes[1+2×i-1;]
[ 9]  r[(10×i-1)+7;1+⍳35]←SEM
[10]  r[(10×i-1)+7+⍳6;⍳35]←(bis[1+2×i-1],aa)geram2 DMA aa←1,(1+2×i-1),ano
[11]  r[(10×i-1)+5;57+⍳9]←mes[2+2×i-1;]
[12]  r[(10×i-1)+7;42+⍳35]←SEM
[13]  r[(10×i-1)+7+⍳6;41+⍳35]←(bis[2+2×i-1],aa)geram2 DMA aa←1,(2+2×i-1),ano
[14]  i←i+1
[15]  →ll1
```

```
[16] fim:
------------------------------------------------------------
[  0]  r←calendalatex2 ano;aa;cab;i;vv;x;zz;j;k;cab1
[  1]  r←66 99↑x←calenda2 ano
[  2]  r[1;]←99↑'⍀begin{tabular}{|c|c|c|c|c|c|'
[  3]  r[2;]←99↑'c|p{1cm}|c|c|c|c|c|c|c|}'
[  4]  r[3;]←99↑'⍀multicolumn{15}{c}{{ ⍀huge ',x[2;44+⍳4],'}}⍀⍀'
[  5]  r[4 14 24 34 44 54;]←6 99⍴99↑'⍀multicolumn{15}{c}{}⍀⍀ '
[  6]  r[5;]←99↑'⍀multicolumn{7}{|c|}{Janeiro} &&⍀multicolumn{7}{|c|}{Fevereiro}⍀⍀'
[  7]  r[15;]←99↑'⍀multicolumn{7}{|c|}{Marᵛo}   &&⍀multicolumn{7}{|c|}{Abril}⍀⍀'
[  8]  r[25;]←99↑'⍀multicolumn{7}{|c|}{Maio}    &&⍀multicolumn{7}{|c|}{Junho}⍀⍀'
[  9]  r[35;]←99↑'⍀multicolumn{7}{|c|}{Julho}   &&⍀multicolumn{7}{|c|}{Agosto}⍀⍀'
[ 10]  r[45;]←99↑'⍀multicolumn{7}{|c|}{Setembro}&&⍀multicolumn{7}{|c|}{Outubro}⍀⍀'
[ 11]  r[55;]←99↑'⍀multicolumn{7}{|c|}{Novembro}&&⍀multicolumn{7}{|c|}{Dezembro}⍀⍀'
[ 12]  aa←'Seg&Ter&Qua&Qui&Sex&Sab&Dom&&Seg&Ter&Qua&Qui&Sex&Sab&Dom⍀⍀'
[ 13]  r[7 17 27 37 47 57;]←6 99⍴99↑aa
[ 14]  r[8 9 10 11 12;1+5 10 15 20 25 30 35 40 46 51 56 61 66 71]←'&'
[ 15]  r[8 9 10 11 12;98 99]←'⍀'
[ 16]  →(99=+/r[13;]=' ')/ufa1
[ 17]  r[13;1+5 10 15 20 25 30 35 40 46 51 56 61 66 71]←'&'
[ 18]  r[13;98 99]←'⍀'
[ 19] ufa1:
[ 20]  r[10+8 9 10 11 12;1+5 10 15 20 25 30 35 40 46 51 56 61 66 71]←'&'
[ 21]  r[10+8 9 10 11 12;98 99]←'⍀'
[ 22]  →(99=+/r[23;]=' ')/ufa2
[ 23]  r[23;1+5 10 15 20 25 30 35 40 46 51 56 61 66 71]←'&'
[ 24]  r[23;98 99]←'⍀'
[ 25] ufa2:
[ 26]  r[20+8 9 10 11 12;1+5 10 15 20 25 30 35 40 46 51 56 61 66 71]←'&'
[ 27]  r[20+8 9 10 11 12;98 99]←'⍀'
[ 28]  →(99=+/r[33;]=' ')/ufa3
[ 29]  r[33;1+5 10 15 20 25 30 35 40 46 51 56 61 66 71]←'&'
[ 30]  r[33;98 99]←'⍀'
[ 31] ufa3:
[ 32]  r[30+8 9 10 11 12;1+5 10 15 20 25 30 35 40 46 51 56 61 66 71]←'&'
[ 33]  r[30+8 9 10 11 12;98 99]←'⍀'
[ 34]  →(99=+/r[43;]=' ')/ufa4
[ 35]  r[43;1+5 10 15 20 25 30 35 40 46 51 56 61 66 71]←'&'
[ 36]  r[43;98 99]←'⍀'
[ 37] ufa4:
[ 38]  r[40+8 9 10 11 12;1+5 10 15 20 25 30 35 40 46 51 56 61 66 71]←'&'
[ 39]  r[40+8 9 10 11 12;98 99]←'⍀'
[ 40]  →(99=+/r[53;]=' ')/ufa5
[ 41]  r[53;1+5 10 15 20 25 30 35 40 46 51 56 61 66 71]←'&'
[ 42]  r[53;98 99]←'⍀'
[ 43] ufa5:
[ 44]  r[50+8 9 10 11 12;1+5 10 15 20 25 30 35 40 46 51 56 61 66 71]←'&'
[ 45]  r[50+8 9 10 11 12;98 99]←'⍀'
[ 46]  →(99=+/r[63;]=' ')/ufa6
[ 47]  r[63;1+5 10 15 20 25 30 35 40 46 51 56 61 66 71]←'&'
[ 48]  r[63;98 99]←'⍀'
[ 49] ufa6:
[ 50]  r[64;]←99↑'⍀end{tabular}'
[ 51]  i←4
[ 52] t1:→(i>63)/ha
[ 53]  vv←((r[i;]≠' ')/r[i;]),'⍀cline{1-7} ⍀cline{9-15}'
[ 54]  r[i;]←99↑vv
[ 55]  i←i+1
[ 56]  →t1
[ 57] ha:
[ 58]  zz←66 200⍴' '
[ 59]  i←1
[ 60] t2:→(i>65)/hu
```

```
[ 61]  j←1 ⋄ k←1
[ 62] t3:→(j>97)/ju
[ 63]  →((1=ema r[i;j])∧(1=ema r[i;j+1]))/sim
[ 64] nao:zz[i;k]←r[i;j]
[ 65]  j←j+1
[ 66]  k←k+1
[ 67]  →t3
[ 68] sim:
[ 69] ⍝ zz[i;k+¯1+⍳15]←'\color{red}{',r[i;j],r[i;j+1],'}'
[ 70]  zz[i;k+¯1+⍳23]←'\cellcolor{red! 20}{',r[i;j],r[i;j+1],'}'
[ 71]  j←j+2
[ 72] ⍝ k←k+15
[ 73]  k←k+23
[ 74]  →t3
[ 75] ju:i←i+1
[ 76]  →t2
[ 77] hu:
[ 78]  cab←21 200⍴' '
[ 79]  cab[1;]←200↑'\documentclass{article}'
[ 80]  cab[2;]←200↑'\usepackage[latin1]{inputenc}'
[ 81]  cab[3;]←200↑'\usepackage[brazil]{babel}'
[ 82]  cab[4;]←200↑'\usepackage[dvips]{graphicx}'
[ 83]  cab[5;]←200↑'\usepackage{geometry}'
[ 84]  cab[6;]←200↑'\geometry{a4paper,left=1in,right=1in,top=0.5in,bottom=1in}'
[ 85]  cab[7;]←200↑'\usepackage{color}'
[ 86]  cab[8;]←200↑'\usepackage[table]{xcolor}'
[ 87]  cab[9;]←200↑'\begin{document}'
[ 88]  cab[10;]←200↑'\definecolor{vermelho}{rgb}{1,0,0}'
[ 89]  cab[11;]←200↑'\definecolor{azul}{rgb}{0,0,1}     '
[ 90]  cab[12;]←200↑'\definecolor{verde}{rgb}{0,1,0}     '
[ 91]  cab[13;]←200↑'\definecolor{cinza}{rgb}{0.33,0.33,0.33}'
[ 92]  cab[14;]←200↑'\definecolor{verdinho}{rgb}{0,0.66,0.33} '
[ 93]  cab[15;]←200↑'\definecolor{marrom}{rgb}{0.66,0,0}       '
[ 94]  cab[16;]←200↑'\definecolor{ocre}{rgb}{0.66,0.33,0}       '
[ 95]  cab[17;]←200↑'\definecolor{rosa}{rgb}{1,0,1}              '
[ 96]  cab[18;]←200↑'\definecolor{laranjao}{rgb}{1,0.25,0}        '
[ 97]  cab[19;]←200↑'\definecolor{red}{rgb}{1,0,0}'
[ 98]  cab[20;]←200↑'\definecolor{roxo}{rgb}{0.5,0,0.5}'
[ 99]  cab[21;]←200↑'\definecolor{azulao}{rgb}{0,0,0.45}'
[100]  cab1←9 200⍴' '
[101]  cab1[1;]←200↑'\color{vermelho}{Feriados e recessos}\\*'
[102]  cab1[2;]←200↑'\color{verdinho}{Semana de provas}\\*'
[103]  cab1[3;]←200↑'\color{rosa}{Prazo de lanˆamento de notas no portal}\\*'
[104]  cab1[4;]←200↑'\color{azul}{Prazo de entrega dos diarios}\\*           '
[105]  cab1[5;]←200↑'\color{ocre}{Segunda Chamada}\\*                        '
[106]  cab1[6;]←200↑'\color{marrom}{Final do bimestre}\\*                     '
[107]  cab1[7;]←200↑'\color{laranjao}{Provas finais do semestre}\\*            '
[108]  cab1[8;]←200↑'\color{roxo}{Inicio e fim de aulas/bimestre}\\*'
[109]  cab1[9;]←200↑'\color{azulao}{Compromissos no portal}\\*'
[110]  r←cab,[1]zz,[1]cab1,[1]1 200⍴200↑'\end{document}'
------------------------------------------------------------
[ 0]  r←calendaminlat ano;x;i;inds
[ 1]  r←125 99↑x←minhoca calenda2 ano
[ 2]  i←0
[ 3]  inds←''
[ 4] t1:→(i>11)/oba1
[ 5]  r[(10×i)+3;]←99↑'\multicolumn{7}{|c|}{\large ',x[(10×i)+3;15+⍳12],'}\\\cline{1-7}'
[ 6]  inds←inds,((10×i)+4)+⍳6
[ 7]  →(42=+/x[(10×i)+11;]=' ')/pula22
[ 8]  inds←inds,(10×i)+11
[ 9] pula22:
[10]  →(i=11)/pula
[11]  r[(10×i)+12;]←99↑'\multicolumn{7}{c}{ }\\ \multicolumn{7}{c}{ }\\ \cline{1-7}'
```

```
[12] pula:
[13]  i←i+1
[14]  →t1
[15] oba1:
[16]  →(42=+/x[61;]=' ')/blz4
[17]  r[2 63;]←2 99ρ99↑'\begin{tabular}{|c|c|c|c|c|c|c|p{7cm}}\cline{1-7}'
[18]  r[62;]←99↑'\end{tabular} \newpage'
[19]  →junta4
[20] blz4:
[21]  r[2 62;]←2 99ρ99↑'\begin{tabular}{|c|c|c|c|c|c|c|p{7cm}}\cline{1-7}'
[22]  r[61;]←99↑'\end{tabular} \newpage'
[23] junta4:
[24]  r[inds;6 11 16 21 26 31 36]←'&'
[25]  r[inds;37+⍳29]←((ρinds),29)ρ' \hspace*{1cm} \\ \cline{1-7}'
[26]  r[125;]←99↑'\end{tabular}'
[27]  r[1;]←99↑'\section*{ \hspace*{8cm} ',(4 0⍕ano),'}'
[28]  r←(((1↑ρCABE1),99)↑CABE1),[1]r
[29]  r←r,[1]1 99ρ99↑'\end{document}'
-------------------------------------------------------------
[ 0]  r←calendapeq ano;mes;bis;i;aa
[ 1]  r←49 45ρ' '
[ 2]  mes←meses
[ 3]  bis←gerabis ano
[ 4]  r[1;10+⍳30]←30↑'CALENDARIO de ',4 0⍕ano
[ 5]  i←1
[ 6] ll1:→(i>6)/fim
[ 7]  r[(8×i-1)+2;7+⍳9]←mes[1+2×i-1;]
[ 8]  r[(8×i-1)+3;⍳21]←SEMPEQ
[ 9]  r[(8×i-1)+3+⍳6;⍳21]←(bis[1+2×i-1],aa)gerampeq DMA aa←1,(1+2×i-1),ano
[10]  r[(8×i-1)+2;31+⍳9]←mes[2+2×i-1;]
[11]  r[(8×i-1)+3;24+⍳21]←SEMPEQ
[12]  r[(8×i-1)+3+⍳6;24+⍳21]←(bis[2+2×i-1],aa)gerampeq DMA aa←1,(2+2×i-1),ano
[13]  i←i+1
[14]  →ll1
[15] fim:r←(57≠+/r=' ')/[1]r
-------------------------------------------------------------
[0]  r←a compara b;aa
[1]  aa←'0123456789'
[2]  →(b[2]='&')/meio
[3]  r←(a[1]∈aa)∧(a[2]∈aa)∧(a[3]='&')
[4]  →0
[5] meio:
[6]  r←(a[1]∈aa)∧(a[1]∈aa)∧(a[3]=' ')∧(a[2]='&')
-------------------------------------------------------------
[ 0]  r←contasemana ano;aa;aaa;bis;i;jj;k;mes
[ 1]  r←66 77ρ' '
[ 2]  mes←meses
[ 3]  bis←gerabis ano
[ 4]  r[2;30+⍳30]←30↑'CALENDARIO SEMANAL de ',4 0⍕ano
[ 5]  r[2;70+⍳6]←6↑'v.1.1'
[ 6]  i←1
[ 7]  jj←1
[ 8] ll1:→(i>6)/fim
[ 9]  r[(10×i-1)+5;16+⍳9]←mes[1+2×i-1;]
[10]  r[(10×i-1)+7;1+⍳35]←SEM
[11]  aaa←(bis[1+2×i-1],aa)geram DMA aa←1,(1+2×i-1),ano
[12]  k←1
[13] t22:→(k>1↑ρaaa)/fim22
[14]  →(3=+/aaa[k;2+⍳3]='   ')/soma22
[15]  aaa[k;11+⍳20]←20↑'*** semana ',(⍕jj),' ***'
[16]  jj←jj+1
[17] soma22:
[18]  k←k+1
```

```
[19]  →t22
[20] fim22:
[21]  r[(10×i-1)+7+⍳6;⍳35]←aaa
[22]  r[(10×i-1)+5;57+⍳9]←mes[2+2×i-1;]
[23]  r[(10×i-1)+7;42+⍳35]←SEM
[24]  aaa←(bis[2+2×i-1],aa)geram DMA aa←1,(2+2×i-1),ano
[25]  k←1
[26] t23:→(k>1↑⍴aaa)/fim23
[27]  →(3=+/aaa[k;2+⍳3]='   ')/soma23
[28]  aaa[k;11+⍳20]←20↑'*** semana ',(⍕jj),' ***'
[29]  jj←jj+1
[30] soma23:
[31]  k←k+1
[32]  →t23
[33] fim23:
[34]  r[(10×i-1)+7+⍳6;41+⍳35]←aaa
[35]  i←i+1
[36]  →ll1
[37] fim:
-------------------------------------------------------------
[ 0]  r←criamarca
[ 1]  MARCACOESN←0⍴0
[ 2]  MARCACOESA←0⍴''
[ 3]  MARCACOESN←MARCACOESN,617 ⋄ MARCACOESA←MARCACOESA,'PR'
[ 4]  MARCACOESN←MARCACOESN,618 ⋄ MARCACOESA←MARCACOESA,'PR'
[ 5]  MARCACOESN←MARCACOESN,620 ⋄ MARCACOESA←MARCACOESA,'PR'
[ 6]  MARCACOESN←MARCACOESN,621 ⋄ MARCACOESA←MARCACOESA,'NY'
[ 7]  MARCACOESN←MARCACOESN,622 ⋄ MARCACOESA←MARCACOESA,'NY'
[ 8]  MARCACOESN←MARCACOESN,623 ⋄ MARCACOESA←MARCACOESA,'NY'
[ 9]  MARCACOESN←MARCACOESN,624 ⋄ MARCACOESA←MARCACOESA,'NY'
[10]  MARCACOESN←MARCACOESN,625 ⋄ MARCACOESA←MARCACOESA,'NY'
[11]  MARCACOESN←MARCACOESN,626 ⋄ MARCACOESA←MARCACOESA,'NY'
[12]  MARCACOESN←MARCACOESN,627 ⋄ MARCACOESA←MARCACOESA,'NY'
[13]  MARCACOESN←MARCACOESN,628 ⋄ MARCACOESA←MARCACOESA,'NY'
[14]  MARCACOESN←MARCACOESN,629 ⋄ MARCACOESA←MARCACOESA,'NY'
[15]  MARCACOESN←MARCACOESN,703 ⋄ MARCACOESA←MARCACOESA,'PR'
[16]  MARCACOESN←MARCACOESN,708 ⋄ MARCACOESA←MARCACOESA,'FE'
[17]  MARCACOESN←MARCACOESN,709 ⋄ MARCACOESA←MARCACOESA,'FE'
[18]  MARCACOESN←MARCACOESN,710 ⋄ MARCACOESA←MARCACOESA,'FE'
[19]  MARCACOESN←MARCACOESN,711 ⋄ MARCACOESA←MARCACOESA,'FE'
[20]  MARCACOESN←MARCACOESN,712 ⋄ MARCACOESA←MARCACOESA,'FE'
[21]  MARCACOESN←MARCACOESN,713 ⋄ MARCACOESA←MARCACOESA,'FE'
[22]  MARCACOESN←MARCACOESN,714 ⋄ MARCACOESA←MARCACOESA,'FE'
[23]  MARCACOESN←MARCACOESN,715 ⋄ MARCACOESA←MARCACOESA,'FE'
[24]  MARCACOESN←MARCACOESN,716 ⋄ MARCACOESA←MARCACOESA,'FE'
[25]  MARCACOESN←MARCACOESN,717 ⋄ MARCACOESA←MARCACOESA,'FE'
[26]  MARCACOESN←MARCACOESN,718 ⋄ MARCACOESA←MARCACOESA,'FE'
[27]  MARCACOESN←MARCACOESN,719 ⋄ MARCACOESA←MARCACOESA,'FE'
[28]  MARCACOESN←MARCACOESN,720 ⋄ MARCACOESA←MARCACOESA,'FE'
[29]  MARCACOESN←MARCACOESN,721 ⋄ MARCACOESA←MARCACOESA,'FE'
-------------------------------------------------------------
[0]  r←dc2ddmm xx;yy;dc;ano;MC
[1]  dc←xx[1] ⋄ ano←xx[2]
[2]  MC←1+0,+⍀¯1↓gerabis ano
[3]  yy←dc-MC
[4]  r←1+⌊/(yy≥0)/yy
[5]  r←r,⌈/(yy≥0)/⍳12
-------------------------------------------------------------
[0]  r←ddmm2dc xx;dd;mm;aa;MC
[1]  dd←xx[1] ⋄ mm←xx[2] ⋄ aa←xx[3]
[2]  MC←1+0,+⍀gerabis aa
[3]  r←MC[mm]+dd-1
-------------------------------------------------------------
```

```
[0]  r←ema z
[1]  r←z∈'ANTIRBPCFES'
-------------------------------------------------------------
[ 0]  r←esticaano inicial;anos;i
[ 1]  r←120 216⍴' '
[ 2]  i←0
[ 3]  anos←10 12⍴0
[ 4]  anos[1;]←gerabis inicial
[ 5]  anos[2;]←gerabis inicial+1
[ 6]  anos[3;]←gerabis inicial+2
[ 7]  anos[4;]←gerabis inicial+3
[ 8]  anos[5;]←gerabis inicial+4
[ 9]  anos[6;]←gerabis inicial+5
[10]  anos[7;]←gerabis inicial+6
[11]  anos[8;]←gerabis inicial+7
[12]  anos[9;]←gerabis inicial+8
[13]  anos[10;]←gerabis inicial+9
[14]  anos←,anos
[15] ⍝ anos
[16] t1:→(i≥120)/fim
[17] ⍝ (anos[i+1],1,(1+12|i),inicial+⌊i÷12)
[18]  r[i+1;]←(2 0 4 0⍕(1+12|i),inicial+⌊i÷12),,(anos[i+1],1,(1+12|i),inicial+⌊(i-1)÷12)ge
      ram DMA 1,(1+12|i),inicial+⌊i÷12
[19]  i←i+1
[20]  →t1
[21] fim: ⍝ fazer agora x←esticaano 2015 e depois x ⎕FM 'c:⍀giz⍀anos10'
-------------------------------------------------------------
[ 0]  r←esticaca x;i;j;a1
[ 1]  r←800 76⍴' '
[ 2]  i←1
[ 3]  j←1
[ 4] t1:→(i>1↑⍴x)/acabou
[ 5]  →('&'∈x[i;])/sim
[ 6] nao:r[j;]←76↑x[i;]
[ 7]  j←j+1
[ 8]  i←i+1
[ 9]  →t1
[10] sim:r[j;]←76↑(a1←1↑(x[i;]='&')/⍳1↓⍴x)↑x[i;]
[11]  x[i;]←(1↓⍴x)↑a1↓x[i;]
[12]  j←j+1
[13]  →t1
[14] acabou:r←(j,76)↑r
-------------------------------------------------------------
[0]  r←gerabis ano
[1]  →(0=400|ano)/sim
[2]  →(0=100|ano)/nao
[3]  →(0=4|ano)/sim
[4] nao:r←31 28 31 30 31 30 31 31 30 31 30 31
[5]  →0
[6] sim:r←31 29 31 30 31 30 31 31 30 31 30 31
-------------------------------------------------------------
[0]  r←geradata;ano;max;mes;dia
[1]  ano←(1600+?300),2100+?300
[2]  ano←ano[?2]
[3]  →(0=2|ano)/okok
[4]  ano←ano+1
[5] okok:max←31,(28+0=4|ano),31 30 31 30 31 31 30 31 30 31
[6]  mes←?12
[7]  dia←?max[mes]
[8]  r←dia,mes,ano
-------------------------------------------------------------
[ 0]  geradiaslat ddmmaa;mes;bis;xx;linhbr;bloco;aa;ul;a1;a2;a3;zz;r;bis1;i
[ 1] ⍝ ddmmaa[1] = seg inicial; [2]=mes; [3] = ano com 4 digitos; [4]=qtd semans.
```

```
[ 2]  ' modo de chamar: aa,bb,cc,dd - aa=seg inicial; bb=mes; cc= ano com 4 digitos; dd=qt
      d semans.'
[ 3]  bis←gerabis ddmmaa[3]
[ 4]  bis1←gerabis ddmmaa[3]+1
[ 5]  zz←somames ddmmaa
[ 6]  a1←(bis[zz[1;2]],aa)gerampeq DMA aa←1,zz[1;2 3]
[ 7]  a1←(21≠+/[2]a1=' ')/[1]a1
[ 8]  a2←(bis[zz[2;2]],aa)gerampeq DMA aa←1,zz[2;2 3]
[ 9]  a2←(21≠+/[2]a2=' ')/[1]a2
[10]  a3←(bis[zz[3;2]],aa)gerampeq DMA aa←1,zz[3;2 3]
[11]  a3←(21≠+/[2]a3=' ')/[1]a3
[12]  xx←a1 ajunta a2 ajunta a3
[13]  '----------------'
[14]  xx
[15]  '------------'
[16] t33:→(ddmmaa[1]=⍎' 0'edit xx[1;⍳3])/cabou
[17]  xx←1 0↓xx
[18]  →t33
[19] cabou:
[20]  xx←(ddmmaa[4],21)↑xx
[21]  r←0 76⍴' '
[22]  r←r,[1]1 76⍴76↑'\setlength{\parindent}{0pt} {\large'
[23]  r←r,[1]1 76⍴76↑'\begin{tabular}{|p{2.2cm}|p{2.2cm}|p{2.2cm}|'
[24]  r←r,[1]1 76⍴76↑'p{2.2cm}|p{2.2cm}|p{2.2cm}|p{1.7cm}|} \hline'
[25]  r←r,[1]1 76⍴76↑'\multicolumn{7}{|c|}{mes: }\\ \hline'
[26]  r←r,[1]1 76⍴76↑'Segunda&Ter\c ca&Quarta&Quinta&Sexta&Sabado&Domingo\\ \hline'
[27]  linhbr←3
[28]  xx[;4 7 10 13 16 19]←'&'
[29]  xx←xx,[2]((1↑⍴xx),10)⍴10↑'\\'
[30]  bloco←(linhbr,76)⍴76↑'   &  &  &  &  &  \\'
[31]  bloco[1↑⍴bloco;23+⍳10]←10↑'\hline'
[32]  i←1
[33] t55:→(i>1↑⍴xx)/oba
[34]  r←r,[1]1 76⍴76↑xx[i;]
[35]  r←r,[1]bloco
[36]  i←i+1
[37]  →t55
[38] oba:
[39]  r←r,[1]1 76⍴76↑'\end{tabular}}'
[40]  r←r,[1]1 76⍴76↑'\clearpage'
[41]  R←r←(((1↑⍴CABE1),76)↑CABE1),[1]r,[1]1 76⍴76↑'\end{document}'
[42]  r ⎕NTIE 0'c:\apl2\caldiasx.tex'
[43]  'arquivo gravado como c:\apl2\caldiasx.tex. Salvo aqui como R'
------------------------------------------------------------
[ 0]  r←geragaba x;A;B;C;D;E;F;G;H;I;J;K;L;M;P;Q;dc;ica;ww;xx;yy
[ 1]  r←0 60⍴' '
[ 2]  r←r,[1]60↑'O ano de entrada = ',4 0⍕x
[ 3]  A←19|x
[ 4]  r←r,[1]60↑'A = ',4 0⍕A
[ 5]  B←⌊x÷100
[ 6]  r←r,[1]60↑'B = ',4 0⍕B
[ 7]  C←100|x
[ 8]  r←r,[1]60↑'C = ',4 0⍕C
[ 9]  D←⌊B÷4
[10]  r←r,[1]60↑'D = ',4 0⍕D
[11]  E←4|B
[12]  r←r,[1]60↑'E = ',4 0⍕E
[13]  F←⌊(B+8)÷25
[14]  r←r,[1]60↑'F = ',4 0⍕F
[15]  G←⌊(1+B-F)÷3
[16]  r←r,[1]60↑'G = ',4 0⍕G
[17]  H←30|(19×A)+B+15-(D+G)
[18]  r←r,[1]60↑'H = ',4 0⍕H
```

```
[19]  I←⌊C÷4
[20]  r←r,[1]60↑'I = ',4 0⍕I
[21]  K←4|C
[22]  r←r,[1]60↑'K = ',4 0⍕K
[23]  L←7|32+(2×E)+(2×I)-(H+K)
[24]  r←r,[1]60↑'L = ',4 0⍕L
[25]  M←⌊(A+(11×H)+(22×L))÷451
[26]  r←r,[1]60↑'M = ',4 0⍕M
[27]  P←⌊(H+L+114-7×M)÷31
[28]  r←r,[1]60↑'P = ',4 0⍕P
[29]  Q←31|H+L+114-7×M
[30]  r←r,[1]60↑'Q = ',4 0⍕Q
[31] ⍝pa  ←(P  ×100)+Q+1   ⍝ este aqui e o dia da pascoa
[32]  dc←ddmm2dc(Q+1),P,x
[33]  r←r,[1]60↑'dc = ',4 0⍕dc
[34]  ww←dc-2
[35]  r←r,[1]60↑'dc-2 = ',4 0⍕ww
[36]  xx←dc-47
[37]  r←r,[1]60↑'dc-47 = ',4 0⍕xx
[38]  yy←dc+60
[39]  r←r,[1]60↑'dc+60 = ',4 0⍕yy
[40]  ica←dc2ddmm ww,x   ⍝ sexta feira santa
[41]  r←r,[1]60↑'sexta feira santa (dd mm) = ',4 0⍕ica
[42]  ica←dc2ddmm xx,x   ⍝ carnaval
[43]  r←r,[1]60↑'carnaval (dd mm) = ',4 0⍕ica
[44]  ica←dc2ddmm yy,x   ⍝  corpus cristhi
[45]  r←r,[1]60↑'Corpus Christi (dd mm) = ',4 0⍕ica
-------------------------------------------------------------
[ 0]  r←dias geram comeco;fers;i;lit;res;zz
[ 1] ⍝com=> 0=sab, 1=dom, 2=seg 3=ter, 6=sex;  dias[1]= 28,29,30 e 31
[ 2] ⍝ dias[2 3 4]=dd,mm,aa
[ 3]  →(comeco>1)/pula
[ 4]  comeco←comeco+7
[ 5] pula:fers←101,421,501,907,908,1012,1102,1115,1225,PASCOA dias[4]
[ 6]  lit←12 2⍴'ANTITRINPCPBFIRENASSCACC' ⋄ res←((comeco-2)×5)⍴' '
[ 7]  →(0=⎕NC'MARCACOESN')/naotem
[ 8]  fers←fers,MARCACOESN
[ 9]  lit←lit,[1]((⍴MARCACOESN),2)⍴MARCACOESA
[10] naotem:i←1
[11] ll1:→(i>dias[1])/aca
[12]  →(~(i+dias[3]×100)∈fers)/naoefer
[13]  zz←,lit[((fers∈i+dias[3]×100)/⍳⍴fers);]
[14]  →(i<10)/eum
[15] edois:res←res,' ',(,lit[((fers∈i+dias[3]×100)/⍳⍴fers);]),2 0⍕i
[16]  →soma
[17] eum:res←res,'  ',(,lit[((fers∈i+dias[3]×100)/⍳⍴fers);]),1 0⍕i
[18]  →soma
[19] naoefer:res←res,5 0⍕i
[20] soma:→(i=i←i+1)/ll1
[21] aca:
[22]  r←6 35⍴res,100⍴' '
-------------------------------------------------------------
[ 0]  r←dias geram2 comeco;fers;i;lit;res;zz
[ 1] ⍝com=> 0=sab, 1=dom, 2=seg 3=ter, 6=sex;  dias[1]= 28,29,30 e 31
[ 2] ⍝ dias[2 3 4]=dd,mm,aa
[ 3]  →(comeco>1)/pula
[ 4]  comeco←comeco+7
[ 5] pula:fers←101,421,501,907,908,1012,1102,1115,1225,PASCOA dias[4]
[ 6]  lit←12 2⍴'ANTITRINPCPBFIRENASSCACC' ⋄ res←((comeco-2)×5)⍴' '
[ 7]  →(0=⎕NC'MARCACOESN')/naotem
[ 8]  fers←fers,MARCACOESN
[ 9]  lit←lit,[1]((⍴MARCACOESN),2)⍴MARCACOESA
[10] naotem:i←1
```

```
[11] ll1:→(i>dias[1])/aca
[12]  →(~(i+dias[3]×100)∈fers)/naoefer
[13]  zz←,lit[((fers∈i+dias[3]×100)/⍳⍴fers);]
[14]  →(i<10)/eum
[15] edois:res←res,'   ',(,lit[((fers∈i+dias[3]×100)/⍳⍴fers);]) ⍝2 0⍕i
[16]  →soma
[17] eum:res←res,'   ',(,lit[((fers∈i+dias[3]×100)/⍳⍴fers);])  ⍝1 0⍕i
[18]  →soma
[19] naoefer:res←res,5 0⍕i
[20] soma:→(i=i←i+1)/ll1
[21] aca:
[22]  r←6 35⍴res,100⍴' '
-------------------------------------------------------------
[ 0]  r←gerameslat mmaa;mes;bis;xx;linhbr;bloco;aa;ul
[ 1] ⍝ mmaa[1] = mes; mmaa[2] = ano com 4 digitos.
[ 2]  bis←gerabis mmaa[2]
[ 3]  xx←(bis[mmaa[1]],aa)gerampeq DMA aa←1,mmaa
[ 4]  mes←12 9⍴' '
[ 5]  mes[⍳3;]←3 9⍴(9↑'Janeiro'),(9↑,'Fevereiro'),9↑'Mar⊂c co'
[ 6]  mes[3+⍳3;]←3 9⍴(9↑'Abril'),(9↑'Maio'),9↑'Junho'
[ 7]  mes[6+⍳3;]←3 9⍴(9↑'Julho'),(9↑'Agosto'),9↑'Setembro'
[ 8]  mes[9+⍳3;]←3 9⍴(9↑'Outubro'),(9↑'Novembro'),9↑'Dezembro'
[ 9]  r←0 76⍴' '
[10]  r←r,[1]1 76⍴76↑'\setlength{\parindent}{0pt} {\large'
[11]  r←r,[1]1 76⍴76↑'\begin{tabular}{|p{1.7cm}|p{1.7cm}|p{1.7cm}|'
[12]  r←r,[1]1 76⍴76↑'p{1.7cm}|p{1.7cm}|p{1.7cm}|p{1.7cm}|} \hline'
[13]  r←r,[1]1 76⍴76↑'\multicolumn{7}{|c|}{',mes[mmaa[1];],' ',(4 0⍕mmaa[2]),'}\\ \hline'
[14]  r←r,[1]1 76⍴76↑'Segunda&Ter⊂c ca&Quarta&Quinta&Sexta&Sabado&Domingo\\ \hline'
[15]  linhbr←6
[16]  ul←+/xx[6;]=' '
[17]  xx[;4 7 10 13 16 19]←'&'
[18]  xx←xx,[2]6 10⍴10↑'\\'
[19]  bloco←(linhbr,76)⍴76↑'&&&&&&\\'
[20]  bloco[1↑⍴bloco;8+⍳10]←10↑'\hline'
[21]  r←r,[1]1 76⍴76↑xx[1;]
[22]  r←r,[1]bloco
[23]  r←r,[1]1 76⍴76↑xx[2;]
[24]  r←r,[1]bloco
[25]  r←r,[1]1 76⍴76↑xx[3;]
[26]  r←r,[1]bloco
[27]  r←r,[1]1 76⍴76↑xx[4;]
[28]  r←r,[1]bloco
[29]  r←r,[1]1 76⍴76↑xx[5;]
[30]  r←r,[1]bloco
[31]  →(ul=21)/foi
[32]  r←r,[1]1 76⍴76↑xx[6;]
[33]  r←r,[1]bloco
[34] foi:
[35]  r←r,[1]1 76⍴76↑'\end{tabular}}'
[36]  r←r,[1]1 76⍴76↑'\clearpage'
-------------------------------------------------------------
[ 0]  r←dias gerampeq comeco;fers;i;lit;res;zz
[ 1] ⍝com=> 0=sab, 1=dom, 2=seg 3=ter, 6=sex;  dias[1]= 28,29,30 e 31
[ 2] ⍝ dias[2 3 4]=dd,mm,aa
[ 3]  →(comeco>1)/pula
[ 4]  comeco←comeco+7
[ 5] pula:fers←101,421,501,907,908,1012,1102,1115,1225,PASCOA dias[4]
[ 6]  lit←12 2⍴'ANTITRINPCPBFIRENASSCACC' ⋄ res←((comeco-2)×3)⍴' '
[ 7]  →(0=⍷NC'MARCACOESN')/naotem
[ 8]  fers←fers,MARCACOESN
[ 9]  lit←lit,[1]((⍴MARCACOESN),2)⍴MARCACOESA
[10] naotem:i←1
[11] ll1:→(i>dias[1])/aca
```

```
[12]  →(~(i+dias[3]×100)∈fers)/naoefer
[13]  zz←,lit[((fers∈i+dias[3]×100)/⍳⍴fers);]
[14]  res←res,' ',(,lit[((fers∈i+dias[3]×100)/⍳⍴fers);])
[15]  →soma
[16] naoefer:res←res,3 0⍕i
[17] soma:→(i=i←i+1)/ll1
[18] aca:
[19]  r←6 21⍴res,100⍴' '
-------------------------------------------------------------
[ 0]  geraquestao031;q;dia;mes;ano;m;aa
[ 1]  m←(7↑'sabado'),(7↑'domingo'),(7↑'segunda'),(7↑'terca'),(7↑'quarta'),(7↑'quinta'),7↑'
      sexta'
[ 2]  m←7 7⍴m
[ 3]  q←''''
[ 4]  dia←?31
[ 5]  mes←(1 3 5 7 8 10 12)[?7]
[ 6]  ano←((1600+⍳99),(2200+⍳99))[?198]
[ 7]  'Para resolver esta quest⍀~ao, voc⍀^e deve executar o algoritmo de Clavius'
[ 8]  'e Lilius que permite determinar o dia da semana em qualquer data do '
[ 9]  'calend⍀',q,'ario gregoriano. O algoritmo ⍀',q,'e:⍀⍀*'
[10]  ' $A  ⍀leftarrow ⍀lfloor((12 - mes) ⍀div 10)$⍀⍀*'
[11]  ' $B  ⍀leftarrow  ano - A$⍀⍀*'
[12]  ' $C  ⍀leftarrow  mes + (12 ⍀times A$)⍀⍀*'
[13]  ' $D  ⍀leftarrow  ⍀lfloor (B ⍀div 100)$⍀⍀*'
[14]  ' $E  ⍀leftarrow  ⍀lfloor (D ⍀div 4)$⍀⍀*'
[15]  ' $F ⍀leftarrow  E + 2 - D$⍀⍀*'
[16]  ' $G  ⍀leftarrow  ⍀lfloor (365.25 ⍀times B)$⍀⍀*'
[17]  ' $H  ⍀leftarrow  ⍀lfloor (30.6001 ⍀times (C + 1))$⍀⍀*'
[18]  ' $I  ⍀leftarrow  F + G + H + dia + 5$⍀⍀*'
[19]  ' $R  ⍀leftarrow  I ⍀; mod ⍀;  7$⍀⍀*'
[20]  ' para o valor de $R$, use: 0=sab, 1=dom, 2=seg, ... 6=sex.⍀⍀*'
[21]  'Considere dia = ',(⍕dia),'; mes = ',(⍕mes),'; e ano = ',(⍕ano),'.'
[22]  'Informe o dia da semana que foi ou que ser⍀',q,'a:⍀⍀*'
[23]  (⍕aa),' - ',m[1+aa←DMA dia,mes,ano;]
-------------------------------------------------------------
[ 0]  geraquestao031a;q;dia;mes;ano;per
[ 1]  q←''''
[ 2]  dia←?28
[ 3]  mes←?4
[ 4]  ano←(,(1950+?30),2020+⍳30)[?60]
[ 5]  per←140+?90
[ 6]  'Suponha que voc⍀^e precisa calcular a data de vencimento de um empr⍀',q,'estimo'
[ 7]  'que foi concedido no dia ',('00'⍕dia),'/',('00'⍕mes),'/',('0000'⍕ano),' pelo prazo'
[ 8]  'de ',(⍕per),'. A pergunta ⍀',q,'e: qual o dia do vencimento do empr⍀',q,'estimo ?⍀⍀
      *'
[ 9]  'Dicas: ⍀⍀*'
[10]  'SE R4=0 $⍀land$ ((R100 $⍀neq$ 0) $⍀lor$ (R400 = 0)) o ano ⍀',q,'e bissexto.'
[11]  'Regra dos ossinhos: 31, 28/29, 31, 30, 31, 30, 31, 31, 30, 31, 30, 31'
[12]  'Vetor acumulado (n/bis): 0, 31, 59, 90, 120, 151, 181, 212, 243, 273, 304, 334'
[13]  '
-------------------------------------------------------------
[ 0]  r←meses
[ 1]  r←12 9⍴' '
[ 2]  r[1;]←9↑'Janeiro'
[ 3]  r[2;]←9↑'Fevereiro'
[ 4]  r[3;]←9↑'Marco'
[ 5]  r[4;]←9↑'Abril'
[ 6]  r[5;]←9↑'Maio'
[ 7]  r[6;]←9↑'Junho'
[ 8]  r[7;]←9↑'Julho'
[ 9]  r[8;]←9↑'Agosto'
[10]  r[9;]←9↑'Setembro'
[11]  r[10;]←9↑'Outubro'
```

```
[12]  r[11;]←9↑'Novembro'
[13]  r[12;]←9↑'Dezembro'
-------------------------------------------------------------
[ 0]  r←minhoca x
[ 1]  r←120 42⍴' '
[ 2]  r[⍳10;⍳41]←x[4+⍳10;1+⍳41]
[ 3]  r[10+⍳10;⍳35]←x[4+⍳10;42+⍳35]
[ 4]  r[20+⍳10;⍳41]←x[14+⍳10;1+⍳41]
[ 5]  r[30+⍳10;⍳35]←x[14+⍳10;42+⍳35]
[ 6]  r[40+⍳10;⍳41]←x[24+⍳10;1+⍳41]
[ 7]  r[50+⍳10;⍳35]←x[24+⍳10;42+⍳35]
[ 8]  r[60+⍳10;⍳41]←x[34+⍳10;1+⍳41]
[ 9]  r[70+⍳10;⍳35]←x[34+⍳10;42+⍳35]
[10]  r[80+⍳10;⍳41]←x[44+⍳10;1+⍳41]
[11]  r[90+⍳10;⍳35]←x[44+⍳10;42+⍳35]
[12]  r[100+⍳10;⍳41]←x[54+⍳10;1+⍳41]
[13]  r[110+⍳10;⍳35]←x[54+⍳10;42+⍳35]
[14]  r←(2 42⍴' '),[1]r
-------------------------------------------------------------
[0]  r←multa a
[1]  r←(a[2]×100)+a[1]
-------------------------------------------------------------
[0]  r←pedemail x
[1]  →(40≠+/' '=x)/aindanao
[2]  r←80↑'Por favor, informe seu e-mail: ⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_'
[3]  →junnao
[4] aindanao:r←80↑'e-mail cadastrado: ⍀verb+',x,'+'
[5] junnao:
-------------------------------------------------------------
[ 0]  r←poecoment x;i;zera;me;md
[ 1] ⍝ esta funcao comenta ao lado de cada dia que dia e esse
[ 2] ⍝ deve ser usada assim: x←poecoment esticaca calendalatex 2013'
[ 3]  r←x
[ 4]  zera←0
[ 5]  i←1
[ 6] t1:→(i>1↑⍴x)/fim
[ 7]  →(~∨/'cline'⍷x[i;])/pula
[ 8]  zera←¯1
[ 9] pula:
[10]  →((15=+/x[i;⍳15]='⍀multicolumn{7}')∧(33>⍴trim x[i;]))/ee
[11]  zera←zera+1
[12] naoee:→((x[i;⍳3]compara'N& ')∨(x[i;⍳3]compara'NN&'))/bota
[13]  i←i+1
[14]  →t1
[15] ee:me←x[i;22 23 24]
[16]  md←x[i+2;22 23 24]
[17]  i←i+3
[18]  →t1
[19] bota:
[20]  →((14|zera)>8)/vira
[21]  r[i;10+⍳7]←'%',((x[i;⍳3]≠'&')/x[i;⍳3]),'-',me
[22]  i←i+1
[23]  →t1
[24] vira:
[25]  r[i;10+⍳7]←'%',((x[i;⍳3]≠'&')/x[i;⍳3]),'-',md
[26]  i←i+1
[27]  →t1
[28] fim:
-------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
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```
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i>1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10] te3:→(candi[j]=' ')/ufa
[11]  j←j-1
[12]  →te3
[13] ufa:r←r,[1]1 80⍴80↑j↑candi
[14]  candi←j↓candi
[15]  →((⍴candi)=+/candi=' ')/som
[16]  →te2
[17] eca:r←r,[1]1 80⍴80↑candi
[18] som:i←i+1
[19]  →te
[20] fim:'acabou'
------------------------------------------------------------
[ 0]  r←somames x
[ 1]  r←3 4⍴x
[ 2]  →(x[2]<11)/ok
[ 3]  →(x[2]=11)/e11
[ 4] e12:r[2 3;2]←1 2
[ 5]  r[2 3;3]←x[3]+1
[ 6]  →cabou
[ 7] e11:r[2;2]←r[2;2]+1
[ 8]  r[3;2]←1
[ 9]  r[3;3]←r[3;3]+1
[10]  →cabou
[11] ok:r[2;2]←r[2;2]+1
[12]  r[3;2]←r[3;2]+2
[13] cabou:
------------------------------------------------------------
[ 0]  r←vejap031;A;B;C;D;E;F;G;H;I;J;K;L;M;P;Q;dc;ica;ww;xx;yy;lixo;x
[ 1]  'Qual o ano a calcular ? '
[ 2]  x←⎕
[ 3]  60↑'O ano de entrada = ',4 0⍕x
[ 4]  A←19|x
[ 5]  60↑'A = ',4 0⍕A
[ 6]  lixo←⎕
[ 7]  B←⌊x÷100
[ 8]  60↑'B = ',4 0⍕B
[ 9]  lixo←⎕
[10]  C←100|x
[11]  60↑'C = ',4 0⍕C
[12]  lixo←⎕
[13]  D←⌊B÷4
[14]  60↑'D = ',4 0⍕D
[15]  lixo←⎕
[16]  E←4|B
[17]  60↑'E = ',4 0⍕E
[18]  lixo←⎕
[19]  F←⌊(B+8)÷25
[20]  60↑'F = ',4 0⍕F
[21]  lixo←⎕
[22]  G←⌊(1+B-F)÷3
[23]  60↑'G = ',4 0⍕G
[24]  lixo←⎕
[25]  H←30|(19×A)+B+15-(D+G)
[26]  60↑'H = ',4 0⍕H
[27]  lixo←⎕
[28]  I←⌊C÷4
[29]  60↑'I = ',4 0⍕I
```

```
[30]  lixo←⍞
[31]  K←4|C
[32]  60↑'K = ',4 0⍕K
[33]  lixo←⍞
[34]  L←7|32+(2×E)+(2×I)-(H+K)
[35]  60↑'L = ',4 0⍕L
[36]  lixo←⍞
[37]  M←⌊(A+(11×H)+(22×L))÷451
[38]  60↑'M = ',4 0⍕M
[39]  lixo←⍞
[40]  P←⌊(H+L+114-7×M)÷31
[41]  60↑'P = ',4 0⍕P
[42]  lixo←⍞
[43]  Q←31|H+L+114-7×M
[44]  60↑'Q = ',4 0⍕Q
[45]  lixo←⍞
[46] ⍝pa  ←(P  ×100)+Q+1   ⍝ este aqui e o dia da pascoa
[47]  dc←ddmm2dc(Q+1),P,x
[48]  60↑'dc = ',4 0⍕dc
[49]  lixo←⍞
[50]  ww←dc-2
[51]  60↑'dc-2 = ',4 0⍕ww
[52]  lixo←⍞
[53]  xx←dc-47
[54]  60↑'dc-47 = ',4 0⍕xx
[55]  lixo←⍞
[56]  yy←dc+60
[57]  60↑'dc+60 = ',4 0⍕yy
[58]  lixo←⍞
[59]  ica←dc2ddmm ww,x   ⍝ sexta feira santa
[60]  60↑'sexta feira santa (dd mm) = ',4 0⍕ica
[61]  lixo←⍞
[62]  ica←dc2ddmm xx,x   ⍝ carnaval
[63]  60↑'carnaval (dd mm) = ',4 0⍕ica
[64]  lixo←⍞
[65]  ica←dc2ddmm yy,x   ⍝  corpus cristhi
[66]  60↑'Corpus Christi (dd mm) = ',4 0⍕ica
-------------------------------------------------------------
[ 0]  r←vejas031;A;B;C;D;E;F;G;H;I;R;lixo;x
[ 1]  'Qual o dia, mes e ano a calcular ? '
[ 2]  x←⍞
[ 3]  60↑'A data a calcular = ',6 0⍕x
[ 4]  A←⌊((12-x[2])÷10)
[ 5]  60↑'A = ',4 0⍕A
[ 6]  lixo←⍞
[ 7]  B←x[3]-A
[ 8]  60↑'B = ',4 0⍕B
[ 9]  lixo←⍞
[10]  C←x[2]+(12×A)
[11]  60↑'C = ',4 0⍕C
[12]  lixo←⍞
[13]  D←⌊B÷100
[14]  60↑'D = ',4 0⍕D
[15]  lixo←⍞
[16]  E←⌊D÷4
[17]  60↑'E = ',4 0⍕E
[18]  lixo←⍞
[19]  F←E+2-D
[20]  60↑'F = ',4 0⍕F
[21]  lixo←⍞
[22]  G←⌊365.25×B
[23]  60↑'G = ',8 0⍕G
[24]  lixo←⍞
```

```
[25]  H←⌊30.6001×C+1
[26]  60↑'H = ',8 0⍕H
[27]  lixo←⍞
[28]  I←F+G+H+x[1]+5
[29]  60↑'I = ',8 0⍕I
[30]  lixo←⍞
[31]  R←7|I
[32]  60↑'R = ',4 0⍕R
-------------------------------------------------------------
[ 0]  opesq vivo031a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;dd;pp
[ 1]  →(0≠⎕NC'opesq')/vemq
[ 2]  opesq←10⍴' '
[ 3] vemq:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←5 ⋄ EVENTO←'PL031   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA031←ajusta80 FOLHALA031
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA031)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[12]  xk←1 ⋄ resu←0 11⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←15 80⍴' '
[15]  f←FOLHALA031
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.28
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23] ⍝ esse[11;]←80↑pedemail ylu[xk;36+⍳40]
[24]  esse[14;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[25]  esse[15;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[26] inica:
[27]  dd←geradata
[28]  resp←resp,DMA dd
[29]  pp←PASCOA dd[3]
[30]  resp←resp,(100|pp[2]),(⌊pp[2]÷100),(100|pp[3]),⌊pp[3]÷100
[31]  esse[8;]←80↑(2 0⍕dd[1]),'/',(2 0⍕dd[2]),'/',4 0⍕dd[3]
[32]  esse[9;]←80↑4 0⍕dd[3]
[33]  esse[10;]←80↑4 0⍕⎕TS[1]
[34]  dd←geradata
[35]  resp←resp,DMA dd
[36]  pp←PASCOA dd[3]
[37]  resp←resp,(100|pp[2]),(⌊pp[2]÷100),(100|pp[3]),⌊pp[3]÷100
[38]  esse[11;]←80↑(2 0⍕dd[1]),'/',(2 0⍕dd[2]),'/',4 0⍕dd[3]
[39]  esse[12;]←80↑4 0⍕dd[3]
[40] ⍝ esse[13;]←80↑4 0⍕⎕TS[1]
[41]  resu←resu,[1]1 11⍴resp
[42]  acuja←(f[;2]='#')/⍳1↑⍴f
[43]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[44]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[45]  ⍞←(⍕xk←xk+1),'-'
[46]  →testa
[47] fim:upag←(1 0+⍴f)⍴' '
[48]  →(1=≡n)/elafa
[49]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[50]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[51]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←4 0 4 0 8 0 2 0 4 0 2 0 6 0 6 0 2 0 4 0 2 0
```

```
      )⍕resu
[52]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[53]  →terminando
[54] elafa:aaa←(ylu,4 0 8 0 2 0 4 0 2 0 6 0 6 0 2 0 4 0 2 0⍕0 1↓resu)
[55]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[56]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[57] terminando:
[58]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[59]  relat[1↑⍴relat;;]←upag
[60]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[61] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[62]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[63]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[64]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo034

```
[ 0]  r←acerta034 x
[ 1]  r←3 25⍴' '
[ 2]  r[1;⍳10]←'99/99/9999'⍕x[1;1]
[ 3]  r[1;10+⍳5]←'¯-'edit 5 0⍕x[1;2]
[ 4]  r[1;15+⍳10]←'99/99/9999'⍕x[1;3]
[ 5]  r[2;⍳10]←'99/99/9999'⍕x[2;1]
[ 6]  r[2;10+⍳5]←5 0⍕x[2;2]
[ 7]  r[2;15+⍳10]←'99/99/9999'⍕x[2;3]
[ 8]  r[3;⍳10]←'99/99/9999'⍕x[3;1]
[ 9]  r[3;10+⍳5]←'¯-'edit 5 0⍕x[3;2]
[10]  r[3;15+⍳10]←'99/99/9999'⍕x[3;3]
-------------------------------------------------------------
[ 0]  cavaleiro034a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinha
      ;relat;resp;resu;upag;xixo;xk;xx;ylu;zz;x
[ 1]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 2]  FOLHALA034←ajusta80 FOLHALA034
[ 3]  relat←ΔFM'c:\apl2\VIVOBLO1'
[ 4]  xk←1
[ 5] testa:→(xk>n)/fim
[ 6]  esse←15 80⍴' '
[ 7]  f←FOLHALA034
[ 8]  esse[1;⍳⍴x]←x←' -- Cavaleiros da Tavola Redonda '
[ 9]  esse[3;]←80↑4 2⍕VERSAOa←1.02
[10]  esse[14;⍳8]←'@000000@'
[11] inica:
[12]  xx←acerta034 geracaso034
[13]  esse[8;]←80↑xx[1;⍳10]
[14]  esse[9;]←80↑xx[1;10+⍳5]
[15]  resp←xx[1;15+⍳10],'-'
[16]  esse[10;]←80↑xx[2;15+⍳10]
[17]  esse[11;]←80↑(5 0⍕|±xx[2;10+⍳5])
[18]  resp←resp,xx[2;⍳10],'-'
[19]  esse[12;]←80↑xx[3;⍳10]
[20]  esse[13;]←80↑xx[3;15+⍳10]
[21]  resp←resp,xx[3;10+⍳5]
[22]  acuja←(f[;2]='#')/⍳1↑⍴f
[23]  f[acuja;⍳80]←esse[±,f[acuja;3 4],' ';]
[24]  ⍞←(⍕xk←xk+1),'-'
[25]  f←(((1↑⍴relat),1↓⍴f)↑relat),[1]f
[26]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'\end{document}'
[27]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'%',resp
[28]  lixo1←f ΔFM'c:\apl2\CA034a',('00'⍕xk-1),'.tex'
[29]  →testa
[30] fim:
```

```
------------------------------------------------------------
[0]  r←geracaso034;qual;quanto
[1]  r←3 3⍴0
[2]  r[;1]←DTS[qual←2000+3?10000]
[3]  r[;2]←quanto←(1000+?2000),(1000+?1000),(3000+?10000)
[4]  r[;3]←DTS[qual+quanto]
------------------------------------------------------------
[ 0]  geraquestao034;q;dia;mes;ano;per;x
[ 1]  q←''''
[ 2]  dia←?28
[ 3]  mes←?4
[ 4]  ano←1970+?99
[ 5]  per←140+?90
[ 6]  'Suponha que voc⍱^e precisa calcular a data de vencimento de um empr⍱',q,'estimo'
[ 7]  'que foi/ser⍱',q,'a concedido no dia ',('00'⍕dia),'/',('00'⍕mes),'/',('0000'⍕ano),'
      pelo prazo'
[ 8]  'de ',(⍕per),' dias. A pergunta ⍱',q,'e: qual o dia do vencimento do empr⍱',q,'estim
      o ?⍱⍱*'
[ 9]  'Dicas: ⍱⍱*'
[10]  'SE R4=0 $⍱land$ ((R100 $⍱neq$ 0) $⍱lor$ (R400 = 0)) o ano ⍱',q,'e bissexto.⍱⍱*'
[11]  'Regra dos ossinhos: 31, 28/29, 31, 30, 31, 30, 31, 31, 30, 31, 30, 31.⍱⍱*'
[12]  'Vetor acumulado (n/bis): 0, 31, 59, 90, 120, 151, 181, 212, 243, 273, 304, 334.'
[13]  x←DTS⍳⍎('00'⍕dia),('00'⍕mes),('0000'⍕ano)
[14]  x←x+per
[15]  '00/00/0000'⍕DTS[x]
------------------------------------------------------------
[0]  r←preenche tam;i;x
[1]  x←tam⍴0
[2]  x[1]←1011970
[3]  i←1
[4] t1:→(i≥⍴x)/fim
[5]  x[i+1]←proxd x[i]
[6]  i←i+1
[7]  →t1
[8] fim:r←x
------------------------------------------------------------
[ 0]  r←proxd dma;aa;bis;dd;mm
[ 1]  dd←⌊dma÷1000000
[ 2]  mm←⌊(dma-(dd×1000000))÷10000
[ 3]  aa←⌊(dma-(dd×1000000)+(mm×10000))
[ 4]  →((dd≠31)∨(mm≠12))/vai1
[ 5]  r←(1000000)+(10000)+aa+1
[ 6]  →0
[ 7] vai1:
[ 8]  →((dd=31)∧((mm=1)∨(mm=3)∨(mm=5)∨(mm=7)∨(mm=8)∨(mm=10)))/esim
[ 9]  →((dd=30)∧((mm=4)∨(mm=6)∨(mm=9)∨(mm=11)))/esim
[10]  bis←((4|aa)=0)∧(((100|aa)≠0)∨((400|aa)=0)) ⍝bis=1 aa e bissexto; =0 nao e
[11]  →((dd=28)∧(mm=2)∧~bis)/esim
[12]  →((dd=29)∧(mm=2)∧bis)/esim
[13]  r←(1000000×dd+1)+(10000×mm)+aa
[14]  →0
[15] esim:r←(1000000)+(10000×mm+1)+aa
------------------------------------------------------------
[0]  vivo034
------------------------------------------------------------
[ 0]  opesq vivo034a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo034 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
```

```
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PL034   '
[ 9]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[69]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[70] terminando:
[71]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[72]  relat[1↑⍴relat;;]←upag
[73]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[74] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[75]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[76]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[77]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo035

```
[ 0]  r←NSLW acha35b torres;rr;i;min;z;s;to
[ 1] ⍝ Se NSLW = 2, o oleoduto passa de leste a oeste
[ 2] ⍝ Se = 1, passa de norte a sul
[ 3]  to←torres
[ 4]  to[;NSLW]←to[;NSLW]-⌊/to[;NSLW]
[ 5]  rr←(z←1↑⍴torres)⍴0
[ 6]  i←1
[ 7] tt:→(i>z)/aca
[ 8]  rr[i]←+/|to[;NSLW]-to[i;NSLW]
[ 9]  →(i=i←i+1)/tt
[10] aca:RR←rr   ⍝ em rr esta o vetor de custos
[11]  →((0=2|z)∧(2=+/rr=min←⌊/rr))/okpar
[12]  →(1=+/rr=min)/okimpar
[13]  r←¯1
[14]  →0
[15] okpar:s←(min=rr)/⍳z
[16]  r←min,(+/torres[s;NSLW])÷2
[17]  →0
[18] okimpar:r←min,(rr=min)/,torres[;NSLW]
-------------------------------------------------------------
[0]  r←qual alternativo t;z;k
[1]  z←t[;qual]
[2]  z←z[⍋z]
[3]  →(0=2|k←1↑⍴t)/par
[4] impar:r←z[⌈k÷2]
[5]  →0
[6] par:r←(+/z[(k÷2),1+k÷2])÷2
-------------------------------------------------------------
[ 0]  r←euler122j;aa;cand;i;ind;j;onde;prof;prox;px;seq;velho;x
[ 1]  x←1000 17⍴0
[ 2]  x[1;]←1 ¯1 0 0,13⍴0 ⍝ chave, &pai, qtdade de ciclos, 88=fechado, ¯1=aberto
[ 3]  x[2;]←2 1 1 ¯1 1,12⍴0
[ 4]  prox←3
[ 5] ⍝ ta dando erro no 77 (1-2-3-5-7-14-19-38-76-77) e o menor e
[ 6] ⍝ 1-2-4-8-9-17-34-43-77: da um a menos. Idem para o 154 (que pega
[ 7] ⍝ carona no 77). A solucao para este erro e guardar todos os minimos
[ 8] ⍝ e nao so o primeiro.
[ 9] t1:⍝→(prox>990)/acabou
[10]  →(200=+/(⍳200)∈x[;1])/acabou
[11]  velho←cand←1↑(x[;4]=¯1)/⍳1000
[12] ⍝ 'velho=',⍕velho
[13]  prof←x[velho;3]
[14] ⍝ 'prof=',⍕prof
[15]  seq←⍳0
[16] aba:→(0=⍴seq)/fr
[17]  →(seq[⍴seq]=1)/ter
[18] fr:seq←seq,x[cand;1]
[19]  cand←x[cand;2]
[20]  →aba
```

```
[21] ter:
[22] ⍝ 'seq=',⍕seq
[23]  ind←⍴seq
[24] f4:→(0=ind)/lk
[25]  →(1=∨/aa←(seq[1]+seq[ind])=x[;1])/pula
[26]  x[prox;]←((seq[1]+seq[ind]),velho,(prof+1),¯1),(12↑seq),ind
[27]  prox←prox+1
[28]  →ikj
[29] pula:
[30]  onde←aa/⍳1↑⍴x                  ⍝ so para ter certeza
[31]  →(x[onde;3]≤prof+1)/ikj        ⍝ que a logica esta certa
[32]  'olha aqui ',⍕onde,prox        ⍝ ele nao entra aqui
[33] ikj:                            ⍝ nenhuma vez
[34]  ind←ind-1
[35]  →f4
[36] lk:x[velho;4]←88 ⍝ era 0
[37]  →t1
[38] acabou:r←x[⍳prox-1;]
[39] ⍝ o jeito correto de achar a solucao e:
[40] ⍝ a←euler122j 800 (ou 900) por ai...
[41] ⍝ b←⊃a[1] - pegar so a matriz gerada
[42] ⍝ ⍴b - da 322 (para o caso de 800)
[43] ⍝ +/b[(b[;1]∈⍳200)/⍳322;3] - col3 eh a coluna onde esta a qtd de operacoes
[44] ⍝ a linha acima deu 1584. Lembrar que ha que retirar 2 por causa do 77
[45] ⍝ e do 154 e a resposta correta e 1582.
[46] ⍝ 1 numera 5 0 4 0 3 0 3 0 10 0 4 0 4 0 3 0 3 0 3 0 3 0 3 0 3 0 3 0 3 0 3 0⍕b
------------------------------------------------------------
[  0]  euler15;x;i
[  1]  x←21 21⍴0
[  2]  x[;1]←0,20⍴1
[  3]  x[;2]←0,1+⍳20
[  4]  x[;3]←0,1↓+⍀⍳21
[  5]  x[3;4]←x[4;3]
[  6]  i←4
[  7] t1:→(i>21)/fi
[  8]  x[i;4]←x[i-1;4]+x[i;3]
[  9]  i←i+1
[ 10]  →t1
[ 11] fi:x[4;5]←x[5;4]
[ 12]  i←5
[ 13] t2:→(i>21)/fi2
[ 14]  x[i;5]←x[i-1;5]+x[i;4]
[ 15]  i←i+1
[ 16]  →t2
[ 17] fi2:
[ 18]  x[5;6]←x[6;5]
[ 19]  i←6
[ 20] t3:→(i>21)/fi3
[ 21]  x[i;6]←x[i-1;6]+x[i;5]
[ 22]  i←i+1
[ 23]  →t3
[ 24] fi3:
[ 25]  x[6;7]←x[7;6]
[ 26]  i←7
[ 27] t4:→(i>21)/fi4
[ 28]  x[i;7]←x[i-1;7]+x[i;6]
[ 29]  i←i+1
[ 30]  →t4
[ 31] fi4:
[ 32]  x[7;8]←x[8;7]
[ 33]  i←8
[ 34] t5:→(i>21)/fi5
[ 35]  x[i;8]←x[i-1;8]+x[i;7]
```

```
[ 36]  i←i+1
[ 37]  →t5
[ 38] fi5:
[ 39]  x[8;9]←x[9;8]
[ 40]  i←9
[ 41] t6:→(i>21)/fi6
[ 42]  x[i;9]←x[i-1;9]+x[i;8]
[ 43]  i←i+1
[ 44]  →t6
[ 45] fi6:
[ 46]  x[9;10]←x[10;9]
[ 47]  i←10
[ 48] t7:→(i>21)/fi7
[ 49]  x[i;10]←x[i-1;10]+x[i;9]
[ 50]  i←i+1
[ 51]  →t7
[ 52] fi7:
[ 53]  x[10;11]←x[11;10]
[ 54]  i←11
[ 55] t8:→(i>21)/fi8
[ 56]  x[i;11]←x[i-1;11]+x[i;10]
[ 57]  i←i+1
[ 58]  →t8
[ 59] fi8:
[ 60]  x[11;12]←x[12;11]
[ 61]  i←12
[ 62] t9:→(i>21)/fi9
[ 63]  x[i;12]←x[i-1;12]+x[i;11]
[ 64]  i←i+1
[ 65]  →t9
[ 66] fi9:
[ 67]  x[12;13]←x[13;12]
[ 68]  i←13
[ 69] t10:→(i>21)/fi10
[ 70]  x[i;13]←x[i-1;13]+x[i;12]
[ 71]  i←i+1
[ 72]  →t10
[ 73] fi10:
[ 74]  x[13;14]←x[14;13]
[ 75]  i←14
[ 76] t11:→(i>21)/fi11
[ 77]  x[i;14]←x[i-1;14]+x[i;13]
[ 78]  i←i+1
[ 79]  →t11
[ 80] fi11:
[ 81]  x[14;15]←x[15;14]
[ 82]  i←15
[ 83] t12:→(i>21)/fi12
[ 84]  x[i;15]←x[i-1;15]+x[i;14]
[ 85]  i←i+1
[ 86]  →t12
[ 87] fi12:
[ 88]  x[15;16]←x[16;15]
[ 89]  i←16
[ 90] t13:→(i>21)/fi13
[ 91]  x[i;16]←x[i-1;16]+x[i;15]
[ 92]  i←i+1
[ 93]  →t13
[ 94] fi13:
[ 95]  x[16;17]←x[17;16]
[ 96]  i←17
[ 97] t14:→(i>21)/fi14
[ 98]  x[i;17]←x[i-1;17]+x[i;16]
```

```
[ 99]  i←i+1
[100]  →t14
[101] fi14:
[102]  x[17;18]←x[18;17]
[103]  i←18
[104] t15:→(i>21)/fi15
[105]  x[i;18]←x[i-1;18]+x[i;17]
[106]  i←i+1
[107]  →t15
[108] fi15:
[109]  x[18;19]←x[19;18]
[110]  i←19
[111] t16:→(i>21)/fi16
[112]  x[i;19]←x[i-1;19]+x[i;18]
[113]  i←i+1
[114]  →t16
[115] fi16:
[116]  x[19;20]←x[20;19]
[117]  i←20
[118] t17:→(i>21)/fi17
[119]  x[i;20]←x[i-1;20]+x[i;19]
[120]  i←i+1
[121]  →t17
[122] fi17:
[123]  x[20;21]←x[21;20]
[124]  i←21
[125] t18:→(i>21)/fi18
[126]  x[i;21]←x[i-1;21]+x[i;20]
[127]  i←i+1
[128]  →t18
[129] fi18:
[130]  X←x
[131]  30 0⍕+/x[20;]
-------------------------------------------------------------
[0]  r←euler28a x
[1]  →(x<2)/um
[2]  r←(4×x*2)+(-(6×(x-1)))+euler28a(x-2)
[3]  →0
[4] um:r←1
-------------------------------------------------------------
[0]  r←geracaso35b n
[1]  r←(n,2)⍴(n×2)?(n×3)
-------------------------------------------------------------
[ 0]  r←geracaso35c;x;n
[ 1] ⍝ euler 122
[ 2]  x←20+?50
[ 3]  r←EULER122[x;1],EULER122[x;3]
[ 4] ⍝ euler 28
[ 5]  n←30+?20   ⍝ era 300+?200
[ 6]  n←(2×n)+1
[ 7]  r←r,n,euler28a n
[ 8] ⍝ euler 15
[ 9]  n←4+?6     ⍝ era 8+?8
[10]  r←r,n,EULER15[n+1;n+1]
[11] ⍝ mathchallenge 233, jul 2005
[12]  n←11+?20
[13]  r←r,n
-------------------------------------------------------------
[ 0]  r←gerag66;i;n
[ 1]  QUE66←BQUE66←ajusta80 BQUE66
[ 2]  r←0 80⍴' '
[ 3]  i←1759
[ 4]  n←11
```

```
[ 5] novo:
[ 6]  →(n>40)/fim
[ 7]  QUE66[1;4+⍳4]←4 0⍕i
[ 8]  QUE66[8;⍳3]←3 0⍕n×4
[ 9]  QUE66[9;⍳3]←3 0⍕n
[10]  QUE66[10;⍳3]←3 0⍕n×5
[11]  QUE66[13;4+⍳4]←4 0⍕i
[12]  QUE66[14;⍳20]←20↑4 0⍕n,n,(n×5),(n×6),(n×7)
[13]  n←n+1
[14]  r←r,[1]((1↑⍴QUE66),80)↑QUE66
[15]  i←i+1
[16]  →novo
[17] fim:⎕EX'QUE66'
-------------------------------------------------------------
[ 0]  opesq vivo035b n;CORRECAO;EVENTO;OBA;T;X;Y;Z;aaa;acuja;dhx;esse;f;lixo1;lixonol;rela
      t;resp;resu;upag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←4 ⋄ EVENTO←'PL035b  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA035b←ajusta80 FOLHALA035b
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA035b)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[12]  xk←1 ⋄ resu←0 7⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←78 80⍴' '
[15]  f←FOLHALA035b
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.1
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23] ⍝ esse[54;]←80↑pedemail ylu[xk;36+⍳40]
[24]  esse[77;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[25]  esse[78;⍳17]←esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[5+⍳5]
[26] inica:
[27] denovo:
[28]  X←2?2 ⋄ Y←7+?4
[29]  Z←Y+(Y<10)+-Y≥10
[30]  esse[8;⍳30]←30↑(2 3⍴'N-SE-W')[X[1];]
[31]  T←geracaso35b Y
[32]  OBA←X[1]acha35b T
[33]  →(OBA=¯1)/xabu
[34]  resp←resp,OBA
[35]  esse[8+⍳22;⍳30]←22 30⍴(,30 0⍕T),300⍴' '
[36]  esse[31;⍳30]←30↑(2 3⍴'N-SE-W')[X[2];]
[37]  T←geracaso35b Z
[38]  OBA←X[2]acha35b T
[39]  →(OBA=¯1)/xabu
[40]  resp←resp,OBA
[41]  esse[31+⍳22;⍳30]←22 30⍴(,30 0⍕T),300⍴' '
[42]  Y←6+?3
[43]  T←geracaso35b Y
[44]  OBA←1 acha35b T
[45]  →(OBA=¯1)/xabu
[46]  resp←resp,OBA
```

```
[47]  esse[54;⍳30]←30↑'N-S'
[48]  esse[54+⍳22;⍳30]←22 30⍴(,30 0⍕T),300⍴' '
[49]  →blz3
[50] xabu:
[51]  ⍞←'*'
[52]  →denovo
[53] blz3:
[54]  resu←resu,[1]1 7⍴resp
[55]  acuja←(f[;2]='#')/⍳1↑⍴f
[56]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[57]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[58]  ⍞←(⍕xk←xk+1),'-'
[59]  →testa
[60] fim:upag←(1 0+⍴f)⍴' '
[61]  →(1=≡n)/elafa
[62]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[63]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[64]  upag[2+⍳1↑⍴resu;⍳¯6++/lixo1]←(lixo1←5 0 10 1 5 1 8 1 5 1 8 1 5 1)⍕resu
[65]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[66]  →terminando
[67] elafa:aaa←(ylu,5 1⍕0 1↓resu)
[68]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[69]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[70] terminando:
[71]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\begin{verbatim}'
[72]  relat[1↑⍴relat;;]←upag
[73]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[74]  lixonol←lixonol,[1]1 80⍴80↑'\end{verbatim} \end{document}'
[75] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[76]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[77]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[78]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[ 0]  opesq vivo035c n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;relat;resp;resu;
      upag;xixo;xk;xx;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←4 ⋄ EVENTO←'PL035c  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA035c←ajusta80 FOLHALA035c
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA035c)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[12]  xk←1 ⋄ resu←0 9⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←15 80⍴' '
[15]  f←FOLHALA035c
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←1.6
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[14;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[15;⍳17]←esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[5+⍳5]
[25] inica:
[26]  xx←geracaso35c
[27]  esse[8;]←80↑3 0⍕xx[1]
```

```
[28]  resp←resp,xx[2]
[29]  esse[9;]←80↑5 0⍕xx[3]
[30]  resp←resp,xx[4]
[31]  esse[10;]←80↑3 0⍕xx[5]
[32]  resp←resp,xx[6]
[33]  esse[11;]←80↑3 0⍕xx[7]×4
[34]  esse[12;]←80↑3 0⍕xx[7]
[35]  esse[13;]←80↑3 0⍕xx[7]×5
[36]  resp←resp,1 1 5 6 7×xx[7]
[37]  resu←resu,[1]1 9⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[41]  ⎕←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳68]←5 0 9 0 13 0 15 0 10 0 4 0 4 0 4 0 4 0⍕resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu,9 0 13 0 15 0 10 0 4 0 4 0 4 0 4 0⍕0 1↓resu)
[51]  lixonol←aaa ⍙FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\begin{verbatim}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol,[1]1 80⍴80↑'\end{verbatim} \end{document}'
[58] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[59]  lixonol←lixonol ⍙FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[60]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[61]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo036

```
[0]  AVISO
[1]  'Ha um limite de 80 exercicios para o vivo036b'
[2]  ''
[3]  'Para o 036f a correcao so traz os 2 primeiros de cada exercicio'
-------------------------------------------------------------
[0]  r←arr12 z;x
[1]  x←⊃z[1]
[2]  r←10 30↑x
[3]  r[;6]←'&'
[4]  r[;9]←'&'
[5]  r[;9+⍳9]←10 9⍴'\\ \hline'
-------------------------------------------------------------
[0]  r←arr3 z;x
[1]  x←⊃z[1]
[2]  r←10 30↑x
[3]  r[;12]←'&'
[4]  r[;15]←'&'
[5]  r[;15+⍳9]←10 9⍴'\\ \hline'
-------------------------------------------------------------
[0]  r←arr4 z;x
[1]  x←⊃z[1]
[2]  r←10 30↑x
[3]  r[;16]←'&'
[4]  r[;19]←'&'
```

```
[5]  r[;19+⍳9]←10 9⍴'⍀⍀ ⍀hline'
-------------------------------------------------------------
[0]  r←arr5 z;x
[1]  x←⊃z[1]
[2]  r←10 50⍴' '
[3]  r[;⍳12]←x[;⍳11],'&'
[4]  r[;13 14]←10 2⍴'  '
[5]  r[;14+⍳11]←x[;11+⍳11]
[6]  r[;26]←'&'
[7]  r[;27 28]←x[;24 25]
[8]  r[;28+⍳10]←10 10⍴'&⍀⍀ ⍀hline'
-------------------------------------------------------------
[0]  r←arr7 z;x
[1]  x←⊃z[1]
[2]  r←10 50⍴' '
[3]  r[;⍳12]←x[;⍳11],'&'
[4]  r[;13 14]←10 2⍴'  '
[5]  r[;14+⍳11]←x[;11+⍳11]
[6]  r[;26]←'&'
[7]  r[;27 28]←x[;24 25]
[8]  r[;28+⍳10]←10 10⍴'&⍀⍀ ⍀hline'
-------------------------------------------------------------
[ 0]  r←arr9a z;x
[ 1]  x←⊃z[1]
[ 2]  r←10 50⍴' '
[ 3]  r[;⍳12]←x[;⍳11],'&'
[ 4]  r[;13 14]←x[;13 14]
[ 5]  r[;15]←'&'
[ 6]  r[;17 18]←10 2⍴'  '
[ 7]  r[;18+⍳11]←x[;14+⍳11]
[ 8]  r[;30]←'&'
[ 9]  r[;31 32]←x[;27 28]
[10]  r[;33 34]←10 2⍴'&'
[11]  r[;35 36]←x[;30 31]
[12]  r[;36+⍳10]←10 10⍴' ⍀⍀ ⍀hline'
-------------------------------------------------------------
[0]  r←base conv102b x
[1] ⍝   →(1=  ⌈/x>base)/erro1
[2]  r←(20⍴base)⊤x
[3]  r←(~∧⍀r=0)/r
[4]  →0
[5] ⍝ erro1:'erro de operador'
[6] ⍝   →0
-------------------------------------------------------------
[0]  r←b conv10q x;z;i
[1]  z←30⍴0
[2]  i←1
[3] t1:→(x=0)/fim
[4]  z[i]←b|x
[5]  x←⌊x÷b
[6]  i←i+1
[7]  →t1
[8] fim:r←'0123456789ABCDEFGHIJKLMNÔPQRSTUVWXYZ'[1+⌽(i-1)↑z]
-------------------------------------------------------------
[ 0]  r←b convq10 x;i;som;j;w
[ 1]  i←⍴,x
[ 2]  w←,¯1+'0123456789ABCDEFGHIJKLMNÔPQRSTUVWXYZ'⍳x
[ 3]  →(∨/(,w)≥b)/erro
[ 4]  som←0
[ 5]  j←0
[ 6] t1:→(i<1)/fim
[ 7]  som←som+w[i]×b*j
[ 8]  i←i-1
```

```
[ 9]  j←j+1
[10]  →t1
[11] fim:r←som
[12]  →0
[13] erro:'base invalida'
------------------------------------------------------------
[ 0]  r←geracaso36b;a1;a2;a3;a4;a5;a6;a7;a8;a9;aa
[ 1]  r←2 10 60⍴' '
[ 2]  a1←101+?198
[ 3]  r[1;1;]←60↑'\item $',(2 0⍕2 conv102b a1),'_{(2)}=?_{(10)}$'
[ 4]  r[2;1;]←60↑3 0⍕a1
[ 5]  a2←2100+?2899
[ 6]  r[1;2;]←60↑'\item $',('0123456789ABCDEF'[1+16 conv102b a2]),'_{(16)}=?_{(10)}$'
[ 7]  r[2;2;]←60↑4 0⍕a2
[ 8]  a3←100+?200
[ 9]  r[1;3;]←60↑'\item $',(5 0⍕a3),'_{(10)}=?_{(2)}$'
[10]  r[2;3;]←60↑1 0⍕2 conv102b a3
[11]  a4←100+?200
[12]  r[1;4;]←60↑'\item $',(5 0⍕a4),'_{(10)}=?_{(2)}$'
[13]  r[2;4;]←60↑1 0⍕2 conv102b a4
[14]  a5←1000+?9000
[15]  r[1;5;]←60↑'\item $',(5 0⍕a5),'_{(10)}=?_{(16)}$'
[16]  r[2;5;]←60↑'0123456789ABCDEF'[1+16 conv102b a5]
[17]  a6←1000+?9000
[18]  r[1;6;]←60↑'\item $',(5 0⍕a6),'_{(10)}=?_{(16)}$'
[19]  r[2;6;]←60↑'0123456789ABCDEF'[1+16 conv102b a6]
[20]  a7←(100+?500),100+?500
[21]  r[1;7;]←60↑'\item $',(1 0⍕2 conv102b a7[1]),'_{(2)}+',(1 0⍕2 conv102b a7[2]),'_{(2)}
      =?_{(2)}$'
[22]  r[2;7;]←60↑1 0⍕2 conv102b a7[1]+a7[2]
[23]  a8←(100+?500),100+?500
[24]  r[1;8;]←60↑'\item $',(1 0⍕2 conv102b a8[1]),'_{(2)}+',(1 0⍕2 conv102b a8[2]),'_{(2)}
      =?_{(2)}$'
[25]  r[2;8;]←60↑1 0⍕2 conv102b a8[1]+a8[2]
[26]  a9←(1000+?9000),1000+?9000
[27]  r[1;9;]←60↑'\item $',('0123456789ABCDEF'[1+16 conv102b a9[1]]),'_{(16)}+',('01234567
      89ABCDEF'[1+16 conv102b a9[2]]),'_{(16)}=?_{(16)}$'
[28]  r[2;9;]←60↑('0123456789ABCDEF'[1+16 conv102b a9[1]+a9[2]])
[29]  aa←(1000+?9000),1000+?9000
[30]  r[1;10;]←60↑'\item $',('0123456789ABCDEF'[1+16 conv102b aa[1]]),'_{(16)}+',('0123456
      789ABCDEF'[1+16 conv102b aa[2]]),'_{(16)}=?_{(16)}$'
[31]  r[2;10;]←60↑('0123456789ABCDEF'[1+16 conv102b aa[1]+aa[2]])
------------------------------------------------------------
[ 0]  r←geraquestaoprova1;zz;u;i;alfa;ia
[ 1]  zz←0 78⍴' '
[ 2]  u←2982
[ 3]  i←1
[ 4] t1:→(i>50)/fim
[ 5]  zz←zz,[1]1 78⍴78↑'$QE',(5 0⍕u),'510      1conversoes bin-hex-dec'
[ 6]  zz←zz,[1]1 78⍴78↑'\begin{enumerate}'
[ 7]  alfa←geracaso36b
[ 8]  ia←3?10
[ 9]  zz←zz,[1]3 78↑alfa[1;ia;]
[10]  zz←zz,[1]1 78⍴78↑'\end{enumerate}'
[11]  zz←zz,[1]1 78⍴78↑'$QR',(5 0⍕u)
[12]  zz←zz,[1]1 78⍴78↑,alfa[2;ia;⍳12]
[13]  u←u+1
[14]  i←i+1
[15]  →t1
[16] fim:r←zz
------------------------------------------------------------
[ 0]  r←gf1;rp;re;i;b;a;alfa
[ 1]  re←10 8⍴' '
```

```
[ 2]  rp←10 11ρ' '
[ 3]  i←1
[ 4] t1:→(i>10)/fim
[ 5] q4:b←2+?34
[ 6]  →(b=10)/q4
[ 7]  re[i;]←(5 0⍕a←5000+?15000),' ',2 0⍕b
[ 8]  rp[i;]←11↑alfa←b conv10q a
[ 9]  →(a≠b convq10 alfa)/erro
[10]  i←i+1
[11]  →t1
[12] fim:r←2ρ0
[13]  r[1]←⊂re
[14]  r[2]←⊂rp
[15]  →0
[16] erro:'deu xaubu'
[17]  a
[18]  b
[19]  alfa
-------------------------------------------------------------
[ 0]  r←gf2;rp;re;i;b;a;b1;alfa
[ 1]  re←10 8ρ' '
[ 2]  rp←10 15ρ' '
[ 3]  i←1
[ 4] t1:→(i>10)/fim
[ 5]  b1←(5ρ2),(10ρ8),10ρ16
[ 6]  b←b1[?ρb1]
[ 7]  re[i;]←(5 0⍕a←5000+?15000),' ',2 0⍕b
[ 8]  rp[i;]←15↑alfa←b conv10q a
[ 9]  →(a≠b convq10 alfa)/erro
[10]  i←i+1
[11]  →t1
[12] fim:r←2ρ0
[13]  r[1]←⊂re
[14]  r[2]←⊂rp
[15]  →0
[16] erro:'deu xabu'
[17]  a
[18]  b
[19]  alfa
-------------------------------------------------------------
[ 0]  r←gf3;rp;re;i;b;a;b1;alfa
[ 1]  rp←10 5ρ' '
[ 2]  re←10 14ρ' '
[ 3]  i←1
[ 4] t1:→(i>10)/fim
[ 5] q4:b←2+?34
[ 6]  →(b=10)/q4
[ 7]  rp[i;]←(5 0⍕a←5000+?15000)
[ 8]  re[i;]←(11↑alfa←b conv10q a),' ',2 0⍕b
[ 9]  →(a≠b convq10 alfa)/erro
[10]  i←i+1
[11]  →t1
[12] fim:r←2ρ0
[13]  r[1]←⊂re
[14]  r[2]←⊂rp
[15]  →0
[16] erro:'deu xabu'
[17]  a
[18]  b
[19]  alfa
-------------------------------------------------------------
[ 0]  r←gf4;rp;re;i;b;a;b1;alfa
[ 1]  re←10 18ρ' '
```

```
[ 2]  rp←10 5ρ' '
[ 3]  i←1
[ 4] t1:→(i>10)/fim
[ 5]  b1←(10ρ2),(10ρ8),10ρ16
[ 6]  b←b1[?ρb1]
[ 7]  rp[i;]←(5 0⍕a←5000+?15000)
[ 8]  re[i;]←(15↑alfa←b conv10q a),' ',2 0⍕b
[ 9]  →(a≠b convq10 alfa)/erro
[10]  i←i+1
[11]  →t1
[12] fim:r←2ρ0
[13]  r[1]←⊂re
[14]  r[2]←⊂rp
[15]  →0
[16] erro:'deu xabu'
[17]  a
[18]  b
[19]  alfa
-------------------------------------------------------------
[ 0]  r←gf5;re;rp;i;x;y;b;alfa;beta
[ 1]  r←2ρ0
[ 2]  re←10 25ρ' '
[ 3]  rp←10 11ρ' '
[ 4]  i←1
[ 5] t1:→(i>10)/fim
[ 6]  x←5000+?15000
[ 7]  y←5000+?15000
[ 8] q4:b←2+?34
[ 9]  →(b=10)/q4
[10]  re[i;⍳11]←11↑alfa←b conv10q x
[11]  re[i;11+⍳11]←11↑beta←b conv10q y
[12]  re[i;23+⍳2]←2 0⍕b
[13]  rp[i;]←11↑b conv10q x+y
[14]  →((x+y)≠(b convq10 alfa)+(b convq10 beta))/erro
[15]  i←i+1
[16]  →t1
[17] fim:
[18]  r[1]←⊂re
[19]  r[2]←⊂rp
[20]  →0
[21] erro:'deu xabu'
[22]  alfa
[23]  beta
-------------------------------------------------------------
[ 0]  r←gf6;re;rp;i;x;y;b;alfa;beta;b1
[ 1]  r←2ρ0
[ 2]  re←10 33ρ' '
[ 3]  rp←10 15ρ' '
[ 4]  i←1
[ 5] t1:→(i>10)/fim
[ 6]  x←5000+?15000
[ 7]  y←5000+?15000
[ 8]  b1←(7ρ2),(10ρ8),10ρ16
[ 9]  b←b1[?ρb1]
[10]  re[i;⍳15]←15↑alfa←b conv10q x
[11]  re[i;15+⍳15]←15↑beta←b conv10q y
[12]  re[i;31+⍳2]←2 0⍕b
[13]  rp[i;]←15↑b conv10q x+y
[14]  →((x+y)≠(b convq10 alfa)+(b convq10 beta))/erro
[15]  i←i+1
[16]  →t1
[17] fim:
[18]  r[1]←⊂re
```

```
[19]  r[2]←⊂rp
[20]  →0
[21] erro:'deu xabu'
[22]  alfa
[23]  beta
------------------------------------------------------------
[ 0]  r←gf7;re;rp;i;x;y;b;alfa;beta;aux
[ 1]  r←2⍴0
[ 2]  re←10 25⍴' '
[ 3]  rp←10 11⍴' '
[ 4]  i←1
[ 5] t1:→(i>10)/fim
[ 6]  x←5000+?15000
[ 7]  y←5000+?15000
[ 8]  →(2000>|x-y)/t1
[ 9]  →(x>y)/q4
[10]  aux←x
[11]  x←y
[12]  y←aux
[13] q4:b←2+?34
[14]  →(b=10)/q4
[15]  re[i;⍳11]←11↑alfa←b conv10q x
[16]  re[i;11+⍳11]←11↑beta←b conv10q y
[17]  re[i;23+⍳2]←2 0⍕b
[18]  rp[i;]←11↑b conv10q x-y
[19]  →((x-y)≠(b convq10 alfa)-(b convq10 beta))/erro
[20]  i←i+1
[21]  →t1
[22] fim:
[23]  r[1]←⊂re
[24]  r[2]←⊂rp
[25]  →0
[26] erro:'deu xabu'
[27]  alfa
[28]  beta
------------------------------------------------------------
[ 0]  r←gf8;re;rp;i;x;y;b;alfa;beta;b1;aux
[ 1]  r←2⍴0
[ 2]  re←10 33⍴' '
[ 3]  rp←10 15⍴' '
[ 4]  i←1
[ 5] t1:→(i>10)/fim
[ 6]  x←5000+?15000
[ 7]  y←5000+?15000
[ 8]  →(x>y)/okk
[ 9]  aux←x
[10]  x←y
[11]  y←aux
[12] okk:b1←(5⍴2),(10⍴8),10⍴16
[13]  b←b1[?⍴b1]
[14]  re[i;⍳15]←15↑alfa←b conv10q x
[15]  re[i;15+⍳15]←15↑beta←b conv10q y
[16]  re[i;31+⍳2]←2 0⍕b
[17]  rp[i;]←15↑b conv10q x-y
[18]  →((x-y)≠(b convq10 alfa)-(b convq10 beta))/erro
[19]  i←i+1
[20]  →t1
[21] fim:
[22]  r[1]←⊂re
[23]  r[2]←⊂rp
[24]  →0
[25] erro:'deu xabu'
[26]  alfa
```

```
[27]  beta
-------------------------------------------------------------
[ 0]  r←gf9;re;rp;i;x;y;b;alfa;beta;b1
[ 1]  r←2ρ0
[ 2]  re←10 31ρ' '
[ 3]  rp←10 11ρ' '
[ 4]  i←1
[ 5] t1:→(i>10)/fim
[ 6]  x←5000+?15000
[ 7]  y←5000+?15000
[ 8]  b1←9 11 12 13 14 15 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36
[ 9]  b←b1[3?ρb1]
[10]  re[i;⍳14]←(11↑alfa←b[1]conv10q x),'-',2 0⍕b[1]
[11]  re[i;14+⍳14]←(11↑beta←b[2]conv10q y),'-',2 0⍕b[2]
[12]  re[i;29 30 31]←'=',2 0⍕b[3]
[13]  rp[i;]←11↑b[3]conv10q x+y
[14]  →((x+y)≠(b[1]convq10 alfa)+(b[2]convq10 beta))/erro
[15]  i←i+1
[16]  →t1
[17] fim:
[18]  r[1]←⊂re
[19]  r[2]←⊂rp
[20]  →0
[21] erro:'deu xabu'
[22]  alfa
[23]  beta
-------------------------------------------------------------
[ 0]  r←gfa;alfa;aux;b;b1;beta;i;re;rp;x;y
[ 1]  r←2ρ0
[ 2]  re←10 31ρ' '
[ 3]  rp←10 11ρ' '
[ 4]  i←1
[ 5] t1:→(i>10)/fim
[ 6]  x←5000+?15000
[ 7]  y←5000+?15000
[ 8]  →(x>y)/ok
[ 9]  aux←x
[10]  x←y
[11]  y←aux
[12] ok:
[13]  b1←9 11 12 13 14 15 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36
[14]  b←b1[3?ρb1]
[15]  re[i;⍳14]←(11↑alfa←b[1]conv10q x),'-',2 0⍕b[1]
[16]  re[i;14+⍳14]←(11↑beta←b[2]conv10q y),'-',2 0⍕b[2]
[17]  re[i;29 30 31]←'=',2 0⍕b[3]
[18]  rp[i;]←11↑b[3]conv10q x-y
[19]  →((x-y)≠(b[1]convq10 alfa)-(b[2]convq10 beta))/erro
[20]  i←i+1
[21]  →t1
[22] fim:
[23]  r[1]←⊂re
[24]  r[2]←⊂rp
[25]  →0
[26] erro:'deu xabu'
[27]  alfa
[28]  beta
-------------------------------------------------------------
[ 0]  r←roubab x;z;i;q
[ 1]  z←x≠' '
[ 2]  i←1
[ 3]  q←⍳0
[ 4] t1:→(i>ρz)/fim
[ 5]  →(z[i]=1)/poe
```

```
[ 6] oba:
[ 7]  →(i>ρz)/fim
[ 8]  →(z[i]=1)/fina
[ 9]  i←i+1
[10]  →oba
[11] fina:
[12]  q←q,' '
[13]  →t1
[14] poe:
[15]  q←q,x[i]
[16]  i←i+1
[17]  →t1
[18] fim:r←q
------------------------------------------------------------
[ 0]  opesq vivo036b n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;nomes;num
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL036b  '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎ιn
[ 9]  ylu←n grupo ylu
[10]  FOLHALA036b←ajusta80 FOLHALA036b
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALA036b)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 80ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←19 80ρ' '
[16]  f←FOLHALA036b
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOb←1.01
[20]  esse[4;]←80↑ylu[xk;ι6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[⎕IO+1]f[;ι4]=((1↑ρf),4)ρ'\#05')/ι1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:
[28]  esse[5;]←80↑ylu[xk;6+ι30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[32]  esse[18;ι10]←'@',esse[6;5+ι3],esse[4;1+ι5],'@'
[33]  esse[19;]←80↑esse[6;5+ι3],'-',esse[4;1+ι5],' - ',opesq[6 7],'/',opesq[9 10]
[34] ini1:
[35]  xx←geracaso36b
[36]  esse[7+ι10;]←10 80↑xx[1;;]
[37]  zz←xx[2;1;ι5],xx[2;2;ι5],xx[2;3;ι11],xx[2;4;ι11],xx[2;5;ι5],xx[2;6;ι5]
[38]  zz←zz,xx[2;7;ι12],xx[2;8;ι12],xx[2;9;ι5],xx[2;10;ι5]
[39]  resu←resu,[1]1 80ρ(3 0⍎resp),'-',zz
[40]  acuja←(f[;2]='#')/ι1↑ρf
[41]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[42]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\newpage'
[43]  ⍞←(⍎xk←xk+1),'-'
[44]  →testa
[45] fim:upag←(1 0+ρf)ρ' '
[46]  →(1=≡n)/elafa
```

```
[47]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[48]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[49]  upag[2+⍳1↑⍴resu;]←resu
[50]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[51]  →terminando
[52] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[53]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[54]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[55] terminando:
[56]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[57]  relat[1↑⍴relat;;]←upag
[58]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[59] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[60]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[61]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo036f n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;nomes;num
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL036f  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA036f←ajusta80 FOLHALA036f
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA036f)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 80⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←69 80⍴' '
[16]  f←FOLHALA036f
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOf←1.02
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:
[28]  esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(resp←3 0⍕xk),' ',opesq
[32]  esse[68;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[69;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] ini1:
[35]  xx←arr12 zz←gf1
[36]  esse[7+⍳10;]←10 80↑xx
[37]  resp←resp,'-',roubab,(⊃zz[2])[⍳2;],' '
[38]  xx←arr3 zz←gf3
[39]  esse[17+⍳10;]←10 80↑xx
[40]  resp←resp,'-',roubab,(⊃zz[2])[⍳2;],' '
[41]  xx←arr5 zz←gf5
[42]  esse[27+⍳10;]←10 80↑xx
[43]  resp←resp,'-',roubab,(⊃zz[2])[⍳2;],' '
[44]  xx←arr7 zz←gf7
```

```
[45]  esse[37+⍳10;]←10 80⍴xx
[46]  resp←resp,'-',roubab,(⊃zz[2])[⍳2;],' '
[47]  xx←arr9a zz←gf9
[48]  esse[47+⍳10;]←10 80⍴xx
[49]  resp←resp,'-',roubab,(⊃zz[2])[⍳2;],' '
[50]  xx←arr9a zz←gfa
[51]  esse[57+⍳10;]←10 80⍴xx
[52]  resp←resp,'-',roubab,(⊃zz[2])[⍳2;],' '
[53]  resu←resu,[1]1 80⍴80⍴resp
[54]  acuja←(f[;2]='#')/⍳1⍴⍴f
[55]  f[acuja;]←esse[⍬,f[acuja;3 4],' ';]
[56]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200⍴'\newpage'
[57]  ⎕←(⍕xk←xk+1),'-'
[58]  →testa
[59] fim:upag←(1 0+⍴f)⍴' '
[60]  →(1=≡n)/elafa
[61]  upag[1;]←(1↓⍴upag)⍴'\begin{verbatim}'
[62]  upag[2;]←(1↓⍴upag)⍴(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[63]  upag[2+⍳1⍴⍴resu;]←resu
[64]  upag[3+1⍴⍴resu;]←(1↓⍴upag)⍴'\end{verbatim}'
[65]  →terminando
[66] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[67]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[68]  '!!!!!  Arquivo GPA com ',(⍕1⍴⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[69] terminando:
[70]  upag[1⍴⍴upag;]←(1↓⍴upag)⍴'\end{document}'
[71]  relat[1⍴⍴relat;;]←upag
[72]  lixonol←(((×/2⍴⍴relat),¯1⍴⍴relat)⍴relat)
[73] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[74]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[75]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo037

```
[0]  r←dica x
[1]  r←((8⍴2)⊤(⎕AV⍳x[1])-1),'   '
[2]  →(3=+/x[2 3 4]=' ')/0
[3]  r←r,((8⍴2)⊤(⎕AV⍳x[2])-1),'   '
[4]  →(2=+/x[3 4]=' ')/0
[5]  r←r,((8⍴2)⊤(⎕AV⍳x[3])-1),'   '
[6]  →(x[4]=' ')/0
[7]  r←r,((8⍴2)⊤(⎕AV⍳x[4])-1)
------------------------------------------------------------
[ 0]  r←embaralha;a
[ 1]  a←?3
[ 2]  →(a=1)/eum
[ 3]  →(a=2)/edois
[ 4] etres:
[ 5]  r←VV[3?64]
[ 6]  →0
[ 7] edois:
[ 8]  r←VV[2?64]
[ 9]  →0
[10] eum:r←VV[1?64]
------------------------------------------------------------
[ 0]  r←geracaso037;aa;bb;cc;dd;ee;ff
[ 1]  r←6 10⍴' '
[ 2]  r[1;⍳5]←5⍴aa←embaralha
[ 3]  r[1;5+⍳5]←5⍴vai64 aa
[ 4]  r[2;⍳5]←5⍴bb←embaralha
[ 5]  r[2;5+⍳5]←5⍴vai64 bb
```

```
[ 6]  r[3;⍳5]←5↑cc←embaralha
[ 7]  r[3;5+⍳5]←5↑vai64 cc
[ 8]  r[4;⍳5]←5↑vai64 dd←embaralha
[ 9]  r[4;5+⍳5]←5↑dd
[10]  r[5;⍳5]←5↑vai64 ee←embaralha
[11]  r[5;5+⍳5]←5↑ee
[12]  r[6;⍳5]←5↑vai64 ff←embaralha
[13]  r[6;5+⍳5]←5↑ff
-------------------------------------------------------------
[ 0]  geraquestao037a;q;x
[ 1]  q←''''
[ 2]  'Neste exerc⍀',q,'icio, voc⍀^e deve converter dois literais hexadecimais em seus'
[ 3]  'equivalentes base64. Relembrando, isto ⍀',q,'e feito trocando 24 bits (3 '
[ 4]  'caracteres hexadecimais) por 4 n⍀',q,'umeros bin⍀',q,'arios de 6 bits.'
[ 5]  'O processo termina quando os 4 n⍀',q,'umeros s⍀~ao convertidos em caracteres'
[ 6]  'usando a tabela a seguir:'
[ 7]  '⍀begin{verbatim}'
[ 8]  'ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz0123456789+/'
[ 9]  '⍀end{verbatim}'
[10]  'Nesta tabela, o A vale 0, o B vale 1 e assim por diante at⍀',q,'e a / que'
[11]  'vale 63.'
[12]  'Se s⍀',q,'o houver 16 bits a converter, isto ⍀',q,'e sinalizado colocando um = '
[13]  'no final. Se s⍀',q,'o houver 8 bits a converter, isto ⍀',q,'e sinalizado'
[14]  'colocando dois == no final.'
[15]  'Os literais a converter:'
[16]  '⍀begin{verbatim}'
[17]  x←geracaso037
[18]  '1. ',x[1;⍳4]
[19]  '2. ',x[2;⍳4]
[20]  '⍀end{verbatim}'
[21]  'Dicas: os valores em bin⍀',q,'ario dos c⍀',q,'odigos ASCII dos literais pedidos s⍀~
      ao:'
[22]  '⍀begin{verbatim}'
[23]  '1. ',dica x[1;⍳4]
[24]  '2. ',dica x[2;⍳4]
[25]  '⍀end{verbatim}'
[26]  x[1;5+⍳4],' e ',x[2;5+⍳4]
-------------------------------------------------------------
[0]  r←vai1 abc;zz;⎕IO
[1]  ⎕IO←0
[2]  r←4⍴' '
[3]  zz←(2 2 2 2 2 2 2 2⊤⎕AF abc)
[4]  r[0]←⍒⍒[(8⍴2)⊥0 0,zz[⍳6]]
[5]  r[1]←⍒⍒[(8⍴2)⊥0 0,zz[6+⍳2],0 0 0 0]
[6]  r[2]←'='
[7]  r[3]←'='
-------------------------------------------------------------
[0]  r←vai2 abc;zz;⎕IO
[1]  ⎕IO←0
[2]  r←4⍴' '
[3]  zz←((8⍴2)⊤⎕AF abc[0]),((8⍴2)⊤⎕AF abc[1])
[4]  r[0]←⍒⍒[(6⍴2)⊥zz[⍳6]]
[5]  r[1]←⍒⍒[(6⍴2)⊥zz[6+⍳6]]
[6]  r[2]←⍒⍒[(6⍴2)⊥zz[12+⍳4],0 0]
[7]  r[3]←'='
-------------------------------------------------------------
[ 0]  r←vai3 abc;zz;⎕IO
[ 1]  ⎕IO←0
[ 2]  r←4⍴' '
[ 3]  zz←(2 2 2 2 2 2 2 2⊤⎕AF abc[0]),(2 2 2 2 2 2 2 2⊤⎕AF abc[1]),(2 2 2 2 2 2 2 2⊤⎕AF ab
      c[2])
[ 4]  r[0]←⍒⍒[(6⍴2)⊥zz[⍳6]]
[ 5]  r[1]←⍒⍒[(6⍴2)⊥zz[6+⍳6]]
```

```
[ 6]  r[2]←VV[(6ρ2)⊥zz[12+⍳6]]
[ 7]  r[3]←VV[(6ρ2)⊥zz[18+⍳6]]
-------------------------------------------------------------
[ 0]  r←vai64 x;i
[ 1]  x←,x
[ 2]  i←0
[ 3]  r←''
[ 4] t1:→(3>(ρx)-i)/fim
[ 5]  r←r,vai3 x[i+⍳3]
[ 6]  i←i+3
[ 7]  →t1
[ 8] fim:
[ 9]  →((ρx)=i)/mesmo
[10]  →(1=(ρx)-i)/e1
[11] e2:r←r,vai2 x[i+⍳2]
[12]  →mesmo
[13] e1:r←r,vai1 x[i+1]
[14] mesmo:
-------------------------------------------------------------
[ 0]  opesq vivo037a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo037 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10ρ' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PL037   '
[ 9]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[42]  xx←geracaso037
[43]  esse[7+⍳6;]←6 80↑6 5↑xx
[44]  resp←(3 0⍕resp),'-',,xx[;5+⍳5]
[45]  resu←resu,[1]1 34⍴resp
[46]  acuja←(f[;2]='#')/⍳1↑⍴f
[47]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[48]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[49]  ⍞←(⍕xk←xk+1),'-'
[50]  →testa
[51] fim:upag←(1 0+⍴f)⍴' '
[52]  →(1=≡n)/elafa
[53]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[54]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[55]  upag[2+⍳1↑⍴presu;⍳34]←resu
[56]  upag[3+1↑⍴presu;]←(1↓⍴upag)↑'\end{verbatim}'
[57]  →terminando
[58] AAAAAAAAAAA↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[59] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[60] AAAAAAAAAAA↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[61]  lixonol←aaa ΔFM('c:\apl2\',((~⊖∧\⊖EVENTO=' ')/EVENTO),'.gpa')
[62]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[63] terminando:
[64]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[65]  relat[1↑⍴relat;;]←upag
[66]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[67] A se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[68]  lixonol←lixonol ΔFM'c:\apl2\',((~⊖∧\⊖EVENTO=' ')/EVENTO),'.tex'
[69]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[70]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[0]  r←volta1 x;zz;⎕IO
[1]  ⎕IO←0
[2]  zz←((6⍴2)⊤⍉⍉⍳x[0]),((6⍴2)⊤⍉⍉⍳x[1])
[3]  r←(⎕AF(8⍴2)⊥zz[⍳8])
-------------------------------------------------------------
[0]  r←volta2 x;zz;⎕IO
[1]  ⎕IO←0
[2]  zz←((6⍴2)⊤⍉⍉⍳x[0]),((6⍴2)⊤⍉⍉⍳x[1]),((6⍴2)⊤⍉⍉⍳x[2])
[3]  r←(⎕AF(8⍴2)⊥zz[⍳8]),(⎕AF(8⍴2)⊥zz[8+⍳8])
-------------------------------------------------------------
[0]  r←volta3 x;zz;⎕IO
[1]  ⎕IO←0
[2]  zz←((6⍴2)⊤⍉⍉⍳x[0]),((6⍴2)⊤⍉⍉⍳x[1]),((6⍴2)⊤⍉⍉⍳x[2]),((6⍴2)⊤⍉⍉⍳x[3])
[3]  r←(⎕AF(8⍴2)⊥zz[⍳8]),(⎕AF(8⍴2)⊥zz[8+⍳8]),⎕AF(8⍴2)⊥zz[16+⍳8]
-------------------------------------------------------------
[ 0]  r←volta64 x;zz;i
[ 1]  i←0
[ 2]  r←''
[ 3] t1:→(i≥⍴x)/aca
[ 4]  →(x[i+4]='=')/fimig
[ 5]  r←r,volta3 x[i+⍳4]
[ 6]  i←i+4
[ 7]  →t1
[ 8] fimig:
[ 9]  →(x[i+3]='=')/tem2
[10]  r←r,volta2 x[i+⍳3]
[11]  →aca
[12] tem2:
[13]  r←r,volta1 x[i+⍳2]
[14] aca:
-------------------------------------------------------------
```

vivo038

```
[ 0]  r←base conv102bx x;alfa;⎕IO
[ 1]  ⎕IO←0
[ 2]  alfa←'0123456789ABCDEFGHIJKLMNÔPQRSTUVWXYZ'
[ 3] ⍝   →(1=  ⌈/x>base)/erro1
[ 4]  r←(20⍴base)⊤x
[ 5]  r←(~∧⌿r=0)/r
[ 6]  r←alfa[r]
[ 7]  →0
[ 8] ⍝ erro1:'erro de operador'
[ 9] ⍝   →0
-------------------------------------------------------------
[0]  r←ba convb210 x;alfa
[1]  alfa←'0123456789ABCDEFGHIJKLMNÔPQRSTUVWXYZ'
[2]  r←+/(¯1+alfa⍳x)×ba*⍳¯1+⍴x
-------------------------------------------------------------
[ 0]  r←criamapa cands
[ 1]  r←((1+⍴cands),0)⍴' '
[ 2]  r←r,2 tripa cands
[ 3]  r←r,' ',¯3 tripa cands
[ 4]  r←r,' ',¯4 tripa cands
[ 5]  r←r,' ',¯5 tripa cands
[ 6]  r←r,' ',¯6 tripa cands
[ 7]  r←r,' ',¯7 tripa cands
[ 8]  r←r,' ',¯8 tripa cands
[ 9]  r←r,' ',¯9 tripa cands
[10]  r←r,' ',¯11 tripa cands
[11]  r←r,' ',¯12 tripa cands
[12]  r←r,' ',¯13 tripa cands
[13]  r←r,' ',¯14 tripa cands
[14]  r←r,' ',¯15 tripa cands
[15]  r←r,' ',¯16 tripa cands
[16]  r←r,' ',¯20 tripa cands
[17]  r←r,' ',¯25 tripa cands
[18]  r←r,' ',¯30 tripa cands
-------------------------------------------------------------
[ 0]  r←geracaso038;bases;b1;c1;i1;t1;t2;t3
[ 1]  bases←17 18 19 21 22 23 24 26 27 28 29 31 32 33 34
[ 2]  b1←bases[?⍴bases]
[ 3]  c1←(-b1)tripa⍳60
[ 4]  i1←35+2?25
[ 5]  i1←i1[⍋i1]
[ 6]  t1←geraconta038
[ 7]  t2←geraconta038
[ 8]  t3←geraconta038
[ 9]  r←7 80⍴' '
[10]  r[1;]←80↑2 0⍕b1
[11]  r[2 3;]←2 80⍴(80↑2 0⍕i1[1]),80↑2 0⍕i1[2]
[12]  r[4 5 6;]←3 80⍴(80↑t1[1;]),(80↑t2[1;]),(80↑t3[1;])
[13]  r[7;]←80↑c1[i1[1]+1;],' ',c1[i1[2]+1;],' ',t1[2;1 2 3],' ',t2[2;1 2 3],' ',t3[2;1 2
      3]
-------------------------------------------------------------
[ 0]  r←geraconta038;a;b;ba;bases;c;i;ra;rb;rc;x1;x2;x3
[ 1]  r←2 30⍴' '
[ 2] denovo:a←300+?1000
[ 3]  b←300+?1000
[ 4]  bases←17 18 19 21 22 23 24 26 27 28 29 31 32 33 34
[ 5]  c←a+b
[ 6] ⍝ a,b,c
[ 7]  ba←bases[?⍴bases]
[ 8]  ra←ba conv102bx a
[ 9]  rb←ba conv102bx b
```

```
[10]  rc←ba conv102bx c
[11]  x1←(ba+1)convb210 ra
[12]  x2←(ba+1)convb210 rb
[13]  x3←(ba+1)convb210 rc
[14]  →(('O'∈ra)∨('O'∈rb)∨('O'∈rc))/denovo  ⍝ 0=zero O=o grande
[15]  r[1;]←30↑ra,'+',rb,'=',rc
[16]  →(x3=x1+x2)/nega
[17]  r[2;]←30↑3 0⍕ba
[18]  →0
[19] nega:
[20]  ba←¯1+⌈/'0123456789ABCDEFGHIJKLMNôPQRSTUVWXYZ'⍳(ra,rb,rc)
[21] resta:
[22]  r[2;]←30↑3 0⍕-ba
------------------------------------------------------------
[ 0]  r←b tripa nums;alfa;i;max;n;tam;⎕IO;tam2
[ 1] ⍝ se a base e negativa, nao coloca a primeira coluna
[ 2]  →(36<|b)/erro
[ 3]  max←0
[ 4]  n←⍴nums
[ 5]  tam2←1+⌈10⍟⌈/nums
[ 6]  alfa←'0123456789ABCDEFGHIJKLMNôPQRSTUVWXYZ'
[ 7]  ⎕IO←0
[ 8]  r←(n,24)⍴' '
[ 9]  i←0
[10] t1:→(i≥n)/fim
[11]  r[i;]←alfa[(24⍴|b)⊤nums[i]]
[12]  tam←⍴(~∧⍀'0'=r[i;])/r[i;]
[13]  max←max⌈tam
[14]  i←i+1
[15]  →t1
[16] fim:→(¯1=×b)/sonum
[17]  r←((n,tam2)⍴tam2 0⍕nums),'-',(((1↑⍴r),-tam)↑r)
[18]  r←((1,1↓⍴r)⍴((1↓⍴r),0)⍕|b),[0]r
[19]  →0
[20] sonum:r←(((1↑⍴r),-tam)↑r)
[21]  r←((1,1↓⍴r)⍴((1↓⍴r),0)⍕|b),[0]r
[22]  →0
[23] erro:'base nao pode ser maior que 36'
[24]  →0
------------------------------------------------------------
[ 0]  opesq vivo038a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo038 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PL038   '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[21]  f←FOLHALA038
[22]  esse[1;]←80↑dhx[1;]
[23]  esse[2;]←80↑dhx[2;]
[24]  esse[3;]←80↑4 2⍕VERSAOa←1.08
[25]  esse[4;]←80↑ylu[xk;⍳6]
[26] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[27]  →(36=1↓⍴ylu)/zebra
[28]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[29]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[30]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[31]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[32]  →maiszebra
[33] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[ 5]  →(~Δ003)/Δ002
[ 6]  X←X-5
[ 7]  S←S+X
[ 8]  →Δ001
[ 9] Δ002:
[10]  RRRR←X,S
-------------------------------------------------------------
[ 0]  RRRR←EX2;X;S;RRRR;Δ001;Δ002;Δ003;Δ004
[ 1]  X←27
[ 2]  S←0
[ 3] Δ001:
[ 4]  X←X-5
[ 5]  S←S+X
[ 6]  Δ003←X<3
[ 7]  →(Δ003)/Δ002
[ 8]  →Δ001
[ 9] Δ002:
[10]  RRRR←X,S
-------------------------------------------------------------
[ 0]  RRRR←EX3;Y;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007
[ 1]  Y←3
[ 2]  X←24
[ 3] Δ001:
[ 4]  Δ003←X≥3
[ 5]  →(~Δ003)/Δ002
[ 6]  Y←Y+X
[ 7]  Δ004←0=2|Y
[ 8]  →(~Δ004)/Δ005
[ 9]  Y←Y+2
[10]  →Δ006
[11] Δ005:
[12]  Y←Y-2
[13] Δ006:
[14]  X←X+¯2
[15]  →Δ001
[16] Δ002:
[17]  RRRR←X,Y
-------------------------------------------------------------
[ 0]  RRRR←EX4;X;Y;Z;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007
[ 1]  X←3
[ 2]  Y←2
[ 3]  Z←1
[ 4] Δ001:
[ 5]  Δ003←((2×(X+Y))≥Z)
[ 6]  →(~Δ003)/Δ002
[ 7]  X←X-3
[ 8]  Y←Y-2
[ 9]  →Δ001
[10] Δ002:
[11]  Δ004←(0=3|X)
[12]  →(~Δ004)/Δ005
[13]  Y←Y-2
[14]  →Δ006
[15] Δ005:
[16]  Z←Z-3
[17] Δ006:
[18]  RRRR←X,Y+Z
-------------------------------------------------------------
[0]  r←car achalincol mat
[1]  r←((∨/[2]car=mat)/⍳1↑⍴mat),(∨/[1]car=mat)/⍳1↓⍴mat
-------------------------------------------------------------
[0]  ajustatams
[1]  BEX1C←70 ajusta BEX1C
```

```
[2]  BEX1F←70 ajusta BEX1F
[3]  BEX1L←70 ajusta BEX1L
-------------------------------------------------------------
[ 0]  cavaleiro040a n;CORRECAO;EVENTO;aa;aaa;acuja;bb;cab;cc;dhx;esse;f;lixo1;lixonol;rela
      t;resp;resu;upag;x;xixa;xk;xx;ylu
[ 1]  □RL←⌊(□TS[7]+□TS[6]+□TS[5])*2.7364736473
[ 2]  FOLHALA040←ajusta80 FOLHALA040
[ 3]  relat←ΔFM'c:⍀apl2⍀VIVOBLO1'
[ 4]  xk←1
[ 5] testa:→(xk>n)/fim
[ 6]  esse←156 80⍴' '
[ 7]  f←((1↑⍴FOLHALA040),110)↑FOLHALA040
[ 8]  esse[1;⍳⍴x]←x←' -- Cavaleiros da Tavola Redonda'
[ 9]  esse[3;]←80↑4 2⍕VERSAOa←1.02
[10]  esse[155;⍳8]←'@000000@'
[11] inica:
[12]  xx←chutaex1
[13]  bb←mataex1 xx
[14]  esse[7+⍳12;]←12 80↑bb[1;;]
[15]  resp←±bb[2;1;⍳10]
[16]  xx←chutaex2
[17]  bb←mataex2 xx
[18]  esse[19+⍳12;]←12 80↑bb[1;;]
[19]  resp←resp,±bb[2;1;⍳10]
[20]  xx←chutaex3
[21]  bb←mataex3 xx
[22]  esse[31+⍳15;]←15 80↑bb[1;;]
[23]  resp←resp,±bb[2;1;⍳10]
[24]  xx←chutaex4
[25]  bb←mataex4 xx
[26]  esse[46+⍳15;]←15 80↑bb[1;;]
[27]  resp←resp,±bb[2;1;⍳10]
[28]  xx←chutaex1
[29]  bb←mataex1 xx
[30]  esse[61+⍳12;]←12 80↑bb[1;;]
[31]  resp←resp,±bb[2;1;⍳10]
[32]  xx←chutaex2
[33]  bb←mataex2 xx
[34]  esse[73+⍳12;]←12 80↑bb[1;;]
[35]  resp←resp,±bb[2;1;⍳10]
[36]  xx←chutaex3
[37]  bb←mataex3 xx
[38]  esse[85+⍳15;]←15 80↑bb[1;;]
[39]  resp←resp,±bb[2;1;⍳10]
[40]  xx←chutaex4
[41]  bb←mataex4 xx
[42]  esse[100+⍳15;]←15 80↑bb[1;;]
[43]  resp←resp,±bb[2;1;⍳10]
[44]  xx←chutaex1
[45]  bb←mataex1 xx
[46]  esse[115+⍳12;]←12 80↑bb[1;;]
[47]  resp←resp,±bb[2;1;⍳10]
[48]  xx←chutaex2
[49]  bb←mataex2 xx
[50]  esse[127+⍳12;]←12 80↑bb[1;;]
[51]  resp←resp,±bb[2;1;⍳10]
[52]  xx←chutaex3
[53]  bb←mataex3 xx
[54]  esse[139+⍳15;]←15 80↑bb[1;;]
[55]  resp←resp,±bb[2;1;⍳10]
[56]  resp←'¯-'edit⍕resp
[57]  acuja←(f[;2]='#')/⍳1↑⍴f
[58]  f[acuja;⍳80]←esse[±,f[acuja;3 4 5],' ';]
```

```
[59]  ⍞←(⍕xk←xk+1),'-'
[60]  f←(((1↑ρrelat),1↓ρf)↑relat),[1]f
[61]  f←f,[1](1,1↓ρf)ρ(1↓ρf)↑'\end{document}'
[62]  f←f,[1](1,1↓ρf)ρ(1↓ρf)↑'%',resp
[63]  lixo1←f ΔFM'c:\apl2\CA040a',('00'⍕xk-1),'.tex'
[64]  →testa
[65] fim:
-------------------------------------------------------------
[ 0]  r←chutaex1;g;g1
[ 1]  g1←2?8
[ 2]  g←7ρ' '
[ 3]  →(1=?2)/coroa
[ 4] cara:
[ 5]  g[1]←'0'
[ 6]  g[2]←1 0⍕?5
[ 7]  g[3]←'<≤'[?2]
[ 8]  g[4]←'12'[?2]
[ 9]  g[5]←1 0⍕?9
[10]  g[6]←'+'
[11]  g[7]←1 0⍕2+?4
[12]  r←g
[13]  →0
[14] coroa:
[15]  g[1]←'12'[?2]
[16]  g[2]←1 0⍕?9
[17]  g[3]←'>≥'[?2]
[18]  g[4]←'0'
[19]  g[5]←1 0⍕?9
[20]  g[6]←'-'
[21]  g[7]←1 0⍕2+?4
[22]  r←g
-------------------------------------------------------------
[ 0]  r←chutaex2;g;g1
[ 1]  g←7ρ' '
[ 2]  →(1=?2)/coroa
[ 3] cara:g[5]←'>≥'[?2]
[ 4]  g[3]←'+'
[ 5]  g[1]←'0'
[ 6]  g[2]←1 0⍕?9
[ 7]  g[4]←1 0⍕2+?4
[ 8]  g[6]←'12'[?2]
[ 9]  g[7]←1 0⍕?9
[10]  r←g
[11]  →0
[12] coroa:
[13]  g[5]←'<≤'[?2]
[14]  g[3]←'-'
[15]  g[1]←'12'[?2]
[16]  g[2]←1 0⍕?9
[17]  g[4]←1 0⍕2+?4
[18]  g[6]←'0'
[19]  g[7]←1 0⍕?9
[20]  r←g
-------------------------------------------------------------
[ 0]  r←chutaex3;g;g1
[ 1]  g←9ρ' '
[ 2]  →(1=?2)/coroa
[ 3] cara:     ⍝ comeca pequeno e cresce
[ 4]  g[1]←1 0⍕2+?5
[ 5]  g[2 3]←'0',1 0⍕?9
[ 6]  g[4 5]←('12'[?2]),1 0⍕?7
[ 7]  g[6 7]←'0',1 0⍕?4
[ 8]  g[8]←1 0⍕?3
```

```
[ 9]  g[9]←1 0⍕?2
[10]  r←g
[11]  →0
[12] coroa:  ⍝ comeca grande e diminui
[13]  g[1]←1 0⍕2+?5
[14]  g[2 3]←('12'[?2]),1 0⍕?7
[15]  g[4 5]←'O',1 0⍕?9
[16]  g[6 7]←'¯',1 0⍕?4
[17]  g[8]←1 0⍕?2
[18]  g[9]←1 0⍕?3
[19]  r←g
[20]  →0
------------------------------------------------------------
[ 0]  r←chutaex4;g;g1
[ 1]  g←7⍴' '
[ 2]  g[1]←1 0⍕?7
[ 3]  g[2]←1 0⍕?7
[ 4]  g[3]←1 0⍕?7
[ 5]  g[4]←1 0⍕?3
[ 6]  g[5]←1 0⍕?2
[ 7]  g[6]←1 0⍕?3
[ 8]  g[7]←1 0⍕?3
[ 9]  r←g
------------------------------------------------------------
[  0]  r←cpc algo;nome;PILHA;nnn;saida;aspa;vv;coma;SALVA;i;j;loca;aaa;pn;pna
[  1] ⍝ versao 1.10
[  2]  PILHA←0 21⍴' ' ⋄ nnn←1 ⋄ saida←0 70⍴' ' ⋄ r←0 70⍴' ' ⋄ aspa←'''' ⋄ loca←'' ⋄ pna←'≤'
[  3]  →(1=⍴⍴algo)/erro90
[  4]  i←1
[  5] t1:→(i>1↑⍴algo)/fim
[  6]  →(algo[i;1]≠'α')/oraviva
[  7]  saida←saida,[1]1 70⍴70↑1↓algo[i;]
[  8]  →(i=i←i+1)/t1
[  9] oraviva:vv←vetoriza algo[i;]
[ 10]  →('algoritmo'igual⊃vv[1])/ealg
[ 11]  →('fim{algoritmo}'igual⊃vv[1])/ealf
[ 12]  →('fimalgoritmo'igual⊃vv[1])/ealf
[ 13]  →('funcao'igual⊃vv[1])/efun
[ 14]  →('fim{funcao}'igual⊃vv[1])/efuf
[ 15]  →('fimfuncao'igual⊃vv[1])/efuf
[ 16]  →('leia'igual⊃vv[1])/elei
[ 17]  →('imprima'igual⊃vv[1])/eimp
[ 18]  →('escreva'igual⊃vv[1])/eimp ⍝ para compatibilizar com o VG = 19/06/08
[ 19]  →('devolva'igual⊃vv[1])/eimp  ⍝ em teste: sera que devolva = imprima neste contexto
       ???
[ 20]  →('se'igual⊃vv[1])/esex
[ 21]  →('senao'igual⊃vv[1])/esen
[ 22]  →('fim{se}'igual⊃vv[1])/esef
[ 23]  →('fimse'igual⊃vv[1])/esef
[ 24]  →('enquanto'igual⊃vv[1])/eenq
[ 25]  →('fim{enquanto}'igual⊃vv[1])/eenf
[ 26]  →('fimenquanto'igual⊃vv[1])/eenf
[ 27]  →('repita'igual⊃vv[1])/erep
[ 28]  →('ate'igual⊃vv[1])/eate
[ 29]  →('para'igual⊃vv[1])/epar
[ 30]  →('fim{para}'igual⊃vv[1])/epaf
[ 31]  →('fimpara'igual⊃vv[1])/epaf
[ 32]  →('abandone'igual⊃vv[1])/eaba
[ 33]  →('saia'igual⊃vv[1])/esai
[ 34]  →('<-'igual⊃vv[2])/ecad
[ 35]  →('inteiro'igual⊃vv[1])/eint
[ 36]  →('real'igual⊃vv[1])/erea
[ 37]  →('logico'igual⊃vv[1])/elog
```

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[ 38]  →('caracter'igual 8↑⊃vv[1])/ecar
[ 39]  →('vetor'igual⊃vv[1])/evet
[ 40]  →('vetora'igual⊃vv[1])/evaa
[ 41]  r←r,[1]1 70⍴70↑(3⍕i),' - comando desconhecido'
[ 42] soma:→(i=i←i+1)/t1
[ 43] ⍝--------------algoritmo--------------
[ 44] ealg:saida←saida,[1]1 70⍴70↑⊃vv[2]
[ 45]  →soma
[ 46] ealf:→fim
[ 47] ⍝--------------funcao-----------------
[ 48] efun:
[ 49]  →(2≥⍴vv)/naotem
[ 50]  coma←'RRRR←',(⊃vv[2]),' AAAA'
[ 51]  →vmesmo
[ 52] naotem:coma←'RRRR←',(⊃vv[2])
[ 53]  saida←saida,[1]1 70⍴70↑coma
[ 54]  nome←⊃vv[2]
[ 55]  →aca0
[ 56] vmesmo:
[ 57]  saida←saida,[1]1 70⍴70↑coma
[ 58]  nome←⊃vv[2]
[ 59]  j←1
[ 60] voi1:→(j>¯2+⍴vv)/aca0
[ 61]  saida←saida,[1]1 70⍴70↑(⊃vv[j+2]),'←AAAA[',(3 0⍕j),']'
[ 62]  loca←loca,';',⊃vv[j+2]
[ 63]  →(j=j←j+1)/voi1
[ 64] aca0:→soma
[ 65] efuf:→fim
[ 66] ⍝---------------leia-----------------
[ 67] elei:saida←saida,[1]1 70⍴70↑aspa,'LEITURA DA VARIAVEL ',(⊃vv[2]),aspa
[ 68]  saida←saida,[1]1 70⍴70↑(⊃vv[2]),'←□'
[ 69]  →soma
[ 70] ⍝---------------imprima--------------
[ 71] eimp:→(3=⍴vv)/temmsg
[ 72]  aaa←⊃vv[2]
[ 73]  →(aaa[⍴aaa]=';')/juntaa
[ 74]  saida←saida,[1]1 70⍴70↑aaa
[ 75]  →soma
[ 76] juntaa:saida←saida,[1]1 70⍴70↑'□←⍕',¯1↓aaa
[ 77]  →soma
[ 78] temmsg:aaa←⊃vv[3]
[ 79]  →(aaa[⍴aaa]=';')/juntab
[ 80]  saida←saida,[1]1 70⍴70↑(⊃vv[2]),' ',aaa
[ 81]  →soma
[ 82] juntab:saida←saida,[1]1 70⍴70↑'□←',(⊃vv[2]),' ,⍕',¯1↓aaa
[ 83]  →soma
[ 84] ⍝---------------atribuicao------------
[ 85] ecad:saida←saida,[1]1 70⍴70↑(⊃vv[1]),'←',,⊃2↓vv
[ 86]  aaa←⊃vv[1]
[ 87]  →('['∈aaa)/soma
[ 88]  →(∨/aaa⍷loca)/soma
[ 89]  loca←loca,';',⊃vv[1]
[ 90]  →soma
[ 91] ⍝---------------se--------------------
[ 92] esex:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[ 93]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn←nnn+1
[ 94]  PILHA←(1 21⍴21↑'SE',('000'⍕nnn)),[1]PILHA
[ 95]  nnn←nnn+1
[ 96]  →soma
[ 97] ⍝--senao--
[ 98] esen:SALVA←PILHA[1;3 4 5] ⋄ PILHA←1 0↓PILHA
[ 99]  PILHA←(1 21⍴21↑'SE',('000'⍕nnn)),[1]PILHA
[100]  saida←saida,[1]1 70⍴70↑'→Δ','000'⍕nnn
```

```
[101]  nnn←nnn+1
[102]  saida←saida,[1]1 70ρ70↑'Δ',SALVA,':'
[103]  →soma
[104] ⍝--fim{se}--
[105] esef:saida←saida,[1]1 70ρ70↑'Δ',PILHA[1;3 4 5],':'
[106]  PILHA←1 0↓PILHA
[107]  →soma
[108] ⍝------------enquanto--------------------
[109] eenq:saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),':'
[110]  PILHA←(1 21ρ21↑'EN','000'⍕nnn),[1]PILHA
[111]  nnn←nnn+1
[112]  PILHA←(1 21ρ21↑'EN','000'⍕nnn),[1]PILHA
[113]  nnn←nnn+1
[114]  saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[115]  nnn←nnn+1
[116]  saida←saida,[1]1 70ρ70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn-2
[117]  →soma
[118] ⍝----------fim{enquanto}------------------
[119] eenf:SALVA←PILHA[1;3 4 5]
[120]  PILHA←1 0↓PILHA
[121]  saida←saida,[1]1 70ρ70↑'→Δ',PILHA[1;3 4 5]
[122]  PILHA←1 0↓PILHA
[123]  saida←saida,[1]1 70ρ70↑'Δ',SALVA,':'
[124]  →soma
[125] ⍝----------repita-------------------------
[126] erep:saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),':'
[127]  PILHA←(1 21ρ21↑'RE','000'⍕nnn),[1]PILHA
[128]  nnn←nnn+1
[129]  →soma
[130] ⍝-----------ate--------------------------
[131] eate:PILHA←(1 21ρ21↑'RE','000'⍕nnn),[1]PILHA
[132]  nnn←nnn+1
[133]  saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[134]  SALVA←PILHA[1;3 4 5]
[135]  PILHA←1 0↓PILHA
[136]  saida←saida,[1]1 70ρ70↑'→(Δ',('000'⍕nnn),')/Δ',SALVA
[137]  SALVA←PILHA[1;3 4 5]
[138]  PILHA←1 0↓PILHA
[139]  saida←saida,[1]1 70ρ70↑'→Δ',SALVA
[140]  saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn-1),':'
[141]  nnn←nnn+1 ⍝ inclusao desta linha em 19/04/06. Ainda nao suficientemente testada
[142]  →soma
[143] ⍝----------para-----------------------
[144] epar:saida←saida,[1]1 70ρ70↑(8↑⊃vv[2]),'←',8↑⊃vv[4]
[145]  PILHA←(1 21ρ21↑'PA','000'⍕nnn),[1]PILHA
[146]  saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),':'
[147]  nnn←nnn+1
[148]  →(8≤ρvv)/tempasso
[149]  PILHA←(1 21ρ21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8↑8⍕1),[1]PILHA
[150]  →juntab
[151] tempasso:PILHA←(1 21ρ21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8 2⍕pn←±⊃vv[8]),[1]PILHA
[152] ⍝ 'pn=',⍕pn
[153]  pna←'≤≥'[1+pn<0] ⍝ alteracao a 22/06/06, para acertar passo negativo
[154] juntab:nnn←nnn+1
[155]  saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),'←',(⊃vv[2]),pna,⍕⊃vv[6]
[156]  saida←saida,[1]1 70ρ70↑'→(~Δ',('000'⍕nnn),')/Δ','000'⍕nnn-1
[157]  nnn←nnn+1
[158]  →soma
[159] ⍝----------fim{para}------------------
[160] epaf:saida←saida,[1]1 70ρ70↑PILHA[1;5+⍳8],'←',PILHA[1;5+⍳8],'+',PILHA[1;13+⍳8]
[161]  SALVA←PILHA[1;3 4 5]
[162]  PILHA←1 0↓PILHA
[163]  saida←saida,[1]1 70ρ70↑'→Δ',PILHA[1;3 4 5]
```

```
[164]  PILHA←1 0↓PILHA
[165]  saida←saida,[1]1 70ρ70↑'Δ',SALVA,':'
[166]  →soma
[167] ⍝----------abandone--------------------
[168] eaba:→soma
[169] ⍝----------saia-------------------------
[170] esai:→soma
[171] ⍝-------- definicao de variaveis---------------
[172] eint:
[173]  saida←saida,[1]1 70ρ70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[174]  →soma
[175] erea:
[176]  saida←saida,[1]1 70ρ70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[177]  →soma
[178] elog:
[179]  saida←saida,[1]1 70ρ70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[180]  →soma
[181] ecar:
[182]  saida←saida,[1]1 70ρ70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[183]  →soma
[184] ⍝----------definicao de vetores------------------
[185] evet:
[186]  saida←saida,[1]1 70ρ70↑(1 parte(⊃vv[2])),'←',(2 parte(⊃vv[2])),'ρ0'
[187]  →soma
[188] evaa:
[189]  saida←saida,[1]1 70ρ70↑(1 parte(⊃vv[2])),'←',(2 parte(⊃vv[2])),'ρ',aspa,' ',aspa
[190]  →soma
[191] fim:
[192]  i←1
[193] tfim:→(i>nnn)/mesmo
[194]  loca←loca,';Δ','000'⍕i
[195]  →(i=i←i+1)/tfim
[196] mesmo:→(50>ρloca)/blz1
[197]  saida←((1↑ρsaida),20+ρloca)↑saida
[198]  saida[1;20+⍳ρloca]←loca
[199]  →pula22
[200] blz1:saida[1;20+⍳50]←50↑loca
[201] pula22:r←'_ 'edit saida
[202]  →0
[203] erro90:'algoritmo nao e uma matriz'
[204]  →0
-------------------------------------------------------------
[0]  r←a igual b;maior
[1]  maior←(1↑ρa)⌈1↑ρb
[2]  a←maior↑a ⋄ b←maior↑b
[3]  r←maior=+/a=b
-------------------------------------------------------------
[ 0]  r←mataex1 x;t;rr;lixo;aa
[ 1]  t←(1↑ρDEX1L)⌈1↑ρDEX1C
[ 2]  r←(2,t,70)ρ' '
[ 3]  aa←('_',x[1])edit aa←('!',x[2])edit aa←('@',x[3])edit aa←('#',x[4])edit aa←('%',x[5]
      )edit DEX1C
[ 4]  aa←('⋄',x[6])edit aa←('*',x[7])edit aa
[ 5]  AA←aa
[ 6]  lixo←⎕FX cpc aa
[ 7]  r[2;1;⍳10]←5 0⍕EX1
[ 8]  aa←('_',x[1])edit aa←('!',x[2])edit aa←('#',x[4])edit aa←('%',x[5])edit DEX1L
[ 9]  aa←('⋄',x[6])edit aa←('*',x[7])edit aa
[10]  aa←((1↑ρaa),5+1↓ρaa)↑aa
[11]  rr←'@'achalincol aa
[12]  aa[rr[1];¯1+rr[2]+⍳6]←traduzrel x[3]
[13]  r[1;;]←(t,70)↑aa
-------------------------------------------------------------
```

```
[ 0]  r←mataex2 x;t;rr;lixo;aa
[ 1]  t←(1↑⍴DEX2C)⌈(1↑⍴DEX2L)
[ 2]  r←(2,t,70)⍴' '
[ 3]  aa←('_',x[1])edit aa←('!',x[2])edit aa←('@',x[3])edit aa←('#',x[4])edit aa←('%',x[5]
      )edit DEX2C
[ 4]  aa←('◇',x[6])edit aa←('*',x[7])edit aa
[ 5]  AA←aa
[ 6]  lixo←⎕FX cpc aa
[ 7]  r[2;1;⍳10]←5 0⍎EX2
[ 8]  aa←('_',x[1])edit aa←('!',x[2])edit aa←('@',x[3])edit aa←('#',x[4])edit DEX2L
[ 9]  aa←('◇',x[6])edit aa←('*',x[7])edit aa
[10]  aa←((1↑⍴aa),5+1↓⍴aa)↑aa
[11]  rr←'%'achalincol aa
[12]  aa[rr[1];¯1+rr[2]+⍳6]←traduzrel x[5]
[13]  r[1;;]←(t,70)↑aa
------------------------------------------------------------
[ 0]  r←mataex3 x;t;rr;lixo;aa
[ 1]  t←(1↑⍴DEX3C)⌈(1↑⍴DEX3L)
[ 2]  r←(2,t,70)⍴' '
[ 3]  aa←('_',x[1])edit aa←('!',x[2])edit aa←('@',x[3])edit aa←('#',x[4])edit aa←('%',x[5]
      )edit DEX3C
[ 4]  aa←('◇',x[6])edit aa←('*',x[7])edit aa←('⊃',x[8])edit aa←('⍬',x[9])edit aa
[ 5]  lixo←⎕FX cpc aa
[ 6]  r[2;1;⍳10]←5 0⍎EX3
[ 7]  aa←('_',x[1])edit aa←('!',x[2])edit aa←('@',x[3])edit aa←('#',x[4])edit aa←('%',x[5]
      )edit DEX3L
[ 8]  aa←('◇',x[6])edit aa←('*',x[7])edit aa←('⊃',x[8])edit aa←('⍬',x[9])edit aa
[ 9]  aa←'¯-'edit aa
[10]  r[1;;]←(t,70)↑aa
------------------------------------------------------------
[ 0]  r←mataex4 x;t;rr;lixo;aa
[ 1]  t←(1↑⍴DEX4C)⌈(1↑⍴DEX4L)
[ 2]  r←(2,t,70)⍴' '
[ 3]  aa←('_',x[1])edit aa←('!',x[2])edit aa←('@',x[3])edit aa←('#',x[4])edit aa←('%',x[5]
      )edit DEX4C
[ 4]  aa←('◇',x[6])edit aa←('*',x[7])edit aa
[ 5]  lixo←⎕FX cpc aa
[ 6]  r[2;1;⍳10]←5 0⍎EX4
[ 7]  aa←('_',x[1])edit aa←('!',x[2])edit aa←('@',x[3])edit aa←('#',x[4])edit aa←('%',x[5]
      )edit DEX4L
[ 8]  aa←('◇',x[6])edit aa←('*',x[7])edit aa
[ 9]  aa←'¯-'edit aa
[10]  r[1;;]←(t,70)↑aa
------------------------------------------------------------
[ 0]  r←quem replace depara;de;i;j;k;onde;para
[ 1] ⍝ forma de usar: texto replace 'strin-de' 'string para'
[ 2] ⍝ obviamente eles nao precisam ter o mesmo tamanho
[ 3]  de←,⊃depara[1] ⋄ para←,⊃depara[2]
[ 4]  i←1 ⋄ r←((1↑⍴quem),200)⍴' '
[ 5] t1:→(i>1↑⍴quem)/fim
[ 6]  →(0=∨/onde←de⍷quem[i;])/naotem
[ 7]  j←1 ⋄ k←1
[ 8] t2:→(k>⍴quem[i;])/acabou
[ 9]  →(onde[k]=0)/soma
[10]  r[i;(j-1)+⍳⍴para]←para
[11]  j←j+⍴para
[12]  k←k+⍴de
[13]  →t2
[14] soma:r[i;j]←quem[i;k]
[15]  k←k+1
[16]  →(j=j←j+1)/t2
[17] naotem:r[i;]←200↑quem[i;]
[18] acabou:→(i=i←i+1)/t1
```

```
[19] fim:r←trim4 r
-------------------------------------------------------------
[ 0]  tabconv;t
[ 1]  t←19 1⍴' '
[ 2]  t[1;1]←'_'
[ 3]  t[2;1]←'!'
[ 4]  t[3;1]←'@'
[ 5]  t[4;1]←'#'
[ 6]  t[5;1]←'%'
[ 7]  t[6;1]←'◇'
[ 8]  t[7;1]←'⋆'
[ 9]  t[8;1]←'⊃' ⍝ mudou: era +
[10]  t[9;1]←'□'
[11]  t[10;1]←'⍈'
[12]  t[11;1]←'⌈'
[13]  t[12;1]←'⌊'
[14]  t[13;1]←'⍳'
[15]  t[14;1]←'∘'
[16]  t[15;1]←'○'
[17]  t[16;1]←'⊗'
[18]  t[17;1]←'⍋'
[19]  t[18;1]←'⍒'
[20]  t[19;1]←'÷'
[21]  t[20;1]←'⍴'
[22]  t[21;1]←'↑'
[23]  t[22;1]←'↓'
-------------------------------------------------------------
[0]  testa c;x
[1]  x←ajeita c
[2]  x[1]
[3]  □FX cpc⊃x[2]
[4]  AAA
-------------------------------------------------------------
[ 0]  r←traduzrel x
[ 1]  →(x='>')/e01
[ 2]  →(x='≥')/e02
[ 3]  →(x='<')/e03
[ 4]  →(x='≤')/e04
[ 5]  →(x='=')/e05
[ 6]  →(x='≠')/e06
[ 7] erro:'deu xabu'
[ 8]  →0
[ 9] e01:r←'$>$   '
[10]  →0
[11] e02:r←'$⍀ge$ '
[12]  →0
[13] e03:r←'$<$   '
[14]  →0
[15] e04:r←'$⍀le$ '
[16]  →0
[17] e05:r←'$=$   '
[18]  →0
[19] e06:r←'$⍀neq$'
[20]  →0
-------------------------------------------------------------
[0]  r←trim4 x;z
[1] ⍝f corta as colunas direitas que sao brancos
[2]  →(2≠⍴⍴x)/erro
[3]  z←+/[1]x=' '
[4]  r←(z≠1↑⍴x)/[2]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
-------------------------------------------------------------
```

```
[ 0]  r←vetoriza x;i;rr;letra;aspa;nume
[ 1] ⍝ versao 1.07
[ 2]  aspa←''''' ⋄ nume←'0123456789'
[ 3]  letra←'abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ()',aspa
[ 4] ⍝ tira os brancos
[ 5]  i←1 ⋄ rr←1
[ 6] t2:→(i>¯2+⍴x)/vaiz
[ 7]  →((x[i+1]=' ')∧(x[i]∈letra)∧(x[i+2]∈nume))/mataz
[ 8]  →((x[i+1]=' ')∧(x[i]∈nume)∧(x[i+2]∈letra))/mataz
[ 9]  →((x[i]∈letra)∧(x[i+2]∈letra))/naopode
[10]  →(((x[1]='p')∨(x[1]='P'))∧(x[2]='a')∧(x[i]∈letra)∧((x[i+2]='-')∨(x[i+2]='¯')))/naopo
      de  ⍝ comando incluido para o passo negativo
[11] ⍝ →((x[i]∈letra)∧((x[i+2]='-')∨(x[i+2]='¯')))/naopode  ⍝ comando incluido para o pass
      o negativo
[12] ⍝ os 3 testes iniciais (pPa) foram incluidos porque o comando acima estava
[13] ⍝ fazendo besteira: vetoriza 'A <- A -1' estava gerando 4 tokens e nao 3.
[14] ⍝ correcao em 13/03/12 - P.kantek
[15]  →(x[i+1]≠' ')/naopode
[16] pode:rr←rr,0
[17]  →(i=i←i+1)/t2
[18] mataz:x[i+1]←'!'
[19] naopode:rr←rr,1
[20]  →(i=i←i+1)/t2
[21] vaiz:rr←rr,1
[22]  x←rr/x
[23] ⍝ separa o sinal <-
[24]  →(2≠+/'<-'∈x)/faca
[25]  i←1 ⋄ rr←⍳0
[26] t1:→(i>¯1+⍴x)/vaix
[27]  →((x[i]='<')∧(x[i+1]='-'))/esim
[28]  rr←rr,1
[29]  →(i=i←i+1)/t1
[30] esim:rr←rr,0 1 1 0
[31]  →(i=i←i+2)/t1
[32] vaix:rr←rr,1
[33]  x←rr⌿x
[34] faca:x←'! 'edit x
[35]  r←(~' '=x)⊂x
-------------------------------------------------------------
[  0]  opesq vivo040a n;CORRECAO;EVENTO;aa;aaa;acuja;bb;cab;cc;dhx;esse;f;lixo1;lixonol;rel
       at;resp;resu;upag;xixa;xk;xx;ylu
[  1]  →(0≠⎕NC'opesq')/qveio
[  2]  opesq←10⍴' '
[  3] qveio:
[  4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[  5]  CORRECAO←0 ⋄ EVENTO←'PL040   '
[  6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
       4 5],⎕TS[6]+⎕TS[7]÷1000
[  7]  →(isnum n)/1+⎕LC ⋄ ylu←⍎FM'c:⌿apl2⌿',(5↑n),'.ALU' ⋄ EVENTO←n
[  8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍕⍳n
[  9]  FOLHALA040←ajusta80 FOLHALA040
[ 10]  relat←((2+1↑⍴ylu),1 30+⍴FOLHALA040)⍴' '
[ 11]  relat[1;;]←(1↓⍴relat)↑⍎FM'c:⌿apl2⌿VIVOBLO1'
[ 12]  xk←1 ⋄ resu←0 23⍴0
[ 13] testa:→(xk>1↑⍴ylu)/fim
[ 14]  esse←156 80⍴' '
[ 15]  f←((1↑⍴FOLHALA040),110)↑FOLHALA040
[ 16]  esse[1;]←80↑dhx[1;]
[ 17]  esse[2;]←80↑dhx[2;]
[ 18]  esse[3;]←80↑4 2⍕VERSAOa←1.04
[ 19]  esse[4;]←80↑ylu[xk;⍳6]
[ 20]  esse[5;]←80↑ylu[xk;6+⍳30]
[ 21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
```

```
[ 22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[ 23] ⍝ esse[305;]←80↑pedemail ylu[xk;36+⍳40]
[ 24]  esse[155;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[ 25]  esse[156;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[ 26] inica:
[ 27]  xx←chutaex1
[ 28]  bb←mataex1 xx
[ 29]  esse[7+⍳12;]←12 80↑bb[1;;]
[ 30]  resp←resp,⍪bb[2;1;⍳10]
[ 31]  xx←chutaex2
[ 32]  bb←mataex2 xx
[ 33]  esse[19+⍳12;]←12 80↑bb[1;;]
[ 34]  resp←resp,⍪bb[2;1;⍳10]
[ 35]  xx←chutaex3
[ 36]  bb←mataex3 xx
[ 37]  esse[31+⍳15;]←15 80↑bb[1;;]
[ 38]  resp←resp,⍪bb[2;1;⍳10]
[ 39]  xx←chutaex4
[ 40]  bb←mataex4 xx
[ 41]  esse[46+⍳15;]←15 80↑bb[1;;]
[ 42]  resp←resp,⍪bb[2;1;⍳10]
[ 43]  xx←chutaex1
[ 44]  bb←mataex1 xx
[ 45]  esse[61+⍳12;]←12 80↑bb[1;;]
[ 46]  resp←resp,⍪bb[2;1;⍳10]
[ 47]  xx←chutaex2
[ 48]  bb←mataex2 xx
[ 49]  esse[73+⍳12;]←12 80↑bb[1;;]
[ 50]  resp←resp,⍪bb[2;1;⍳10]
[ 51]  xx←chutaex3
[ 52]  bb←mataex3 xx
[ 53]  esse[85+⍳15;]←15 80↑bb[1;;]
[ 54]  resp←resp,⍪bb[2;1;⍳10]
[ 55]  xx←chutaex4
[ 56]  bb←mataex4 xx
[ 57]  esse[100+⍳15;]←15 80↑bb[1;;]
[ 58]  resp←resp,⍪bb[2;1;⍳10]
[ 59]  xx←chutaex1
[ 60]  bb←mataex1 xx
[ 61]  esse[115+⍳12;]←12 80↑bb[1;;]
[ 62]  resp←resp,⍪bb[2;1;⍳10]
[ 63]  xx←chutaex2
[ 64]  bb←mataex2 xx
[ 65]  esse[127+⍳12;]←12 80↑bb[1;;]
[ 66]  resp←resp,⍪bb[2;1;⍳10]
[ 67]  xx←chutaex3
[ 68]  bb←mataex3 xx
[ 69]  esse[139+⍳15;]←15 80↑bb[1;;]
[ 70]  resp←resp,⍪bb[2;1;⍳10]
[ 71]  resu←resu,[1]1 23⍴resp
[ 72]  acuja←(f[;2]='#')/⍳1↑⍴f
[ 73]  f[acuja;⍳80]←esse[⍪,f[acuja;3 4 5],' ';]
[ 74]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[ 75]  □←(⍕xk←xk+1),'-'
[ 76]  →testa
[ 77] fim:upag←(1 0+⍴f)⍴' '
[ 78]  →(1=≡n)/elafa
[ 79]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[ 80]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[ 81]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←46⍴4 0 5 0)⍕resu
[ 82]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[ 83]  →terminando
[ 84] elafa:aaa←(ylu,'¯-'edit(44⍴5 0 4 0)⍕0 1↓resu)
```

```
[ 85]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.gpa')
[ 86]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[ 87] terminando:
[ 88]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[ 89]  relat[1↑⍴relat;;]←upag
[ 90]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[ 91] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[ 92]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.tex'
[ 93]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo041

```
[ 0]  RRRR←AAA;A;B;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006
[ 1]  A←3
[ 2]  B←23
[ 3] Δ001:
[ 4]  Δ003←A≤B
[ 5]  →(~Δ003)/Δ002
[ 6]  Δ004←(0≠2|B)∨(0≠3|A)
[ 7]  →(~Δ004)/Δ005
[ 8]  B←B-2
[ 9] Δ005:
[10]  A←A+3
[11]  B←B-2
[12]  →Δ001
[13] Δ002:
[14]  A←A-1
[15]  RRRR←A+B
-------------------------------------------------------------
[  0]  r←cpc algo;nome;PILHA;nnn;saida;aspa;vv;coma;SALVA;i;j;loca;aaa;pn;pna
[  1] ⍝ versao 1.08
[  2]  PILHA←0 21⍴' ' ⋄ nnn←1 ⋄ saida←0 70⍴' ' ⋄ r←0 70⍴' ' ⋄ aspa←'''' ⋄ loca←'' ⋄ pna←'≤'
[  3]  i←1
[  4] t1:→(i>1↑⍴algo)/fim
[  5]  →(algo[i;1]≠'α')/oraviva
[  6]  saida←saida,[1]1 70⍴70↑1↓algo[i;]
[  7]  →(i=i←i+1)/t1
[  8] oraviva:vv←vetoriza algo[i;]
[  9]  →('algoritmo'igual⊃vv[1])/ealg
[ 10]  →('fim{algoritmo}'igual⊃vv[1])/ealf
[ 11]  →('fimalgoritmo'igual⊃vv[1])/ealf
[ 12]  →('funcao'igual⊃vv[1])/efun
[ 13]  →('fim{funcao}'igual⊃vv[1])/efuf
[ 14]  →('fimfuncao'igual⊃vv[1])/efuf
[ 15]  →('leia'igual⊃vv[1])/elei
[ 16]  →('imprima'igual⊃vv[1])/eimp
[ 17]  →('escreva'igual⊃vv[1])/eimp ⍝ para compatibilizar com o VG = 19/06/08
[ 18]  →('devolva'igual⊃vv[1])/eimp  ⍝ em teste: sera que devolva = imprima neste contexto
      ???
[ 19]  →('se'igual⊃vv[1])/esex
[ 20]  →('senao'igual⊃vv[1])/esen
[ 21]  →('fim{se}'igual⊃vv[1])/esef
[ 22]  →('fimse'igual⊃vv[1])/esef
[ 23]  →('enquanto'igual⊃vv[1])/eenq
[ 24]  →('fim{enquanto}'igual⊃vv[1])/eenf
[ 25]  →('fimenquanto'igual⊃vv[1])/eenf
[ 26]  →('repita'igual⊃vv[1])/erep
[ 27]  →('ate'igual⊃vv[1])/eate
[ 28]  →('para'igual⊃vv[1])/epar
[ 29]  →('fim{para}'igual⊃vv[1])/epaf
[ 30]  →('fimpara'igual⊃vv[1])/epaf
```

```
[ 31]  →('abandone'igual⊃vv[1])/eaba
[ 32]  →('saia'igual⊃vv[1])/esai
[ 33]  →('<-'igual⊃vv[2])/ecad
[ 34]  →('inteiro'igual⊃vv[1])/eint
[ 35]  →('real'igual⊃vv[1])/erea
[ 36]  →('logico'igual⊃vv[1])/elog
[ 37]  →('caracter'igual 8↑⊃vv[1])/ecar
[ 38]  →('vetor'igual⊃vv[1])/evet
[ 39]  →('vetora'igual⊃vv[1])/evaa
[ 40]  r←r,[1]1 70ρ70↑(3⍕i),' - comando desconhecido'
[ 41] soma:→(i=i←i+1)/t1
[ 42] ⍝--------------algoritmo--------------
[ 43] ealg:saida←saida,[1]1 70ρ70↑⊃vv[2]
[ 44]  →soma
[ 45] ealf:→fim
[ 46] ⍝--------------funcao-----------------
[ 47] efun:
[ 48]  →(2≥ρvv)/naotem
[ 49]  coma←'RRRR←',(⊃vv[2]),' AAAA'
[ 50]  →vmesmo
[ 51] naotem:coma←'RRRR←',(⊃vv[2])
[ 52]  saida←saida,[1]1 70ρ70↑coma
[ 53]  nome←⊃vv[2]
[ 54]  →aca0
[ 55] vmesmo:
[ 56]  saida←saida,[1]1 70ρ70↑coma
[ 57]  nome←⊃vv[2]
[ 58]  j←1
[ 59] voi1:→(j>¯2+ρvv)/aca0
[ 60]  saida←saida,[1]1 70ρ70↑(⊃vv[j+2]),'←AAAA[',(3 0⍕j),']'
[ 61]  loca←loca,';',⊃vv[j+2]
[ 62]  →(j=j←j+1)/voi1
[ 63] aca0:→soma
[ 64] efuf:→fim
[ 65] ⍝---------------leia-----------------
[ 66] elei:saida←saida,[1]1 70ρ70↑aspa,'LEITURA DA VARIAVEL ',(⊃vv[2]),aspa
[ 67]  saida←saida,[1]1 70ρ70↑(⊃vv[2]),'←□'
[ 68]  →soma
[ 69] ⍝---------------imprima--------------
[ 70] eimp:→(3=ρvv)/temmsg
[ 71]  aaa←⊃vv[2]
[ 72]  →(aaa[ρaaa]=';')/juntaa
[ 73]  saida←saida,[1]1 70ρ70↑aaa
[ 74]  →soma
[ 75] juntaa:saida←saida,[1]1 70ρ70↑'□←⍕',¯1↓aaa
[ 76]  →soma
[ 77] temmsg:aaa←⊃vv[3]
[ 78]  →(aaa[ρaaa]=';')/juntab
[ 79]  saida←saida,[1]1 70ρ70↑(⊃vv[2]),' ',aaa
[ 80]  →soma
[ 81] juntab:saida←saida,[1]1 70ρ70↑'□←',(⊃vv[2]),' ,⍕',¯1↓aaa
[ 82]  →soma
[ 83] ⍝---------------atribuicao------------
[ 84] ecad:saida←saida,[1]1 70ρ70↑(⊃vv[1]),'←',,⊃2↓vv
[ 85]  aaa←⊃vv[1]
[ 86]  →('['∈aaa)/soma
[ 87]  →(∨/aaa≤loca)/soma
[ 88]  loca←loca,';',⊃vv[1]
[ 89]  →soma
[ 90] ⍝---------------se--------------------
[ 91] esex:saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[ 92]  saida←saida,[1]1 70ρ70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn←nnn+1
[ 93]  PILHA←(1 21ρ21↑'SE',('000'⍕nnn)),[1]PILHA
```

```
[ 94]  nnn←nnn+1
[ 95]  →soma
[ 96] ⍝--senao--
[ 97] esen:SALVA←PILHA[1;3 4 5] ⋄ PILHA←1 0↓PILHA
[ 98]  PILHA←(1 21⍴21↑'SE',('000'⍕nnn)),[1]PILHA
[ 99]  saida←saida,[1]1 70⍴70↑'→Δ','000'⍕nnn
[100]  nnn←nnn+1
[101]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[102]  →soma
[103] ⍝--fim{se}--
[104] esef:saida←saida,[1]1 70⍴70↑'Δ',PILHA[1;3 4 5],':'
[105]  PILHA←1 0↓PILHA
[106]  →soma
[107] ⍝------------enquanto--------------------
[108] eenq:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[109]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[110]  nnn←nnn+1
[111]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[112]  nnn←nnn+1
[113]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[114]  nnn←nnn+1
[115]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn-2
[116]  →soma
[117] ⍝----------fim{enquanto}-----------------
[118] eenf:SALVA←PILHA[1;3 4 5]
[119]  PILHA←1 0↓PILHA
[120]  saida←saida,[1]1 70⍴70↑'→Δ',PILHA[1;3 4 5]
[121]  PILHA←1 0↓PILHA
[122]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[123]  →soma
[124] ⍝----------repita-------------------------
[125] erep:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[126]  PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[127]  nnn←nnn+1
[128]  →soma
[129] ⍝-----------ate--------------------------
[130] eate:PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[131]  nnn←nnn+1
[132]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[133]  SALVA←PILHA[1;3 4 5]
[134]  PILHA←1 0↓PILHA
[135]  saida←saida,[1]1 70⍴70↑'→(Δ',('000'⍕nnn),')/Δ',SALVA
[136]  SALVA←PILHA[1;3 4 5]
[137]  PILHA←1 0↓PILHA
[138]  saida←saida,[1]1 70⍴70↑'→Δ',SALVA
[139]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn-1),':'
[140]  nnn←nnn+1 ⍝ inclusao desta linha em 19/04/06. Ainda nao suficientemente testada
[141]  →soma
[142] ⍝----------para-----------------------
[143] epar:saida←saida,[1]1 70⍴70↑(8↑⊃vv[2]),'←',8↑⊃vv[4]
[144]  PILHA←(1 21⍴21↑'PA','000'⍕nnn),[1]PILHA
[145]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[146]  nnn←nnn+1
[147]  →(8=⍴vv)/tempasso
[148]  PILHA←(1 21⍴21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8↑8⍕1),[1]PILHA
[149]  →juntab
[150] tempasso:PILHA←(1 21⍴21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8 2⍕pn←⍪⊃vv[8]),[1]PILHA
[151] ⍝ 'pn=',⍕pn
[152]  pna←'≤≥'[1+pn<0] ⍝ alteracao a 22/06/06, para acertar passo negativo
[153] juntab:nnn←nnn+1
[154]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',(⊃vv[2]),pna,⍕⊃vv[6]
[155]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn),')/Δ','000'⍕nnn-1
[156]  nnn←nnn+1
```

```
[157]  →soma
[158] ⍝----------fim{para}-----------------
[159] epaf:saida←saida,[1]1 70⍴70↑PILHA[1;5+⍳8],'←',PILHA[1;5+⍳8],'+',PILHA[1;13+⍳8]
[160]  SALVA←PILHA[1;3 4 5]
[161]  PILHA←1 0↓PILHA
[162]  saida←saida,[1]1 70⍴70↑'→Δ',PILHA[1;3 4 5]
[163]  PILHA←1 0↓PILHA
[164]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[165]  →soma
[166] ⍝----------abandone--------------------
[167] eaba:→soma
[168] ⍝----------saia-------------------------
[169] esai:→soma
[170] ⍝-------- definicao de variaveis---------------
[171] eint:
[172]  saida←saida,[1]1 70⍴70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[173]  →soma
[174] erea:
[175]  saida←saida,[1]1 70⍴70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[176]  →soma
[177] elog:
[178]  saida←saida,[1]1 70⍴70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[179]  →soma
[180] ecar:
[181]  saida←saida,[1]1 70⍴70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[182]  →soma
[183] ⍝----------definicao de vetores-----------------
[184] evet:
[185]  saida←saida,[1]1 70⍴70↑(1 parte(⊃vv[2])),'←',(2 parte(⊃vv[2])),'⍴0'
[186]  →soma
[187] evaa:
[188]  saida←saida,[1]1 70⍴70↑(1 parte(⊃vv[2])),'←',(2 parte(⊃vv[2])),'⍴',aspa,' ',aspa
[189]  →soma
[190] fim:
[191]  i←1
[192] tfim:→(i>nnn)/mesmo
[193]  loca←loca,';Δ','000'⍕i
[194]  →(i=i←i+1)/tfim
[195] mesmo:→(50>⍴loca)/blz1
[196]  saida←((1↑⍴saida),20+⍴loca)↑saida
[197]  saida[1;20+⍳⍴loca]←loca
[198]  →pula22
[199] blz1:saida[1;20+⍳50]←50↑loca
[200] pula22:r←'_ 'edit saida
-------------------------------------------------------------
[ 0]  r←gera1;p1;p2;aa;bb;cc;dd;ee;ff;gg;hh;nomes;nome
[ 1]  p1←13 79⍴' '
[ 2]  p1[1;]←79↑'funcao AAA'
[ 3]  p1[2;]←79↑'X <- ',2 0⍕aa←5+?5
[ 4]  p1[3;]←79↑'Y <- ',2 0⍕bb←30+?12
[ 5]  p1[4;]←79↑'KOISA <- ',2 0⍕cc←1+?3
[ 6]  p1[5;]←79↑'enquanto X < Y faca'
[ 7]  p1[6;]←79↑'   X <- X + KOISA'
[ 8]  p1[7;]←79↑'   se 0≠',(1 0⍕ee←1+?2),'|KOISA entao'
[ 9]  p1[8;]←79↑'      KOISA <- KOISA + ',2 0⍕dd←?2
[10]  p1[9;]←79↑'   fimse'
[11]  p1[10;]←79↑'   KOISA <- KOISA + 1'
[12]  p1[11;]←79↑'fimenquanto'
[13]  p1[12;]←79↑'RRRR <- X'
[14]  p1[13;]←79↑'fimfuncao'
[15]  p2←11 79⍴' '
[16]  nomes←5 4⍴'ALFABETAALINCTDSGAMA'
[17]  nome←nomes[?5;]
```

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[18]  p2[1;]←79↑'⍀STATE X $⍀gets$ ',2 0⍕aa
[19]  p2[2;]←79↑'⍀STATE Y $⍀gets$ ',2 0⍕bb
[20]  p2[3;]←79↑'⍀STATE ',nome,' $⍀gets$ ',2 0⍕cc
[21]  p2[4;]←79↑'⍀WHILE{X $<$ Y}'
[22]  p2[5;]←79↑'⍀STATE X $⍀gets$ X + ',nome
[23]  p2[6;]←79↑'⍀IF {((',nome,' mod ',(1 0⍕ee),') $⍀neq$ 0)}'
[24]  p2[7;]←79↑'⍀STATE ',nome,' $⍀gets$ ',nome,' + ',2 0⍕dd
[25]  p2[8;]←79↑'⍀ENDIF'
[26]  p2[9;]←79↑'⍀STATE ',nome,' $⍀gets$ ',nome,' + 1'
[27]  p2[10;]←79↑'⍀ENDWHILE'
[28]  p2[11;]←79↑'⍀STATE escreva X'
[29]  r←(p1 p2)
-------------------------------------------------------------
[ 0]  r←gera2;p1;p2;aa;bb;cc;dd;ee;ff;gg;hh;ii
[ 1]  p1←13 79⍴' '
[ 2]  p1[1;]←79↑'funcao AAA'
[ 3]  p1[2;]←79↑'Z <- ',2 0⍕ff←?3
[ 4]  p1[3;]←79↑'UBA <- 0'
[ 5]  p1[4;]←79↑'para UBA de!',(2 0⍕aa←5+?5),' ate!',(2 0⍕bb←15+?5),' passo!',(2 0⍕cc←+?5)
[ 6]  p1[5;]←79↑'   para UCA de!',(2 0⍕dd←?3),' ate!',(2 0⍕ee←3+?2)
[ 7]  p1[6;]←79↑'      Z <- Z + UCA'
[ 8]  p1[7;]←79↑'   fimpara'
[ 9]  p1[8;]←79↑'   Z <- Z - ',2 0⍕gg←?3
[10]  p1[9;]←79↑'fimpara'
[11]  p1[10;]←79↑'F <- ',(2 0⍕hh←?10)
[12]  p1[11;]←79↑'Z <- Z + F'
[13]  p1[12;]←79↑'RRRR <- Z + F'
[14]  p1[13;]←79↑'fimfuncao'
[15]  p2←11 79⍴' '
[16]  p2[1;]←79↑'⍀STATE Z $⍀gets$ ',2 0⍕ff
[17]  p2[2;]←79↑'⍀STATE F $⍀gets$ ',2 0⍕?5
[18]  p2[3;]←79↑'⍀FOR{UBA de ',(2 0⍕aa),' ate ',(2 0⍕bb),' passo ',(2 0⍕cc),'}'
[19]  p2[4;]←79↑'⍀FOR{UCA de ',(2 0⍕dd),' ate ',(2 0⍕ee),'}'
[20]  p2[5;]←79↑'⍀STATE Z $⍀gets$ Z + UCA'
[21]  p2[6;]←79↑'⍀ENDFOR'
[22]  p2[7;]←79↑'⍀STATE Z $⍀gets$ Z - ',2 0⍕gg
[23]  p2[8;]←79↑'⍀ENDFOR'
[24]  p2[9;]←79↑'⍀STATE Z $⍀gets$ Z + F'
[25]  p2[10;]←79↑'⍀STATE F $⍀gets$ ',2 0⍕hh
[26]  p2[11;]←79↑'⍀STATE escreva (Z + F)'
[27]  r←(p1 p2)
-------------------------------------------------------------
[ 0]  r←gera3;p1;p2;aa;bb;cc;dd;ee;ff;gg;hh;ii
[ 1]  p1←13 79⍴' '
[ 2]  p1[1;]←79↑'funcao AAA'
[ 3]  p1[2;]←79↑'A <- ',2 0⍕aa←?3
[ 4]  p1[3;]←79↑'B <- ',2 0⍕bb←20+?3
[ 5]  p1[4;]←79↑'enquanto A ≤ B'
[ 6]  p1[5;]←79↑'   se (0≠2|B) ∨ (0≠3|A)'
[ 7]  p1[6;]←79↑'      B <- B - ',2 0⍕cc←?3
[ 8]  p1[7;]←79↑'   fimse'
[ 9]  p1[8;]←79↑'   A <- A + ',2 0⍕dd←?3
[10]  p1[9;]←79↑'   B <- B - ',2 0⍕ee←?3
[11]  p1[10;]←79↑'fimenquanto'
[12]  p1[11;]←79↑'A <- A - ',2 0⍕ff←?3
[13]  p1[12;]←79↑'RRRR <- A + B'
[14]  p1[13;]←79↑'fimfuncao'
[15]  p2←11 79⍴' '
[16]  p2[1;]←79↑'⍀STATE A $⍀gets$ ',2 0⍕aa
[17]  p2[2;]←79↑'⍀STATE B $⍀gets$ ',2 0⍕bb
[18]  p2[3;]←79↑'⍀WHILE {A $⍀le$ B}'
[19]  p2[4;]←79↑'⍀IF{((B mod 2) = 0) $⍀lor$ ((A mod 3) = 0)}'
[20]  p2[5;]←79↑'⍀STATE B $⍀gets$ B - ',2 0⍕cc
```

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[21]  p2[6;]←79↑'⍀ENDIF'
[22]  p2[7;]←79↑'⍀STATE A $⍀gets$ A + ',2 0⍕dd
[23]  p2[8;]←79↑'⍀STATE B $⍀gets$ B - ',2 0⍕ee
[24]  p2[9;]←79↑'⍀ENDWHILE'
[25]  p2[10;]←79↑'⍀STATE A $⍀gets$ A - ',2 0⍕ff
[26]  p2[11;]←79↑'⍀STATE escreva (A + B)'
[27]  r←(p1 p2)
-------------------------------------------------------------
[ 0]  r←gera4;p1;p2;aa;bb;cc;dd;ee;ff;gg;hh;ii
[ 1]  p1←13 79⍴' '
[ 2]  aa←3?5
[ 3]  p1[1;]←79↑'funcao AAA'
[ 4]  p1[2;]←79↑'A <- ',2 0⍕aa[1]
[ 5]  p1[3;]←79↑'B <- ',2 0⍕aa[2]
[ 6]  p1[4;]←79↑'C <- ',2 0⍕aa[3]
[ 7]  p1[5;]←79↑'repita'
[ 8]  p1[6;]←79↑'   se B ≥ C'
[ 9]  p1[7;]←79↑'      A <- A + B'
[10]  p1[8;]←79↑'   senao'
[11]  p1[9;]←79↑'      A <- A + C'
[12]  p1[10;]←79↑'  fimse'
[13]  p1[11;]←79↑'ate A > (2×(B+C))'
[14]  p1[12;]←79↑'RRRR <- (A+B+C)'
[15]  p1[13;]←79↑'fimfuncao'
[16]  p2←11 79⍴' '
[17]  p2[1;]←79↑'⍀STATE A $⍀gets$ ',2 0⍕aa[1]
[18]  p2[2;]←79↑'⍀STATE B $⍀gets$ ',2 0⍕aa[2]
[19]  p2[3;]←79↑'⍀STATE C $⍀gets$ ',2 0⍕aa[3]
[20]  p2[4;]←79↑'⍀REPEAT'
[21]  p2[5;]←79↑'⍀IF {B $>$ C}'
[22]  p2[6;]←79↑'⍀STATE A $⍀gets$ A+B'
[23]  p2[7;]←79↑'⍀ELSE'
[24]  p2[8;]←79↑'⍀STATE A $⍀gets$ A+C'
[25]  p2[9;]←79↑'⍀ENDIF'
[26]  p2[10;]←79↑'⍀UNTIL {A $>$ (2$⍀times$(B+C))}'
[27]  p2[11;]←79↑'⍀STATE escreva (A + B + C)'
[28]  r←(p1 p2)
-------------------------------------------------------------
[ 0]  r←gera5;p1;p2;aa;bb;cc;dd;ee;ff;gg;hh;ii
[ 1]  p1←13 79⍴' '
[ 2]  aa←3?5 ⋄ bb←10+3?5 ⋄ cc←3?6
[ 3]  p1[1;]←79↑'funcao AAA'
[ 4]  p1[2;]←79↑'J <- ',2 0⍕dd←?9
[ 5]  p1[3;]←79↑'B <- ',2 0⍕ee←?9
[ 6]  p1[4;]←79↑'C <- ',2 0⍕ff←?9
[ 7]  p1[5;]←79↑'para J de! ',(2 0⍕aa[1]),' ate!  ',(2 0⍕bb[1]),' passo! ',(1 0⍕cc[1])
[ 8]  p1[6;]←79↑'   para B de! ',(2 0⍕bb[2]),' ate! ',(2 0⍕aa[2]),' passo! -',1 0⍕cc[2]
[ 9]  p1[7;]←79↑'      C <- J + B'
[10]  p1[8;]←79↑'   fimpara'
[11]  p1[9;]←79↑'fimpara'
[12]  p1[10;]←79↑'J <- J + 2'
[13]  p1[11;]←79↑'B <- B - 3'
[14]  p1[12;]←79↑'RRRR <- (J+B+C)'
[15]  p1[13;]←79↑'fimfuncao'
[16]  p2←11 79⍴' '
[17]  p2[1;]←79↑'⍀STATE J $⍀gets$ ',2 0⍕dd
[18]  p2[2;]←79↑'⍀STATE B $⍀gets$ ',2 0⍕ee
[19]  p2[3;]←79↑'⍀STATE C $⍀gets$ ',2 0⍕ff
[20]  p2[4;]←79↑'⍀FOR{J de ',(2 0⍕aa[1]),' ate ',(2 0⍕bb[1]),' passo ',(1 0⍕cc[1]),'}'
[21]  p2[5;]←79↑'⍀FOR{B de ',(2 0⍕bb[2]),' ate ',(2 0⍕aa[2]),' passo -',(1 0⍕cc[2]),'}'
[22]  p2[6;]←79↑'⍀STATE C $⍀gets$ J+B'
[23]  p2[7;]←79↑'⍀ENDFOR'
[24]  p2[8;]←79↑'⍀ENDFOR'
```

```
[25]  p2[9;]←79↑'⍀STATE J $⍀gets$ J + 2'
[26]  p2[10;]←79↑'⍀STATE B $⍀gets$ B - 3'
[27]  p2[11;]←79↑'⍀STATE escreva (J + B + C)'
[28]  r←(p1 p2)
-------------------------------------------------------------
[ 0]  r←gera6;p1;p2;aa;bb;cc;dd;ee;ff;gg;hh;ii
[ 1]  p1←13 79⍴' '
[ 2]  p1[1;]←79↑'funcao AAA'
[ 3]  p1[2;]←79↑'J <- ',2 0⍕aa←?9
[ 4]  p1[3;]←79↑'se J > ',(2 0⍕cc←?9),' entao'
[ 5]  p1[4;]←79↑'   repita'
[ 6]  p1[5;]←79↑'      J <- J + ',2 0⍕dd←?4
[ 7]  p1[6;]←79↑'   ate (J > ',(2 0⍕ee←10+?6),')'
[ 8]  p1[7;]←79↑'senao'
[ 9]  p1[8;]←79↑'   enquanto J > ',2 0⍕ff←8+?7
[10]  p1[9;]←79↑'      J <- J - ',2 0⍕gg←1+?6
[11]  p1[10;]←79↑'   fimenquanto'
[12]  p1[11;]←79↑'fimse'
[13]  p1[12;]←79↑'RRRR <- J'
[14]  p1[13;]←79↑'fimfuncao'
[15]  p2←11 79⍴' '
[16]  p2[1;]←79↑'⍀STATE J $⍀gets$ ',2 0⍕aa
[17]  p2[2;]←79↑'⍀IF {J $>$',(2 0⍕cc),'}'
[18]  p2[3;]←79↑'⍀REPEAT'
[19]  p2[4;]←79↑'⍀STATE J $⍀gets$ j +',(2 0⍕dd)
[20]  p2[5;]←79↑'⍀UNTIL {J $>$ ',(2 0⍕ee),'}'
[21]  p2[6;]←79↑'⍀ELSE'
[22]  p2[7;]←79↑'⍀WHILE{J $>$',(2 0⍕ff),'}'
[23]  p2[8;]←79↑'⍀STATE J $⍀gets$ J -',(2 0⍕gg)
[24]  p2[9;]←79↑'⍀ENDWHILE'
[25]  p2[10;]←79↑'⍀ENDIF'
[26]  p2[11;]←79↑'⍀STATE escreva (J)'
[27]  r←(p1 p2)
-------------------------------------------------------------
[0]  r←a igual b;maior
[1]  maior←(1↑⍴a)⌈1↑⍴b
[2]  a←maior↑a ⋄ b←maior↑b
[3]  r←maior=+/a=b
-------------------------------------------------------------
[0]  r←pedemail x
[1]  →(40≠+/' '=x)/aindanao
[2]  r←80↑'Por favor, informe seu e-mail: ⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_'
[3]  →junnao
[4] aindanao:r←80↑'e-mail cadastrado: ',x
[5] junnao:
-------------------------------------------------------------
[ 0]  r←quem replace depara;de;i;j;k;onde;para
[ 1] ⍝ forma de usar: texto replace 'strin-de' 'string para'
[ 2] ⍝ obviamente eles nao precisam ter o mesmo tamanho
[ 3]  de←,⊃depara[1] ⋄ para←,⊃depara[2]
[ 4]  i←1 ⋄ r←((1↑⍴quem),200)⍴' '
[ 5] t1:→(i>1↑⍴quem)/fim
[ 6]  →(0=∨/onde←de⍷quem[i;])/naotem
[ 7]  j←1 ⋄ k←1
[ 8] t2:→(k>⍴quem[i;])/acabou
[ 9]  →(onde[k]=0)/soma
[10]  r[i;(j-1)+⍳⍴para]←para
[11]  j←j+⍴para
[12]  k←k+⍴de
[13]  →t2
[14] soma:r[i;j]←quem[i;k]
[15]  k←k+1
[16]  →(j=j←j+1)/t2
```

```
[17] naotem:r[i;]←200↑quem[i;]
[18] acabou:→(i=i←i+1)/t1
[19] fim:r←trim4 r
-------------------------------------------------------------
[0]  r←trim4 x;z
[1] ⍝f corta as colunas direitas que sao brancos
[2]  →(2≠⍴⍴x)/erro
[3]  z←+/[1]x=' '
[4]  r←(z≠1↑⍴x)/[2]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
-------------------------------------------------------------
[ 0]  r←vetoriza x;i;rr;letra;aspa;nume
[ 1] ⍝ versao 1.07
[ 2]  aspa←''''' ⋄ nume←'0123456789'
[ 3]  letra←'abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ()',aspa
[ 4] ⍝ tira os brancos
[ 5]  i←1 ⋄ rr←1
[ 6] t2:→(i>¯2+⍴x)/vaiz
[ 7]  →((x[i+1]=' ')∧(x[i]∈letra)∧(x[i+2]∈nume))/mataz
[ 8]  →((x[i+1]=' ')∧(x[i]∈nume)∧(x[i+2]∈letra))/mataz
[ 9]  →((x[i]∈letra)∧(x[i+2]∈letra))/naopode
[10]  →((x[i]∈letra)∧(x[i+2]='-'))/naopode  ⍝ comando incluido para o passo negativo
[11]  →(x[i+1]≠' ')/naopode
[12] pode:rr←rr,0
[13]  →(i=i←i+1)/t2
[14] mataz:x[i+1]←'!'
[15] naopode:rr←rr,1
[16]  →(i=i←i+1)/t2
[17] vaiz:rr←rr,1
[18]  x←rr/x
[19] ⍝ separa o sinal <-
[20]  →(2≠+/'<-'∈x)/faca
[21]  i←1 ⋄ rr←⍳0
[22] t1:→(i>¯1+⍴x)/vaix
[23]  →((x[i]='<')∧(x[i+1]='-'))/esim
[24]  rr←rr,1
[25]  →(i=i←i+1)/t1
[26] esim:rr←rr,0 1 1 0
[27]  →(i=i←i+2)/t1
[28] vaix:rr←rr,1
[29]  x←rr⌿x
[30] faca:x←'! 'edit x
[31]  r←(~' '=x)⊂x
-------------------------------------------------------------
[  0]  opesq vivo041a n;CORRECAO;EVENTO;aa;aaa;acuja;bb;cab;cc;dhx;esse;f;lixo1;lixonol;rel
       at;resp;resu;upag;xixa;xk;xx;ylu
[  1]  →(0≠⎕NC'opesq')/qveio
[  2]  opesq←10⍴' '
[  3] qveio:
[  4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[  5]  CORRECAO←0 ⋄ EVENTO←'PL041   '
[  6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
       4 5],⎕TS[6]+⎕TS[7]÷1000
[  7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⌿apl2⌿',(5↑n),'.ALU' ⋄ EVENTO←n
[  8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍎⍳n
[  9]  FOLHALA041←ajusta80 FOLHALA041
[ 10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA041)⍴' '
[ 11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⌿apl2⌿VIVOBLO1'
[ 12]  xk←1 ⋄ resu←0 8⍴0
[ 13] testa:→(xk>1↑⍴ylu)/fim
[ 14]  esse←240 80⍴' '
[ 15]  f←FOLHALA041
```

```
[ 16]  esse[1;]←80↑dhx[1;]
[ 17]  esse[2;]←80↑dhx[2;]
[ 18]  esse[3;]←80↑4 2⍕VERSAOa←1.02
[ 19]  esse[4;]←80↑ylu[xk;⍳6]
[ 20]  esse[5;]←80↑ylu[xk;6+⍳30]
[ 21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[ 22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[ 23]  esse[239;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[ 24]  esse[240;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[ 25] inica:
[ 26]  xx←gera1
[ 27]  esse[7+⍳11;]←11 80↑⊃xx[2]
[ 28]  bb←⎕FX cpc⊃xx[1]
[ 29]  xixa←,⍪'AAA'
[ 30]  xx←gera2
[ 31]  esse[18+⍳11;]←11 80↑⊃xx[2]
[ 32]  bb←⎕FX cpc⊃xx[1]
[ 33]  xixa←xixa+⍪'AAA'
[ 34]  xx←gera3
[ 35]  esse[29+⍳11;]←11 80↑⊃xx[2]
[ 36]  bb←⎕FX cpc⊃xx[1]
[ 37]  xixa←xixa+⍪'AAA'
[ 38]  resp←resp,xixa
[ 39]  xx←gera4
[ 40]  esse[40+⍳11;]←11 80↑⊃xx[2]
[ 41]  bb←⎕FX cpc⊃xx[1]
[ 42]  xixa←,⍪'AAA'
[ 43]  xx←gera5
[ 44]  esse[51+⍳11;]←11 80↑⊃xx[2]
[ 45]  bb←⎕FX cpc⊃xx[1]
[ 46]  xixa←xixa+⍪'AAA'
[ 47]  xx←gera6
[ 48]  esse[62+⍳11;]←11 80↑⊃xx[2]
[ 49]  bb←⎕FX cpc⊃xx[1]
[ 50]  xixa←xixa+⍪'AAA'
[ 51]  resp←resp,xixa
[ 52]  xx←gera1
[ 53]  esse[73+⍳11;]←11 80↑⊃xx[2]
[ 54]  bb←⎕FX cpc⊃xx[1]
[ 55]  xixa←,⍪'AAA'
[ 56]  xx←gera2
[ 57]  esse[84+⍳11;]←11 80↑⊃xx[2]
[ 58]  bb←⎕FX cpc⊃xx[1]
[ 59]  xixa←xixa+⍪'AAA'
[ 60]  xx←gera3
[ 61]  esse[95+⍳11;]←11 80↑⊃xx[2]
[ 62]  bb←⎕FX cpc⊃xx[1]
[ 63]  xixa←xixa+⍪'AAA'
[ 64]  resp←resp,xixa
[ 65]  xx←gera4
[ 66]  esse[106+⍳11;]←11 80↑⊃xx[2]
[ 67]  bb←⎕FX cpc⊃xx[1]
[ 68]  xixa←⍪'AAA'
[ 69]  xx←gera5
[ 70]  esse[117+⍳11;]←11 80↑⊃xx[2]
[ 71]  bb←⎕FX cpc⊃xx[1]
[ 72]  xixa←xixa+⍪'AAA'
[ 73]  xx←gera6
[ 74]  esse[128+⍳11;]←11 80↑⊃xx[2]
[ 75]  bb←⎕FX cpc⊃xx[1]
[ 76]  xixa←xixa+⍪'AAA'
[ 77]  resp←resp,xixa
[ 78]  xx←gera1
```

```
[ 79]  esse[139+⍳11;]←11 80↑⊃xx[2]
[ 80]  bb←⎕FX cpc⊃xx[1]
[ 81]  xixa←⍬'AAA'
[ 82]  xx←gera2
[ 83]  esse[150+⍳11;]←11 80↑⊃xx[2]
[ 84]  bb←⎕FX cpc⊃xx[1]
[ 85]  xixa←xixa+,⍬'AAA'
[ 86]  xx←gera3
[ 87]  esse[161+⍳11;]←11 80↑⊃xx[2]
[ 88]  bb←⎕FX cpc⊃xx[1]
[ 89]  xixa←xixa+⍬'AAA'
[ 90]  resp←resp,xixa
[ 91]  xx←gera4
[ 92]  esse[172+⍳11;]←11 80↑⊃xx[2]
[ 93]  bb←⎕FX cpc⊃xx[1]
[ 94]  xixa←⍬'AAA'
[ 95]  xx←gera5
[ 96]  esse[183+⍳11;]←11 80↑⊃xx[2]
[ 97]  bb←⎕FX cpc⊃xx[1]
[ 98]  xixa←xixa+⍬'AAA'
[ 99]  xx←gera6
[100]  esse[194+⍳11;]←11 80↑⊃xx[2]
[101]  bb←⎕FX cpc⊃xx[1]
[102]  xixa←xixa+⍬'AAA'
[103]  resp←resp,xixa
[104]  xx←gera1
[105]  esse[205+⍳11;]←11 80↑⊃xx[2]
[106]  bb←⎕FX cpc⊃xx[1]
[107]  xixa←⍬'AAA'
[108]  xx←gera2
[109]  esse[216+⍳11;]←11 80↑⊃xx[2]
[110]  bb←⎕FX cpc⊃xx[1]
[111]  xixa←xixa+,⍬'AAA'
[112]  xx←gera3
[113]  esse[227+⍳11;]←11 80↑⊃xx[2]
[114]  bb←⎕FX cpc⊃xx[1]
[115]  xixa←xixa+⍬'AAA'
[116]  resp←resp,xixa
[117]  resu←resu,[1]1 8⍴resp
[118]  acuja←(f[;2]='#')/⍳1↑⍴f
[119]  f[acuja;⍳80]←esse[⍬,f[acuja;3 4 5],' ';]
[120]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[121]  ⍎(⍕xk←xk+1),'-'
[122]  →testa
[123] fim:upag←(1 0+⍴f)⍴' '
[124]  →(1=≡n)/elafa
[125]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[126]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[127]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←4 0 10 0 4 0 4 0 6 0 4 0 4 0 6 0)⍕resu
[128]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[129]  →terminando
[130] elafa:aaa←(ylu,10 0 4 0 4 0 6 0 4 0 4 0 6 0⍕0 1↓resu)
[131]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[132]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[133] terminando:
[134]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[135]  relat[1↑⍴relat;;]←upag
[136]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[137] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[138]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[139]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo042

```
[ 0]  RRRR←AAA;K;L;M;CT;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ008;Δ009;Δ010
[ 1]  K←2
[ 2]  L←14
[ 3]  M←23
[ 4]  CT←0
[ 5] Δ001:
[ 6]  Δ003←K<15
[ 7]  →(~Δ003)/Δ002
[ 8]  CT←CT+1
[ 9] Δ004:
[10]  Δ006←L>1
[11]  →(~Δ006)/Δ005
[12]  CT←CT+2
[13] Δ007:
[14]  Δ009←M≥13
[15]  →(~Δ009)/Δ008
[16]  CT←CT+3
[17]  M←M-5
[18]  →Δ007
[19] Δ008:
[20]  L←L-7
[21]  →Δ004
[22] Δ005:
[23]  K←K+8
[24]  →Δ001
[25] Δ002:
[26]  CT←CT+4
[27]  K←K-5
[28]  RRRR←K+CT
-------------------------------------------------------------
[  0]  r←cpc algo;nome;PILHA;nnn;saida;aspa;vv;coma;SALVA;i;j;loca;aaa;pn;pna
[  1] ⍝ versao 1.10
[  2]  PILHA←0 21⍴' ' ⋄ nnn←1 ⋄ saida←0 70⍴' ' ⋄ r←0 70⍴' ' ⋄ aspa←'''' ⋄ loca←'' ⋄ pna←'≤'
[  3]  →(1=⍴⍴algo)/erro90
[  4]  i←1
[  5] t1:→(i>1↑⍴algo)/fim
[  6]  →(algo[i;1]≠'α')/oraviva
[  7]  saida←saida,[1]1 70⍴70↑1↓algo[i;]
[  8]  →(i=i←i+1)/t1
[  9] oraviva:vv←vetoriza algo[i;]
[ 10]  →('algoritmo'igual⊃vv[1])/ealg
[ 11]  →('fim{algoritmo}'igual⊃vv[1])/ealf
[ 12]  →('fimalgoritmo'igual⊃vv[1])/ealf
[ 13]  →('funcao'igual⊃vv[1])/efun
[ 14]  →('fim{funcao}'igual⊃vv[1])/efuf
[ 15]  →('fimfuncao'igual⊃vv[1])/efuf
[ 16]  →('leia'igual⊃vv[1])/elei
[ 17]  →('imprima'igual⊃vv[1])/eimp
[ 18]  →('escreva'igual⊃vv[1])/eimp ⍝ para compatibilizar com o VG = 19/06/08
[ 19]  →('devolva'igual⊃vv[1])/eimp  ⍝ em teste: sera que devolva = imprima neste contexto
       ???
[ 20]  →('se'igual⊃vv[1])/esex
[ 21]  →('senao'igual⊃vv[1])/esen
[ 22]  →('fim{se}'igual⊃vv[1])/esef
[ 23]  →('fimse'igual⊃vv[1])/esef
[ 24]  →('enquanto'igual⊃vv[1])/eenq
[ 25]  →('fim{enquanto}'igual⊃vv[1])/eenf
[ 26]  →('fimenquanto'igual⊃vv[1])/eenf
[ 27]  →('repita'igual⊃vv[1])/erep
[ 28]  →('ate'igual⊃vv[1])/eate
[ 29]  →('para'igual⊃vv[1])/epar
```

```
[ 30]  →('fim{para}'igual⊃vv[1])/epaf
[ 31]  →('fimpara'igual⊃vv[1])/epaf
[ 32]  →('abandone'igual⊃vv[1])/eaba
[ 33]  →('saia'igual⊃vv[1])/esai
[ 34]  →('<-'igual⊃vv[2])/ecad
[ 35]  →('inteiro'igual⊃vv[1])/eint
[ 36]  →('real'igual⊃vv[1])/erea
[ 37]  →('logico'igual⊃vv[1])/elog
[ 38]  →('caracter'igual 8↑⊃vv[1])/ecar
[ 39]  →('vetor'igual⊃vv[1])/evet
[ 40]  →('vetora'igual⊃vv[1])/evaa
[ 41]  r←r,[1]1 70ρ70↑(3⍕i),' - comando desconhecido'
[ 42] soma:→(i=i←i+1)/t1
[ 43] ⍝--------------algoritmo--------------
[ 44] ealg:saida←saida,[1]1 70ρ70↑⊃vv[2]
[ 45]  →soma
[ 46] ealf:→fim
[ 47] ⍝--------------funcao-----------------
[ 48] efun:
[ 49]  →(2≥ρvv)/naotem
[ 50]  coma←'RRRR←',(⊃vv[2]),' AAAA'
[ 51]  →vmesmo
[ 52] naotem:coma←'RRRR←',(⊃vv[2])
[ 53]  saida←saida,[1]1 70ρ70↑coma
[ 54]  nome←⊃vv[2]
[ 55]  →aca0
[ 56] vmesmo:
[ 57]  saida←saida,[1]1 70ρ70↑coma
[ 58]  nome←⊃vv[2]
[ 59]  j←1
[ 60] voi1:→(j>¯2+ρvv)/aca0
[ 61]  saida←saida,[1]1 70ρ70↑(⊃vv[j+2]),'←AAAA[',(3 0⍕j),']'
[ 62]  loca←loca,';',⊃vv[j+2]
[ 63]  →(j=j←j+1)/voi1
[ 64] aca0:→soma
[ 65] efuf:→fim
[ 66] ⍝---------------leia-----------------
[ 67] elei:saida←saida,[1]1 70ρ70↑aspa,'LEITURA DA VARIAVEL ',(⊃vv[2]),aspa
[ 68]  saida←saida,[1]1 70ρ70↑(⊃vv[2]),'←□'
[ 69]  →soma
[ 70] ⍝---------------imprima--------------
[ 71] eimp:→(3=ρvv)/temmsg
[ 72]  aaa←⊃vv[2]
[ 73]  →(aaa[ρaaa]=';')/juntaa
[ 74]  saida←saida,[1]1 70ρ70↑aaa
[ 75]  →soma
[ 76] juntaa:saida←saida,[1]1 70ρ70↑'□←⍕',¯1↓aaa
[ 77]  →soma
[ 78] temmsg:aaa←⊃vv[3]
[ 79]  →(aaa[ρaaa]=';')/juntab
[ 80]  saida←saida,[1]1 70ρ70↑(⊃vv[2]),' ',aaa
[ 81]  →soma
[ 82] juntab:saida←saida,[1]1 70ρ70↑'□←',(⊃vv[2]),' ,⍕',¯1↓aaa
[ 83]  →soma
[ 84] ⍝---------------atribuicao------------
[ 85] ecad:saida←saida,[1]1 70ρ70↑(⊃vv[1]),'←',,⊃2↓vv
[ 86]  aaa←⊃vv[1]
[ 87]  →('['∈aaa)/soma
[ 88]  →(∨/aaa⍷loca)/soma
[ 89]  loca←loca,';',⊃vv[1]
[ 90]  →soma
[ 91] ⍝---------------se--------------------
[ 92] esex:saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
```

```
[ 93]  saida←saida,[1]1 70ρ70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn←nnn+1
[ 94]  PILHA←(1 21ρ21↑'SE',('000'⍕nnn)),[1]PILHA
[ 95]  nnn←nnn+1
[ 96]  →soma
[ 97] ⍝--senao--
[ 98] esen:SALVA←PILHA[1;3 4 5] ⋄ PILHA←1 0↓PILHA
[ 99]  PILHA←(1 21ρ21↑'SE',('000'⍕nnn)),[1]PILHA
[100]  saida←saida,[1]1 70ρ70↑'→Δ','000'⍕nnn
[101]  nnn←nnn+1
[102]  saida←saida,[1]1 70ρ70↑'Δ',SALVA,':'
[103]  →soma
[104] ⍝--fim{se}--
[105] esef:saida←saida,[1]1 70ρ70↑'Δ',PILHA[1;3 4 5],':'
[106]  PILHA←1 0↓PILHA
[107]  →soma
[108] ⍝------------enquanto--------------------
[109] eenq:saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),':'
[110]  PILHA←(1 21ρ21↑'EN','000'⍕nnn),[1]PILHA
[111]  nnn←nnn+1
[112]  PILHA←(1 21ρ21↑'EN','000'⍕nnn),[1]PILHA
[113]  nnn←nnn+1
[114]  saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),'←',⍕vv[2]
[115]  nnn←nnn+1
[116]  saida←saida,[1]1 70ρ70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn-2
[117]  →soma
[118] ⍝----------fim{enquanto}------------------
[119] eenf:SALVA←PILHA[1;3 4 5]
[120]  PILHA←1 0↓PILHA
[121]  saida←saida,[1]1 70ρ70↑'→Δ',PILHA[1;3 4 5]
[122]  PILHA←1 0↓PILHA
[123]  saida←saida,[1]1 70ρ70↑'Δ',SALVA,':'
[124]  →soma
[125] ⍝----------repita-------------------------
[126] erep:saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),':'
[127]  PILHA←(1 21ρ21↑'RE','000'⍕nnn),[1]PILHA
[128]  nnn←nnn+1
[129]  →soma
[130] ⍝-----------ate--------------------------
[131] eate:PILHA←(1 21ρ21↑'RE','000'⍕nnn),[1]PILHA
[132]  nnn←nnn+1
[133]  saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),'←',⍕vv[2]
[134]  SALVA←PILHA[1;3 4 5]
[135]  PILHA←1 0↓PILHA
[136]  saida←saida,[1]1 70ρ70↑'→(Δ',('000'⍕nnn),')/Δ',SALVA
[137]  SALVA←PILHA[1;3 4 5]
[138]  PILHA←1 0↓PILHA
[139]  saida←saida,[1]1 70ρ70↑'→Δ',SALVA
[140]  saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn-1),':'
[141]  nnn←nnn+1 ⍝ inclusao desta linha em 19/04/06. Ainda nao suficientemente testada
[142]  →soma
[143] ⍝----------para-----------------------
[144] epar:saida←saida,[1]1 70ρ70↑(8↑⍕vv[2]),'←',8↑⍕vv[4]
[145]  PILHA←(1 21ρ21↑'PA','000'⍕nnn),[1]PILHA
[146]  saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),':'
[147]  nnn←nnn+1
[148]  →(8≤ρvv)/tempasso
[149]  PILHA←(1 21ρ21↑'PA',('000'⍕nnn),(8↑⍕vv[2]),8↑8⍕1),[1]PILHA
[150]  →juntab
[151] tempasso:PILHA←(1 21ρ21↑'PA',('000'⍕nnn),(8↑⍕vv[2]),8 2⍕pn←±⍕vv[8]),[1]PILHA
[152] ⍝ 'pn=',⍕pn
[153]  pna←'≤≥'[1+pn<0] ⍝ alteracao a 22/06/06, para acertar passo negativo
[154] juntab:nnn←nnn+1
[155]  saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),'←',(⍕vv[2]),pna,⍕⍕vv[6]
```

```
[156]  saida←saida,[1]1 70ρ70↑'→(~Δ',('000'⍕nnn),')/Δ','000'⍕nnn-1
[157]  nnn←nnn+1
[158]  →soma
[159] ⍝----------fim{para}------------------
[160] epaf:saida←saida,[1]1 70ρ70↑PILHA[1;5+⍳8],'←',PILHA[1;5+⍳8],'+',PILHA[1;13+⍳8]
[161]  SALVA←PILHA[1;3 4 5]
[162]  PILHA←1 0↓PILHA
[163]  saida←saida,[1]1 70ρ70↑'→Δ',PILHA[1;3 4 5]
[164]  PILHA←1 0↓PILHA
[165]  saida←saida,[1]1 70ρ70↑'Δ',SALVA,':'
[166]  →soma
[167] ⍝-----------abandone--------------------
[168] eaba:→soma
[169] ⍝-----------saia--------------------------
[170] esai:→soma
[171] ⍝-------- definicao de variaveis---------------
[172] eint:
[173]  saida←saida,[1]1 70ρ70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[174]  →soma
[175] erea:
[176]  saida←saida,[1]1 70ρ70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[177]  →soma
[178] elog:
[179]  saida←saida,[1]1 70ρ70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[180]  →soma
[181] ecar:
[182]  saida←saida,[1]1 70ρ70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[183]  →soma
[184] ⍝----------definicao de vetores------------------
[185] evet:
[186]  saida←saida,[1]1 70ρ70↑(1 parte(⊃vv[2])),'←',(2 parte(⊃vv[2])),'ρ0'
[187]  →soma
[188] evaa:
[189]  saida←saida,[1]1 70ρ70↑(1 parte(⊃vv[2])),'←',(2 parte(⊃vv[2])),'ρ',aspa,' ',aspa
[190]  →soma
[191] fim:
[192]  i←1
[193] tfim:→(i>nnn)/mesmo
[194]  loca←loca,';Δ','000'⍕i
[195]  →(i=i←i+1)/tfim
[196] mesmo:→(50>ρloca)/blz1
[197]  saida←((1↑ρsaida),20+ρloca)↑saida
[198]  saida[1;20+⍳ρloca]←loca
[199]  →pula22
[200] blz1:saida[1;20+⍳50]←50↑loca
[201] pula22:r←'_ 'edit saida
[202]  →0
[203] erro90:'algoritmo nao e uma matriz'
[204]  →0
-------------------------------------------------------------
[ 0]  ex1;a;b;c;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ008;Δ009;Δ010;Δ011;Δ012
[ 1]  a←8
[ 2] Δ001:
[ 3]  Δ003←(a≤14)
[ 4]  →(~Δ003)/Δ002
[ 5]  b←22
[ 6] Δ004:
[ 7]  Δ006←(b≥11)
[ 8]  →(~Δ006)/Δ005
[ 9]  c←5
[10]  Δ007←(a+b+c)>20
[11]  →(~Δ007)/Δ008
[12]  c←c+1
```

```
[13]  →Δ009
[14] Δ008:
[15]  c←c-1
[16] Δ009:
[17]  a←a+1
[18]  Δ010←b>17
[19]  →(~Δ010)/Δ011
[20]  a←a+1
[21] Δ011:
[22]  b←b-3
[23]  →Δ004
[24] Δ005:
[25]  a←a+4
[26]  →Δ001
[27] Δ002:
[28]  (a+b+c)
-------------------------------------------------------------
[ 0]  ex2;A;B;C;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ008;Δ009;Δ010;Δ011;Δ012
[ 1]  A←16
[ 2]  B←9
[ 3]  C←15
[ 4] Δ001:
[ 5]  C←C-5
[ 6] Δ002:
[ 7]  Δ004←A<34
[ 8]  →(~Δ004)/Δ003
[ 9]  B←B+5
[10]  Δ005←A<15
[11]  →(~Δ005)/Δ006
[12]  B←B+2
[13]  →Δ007
[14] Δ006:
[15]  C←C-1
[16] Δ007:
[17]  Δ008←0=2|C
[18]  →(~Δ008)/Δ009
[19]  B←B+1
[20] Δ009:
[21]  A←A+4
[22]  →Δ002
[23] Δ003:
[24]  Δ011←C<0
[25]  →(Δ011)/Δ010
[26]  →Δ001
[27] Δ010:
[28]  (A+B+C)
-------------------------------------------------------------
[ 0]  ex3;X;Y;Z;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ008;Δ009;Δ010;Δ011;Δ012
[ 1]  X←5
[ 2]  Y←27
[ 3]  Z←16
[ 4]  I←4
[ 5] Δ001:
[ 6]  Δ003←I≤16
[ 7]  →(~Δ003)/Δ002
[ 8]  X←X+I
[ 9]  J←21
[10] Δ004:
[11]  Δ006←J≤3
[12]  →(~Δ006)/Δ005
[13]  (J)
[14]  Y←Y-I
[15]  Z←Z+J
```

```
[16]  J←J+1
[17]  →Δ004
[18] Δ005:
[19]  Δ007←(2×Z)>11
[20]  →(~Δ007)/Δ008
[21]  X←⌊(X÷2)
[22]  →Δ009
[23] Δ008:
[24]  Y←Y+1
[25] Δ009:
[26]  I←I+5
[27]  →Δ001
[28] Δ002:
[29]  Δ010←X<17
[30]  →(~Δ010)/Δ011
[31]  Z←Z+3
[32] Δ011:
[33]  (Y+Z)
-------------------------------------------------------------
[ 0]  funcao AAA
[ 1]  A<-16
[ 2]  B<-9
[ 3]  C<-15
[ 4]  repita
[ 5]  C<-C-5
[ 6]  enquanto A<34
[ 7]  B<-B+5
[ 8]  se A<15
[ 9]  B<-B+2
[10]  senao
[11]  C<-C-1
[12]  fimse
[13]  se 0=2|C
[14]  B<-B+1
[15]  fimse
[16]  A<-A+4
[17]  fimenquanto
[18]  ate C<0
[19]  RRRR<-A+B+C
[20]  fimfuncao
-------------------------------------------------------------
[ 0]  r←gerb1;p1;p2;aa;bb;cc;dd;ee;ff;gg;hh;ii;jj;kk;ll
[ 1]  p1←21 79⍴' '
[ 2]  p1[1;]←79↑'funcao AAA'
[ 3]  p1[2;]←79↑'A <- ',2 0⍕aa←?9
[ 4]  p1[3;]←79↑'enquanto A ≤ ',2 0⍕bb←10+?7
[ 5]  p1[4;]←79↑'   B <- ',2 0⍕dd←20+?5
[ 6]  p1[5;]←79↑'   enquanto B ≥ ',2 0⍕ee←10+?7
[ 7]  p1[6;]←79↑'      C <- ',2 0⍕gg←?9
[ 8]  p1[7;]←79↑'      se (A + B + C) > 20'
[ 9]  p1[8;]←79↑'         C <- C + 1'
[10]  p1[9;]←79↑'      senao'
[11]  p1[10;]←79↑'          C <- C - 1'
[12]  p1[11;]←79↑'       fimse'
[13]  p1[12;]←79↑'       A <- A + 1'
[14]  p1[13;]←79↑'       se B > ',2 0⍕hh←12+?5
[15]  p1[14;]←79↑'          A <- A + 1'
[16]  p1[15;]←79↑'       fimse'
[17]  p1[16;]←79↑'       B <- B - ',2 0⍕ff←?3
[18]  p1[17;]←79↑'   fimenquanto'
[19]  p1[18;]←79↑'   A <- A + ',2 0⍕cc←2+?3
[20]  p1[19;]←79↑'fimenquanto'
[21]  p1[20;]←79↑'RRRR <- A + B + C'
```

```
[22]  p1[21;]←79↑'fimfuncao'
[23]  p2←19 79⍴' '
[24]  p2[1;]←79↑'⍀STATE A $⍀gets$ ',2 0⍕aa
[25]  p2[2;]←79↑'⍀WHILE{ A $⍀le$ ',(2 0⍕bb),' } '
[26]  p2[3;]←79↑'⍀STATE B $⍀gets$ ',2 0⍕dd
[27]  p2[4;]←79↑'⍀WHILE{B $⍀ge$ ',(2 0⍕ee),' } '
[28]  p2[5;]←79↑'⍀STATE C $⍀gets$ ',2 0⍕gg
[29]  p2[6;]←79↑'⍀IF{(A + B + C) $>$ 20}'
[30]  p2[7;]←79↑'⍀STATE C $⍀gets$ C + 1'
[31]  p2[8;]←79↑'⍀ELSE'
[32]  p2[9;]←79↑'⍀STATE C $⍀gets$ C - 1'
[33]  p2[10;]←79↑'⍀ENDIF'
[34]  p2[11;]←79↑'⍀STATE A $⍀gets$ A + 1'
[35]  p2[12;]←79↑'⍀IF {B $>$ ',(2 0⍕hh),' } '
[36]  p2[13;]←79↑'⍀STATE A $⍀gets$ A + 1'
[37]  p2[14;]←79↑'⍀ENDIF'
[38]  p2[15;]←79↑'⍀STATE B $⍀gets$ B - ',2 0⍕ff
[39]  p2[16;]←79↑'⍀ENDWHILE'
[40]  p2[17;]←79↑'⍀STATE A $⍀gets$ A + ',2 0⍕cc
[41]  p2[18;]←79↑'⍀ENDWHILE'
[42]  p2[19;]←79↑'⍀STATE escreva(A + B + C)'
[43]  r←(p1 p2)
-------------------------------------------------------------
[ 0]  r←gerb2;p1;p2;aa;bb;cc;dd;ee;ff;gg;hh;ii;jj;kk;ll
[ 1]  p1←21 79⍴' '
[ 2]  p1[1;]←79↑'funcao AAA'
[ 3]  p1[2;]←79↑'A <- ',2 0⍕aa←10+?7
[ 4]  p1[3;]←79↑'B <- ',2 0⍕bb←?9
[ 5]  p1[4;]←79↑'C <- ',2 0⍕cc←12+?5
[ 6]  p1[5;]←79↑'repita'
[ 7]  p1[6;]←79↑'   C <- C - ',2 0⍕dd←2+?3
[ 8]  p1[7;]←79↑'   enquanto A < ',2 0⍕ee←30+?6
[ 9]  p1[8;]←79↑'      B <- B + ',2 0⍕gg←2+?3
[10]  p1[9;]←79↑'      se A < ',2 0⍕hh←14+?6
[11]  p1[10;]←79↑'         B <- B + ',2 0⍕ii←?3
[12]  p1[11;]←79↑'      senao'
[13]  p1[12;]←79↑'         C <- C - 1'
[14]  p1[13;]←79↑'      fimse'
[15]  p1[14;]←79↑'      se 0=2|C'
[16]  p1[15;]←79↑'         B <- B + 1'
[17]  p1[16;]←79↑'      fimse'
[18]  p1[17;]←79↑'      A <- A + ',2 0⍕ff←2+?3
[19]  p1[18;]←79↑'   fimenquanto'
[20]  p1[19;]←79↑'ate C < 0'
[21]  p1[20;]←79↑'RRRR <- A + B + C'
[22]  p1[21;]←79↑'fimfuncao'
[23]  p2←19 79⍴' '
[24]  p2[1;]←79↑'⍀STATE A $⍀gets$ ',2 0⍕aa
[25]  p2[2;]←79↑'⍀STATE B $⍀gets$ ',2 0⍕bb
[26]  p2[3;]←79↑'⍀STATE C $⍀gets$ ',2 0⍕cc
[27]  p2[4;]←79↑'⍀REPEAT '
[28]  p2[5;]←79↑'⍀STATE C $⍀gets$ C - ',2 0⍕dd
[29]  p2[6;]←79↑'⍀WHILE {A $<$ ',(2 0⍕ee),' } '
[30]  p2[7;]←79↑'⍀STATE B $⍀gets$ B + ',2 0⍕gg
[31]  p2[8;]←79↑'⍀IF{A $<$ ',(2 0⍕hh),'}'
[32]  p2[9;]←79↑'⍀STATE B $⍀gets$ B + ',2 0⍕ii
[33]  p2[10;]←79↑'⍀ELSE      '
[34]  p2[11;]←79↑'⍀STATE C $⍀gets$ C - 1'
[35]  p2[12;]←79↑'⍀ENDIF'
[36]  p2[13;]←79↑'⍀IF{((C mod 2) = 0)}'
[37]  p2[14;]←79↑'⍀STATE B $⍀gets$ B + 1'
[38]  p2[15;]←79↑'⍀ENDIF'
[39]  p2[16;]←79↑'⍀STATE A $⍀gets$ A + ',2 0⍕ff
```

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[40]  p2[17;]←79↑'⍀ENDWHILE              '
[41]  p2[18;]←79↑'⍀UNTIL{C $<$ 0}'
[42]  p2[19;]←79↑'⍀STATE escreva (A+B+C)'
[43]  r←(p1 p2)
-------------------------------------------------------------
[ 0]  r←gerb3;p1;p2;aa;bb;cc;dd;ee;ff;gg;hh;ii;jj;kk;ll
[ 1]  p1←21 79⍴' '
[ 2]  p1[1;]←79↑'funcao AAA'
[ 3]  p1[2;]←79↑'X <- ',2 0⍕aa←?9
[ 4]  p1[3;]←79↑'Y <- ',2 0⍕bb←20+?9
[ 5]  p1[4;]←79↑'Z <- ',2 0⍕cc←10+?8
[ 6]  p1[5;]←79↑'para I de ',(1 0⍕dd←?9),' ate ',(2 0⍕ee←10+?8),' passo ',(1 0⍕ff←2+?3)
[ 7]  p1[6;]←79↑'   X <- X + I'
[ 8]  p1[7;]←79↑'   para J de ',(2 0⍕gg←20+?9),' ate ',(1 0⍕hh←?9),' passo -',1 0⍕ii←4+?4
[ 9]  p1[8;]←79↑'      Y <- Y - I'
[10]  p1[9;]←79↑'      Z <- Z + J'
[11]  p1[10;]←79↑'   fimpara'
[12]  p1[11;]←79↑'   se (2 × Z) > ',2 0⍕jj←10+?9
[13]  p1[12;]←79↑'      X <- ⌊(X÷2)'
[14]  p1[13;]←79↑'   senao'
[15]  p1[14;]←79↑'      Y <- Y + 1'
[16]  p1[15;]←79↑'   fimse'
[17]  p1[16;]←79↑'fimpara'
[18]  p1[17;]←79↑'se X < ',2 0⍕kk←10+?9
[19]  p1[18;]←79↑'    Z <- Z + 3'
[20]  p1[19;]←79↑'fimse'
[21]  p1[20;]←79↑'RRRR <- Y + Z'
[22]  p1[21;]←79↑'fimfuncao'
[23]  p2←19 79⍴' '
[24]  p2[1;]←79↑'⍀STATE X $⍀gets$ ',2 0⍕aa
[25]  p2[2;]←79↑'⍀STATE Y $⍀gets$ ',2 0⍕bb
[26]  p2[3;]←79↑'⍀STATE Z $⍀gets$ ',2 0⍕cc
[27]  p2[4;]←79↑'⍀FOR{I de ',(2 0⍕dd),' ate ',(2 0⍕ee),' passo ',(1 0⍕ff),' } '
[28]  p2[5;]←79↑'⍀STATE X $⍀gets$ X + I'
[29]  p2[6;]←79↑'⍀FOR{J de ',(2 0⍕gg),' ate ',(1 0⍕hh),' passo -',(1 0⍕ii),' }'
[30]  p2[7;]←79↑'⍀STATE Y $⍀gets$ Y - I'
[31]  p2[8;]←79↑'⍀STATE Z $⍀gets$ Z + J'
[32]  p2[9;]←79↑'⍀ENDFOR'
[33]  p2[10;]←79↑'⍀IF {(Z $⍀times$ 2) $>$ ',(2 0⍕jj),' } '
[34]  p2[11;]←79↑'⍀STATE X $⍀gets ⍀lfloor$ ( X $⍀div$ 2)'
[35]  p2[12;]←79↑'⍀ELSE'
[36]  p2[13;]←79↑'⍀STATE Y $⍀gets$ Y + 1'
[37]  p2[14;]←79↑'⍀ENDIF'
[38]  p2[15;]←79↑'⍀ENDFOR'
[39]  p2[16;]←79↑'⍀IF { X $<$ ',(2 0⍕kk),' } '
[40]  p2[17;]←79↑'⍀STATE Z $⍀gets$ Z + 3'
[41]  p2[18;]←79↑'⍀ENDIF'
[42]  p2[19;]←79↑'⍀STATE escreva (Y + Z)'
[43]  r←(p1 p2)
-------------------------------------------------------------
[ 0]  r←gerb4;p1;p2;aa;bb;cc;dd;ee;ff;gg;hh;ii;jj;kk;ll
[ 1]  p1←21 79⍴' '
[ 2]  p1[1;]←79↑'funcao AAA'
[ 3]  p1[2;]←79↑'K <- ',2 0⍕aa←?5
[ 4]  p1[3;]←79↑'L <- ',2 0⍕bb←10+?5
[ 5]  p1[4;]←79↑'M <- ',2 0⍕cc←20+?9
[ 6]  p1[5;]←79↑'CT <- 0'
[ 7]  p1[6;]←79↑'enquanto K < ',2 0⍕dd←10+?8
[ 8]  p1[7;]←79↑'   CT <- CT + 1'
[ 9]  p1[8;]←79↑'   enquanto L > ',2 0⍕ee←?5
[10]  p1[9;]←79↑'      CT <- CT + 2'
[11]  p1[10;]←79↑'      enquanto M ≥ ',2 0⍕ff←10+?7
[12]  p1[11;]←79↑'         CT <- CT + 3'
```

```
[13]  p1[12;]←79↑'          M <- M - ',2 0⍕gg←2+?7
[14]  p1[13;]←79↑'      fimenquanto'
[15]  p1[14;]←79↑'      L <- L - ',2 0⍕hh←3+?6
[16]  p1[15;]←79↑'   fimenquanto'
[17]  p1[16;]←79↑'   K <- K + ',2 0⍕ii←2+?7
[18]  p1[17;]←79↑'fimenquanto'
[19]  p1[18;]←79↑'CT <- CT + 4'
[20]  p1[19;]←79↑'K <- K - ',2 0⍕jj←3+?3
[21]  p1[20;]←79↑'RRRR <- K + CT'
[22]  p1[21;]←79↑'fimfuncao'
[23]  p2←19 79⍴' '
[24]  p2[1;]←79↑'⍀STATE K $⍀gets$ ',2 0⍕aa
[25]  p2[2;]←79↑'⍀STATE L $⍀gets$ ',2 0⍕bb
[26]  p2[3;]←79↑'⍀STATE M $⍀gets$ ',2 0⍕cc
[27]  p2[4;]←79↑'⍀STATE CT $⍀gets$ 0'
[28]  p2[5;]←79↑'⍀WHILE{K $<$ ',(2 0⍕dd),' } '
[29]  p2[6;]←79↑'⍀STATE CT $⍀gets$ CT + 1'
[30]  p2[7;]←79↑'⍀WHILE{L $>$ ',(2 0⍕ee),' } '
[31]  p2[8;]←79↑'⍀STATE CT $⍀gets$ CT + 2'
[32]  p2[9;]←79↑'⍀WHILE{M $⍀ge$ ',(2 0⍕ff),' } '
[33]  p2[10;]←79↑'⍀STATE CT $⍀gets$ CT + 3'
[34]  p2[11;]←79↑'⍀STATE M $⍀gets$ M - ',2 0⍕gg
[35]  p2[12;]←79↑'⍀ENDWHILE'
[36]  p2[13;]←79↑'⍀STATE L $⍀gets$ L - ',2 0⍕hh
[37]  p2[14;]←79↑'⍀ENDWHILE'
[38]  p2[15;]←79↑'⍀STATE K $⍀gets$ K + ',2 0⍕ii
[39]  p2[16;]←79↑'⍀ENDWHILE'
[40]  p2[17;]←79↑'⍀STATE CT $⍀gets$ CT + 4'
[41]  p2[18;]←79↑'⍀STATE K $⍀gets$ K - ',2 0⍕jj
[42]  p2[19;]←79↑'⍀STATE escreva (K + CT)'
[43]  r←(p1 p2)
-------------------------------------------------------------
[ 0]  r←gerb5;p1;p2;aa;bb;cc;dd;ee;ff;gg;hh;ii;jj;kk;ll
[ 1]  p1←21 79⍴' '
[ 2]  p1[1;]←79↑'funcao AAA'
[ 3]  p1[2;]←79↑'A <- ',2 0⍕aa←?9
[ 4]  p1[3;]←79↑'se 0 = 2|A '
[ 5]  p1[4;]←79↑'   J <- ',2 0⍕bb←?9
[ 6]  p1[5;]←79↑'   enquanto J < ',2 0⍕cc←12+?9
[ 7]  p1[6;]←79↑'      se (0 = 3|J) ∨ (J > 0)'
[ 8]  p1[7;]←79↑'         K <- ',2 0⍕dd←?9
[ 9]  p1[8;]←79↑'      fimse'
[10]  p1[9;]←79↑'      J <- J + ',2 0⍕ee←2+?3
[11]  p1[10;]←79↑'   fimenquanto'
[12]  p1[11;]←79↑'senao'
[13]  p1[12;]←79↑'   K <- ',2 0⍕ff←?8
[14]  p1[13;]←79↑'   repita'
[15]  p1[14;]←79↑'   se (0 ≠ 3|K) ∨ (K > 0)'
[16]  p1[15;]←79↑'      J <- ',2 0⍕hh←?9
[17]  p1[16;]←79↑'   fimse'
[18]  p1[17;]←79↑'   K <- K + ',2 0⍕ii←3+?3
[19]  p1[18;]←79↑'ate K > ',2 0⍕gg←10+?9
[20]  p1[19;]←79↑'fimse'
[21]  p1[20;]←79↑'RRRR <- A + K + J'
[22]  p1[21;]←79↑'fimfuncao'
[23]  p2←19 79⍴' '
[24]  p2[1;]←79↑'⍀STATE A $⍀gets$ ',2 0⍕aa
[25]  p2[2;]←79↑'⍀IF{((A mod 2) = 0)}'
[26]  p2[3;]←79↑'⍀STATE J $⍀gets$ ',2 0⍕bb
[27]  p2[4;]←79↑'⍀WHILE{J $<$ ',(2 0⍕cc),'}'
[28]  p2[5;]←79↑'⍀IF{((J mod 3) = 0) $⍀lor$ (J $>$ 0)}'
[29]  p2[6;]←79↑'⍀STATE K $⍀gets$ ',2 0⍕dd
[30]  p2[7;]←79↑'⍀ENDIF'
```

```
[31]  p2[8;]←79↑'⍀STATE J $⍀gets$ J + ',2 0⍕ee
[32]  p2[9;]←79↑'⍀ENDWHILE'
[33]  p2[10;]←79↑'⍀ELSE'
[34]  p2[11;]←79↑'⍀STATE K $⍀gets$ ',2 0⍕ff
[35]  p2[12;]←79↑'⍀REPEAT'
[36]  p2[13;]←79↑'⍀IF{((K mod 3) $⍀neq$ 0) $⍀lor$ (K $>$ 0)}'
[37]  p2[14;]←79↑'⍀STATE J $⍀gets$ ',2 0⍕hh
[38]  p2[15;]←79↑'⍀ENDIF'
[39]  p2[16;]←79↑'⍀STATE K $⍀gets$ K + ',2 0⍕ii
[40]  p2[17;]←79↑'⍀UNTIL {K $>$ ',(2 0⍕gg),' } '
[41]  p2[18;]←79↑'⍀ENDIF'
[42]  p2[19;]←79↑'⍀STATE escreva (A + K + J)'
[43]  r←(p1 p2)
-------------------------------------------------------------
[0]  r←a igual b;maior
[1]  maior←(1↑⍴a)⌈1↑⍴b
[2]  a←maior↑a ⋄ b←maior↑b
[3]  r←maior=+/a=b
-------------------------------------------------------------
[0]  r←pedemail x
[1]  →(40≠+/' '=x)/aindanao
[2]  r←80↑'Por favor, informe seu e-mail: ⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_'
[3]  →junnao
[4] aindanao:r←80↑'e-mail cadastrado: ',x
[5] junnao:
-------------------------------------------------------------
[ 0]  r←quem replace depara;de;i;j;k;onde;para
[ 1] ⍝ forma de usar: texto replace 'strin-de' 'string para'
[ 2] ⍝ obviamente eles nao precisam ter o mesmo tamanho
[ 3]  de←,⊃depara[1] ⋄ para←,⊃depara[2]
[ 4]  i←1 ⋄ r←((1↑⍴quem),200)⍴' '
[ 5] t1:→(i>1↑⍴quem)/fim
[ 6]  →(0=∨/onde←de⍷quem[i;])/naotem
[ 7]  j←1 ⋄ k←1
[ 8] t2:→(k>⍴quem[i;])/acabou
[ 9]  →(onde[k]=0)/soma
[10]  r[i;(j-1)+⍳⍴para]←para
[11]  j←j+⍴para
[12]  k←k+⍴de
[13]  →t2
[14] soma:r[i;j]←quem[i;k]
[15]  k←k+1
[16]  →(j=j←j+1)/t2
[17] naotem:r[i;]←200↑quem[i;]
[18] acabou:→(i=i←i+1)/t1
[19] fim:r←trim4 r
-------------------------------------------------------------
[0]  te1;Δ001;Δ002;Δ003;Δ004
[1]  i←1
[2] Δ001:
[3]  Δ003←i≤10
[4]  →(~Δ003)/Δ002
[5]  (i)
[6]  i←i+3
[7]  →Δ001
[8] Δ002:
-------------------------------------------------------------
[0]  r←trim4 x;z
[1] ⍝f corta as colunas direitas que sao brancos
[2]  →(2≠⍴⍴x)/erro
[3]  z←+/[1]x=' '
[4]  r←(z≠1↑⍴x)/[2]x
[5]  →0
```

```
[6] erro:'o operando deve ter rank=2'
-------------------------------------------------------------
[ 0]  r←vetoriza x;i;rr;letra;aspa;nume
[ 1] ⍝ versao 1.07
[ 2]  aspa←'''' ⋄ nume←'0123456789'
[ 3]  letra←'abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ()',aspa
[ 4] ⍝ tira os brancos
[ 5]  i←1 ⋄ rr←1
[ 6] t2:→(i>¯2+⍴x)/vaiz
[ 7]  →((x[i+1]=' ')∧(x[i]∈letra)∧(x[i+2]∈nume))/mataz
[ 8]  →((x[i+1]=' ')∧(x[i]∈nume)∧(x[i+2]∈letra))/mataz
[ 9]  →((x[i]∈letra)∧(x[i+2]∈letra))/naopode
[10]  →(((x[1]='p')∨(x[1]='P'))∧(x[2]='a')∧(x[i]∈letra)∧((x[i+2]='-')∨(x[i+2]='¯')))/naopo
      de  ⍝ comando incluido para o passo negativo
[11] ⍝ →((x[i]∈letra)∧((x[i+2]='-')∨(x[i+2]='¯')))/naopode  ⍝ comando incluido para o pass
      o negativo
[12] ⍝ os 3 testes iniciais (pPa) foram incluidos porque o comando acima estava
[13] ⍝ fazendo besteira: vetoriza 'A <- A -1' estava gerando 4 tokens e nao 3.
[14] ⍝ correcao em 13/03/12 - P.kantek
[15]  →(x[i+1]≠' ')/naopode
[16] pode:rr←rr,0
[17]  →(i=i←i+1)/t2
[18] mataz:x[i+1]←'!'
[19] naopode:rr←rr,1
[20]  →(i=i←i+1)/t2
[21] vaiz:rr←rr,1
[22]  x←rr/x
[23] ⍝ separa o sinal <-
[24]  →(2≠+/'<-'∈x)/faca
[25]  i←1 ⋄ rr←⍳0
[26] t1:→(i>¯1+⍴x)/vaix
[27]  →((x[i]='<')∧(x[i+1]='-'))/esim
[28]  rr←rr,1
[29]  →(i=i←i+1)/t1
[30] esim:rr←rr,0 1 1 0
[31]  →(i=i←i+2)/t1
[32] vaix:rr←rr,1
[33]  x←rr⌿x
[34] faca:x←'! 'edit x
[35]  r←(~' '=x)⊂x
-------------------------------------------------------------
[  0]  opesq vivo042a n;CORRECAO;EVENTO;aa;aaa;acuja;bb;cab;cc;dhx;esse;f;lixo1;lixonol;rel
       at;resp;resu;upag;xixa;xk;xx;ylu
[  1]  →(0≠⎕NC'opesq')/qveio
[  2]  opesq←10⍴' '
[  3] qveio:
[  4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[  5]  CORRECAO←0 ⋄ EVENTO←'PL042   '
[  6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
       4 5],⎕TS[6]+⎕TS[7]÷1000
[  7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⌿apl2⌿',(5↑n),'.ALU' ⋄ EVENTO←n
[  8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍕⍳n
[  9]  FOLHALA042←ajusta80 FOLHALA042
[ 10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA042)⍴' '
[ 11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⌿apl2⌿VIVOBLO1'
[ 12]  xk←1 ⋄ resu←0 6⍴0
[ 13] testa:→(xk>1↑⍴ylu)/fim
[ 14]  esse←275 80⍴' '
[ 15]  f←FOLHALA042
[ 16]  esse[1;]←80↑dhx[1;]
[ 17]  esse[2;]←80↑dhx[2;]
[ 18]  esse[3;]←80↑4 2⍕VERSAOa←1.02
[ 19]  esse[4;]←80↑ylu[xk;⍳6]
```

```
[ 20]  esse[5;]←80↑ylu[xk;6+⍳30]
[ 21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[ 22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[ 23]  esse[274;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[ 24]  esse[275;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[ 25] inica:
[ 26]  xx←gerb1
[ 27]  esse[7+⍳19;]←19 80↑⊃xx[2]
[ 28]  bb←⎕FX cpc⊃xx[1]
[ 29]  xixa←,⍤'AAA'
[ 30]  xx←gerb2
[ 31]  esse[26+⍳19;]←19 80↑⊃xx[2]
[ 32]  bb←⎕FX cpc⊃xx[1]
[ 33]  xixa←xixa+⍤'AAA'
[ 34]  xx←gerb3
[ 35]  esse[45+⍳19;]←19 80↑⊃xx[2]
[ 36]  bb←⎕FX cpc⊃xx[1]
[ 37]  xixa←xixa+⍤'AAA'
[ 38]  resp←resp,xixa
[ 39]  xx←gerb4
[ 40]  esse[64+⍳19;]←19 80↑⊃xx[2]
[ 41]  bb←⎕FX cpc⊃xx[1]
[ 42]  xixa←,⍤'AAA'
[ 43]  xx←gerb5
[ 44]  esse[83+⍳19;]←19 80↑⊃xx[2]
[ 45]  bb←⎕FX cpc⊃xx[1]
[ 46]  xixa←xixa+⍤'AAA'
[ 47]  xx←gerb1
[ 48]  esse[102+⍳19;]←19 80↑⊃xx[2]
[ 49]  bb←⎕FX cpc⊃xx[1]
[ 50]  xixa←xixa+⍤'AAA'
[ 51]  resp←resp,xixa
[ 52]  xx←gerb2
[ 53]  esse[121+⍳19;]←19 80↑⊃xx[2]
[ 54]  bb←⎕FX cpc⊃xx[1]
[ 55]  xixa←,⍤'AAA'
[ 56]  xx←gerb3
[ 57]  esse[140+⍳19;]←19 80↑⊃xx[2]
[ 58]  bb←⎕FX cpc⊃xx[1]
[ 59]  xixa←xixa+⍤'AAA'
[ 60]  xx←gerb4
[ 61]  esse[159+⍳19;]←19 80↑⊃xx[2]
[ 62]  bb←⎕FX cpc⊃xx[1]
[ 63]  xixa←xixa+⍤'AAA'
[ 64]  resp←resp,xixa
[ 65]  xx←gerb5
[ 66]  esse[178+⍳19;]←19 80↑⊃xx[2]
[ 67]  bb←⎕FX cpc⊃xx[1]
[ 68]  xixa←⍤'AAA'
[ 69]  xx←gerb1
[ 70]  esse[197+⍳19;]←19 80↑⊃xx[2]
[ 71]  bb←⎕FX cpc⊃xx[1]
[ 72]  xixa←xixa+⍤'AAA'
[ 73]  xx←gerb2
[ 74]  esse[216+⍳19;]←19 80↑⊃xx[2]
[ 75]  bb←⎕FX cpc⊃xx[1]
[ 76]  xixa←xixa+⍤'AAA'
[ 77]  resp←resp,xixa
[ 78]  xx←gerb3
[ 79]  esse[235+⍳19;]←19 80↑⊃xx[2]
[ 80]  bb←⎕FX cpc⊃xx[1]
[ 81]  xixa←⍤'AAA'
[ 82]  xx←gerb4
```

```
[ 83]  esse[254+⍳19;]←19 80↑⊃xx[2]
[ 84]  bb←⎕FX cpc⊃xx[1]
[ 85]  xixa←xixa+,⍤'AAA'
[ 86]  resp←resp,xixa
[ 87]  resu←resu,[1]1 6⍴resp
[ 88]  acuja←(f[;2]='#')/⍳1↑⍴f
[ 89]  f[acuja;⍳80]←esse[⍤,f[acuja;3 4 5],' ';]
[ 90]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[ 91]  ⎕←(⍕xk←xk+1),'-'
[ 92]  →testa
[ 93] fim:upag←(1 0+⍴f)⍴' '
[ 94]  →(1=≡n)/elafa
[ 95]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[ 96]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[ 97]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←4 0 10 0 4 0 4 0 6 0 4 0)⍀resu
[ 98]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[ 99]  →terminando
[100] elafa:aaa←(ylu,10 0 4 0 4 0 6 0 4 0⍀0 1↓resu)
[101]  lixonol←aaa ⍙FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[102]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[103] terminando:
[104]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[105]  relat[1↑⍴relat;;]←upag
[106]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[107] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[108]  lixonol←lixonol ⍙FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[109]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo046

```
[ 0]  RRRR←AA01;A;B;C;D;F;G;RRRR;⍙001;⍙002;⍙003;⍙004;⍙005;⍙006;⍙007;⍙008;⍙009;⍙010;⍙011;⍙0
      12;⍙013;⍙014;⍙015;⍙016
[ 1]  A←2
[ 2]  B←8
[ 3]  C←3
[ 4]  D←2
[ 5]  F←7
[ 6]  G←4
[ 7]  ⍙001←G≥5⍝{
[ 8]  →(~⍙001)/⍙002
[ 9]  F←G-G⍝;
[10] ⍙002:
[11]  ⍙003←(~(C=6))∧(G>8)⍝{
[12]  →(~⍙003)/⍙004
[13]  ⍙005←A<7⍝{
[14]  →(~⍙005)/⍙006
[15]  C←F-C⍝;
[16] ⍙006:
[17] ⍙004:
[18]  C←G×B⍝;
[19]  ⍙007←(G≥2)∨(D=3)⍝{
[20]  →(~⍙007)/⍙008
[21]  B←C+D⍝;
[22]  ⍙009←D≠3⍝{
[23]  →(~⍙009)/⍙010
[24]  D←C+G⍝;
[25]  →⍙011
[26] ⍙010:
[27]  B←A×F⍝;
[28] ⍙011:
[29]  →⍙012
```

```
[30] Δ008:
[31]  Δ013←(~(G≤6))∨(A<4)⍵{
[32]  →(~Δ013)/Δ014
[33]  A←G-A⍵;
[34]  →Δ015
[35] Δ014:
[36]  B←G+B⍵;
[37] Δ015:
[38]  F←C×B⍵;
[39] Δ012:
[40]  C←G+G⍵;
[41]  RRRR←C+A+B+D⍵;
------------------------------------------------------------
[ 0]  r←acertafinal x;i;j
[ 1]  r←x
[ 2]  i←1
[ 3] t1:→(i>1↑⍴x)/fim
[ 4]  j←1↓⍴x
[ 5] t2:→(j<1)/soma
[ 6]  →(x[i;j]≠';')/sub
[ 7]  →(i=¯1+1↑⍴x)/acaba
[ 8]  r[i;j]←' '
[ 9]  →soma
[10] sub:
[11]  j←j-1
[12]  →t2
[13] soma:
[14]  i←i+1
[15]  →t1
[16] acaba:r[i;j]←')'
[17] fim:
------------------------------------------------------------
[0]  r←arrancalinhas x
[1]  r←(~∧/[2]x=' ')/[1]x
------------------------------------------------------------
[0]  comandogenerico01
------------------------------------------------------------
[0]  r←contabb lin;i
[1]  i←1
[2] t1:→(i>⍴lin)/deu
[3]  →(lin[i]≠' ')/deu
[4]  i←i+1
[5]  →t1
[6] deu:r←(i-1)⍴' '
------------------------------------------------------------
[  0]  r←cpc algo;nome;PILHA;nnn;saida;aspa;vv;coma;SALVA;i;j;loca;aaa;pn;pna
[  1] ⍝ versao 1.10
[  2]  PILHA←0 21⍴' ' ⋄ nnn←1 ⋄ saida←0 70⍴' ' ⋄ r←0 70⍴' ' ⋄ aspa←'''' ⋄ loca←'' ⋄ pna←'≤'
[  3]  →(1=⍴⍴algo)/erro90
[  4]  i←1
[  5] t1:→(i>1↑⍴algo)/fim
[  6]  →(algo[i;1]≠'α')/oraviva
[  7]  saida←saida,[1]1 70⍴70↑1↓algo[i;]
[  8]  →(i=i←i+1)/t1
[  9] oraviva:vv←vetoriza algo[i;]
[ 10]  →('algoritmo'igual⊃vv[1])/ealg
[ 11]  →('fim{algoritmo}'igual⊃vv[1])/ealf
[ 12]  →('fimalgoritmo'igual⊃vv[1])/ealf
[ 13]  →('funcao'igual⊃vv[1])/efun
[ 14]  →('fim{funcao}'igual⊃vv[1])/efuf
[ 15]  →('fimfuncao'igual⊃vv[1])/efuf
[ 16]  →('leia'igual⊃vv[1])/elei
[ 17]  →('imprima'igual⊃vv[1])/eimp
```

```
[ 18]  →('escreva'igual⊃vv[1])/eimp ⍝ para compatibilizar com o VG = 19/06/08
[ 19]  →('devolva'igual⊃vv[1])/eimp  ⍝ em teste: sera que devolva = imprima neste contexto
      ???
[ 20]  →('se'igual⊃vv[1])/esex
[ 21]  →('senao'igual⊃vv[1])/esen
[ 22]  →('fim{se}'igual⊃vv[1])/esef
[ 23]  →('fimse'igual⊃vv[1])/esef
[ 24]  →('enquanto'igual⊃vv[1])/eenq
[ 25]  →('fim{enquanto}'igual⊃vv[1])/eenf
[ 26]  →('fimenquanto'igual⊃vv[1])/eenf
[ 27]  →('repita'igual⊃vv[1])/erep
[ 28]  →('ate'igual⊃vv[1])/eate
[ 29]  →('para'igual⊃vv[1])/epar
[ 30]  →('fim{para}'igual⊃vv[1])/epaf
[ 31]  →('fimpara'igual⊃vv[1])/epaf
[ 32]  →('abandone'igual⊃vv[1])/eaba
[ 33]  →('saia'igual⊃vv[1])/esai
[ 34]  →('<-'igual⊃vv[2])/ecad
[ 35]  →('inteiro'igual⊃vv[1])/eint
[ 36]  →('real'igual⊃vv[1])/erea
[ 37]  →('logico'igual⊃vv[1])/elog
[ 38]  →('caracter'igual 8↑⊃vv[1])/ecar
[ 39]  →('vetor'igual⊃vv[1])/evet
[ 40]  →('vetora'igual⊃vv[1])/evaa
[ 41]  r←r,[1]1 70⍴70↑(3⍕i),' - comando desconhecido'
[ 42] soma:→(i=i←i+1)/t1
[ 43] ⍝--------------algoritmo--------------
[ 44] ealg:saida←saida,[1]1 70⍴70↑⊃vv[2]
[ 45]  →soma
[ 46] ealf:→fim
[ 47] ⍝--------------funcao-----------------
[ 48] efun:
[ 49]  →(2≥⍴vv)/naotem
[ 50]  coma←'RRRR←',(⊃vv[2]),' AAAA'
[ 51]  →vmesmo
[ 52] naotem:coma←'RRRR←',(⊃vv[2])
[ 53]  saida←saida,[1]1 70⍴70↑coma
[ 54]  nome←⊃vv[2]
[ 55]  →aca0
[ 56] vmesmo:
[ 57]  saida←saida,[1]1 70⍴70↑coma
[ 58]  nome←⊃vv[2]
[ 59]  j←1
[ 60] voi1:→(j>¯2+⍴vv)/aca0
[ 61]  saida←saida,[1]1 70⍴70↑(⊃vv[j+2]),'←AAAA[',(3 0⍕j),']'
[ 62]  loca←loca,';',⊃vv[j+2]
[ 63]  →(j=j←j+1)/voi1
[ 64] aca0:→soma
[ 65] efuf:→fim
[ 66] ⍝---------------leia-----------------
[ 67] elei:saida←saida,[1]1 70⍴70↑aspa,'LEITURA DA VARIAVEL ',(⊃vv[2]),aspa
[ 68]  saida←saida,[1]1 70⍴70↑(⊃vv[2]),'←□'
[ 69]  →soma
[ 70] ⍝---------------imprima---------------
[ 71] eimp:→(3=⍴vv)/temmsg
[ 72]  aaa←⊃vv[2]
[ 73]  →(aaa[⍴aaa]=';')/juntaa
[ 74]  saida←saida,[1]1 70⍴70↑aaa
[ 75]  →soma
[ 76] juntaa:saida←saida,[1]1 70⍴70↑'□←⍕',¯1↓aaa
[ 77]  →soma
[ 78] temmsg:aaa←⊃vv[3]
[ 79]  →(aaa[⍴aaa]=';')/juntab
```

```
[ 80]  saida←saida,[1]1 70⍴70↑(⊃vv[2]),' ',aaa
[ 81]  →soma
[ 82] juntab:saida←saida,[1]1 70⍴70↑'⍞←',(⊃vv[2]),' ,⍕',¯1↓aaa
[ 83]  →soma
[ 84] ⍝---------------atribuicao------------
[ 85] ecad:saida←saida,[1]1 70⍴70↑(⊃vv[1]),'←',,⊃2↓vv
[ 86]  aaa←⊃vv[1]
[ 87]  →('['∊aaa)/soma
[ 88]  →(∨/aaa⍷loca)/soma
[ 89]  loca←loca,';',⊃vv[1]
[ 90]  →soma
[ 91] ⍝---------------se--------------------
[ 92] esex:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[ 93]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn←nnn+1
[ 94]  PILHA←(1 21⍴21↑'SE',('000'⍕nnn)),[1]PILHA
[ 95]  nnn←nnn+1
[ 96]  →soma
[ 97] ⍝--senao--
[ 98] esen:SALVA←PILHA[1;3 4 5] ⋄ PILHA←1 0↓PILHA
[ 99]  PILHA←(1 21⍴21↑'SE',('000'⍕nnn)),[1]PILHA
[100]  saida←saida,[1]1 70⍴70↑'→Δ','000'⍕nnn
[101]  nnn←nnn+1
[102]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[103]  →soma
[104] ⍝--fim{se}--
[105] esef:saida←saida,[1]1 70⍴70↑'Δ',PILHA[1;3 4 5],':'
[106]  PILHA←1 0↓PILHA
[107]  →soma
[108] ⍝-------------enquanto--------------------
[109] eenq:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[110]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[111]  nnn←nnn+1
[112]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[113]  nnn←nnn+1
[114]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[115]  nnn←nnn+1
[116]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn-2
[117]  →soma
[118] ⍝----------fim{enquanto}------------------
[119] eenf:SALVA←PILHA[1;3 4 5]
[120]  PILHA←1 0↓PILHA
[121]  saida←saida,[1]1 70⍴70↑'→Δ',PILHA[1;3 4 5]
[122]  PILHA←1 0↓PILHA
[123]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[124]  →soma
[125] ⍝----------repita-------------------------
[126] erep:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[127]  PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[128]  nnn←nnn+1
[129]  →soma
[130] ⍝-----------ate--------------------------
[131] eate:PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[132]  nnn←nnn+1
[133]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[134]  SALVA←PILHA[1;3 4 5]
[135]  PILHA←1 0↓PILHA
[136]  saida←saida,[1]1 70⍴70↑'→(Δ',('000'⍕nnn),')/Δ',SALVA
[137]  SALVA←PILHA[1;3 4 5]
[138]  PILHA←1 0↓PILHA
[139]  saida←saida,[1]1 70⍴70↑'→Δ',SALVA
[140]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn-1),':'
[141]  nnn←nnn+1 ⍝ inclusao desta linha em 19/04/06. Ainda nao suficientemente testada
[142]  →soma
```

```
[143] ⍝----------para-----------------------
[144] epar:saida←saida,[1]1 70⍴70↑(8↑⊃vv[2]),'←',8↑⊃vv[4]
[145]  PILHA←(1 21⍴21↑'PA','000'⍕nnn),[1]PILHA
[146]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[147]  nnn←nnn+1
[148]  →(8≤⍴vv)/tempasso
[149]  PILHA←(1 21⍴21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8↑8⍕1),[1]PILHA
[150]  →juntab
[151] tempasso:PILHA←(1 21⍴21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8 2⍕pn←⍎⊃vv[8]),[1]PILHA
[152] ⍝ 'pn=',⍕pn
[153]  pna←'≤≥'[1+pn<0] ⍝ alteracao a 22/06/06, para acertar passo negativo
[154] juntab:nnn←nnn+1
[155]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',(⊃vv[2]),pna,⍕⊃vv[6]
[156]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn),')/Δ','000'⍕nnn-1
[157]  nnn←nnn+1
[158]  →soma
[159] ⍝----------fim{para}------------------
[160] epaf:saida←saida,[1]1 70⍴70↑PILHA[1;5+⍳8],'←',PILHA[1;5+⍳8],'+',PILHA[1;13+⍳8]
[161]  SALVA←PILHA[1;3 4 5]
[162]  PILHA←1 0↓PILHA
[163]  saida←saida,[1]1 70⍴70↑'→Δ',PILHA[1;3 4 5]
[164]  PILHA←1 0↓PILHA
[165]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[166]  →soma
[167] ⍝-----------abandone--------------------
[168] eaba:→soma
[169] ⍝-----------saia--------------------------
[170] esai:→soma
[171] ⍝-------- definicao de variaveis---------------
[172] eint:
[173]  saida←saida,[1]1 70⍴70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[174]  →soma
[175] erea:
[176]  saida←saida,[1]1 70⍴70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[177]  →soma
[178] elog:
[179]  saida←saida,[1]1 70⍴70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[180]  →soma
[181] ecar:
[182]  saida←saida,[1]1 70⍴70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[183]  →soma
[184] ⍝----------definicao de vetores------------------
[185] evet:
[186]  saida←saida,[1]1 70⍴70↑(1 parte(⊃vv[2])),'←',(2 parte(⊃vv[2])),'⍴0'
[187]  →soma
[188] evaa:
[189]  saida←saida,[1]1 70⍴70↑(1 parte(⊃vv[2])),'←',(2 parte(⊃vv[2])),'⍴',aspa,' ',aspa
[190]  →soma
[191] fim:
[192]  i←1
[193] tfim:→(i>nnn)/mesmo
[194]  loca←loca,';Δ','000'⍕i
[195]  →(i=i←i+1)/tfim
[196] mesmo:→(50>⍴loca)/blz1
[197]  saida←((1↑⍴saida),20+⍴loca)↑saida
[198]  saida[1;20+⍳⍴loca]←loca
[199]  →pula22
[200] blz1:saida[1;20+⍳50]←50↑loca
[201] pula22:r←'_ 'edit saida
[202]  →0
[203] erro90:'algoritmo nao e uma matriz'
[204]  →0
------------------------------------------------------------
```

```
[  0]  r←cpctrace algo;nome;PILHA;nnn;saida;aspa;vv;coma;SALVA;i;j;loca;aaa
[  1]  PILHA←0 21⍴' ' ⋄ nnn←1 ⋄ saida←0 70⍴' ' ⋄ r←0 70⍴' ' ⋄ aspa←'''' ⋄ loca←''
[  2]  i←1
[  3] t1:→(i>1↑⍴algo)/fim
[  4]  vv←vetoriza algo[i;]
[  5]  →('algoritmo'igual⊃vv[1])/ealg
[  6]  →('fimalgoritmo'igual⊃vv[1])/ealf
[  7]  →('funcao'igual⊃vv[1])/efun
[  8]  →('fimfuncao'igual⊃vv[1])/efuf
[  9]  →('leia'igual⊃vv[1])/elei
[ 10]  →('imprima'igual⊃vv[1])/eimp
[ 11]  →('devolva'igual⊃vv[1])/eimp  ⍝ em teste: sera que devolva = imprima neste contexto
       ???
[ 12]  →('se'igual⊃vv[1])/esex
[ 13]  →('senao'igual⊃vv[1])/esen
[ 14]  →('fimse'igual⊃vv[1])/esef
[ 15]  →('enquanto'igual⊃vv[1])/eenq
[ 16]  →('fimenquanto'igual⊃vv[1])/eenf
[ 17]  →('repita'igual⊃vv[1])/erep
[ 18]  →('ate'igual⊃vv[1])/eate
[ 19]  →('para'igual⊃vv[1])/epar
[ 20]  →('fimpara'igual⊃vv[1])/epaf
[ 21]  →('abandone'igual⊃vv[1])/eaba
[ 22]  →('saia'igual⊃vv[1])/esai
[ 23]  →('<-'igual⊃vv[2])/ecad
[ 24]  →('inteiro'igual⊃vv[1])/eint
[ 25]  →('real'igual⊃vv[1])/erea
[ 26]  →('logico'igual⊃vv[1])/elog
[ 27]  →('caracter'igual 8↑⊃vv[1])/ecar
[ 28]  →('vetor'igual⊃vv[1])/evet
[ 29]  r←r,[1]1 70⍴70↑(3⍕i),' - comando desconhecido'
[ 30] soma:→(i=i←i+1)/t1
[ 31] ⍝--------------algoritmo--------------
[ 32] ealg:saida←saida,[1]1 70⍴70↑⊃vv[2]
[ 33]  saida←saida,[1]1 70⍴70↑'TRACE←1 '
[ 34]  →soma
[ 35] ealf:→fim
[ 36] ⍝--------------funcao-----------------
[ 37] efun:
[ 38]  →(2≥⍴vv)/naotem
[ 39]  coma←'RRRR←',(⊃vv[2]),' AAAA'
[ 40]  →vmesmo
[ 41] naotem:coma←'RRRR←',(⊃vv[2])
[ 42]  saida←saida,[1]1 70⍴70↑coma
[ 43]  saida←saida,[1]1 70⍴70↑'TRACE←1'
[ 44]  nome←⊃vv[2]
[ 45]  →aca0
[ 46] vmesmo:
[ 47]  saida←saida,[1]1 70⍴70↑coma
[ 48]  saida←saida,[1]1 70⍴70↑'TRACE←1'
[ 49]  nome←⊃vv[2]
[ 50]  j←1
[ 51] voi1:→(j>¯2+⍴vv)/aca0
[ 52]  saida←saida,[1]1 70⍴70↑(⊃vv[j+2]),'←AAAA[',(3 0⍕j),']'
[ 53]  loca←loca,';',⊃vv[j+2]
[ 54]  →(j=j←j+1)/voi1
[ 55] aca0:→soma
[ 56] efuf:→fim
[ 57] ⍝---------------leia-----------------
[ 58] elei:saida←saida,[1]1 70⍴70↑aspa,'LEITURA DA VARIAVEL ',(⊃vv[2]),aspa
[ 59]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[ 60]  saida←saida,[1]1 70⍴70↑(⊃vv[2]),'←□'
[ 61]  →soma
```

```
[ 62] ⍝---------------imprima---------------
[ 63] eimp:
[ 64]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[ 65]  →(3=⍴vv)/temmsg
[ 66]  aaa←⊃vv[2]
[ 67]  →(aaa[⍴aaa]=';')/juntaa
[ 68]  saida←saida,[1]1 70⍴70↑aaa
[ 69]  →soma
[ 70] juntaa:saida←saida,[1]1 70⍴70↑'□←⍕',¯1↓aaa
[ 71]  →soma
[ 72] temmsg:aaa←⊃vv[3]
[ 73]  →(aaa[⍴aaa]=';')/juntab
[ 74]  saida←saida,[1]1 70⍴70↑(⊃vv[2]),' ',aaa
[ 75]  →soma
[ 76] juntab:saida←saida,[1]1 70⍴70↑'□←',(⊃vv[2]),' ,⍕',¯1↓aaa
[ 77]  →soma
[ 78] ⍝---------------atribuicao------------
[ 79] ecad:saida←saida,[1]1 70⍴70↑(⊃vv[1]),'←',⊃vv[3]
[ 80]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[ 81]  aaa←⊃vv[1]
[ 82]  →('['∊aaa)/soma
[ 83]  →(∨/aaa≤loca)/soma
[ 84]  loca←loca,';',⊃vv[1]
[ 85]  →soma
[ 86] ⍝---------------se--------------------
[ 87] esex:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[ 88]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[ 89]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn←nnn+1
[ 90]  PILHA←(1 21⍴21↑'SE',('000'⍕nnn)),[1]PILHA
[ 91]  nnn←nnn+1
[ 92]  →soma
[ 93] ⍝--senao--
[ 94] esen:SALVA←PILHA[1;3 4 5] ⋄ PILHA←1 0↓PILHA
[ 95]  PILHA←(1 21⍴21↑'SE',('000'⍕nnn)),[1]PILHA
[ 96]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[ 97]  saida←saida,[1]1 70⍴70↑'→Δ','000'⍕nnn
[ 98]  nnn←nnn+1
[ 99]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[100]  →soma
[101] ⍝--fim{se}--
[102] esef:saida←saida,[1]1 70⍴70↑'Δ',PILHA[1;3 4 5],':'
[103]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[104]  PILHA←1 0↓PILHA
[105]  →soma
[106] ⍝-------------enquanto--------------------
[107] eenq:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[108]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[109]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[110]  nnn←nnn+1
[111]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[112]  nnn←nnn+1
[113]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[114]  nnn←nnn+1
[115]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn-2
[116]  →soma
[117] ⍝----------fim{enquanto}-----------------
[118] eenf:SALVA←PILHA[1;3 4 5]
[119]  PILHA←1 0↓PILHA
[120]  saida←saida,[1]1 70⍴70↑'→Δ',PILHA[1;3 4 5]
[121]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[122]  PILHA←1 0↓PILHA
[123]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[124]  →soma
```

```
[125] ⍝----------repita-------------------------
[126] erep:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[127]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[128]  PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[129]  nnn←nnn+1
[130]  →soma
[131] ⍝-----------ate--------------------------
[132] eate:PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[133]  nnn←nnn+1
[134]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[135]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[136]  SALVA←PILHA[1;3 4 5]
[137]  PILHA←1 0↓PILHA
[138]  saida←saida,[1]1 70⍴70↑'→(Δ',('000'⍕nnn),')/Δ',SALVA
[139]  SALVA←PILHA[1;3 4 5]
[140]  PILHA←1 0↓PILHA
[141]  saida←saida,[1]1 70⍴70↑'→Δ',SALVA
[142]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn-1),':'
[143]  nnn←nnn+1 ⍝ inclusao desta linha em 19/04/06. Ainda nao suficientemente testada
[144]  →soma
[145] ⍝----------para-----------------------
[146] epar:saida←saida,[1]1 70⍴70↑(8↑⊃vv[2]),'←',8↑⊃vv[4]
[147]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[148]  PILHA←(1 21⍴21↑'PA','000'⍕nnn),[1]PILHA
[149]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[150]  nnn←nnn+1
[151]  →(8=⍴vv)/tempasso
[152]  PILHA←(1 21⍴21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8↑8⍕1),[1]PILHA
[153]  →juntab
[154] tempasso:PILHA←(1 21⍴21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8 2⍕⊃vv[8]),[1]PILHA
[155] juntab:nnn←nnn+1
[156]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',(⊃vv[2]),'≤',⍕⊃vv[6]
[157]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn),')/Δ','000'⍕nnn-1
[158]  nnn←nnn+1
[159]  →soma
[160] ⍝----------fim{para}------------------
[161] epaf:saida←saida,[1]1 70⍴70↑PILHA[1;5+⍳8],'←',PILHA[1;5+⍳8],'+',PILHA[1;13+⍳8]
[162]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[163]  SALVA←PILHA[1;3 4 5]
[164]  PILHA←1 0↓PILHA
[165]  saida←saida,[1]1 70⍴70↑'→Δ',PILHA[1;3 4 5]
[166]  PILHA←1 0↓PILHA
[167]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[168]  →soma
[169] ⍝-----------abandone--------------------
[170] eaba:→soma
[171] esai:→soma
[172] eint:→soma
[173] erea:→soma
[174] elog:→soma
[175] ecar:→soma
[176] evet:
[177]  saida←saida,[1]1 70⍴70↑(1 parte(⊃vv[2])),'←',(2 parte(⊃vv[2])),'⍴0'
[178]  →soma
[179] fim:
[180]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[181]  i←1
[182] tfim:→(i>nnn)/mesmo
[183]  loca←loca,';Δ','000'⍕i
[184]  →(i=i←i+1)/tfim
[185] mesmo:→(50>⍴loca)/blz1
[186]  saida←((1↑⍴saida),20+⍴loca)↑saida
[187]  saida[1;20+⍳⍴loca]←loca
```

```
[188]  →pula22
[189] blz1:saida[1;20+⍳50]←50↑loca
[190] pula22:r←'_ 'edit saida
-------------------------------------------------------------
[0]  r←geracomandosimples;no;co
[1]  no←'ABCDFG' ⋄ co←'+-×'
[2]  r←no[?⍴no],' <- ',no[?⍴no],co[?⍴co],no[?⍴no],' ⍝;'
-------------------------------------------------------------
[ 0]  r←geracondicaocomposta;qu;no;z1;z2
[ 1]  qu←'<>≤≥≠=' ⋄ no←'ABCDFG'
[ 2]  z1←no[?⍴no],qu[?⍴qu],2 0⍕1+?8
[ 3]  z2←no[?⍴no],qu[?⍴qu],2 0⍕1+?8
[ 4]  →(1≠?6)/vai1
[ 5]  z1←'~(',z1,')'
[ 6] vai1:
[ 7]  →(1≠?6)/vai2
[ 8]  z2←'~(',z2,')'
[ 9] vai2:
[10]  →(1=?2)/ore
[11] ande:
[12]  r←'(',z1,')∧(',z2,')'
[13]  →junta
[14] ore:
[15]  r←'(',z1,')∨(',z2,')'
[16] junta:
-------------------------------------------------------------
[0]  r←geracondicaosimples;qu;no
[1]  qu←'<>≤≥≠=' ⋄ no←'ABCDFG'
[2]  r←no[?⍴no],qu[?⍴qu],2 0⍕1+?8
-------------------------------------------------------------
[ 0]  r←geraquestaoprova1;zz;u;i;kk;xx;aa
[ 1]  zz←0 78⍴' '
[ 2]  u←2871
[ 3]  i←1
[ 4] t1:→(i>40)/fim
[ 5]  zz←zz,[1]1 78⍴78↑'$QE',(5 0⍕u),'501      1condicional simples em python   '
[ 6]  zz←zz,[1]1 78⍴78↑'\begin{verbatim}'
[ 7]  kk←?4
[ 8]  →(kk=1)/um
[ 9]  →(kk=2)/dois
[10]  →(kk=3)/tres
[11] quatro:
[12]  xx←preenche046 ancora11
[13]  →junta
[14] tres:
[15]  xx←preenche046 ancora12
[16]  →junta
[17] dois:
[18]  xx←preenche046 ancora13
[19]  →junta
[20] um:
[21]  xx←preenche046 ancora14
[22] junta:
[23]  aa←⍞⍞FX cpc xx
[24]  zz←zz,[1]trim2((1↑⍴xx),78)↑traduzpy046 xx
[25]  zz←zz,[1]1 78⍴78↑'\end{verbatim}'
[26]  zz←zz,[1]1 78⍴78↑'$QR',(5 0⍕u)
[27]  zz←zz,[1]1 78⍴78↑⍕aa
[28]  u←u+1
[29]  i←i+1
[30]  →t1
[31] fim:r←zz
-------------------------------------------------------------
```

```
[ 0]  r←geraquestaoprova2;zz;u;i;kk;xx;aa
[ 1]  zz←0 78⍴' '
[ 2]  u←2911
[ 3]  i←1
[ 4] t1:→(i>40)/fim
[ 5]  zz←zz,[1]1 78⍴78↑'$QE',(5 0⍕u),'502      1condicional complexa em python   '
[ 6]  zz←zz,[1]1 78⍴78↑'\begin{verbatim}'
[ 7]  kk←?4
[ 8]  →(kk=1)/um
[ 9]  →(kk=2)/dois
[10]  →(kk=3)/tres
[11] quatro:
[12]  xx←preenche046 ancora21
[13]  →junta
[14] tres:
[15]  xx←preenche046 ancora22
[16]  →junta
[17] dois:
[18]  xx←preenche046 ancora23
[19]  →junta
[20] um:
[21]  xx←preenche046 ancora24
[22] junta:
[23]  aa←⍎⎕FX cpc xx
[24]  zz←zz,[1]trim2((1↑⍴xx),78)↑traduzpy046 xx
[25]  zz←zz,[1]1 78⍴78↑'\end{verbatim}'
[26]  zz←zz,[1]1 78⍴78↑'$QR',(5 0⍕u)
[27]  zz←zz,[1]1 78⍴78↑⍕aa
[28]  u←u+1
[29]  i←i+1
[30]  →t1
[31] fim:r←zz
-------------------------------------------------------------
[0]  r←gerasomagenerica;no;ope;io;al
[1]  al←4?6
[2]  no←'ABCDFG' ⋄ ope←'+++-'
[3]  io←3?⍴ope
[4]  io←io[⍋io]
[5]  r←no[al[1]],ope[io[1]],no[al[2]],ope[io[2]],no[al[3]],ope[io[3]],no[al[4]],' A;'
-------------------------------------------------------------
[0]  r←a igual b;maior
[1]  maior←(1↑⍴a)⌈1↑⍴b
[2]  a←maior↑a ⋄ b←maior↑b
[3]  r←maior=+/a=b
-------------------------------------------------------------
[0]  r←contabb lin i
[1]  i←0
[2] t1:→(lin[i;]≠' ')/deu
[3]  i←i+1
[4]  →t1
[5] deu:r←i⍴' '
-------------------------------------------------------------
[0]  r←ltrim a
[1]  r←(~∧\a=' ')/a
-------------------------------------------------------------
[ 0]  r←preenche046 x;z;ll
[ 1]  ll←2 0⍕1+?8
[ 2]  z←x replace'aa'll
[ 3]  ll←2 0⍕1+?8
[ 4]  z←z replace'bb'll
[ 5]  ll←2 0⍕1+?8
[ 6]  z←z replace'cc'll
[ 7]  ll←2 0⍕1+?8
```

```
[ 8]  z←z replace'dd'll
[ 9]  ll←2 0⍕1+?8
[10]  z←z replace'ff'll
[11]  ll←2 0⍕1+?8
[12]  z←z replace'gg'll
[13]  ll←2 0⍕1+?8
[14]  z←z replace'condicao01'geracondicaosimples
[15]  z←z replace'condicao02'geracondicaocomposta
[16]  z←z replace'condicao03'geracondicaosimples
[17]  z←z replace'condicao04'geracondicaocomposta
[18]  z←z replace'condicao05'geracondicaosimples
[19]  z←z replace'condicao06'geracondicaocomposta
[20]  z←z replace'condicao07'geracondicaosimples
[21]  z←z replace'condicao08'geracondicaocomposta
[22]  z←z replace'comandogenerico01'geracomandosimples
[23]  z←z replace'comandogenerico02'geracomandosimples
[24]  z←z replace'comandogenerico03'geracomandosimples
[25]  z←z replace'comandogenerico04'geracomandosimples
[26]  z←z replace'comandogenerico05'geracomandosimples
[27]  z←z replace'comandogenerico06'geracomandosimples
[28]  z←z replace'comandogenerico07'geracomandosimples
[29]  z←z replace'comandogenerico08'geracomandosimples
[30]  z←z replace'comandogenerico09'geracomandosimples
[31]  z←z replace'comandogenerico10'geracomandosimples
[32]  z←z replace'comandogenerico11'geracomandosimples
[33]  z←z replace'comandogenerico12'geracomandosimples
[34]  z←z replace'comandogenerico13'geracomandosimples
[35]  z←z replace'comandogenerico14'geracomandosimples
[36]  z←z replace'somageneric01'gerasomagenerica
[37]  r←z
-------------------------------------------------------------
[ 0]  r←quem replace depara;de;i;j;k;onde;para
[ 1] ⍝ forma de usar: texto replace 'strin-de' 'string para'
[ 2] ⍝ obviamente eles nao precisam ter o mesmo tamanho
[ 3]  de←,⊃depara[1] ⋄ para←,⊃depara[2]
[ 4]  i←1 ⋄ r←((1↑⍴quem),200)⍴' '
[ 5] t1:→(i>1↑⍴quem)/fim
[ 6]  →(0=∨/onde←de⍷quem[i;])/naotem
[ 7]  j←1 ⋄ k←1
[ 8] t2:→(k>⍴quem[i;])/acabou
[ 9]  →(onde[k]=0)/soma
[10]  r[i;(j-1)+⍳⍴para]←para
[11]  j←j+⍴para
[12]  k←k+⍴de
[13]  →t2
[14] soma:r[i;j]←quem[i;k]
[15]  k←k+1
[16]  →(j=j←j+1)/t2
[17] naotem:r[i;]←200↑quem[i;]
[18] acabou:→(i=i←i+1)/t1
[19] fim:r←trim4 r
-------------------------------------------------------------
[0]  testa01;z
[1]  ⎕FX cpc z←preenche046 ancora01
[2]  AA01
[3]  traduzc046 z
-------------------------------------------------------------
[0]  testa02;z
[1]  ⎕FX cpc z←preenche046 ancora02
[2]  AA01
[3]  traduzc046 z
-------------------------------------------------------------
[0]  testa03;z
```

```
[1]  ⎕FX cpc z←preenche046 ancora03
[2]  AA01
[3]  traduzc046 z
------------------------------------------------------------
[0]  testa04;z
[1]  ⎕FX cpc z←preenche046 ancora04
[2]  AA01
[3]  traduzc046 z
------------------------------------------------------------
[0]  testa11;z
[1]  ⎕FX cpc z←preenche046 ancora11
[2]  AA01
[3]  traduzc046 z
------------------------------------------------------------
[0]  testa12;z
[1]  ⎕FX cpc z←preenche046 ancora12
[2]  AA01
[3]  traduzc046 z
------------------------------------------------------------
[0]  testa13;z;aa
[1]  ⎕FX cpc z←preenche046 ancora13
[2]  aa←⍎'AA01'
[3]  'aa',⍕aa
[4]  traduzc046 z
------------------------------------------------------------
[0]  testa14;z
[1]  ⎕FX cpc z←preenche046 ancora14
[2]  AA01
[3]  traduzc046 z
------------------------------------------------------------
[0]  testa21;z
[1]  ⎕FX cpc z←preenche046 ancora21
[2]  AA01
[3]  traduzc046 z
[4]  '--------------'
[5]  traduzpy046 z
------------------------------------------------------------
[0]  testa22;z
[1]  ⎕FX cpc z←preenche046 ancora22
[2]  AA01
[3]  traduzc046 z
[4]  '--------------'
[5]  traduzpy046 z
------------------------------------------------------------
[0]  testa23;z
[1]  ⎕FX cpc z←preenche046 ancora23
[2]  AA01
[3]  traduzc046 z
[4]  '--------------'
[5]  traduzpy046 z
------------------------------------------------------------
[0]  testa24;z
[1]  ⎕FX cpc z←preenche046 ancora24
[2]  AA01
[3]  traduzc046 z
[4]  '--------------'
[5]  traduzpy046 z
------------------------------------------------------------
[0]  testa25;z
[1]  ⎕FX cpc z←preenche046 ancora25
[2]  AA01
[3]  traduzc046 z
[4]  '--------------'
```

```
[5]  traduzpy046 z
-------------------------------------------------------------
[ 0]  r←traduz046pyse x;z
[ 1]  z←x replace'fim{se}' ''
[ 2]  z←z replace'senao' '####'
[ 3]  z←z replace'se' 'if#'
[ 4]  z←z replace'⍝{' ':'
[ 5]  z←z replace'=' '=='
[ 6]  z←z replace'≤' '<='
[ 7]  z←z replace'≥' '>='
[ 8]  z←z replace'≠' '!='
[ 9]  z←z replace'∨' ' or '
[10]  z←z replace'∧' ' and '
[11]  z←z replace'~' ' not '
[12]  z←z replace'×' '*'
[13]  z←z replace'<-' '='
[14]  z←z replace'RRRR=' 'print ('
[15]  z←z replace'####' 'else:'
[16]  z←z replace'⍝' ''
[17]  z←z replace'fim{funcao}' ''
[18]  r←z
-------------------------------------------------------------
[ 0]  r←traduz046se x;z
[ 1]  z←x replace'fim{se}' '}'
[ 2]  z←z replace'senao' '} #### {'
[ 3]  z←z replace'se' 'if ('
[ 4]  z←z replace'⍝{' ') {'
[ 5]  z←z replace'=' '=='
[ 6]  z←z replace'≤' '<='
[ 7]  z←z replace'≥' '>='
[ 8]  z←z replace'≠' '!='
[ 9]  z←z replace'∨' '||'
[10]  z←z replace'∧' '&&'
[11]  z←z replace'~' '!'
[12]  z←z replace'×' '*'
[13]  z←z replace'<-' '='
[14]  z←z replace'RRRR=' 'cout << '
[15]  z←z replace'####' 'else'
[16]  z←z replace'⍝' ''
[17]  z←z replace'fim{funcao}' ''
[18]  r←z
-------------------------------------------------------------
[ 0]  r←traduzc046 x;z;i;j;troco
[ 1]  z←((1↑⍴x),50)↑x
[ 2]  z[1;]←50↑'int main() {'
[ 3]  z[2;]←50↑'   int A,B,C,D,F,G;'
[ 4]  z[3;]←50↑'   A=',(x[2;7]),',B=',(x[3;7]),',C=',(x[4;7]),',D=',(x[5;7]),',F=',(x[6;7]
      ),',G=',(x[7;7]),';'
[ 5]  i←4
[ 6]  j←8
[ 7] t1:→(j>1↑⍴x)/fim
[ 8]  troco←contabb x[j;]
[ 9]  z[i;]←50↑'   ',troco,,traduz046se 1 50⍴50↑x[j;]
[10]  i←i+1
[11]  j←j+1
[12]  →t1
[13] fim:
[14]  r←((i-2),50)↑z
[15]  r←r,[1]⍝(1,1↓⍴r)⍴(1↓⍴r)↑'}'
-------------------------------------------------------------
[ 0]  r←traduzpy046 x;z;i;j;troco;xc
[ 1]  z←((1↑⍴x),50)↑x
[ 2]  z[1;]←50↑'def AA():'
```

```
[ 3]  z[2;]←50↑'   A=',(x[2;7]),';B=',(x[3;7]),';C=',(x[4;7]),';D=',(x[5;7]),';F=',(x[6;7]
      ),';G=',(x[7;7]),';'
[ 4]  i←3
[ 5]  j←8
[ 6] t1:→(j>1↑⍴x)/fim
[ 7]  troco←contabb x[j;]
[ 8]  xc←'   ',troco,,traduz046pyse 1 50⍴50↑x[j;]
[ 9]  z[i;]←50↑xc
[10]  i←i+1
[11]  j←j+1
[12]  →t1
[13] fim:
[14]  r←((i-2),50)↑z
[15]  r←r,[1](1,1↓⍴r)⍴(1↓⍴r)↑'AA()'
[16]  r←arrancalinhas r
[17]  r←acertafinal r
[18]  r←'# 'edit r
------------------------------------------------------------
[0]  r←trim2 x;z
[1] ⍝f corta as linhas inferiores que sao brancas
[2]  →(2≠⍴⍴x)/erro
[3]  z←+/[2]x=' '
[4]  r←(z≠1↓⍴x)/[1]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
------------------------------------------------------------
[0]  r←trim3 x;z
[1] ⍝f corta as colunas direitas que sao 0
[2]  →(2≠⍴⍴x)/erro
[3]  z←+/[1]x=0
[4]  r←(z≠1↑⍴x)/[2]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
------------------------------------------------------------
[0]  r←trim4 x;z
[1] ⍝f corta as colunas direitas que sao brancos
[2]  →(2≠⍴⍴x)/erro
[3]  z←+/[1]x=' '
[4]  r←(z≠1↑⍴x)/[2]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
------------------------------------------------------------
[ 0]  r←vetoriza x;i;rr;letra;aspa;nume
[ 1] ⍝ versao 1.07
[ 2]  aspa←''''' ⋄ nume←'0123456789'
[ 3]  letra←'abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ()',aspa
[ 4] ⍝ tira os brancos
[ 5]  i←1 ⋄ rr←1
[ 6] t2:→(i>¯2+⍴x)/vaiz
[ 7]  →((x[i+1]=' ')∧(x[i]∈letra)∧(x[i+2]∈nume))/mataz
[ 8]  →((x[i+1]=' ')∧(x[i]∈nume)∧(x[i+2]∈letra))/mataz
[ 9]  →((x[i]∈letra)∧(x[i+2]∈letra))/naopode
[10]  →(((x[1]='p')∨(x[1]='P'))∧(x[2]='a')∧(x[i]∈letra)∧((x[i+2]='-')∨(x[i+2]='¯')))/naopo
      de  ⍝ comando incluido para o passo negativo
[11] ⍝ →((x[i]∈letra)∧((x[i+2]='-')∨(x[i+2]='¯')))/naopode  ⍝ comando incluido para o pass
      o negativo
[12] ⍝ os 3 testes iniciais (pPa) foram incluidos porque o comando acima estava
[13] ⍝ fazendo besteira: vetoriza 'A <- A -1' estava gerando 4 tokens e nao 3.
[14] ⍝ correcao em 13/03/12 - P.kantek
[15]  →(x[i+1]≠' ')/naopode
[16] pode:rr←rr,0
[17]  →(i=i←i+1)/t2
[18] mataz:x[i+1]←'!'
```

```
[19] naopode:rr←rr,1
[20]  →(i=i←i+1)/t2
[21] vaiz:rr←rr,1
[22]  x←rr/x
[23] ⍝ separa o sinal <-
[24]  →(2≠+/'<-'∈x)/faca
[25]  i←1 ⋄ rr←⍳0
[26] t1:→(i>¯1+⍴x)/vaix
[27]  →((x[i]='<')∧(x[i+1]='-'))/esim
[28]  rr←rr,1
[29]  →(i=i←i+1)/t1
[30] esim:rr←rr,0 1 1 0
[31]  →(i=i←i+2)/t1
[32] vaix:rr←rr,1
[33]  x←rr⌿x
[34] faca:x←'! 'edit x
[35]  r←(~' '=x)⊂x
-------------------------------------------------------------
[  0]  opesq vivo046b n;CORRECAO;EVENTO;aa;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;ql
       inha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[  1]  →(0≠⎕NC'opesq')/qveio
[  2]  opesq←10⍴' '
[  3] qveio:
[  4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[  5]  EVENTO←'PL046b  '
[  6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
       4 5],⎕TS[6]+⎕TS[7]÷1000
[  7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⌿apl2⌿',(5↑n),'.ALU' ⋄ EVENTO←n
[  8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[  9]  ylu←n grupo ylu
[ 10]  FOLHALA046b←ajusta80 FOLHALA046b
[ 11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA046b)⍴' '
[ 12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⌿apl2⌿VIVOBLO1'
[ 13]  xk←1 ⋄ resu←0 13⍴0
[ 14] testa:→(xk>1↑⍴ylu)/fim
[ 15]  esse←200 80⍴' '
[ 16]  f←FOLHALA046b
[ 17]  esse[1;]←80↑dhx[1;]
[ 18]  esse[2;]←80↑dhx[2;]
[ 19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[ 20]  esse[4;]←80↑ylu[xk;⍳6]
[ 21]  →(36=1↓⍴ylu)/zebra
[ 22]  qlinha←(1=∧/[2]f[;⍳5]=((1↑⍴f),5)⍴'⌿#005')/⍳1↑⍴f
[ 23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[ 24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[ 25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[ 26]  →maiszebra
[ 27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[ 28] maiszebra:
[ 29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[ 30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[ 31]  esse[199;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[ 32]  esse[200;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[ 33] inica:
[ 34]  xx←preenche046 ancora01
[ 35]  aa←⎕FX cpc xx
[ 36]  esse[7+⍳10;]←10 80↑traduzc046 xx
[ 37]  resp←resp,,⍪aa
[ 38]  xx←preenche046 ancora02
[ 39]  aa←⎕FX cpc xx
[ 40]  esse[17+⍳11;]←11 80↑traduzc046 xx
[ 41]  resp←resp,,⍪aa
[ 42]  xx←preenche046 ancora03
```

```
[ 43]  aa←⍞FX cpc xx
[ 44]  esse[28+⍳11;]←11 80↑traduzc046 xx
[ 45]  resp←resp,,⍪aa
[ 46]  xx←preenche046 ancora04
[ 47]  aa←⍞FX cpc xx
[ 48]  esse[39+⍳11;]←11 80↑traduzc046 xx
[ 49]  resp←resp,,⍪aa
[ 50]  xx←preenche046 ancora11
[ 51]  aa←⍞FX cpc xx
[ 52]  esse[50+⍳16;]←16 80↑traduzc046 xx
[ 53]  resp←resp,,⍪aa
[ 54]  xx←preenche046 ancora12
[ 55]  aa←⍞FX cpc xx
[ 56]  esse[67+⍳18;]←18 80↑traduzc046 xx
[ 57]  resp←resp,,⍪aa
[ 58]  xx←preenche046 ancora13
[ 59]  aa←⍞FX cpc xx
[ 60]  esse[84+⍳20;]←20 80↑traduzc046 xx
[ 61]  resp←resp,,⍪aa
[ 62]  xx←preenche046 ancora14
[ 63]  aa←⍞FX cpc xx
[ 64]  esse[104+⍳20;]←20 80↑traduzc046 xx
[ 65]  resp←resp,,⍪aa
[ 66]  xx←preenche046 ancora11
[ 67]  aa←⍞FX cpc xx
[ 68]  esse[124+⍳16;]←16 80↑traduzc046 xx
[ 69]  resp←resp,,⍪aa
[ 70]  xx←preenche046 ancora12
[ 71]  aa←⍞FX cpc xx
[ 72]  esse[140+⍳18;]←18 80↑traduzc046 xx
[ 73]  resp←resp,,⍪aa
[ 74]  xx←preenche046 ancora13
[ 75]  aa←⍞FX cpc xx
[ 76]  esse[158+⍳20;]←20 80↑traduzc046 xx
[ 77]  resp←resp,,⍪aa
[ 78]  xx←preenche046 ancora14
[ 79]  aa←⍞FX cpc xx
[ 80]  esse[178+⍳20;]←20 80↑traduzc046 xx
[ 81]  resp←resp,,⍪aa
[ 82]  resu←resu,[1]1 13⍴resp
[ 83]  acuja←(f[;2]='#')/⍳1↑⍴f
[ 84]  f[acuja;⍳80]←esse[⍪,f[acuja;3 4 5],' ';]
[ 85]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[ 86]  ⍞←(⍕xk←xk+1),'-'
[ 87]  →testa
[ 88] fim:upag←(1 0+⍴f)⍴' '
[ 89]  →(1=≡n)/elafa
[ 90]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[ 91]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[ 92]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯'-'edit(lixo1←5 0,24⍴6 0)⍕resu
[ 93]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[ 94]  →terminando
[ 95] elafa:aaa←(⍳lu[;⍳36],'¯'-'edit 6 0⍕0 1↓resu)
[ 96]  lixonol←aaa ⍙FM('c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.gpa')
[ 97]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[ 98] terminando:
[ 99]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[100]  relat[1↑⍴relat;;]←upag
[101]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[102]  lixonol←lixonol ⍙FM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.tex'
[103]  lixonol←⍞EX 2 10⍴'quantos   matriz    '
[104]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

```
[ 0]  opesq vivo046d n;CORRECAO;EVENTO;aa;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;ql
      inha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL046d  '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA046d←ajusta80 FOLHALA046d
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA046d)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 7⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←198 80⍴' '
[16]  f←FOLHALA046d
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳5]=((1↑⍴f),5)⍴'\#005')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[197;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[198;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←preenche046 ancora21
[35]  aa←⎕FX cpc xx
[36]  esse[7+⍳26;]←26 80↑traduzc046 xx
[37]  resp←resp,,⍪aa
[38]  xx←preenche046 ancora22
[39]  aa←⎕FX cpc xx
[40]  esse[33+⍳30;]←30 80↑traduzc046 xx
[41]  resp←resp,,⍪aa
[42]  xx←preenche046 ancora23
[43]  aa←⎕FX cpc xx
[44]  esse[63+⍳30;]←30 80↑traduzc046 xx
[45]  resp←resp,,⍪aa
[46]  xx←preenche046 ancora24
[47]  aa←⎕FX cpc xx
[48]  esse[93+⍳40;]←40 80↑traduzc046 xx
[49]  resp←resp,,⍪aa
[50]  xx←preenche046 ancora25
[51]  aa←⎕FX cpc xx
[52]  esse[133+⍳37;]←37 80↑traduzc046 xx
[53]  resp←resp,,⍪aa
[54]  xx←preenche046 ancora21
[55]  aa←⎕FX cpc xx
[56]  esse[170+⍳26;]←26 80↑traduzc046 xx
[57]  resp←resp,,⍪aa
[58]  resu←resu,[1]1 7⍴resp
[59]  acuja←(f[;2]='#')/⍳1↑⍴f
[60]  f[acuja;⍳80]←esse[⍪,f[acuja;3 4 5],' ';]
```

```
[61]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'⍝clearpage'
[62]  ⍞←(⍕xk←xk+1),'-'
[63]  →testa
[64] fim:upag←(1 0+ρf)ρ' '
[65]  →(1=≡n)/elafa
[66]  upag[1;]←(1↓ρupag)↑'⍝begin{verbatim}'
[67]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[68]  upag[2+⍳1↑ρresu;⍳+/lixo1]←'¯-'edit(lixo1←5 0,12ρ8 0)⍕resu
[69]  upag[3+1↑ρresu;]←(1↓ρupag)↑'⍝end{verbatim}'
[70]  →terminando
[71] elafa:aaa←(ylu[;⍳36],'¯-'edit 8 0⍕0 1↓resu)
[72]  lixonol←aaa ΔFM('c:⍝apl2⍝',((~⍷∧⍝⍷EVENTO=' ')/EVENTO),'.gpa')
[73]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[74] terminando:
[75]  upag[1↑ρupag;]←(1↓ρupag)↑'⍝end{document}'
[76]  relat[1↑ρrelat;;]←upag
[77]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[78]  lixonol←lixonol ΔFM'c:⍝apl2⍝',((~⍷∧⍝⍷EVENTO=' ')/EVENTO),'.tex'
[79]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[80]  'Arquivo(s) criado(s) com o nome de c:⍝apl2⍝',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[  0]  opesq vivo046p n;CORRECAO;EVENTO;aa;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;ql
       inha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[  1]  →(0≠⎕NC'opesq')/qveio
[  2]  opesq←10ρ' '
[  3] qveio:
[  4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[  5]  EVENTO←'PL046p  '
[  6]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
       4 5],⎕TS[6]+⎕TS[7]÷1000
[  7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍝apl2⍝',(5↑n),'.ALU' ⋄ EVENTO←n
[  8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕⍳n
[  9]  ylu←n grupo ylu
[ 10]  FOLHALA046p←ajusta80 FOLHALA046p
[ 11]  relat←((2+1↑ρylu),1 0+ρFOLHALA046p)ρ' '
[ 12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:⍝apl2⍝VIVOBLO1'
[ 13]  xk←1 ⋄ resu←0 5ρ0
[ 14] testa:→(xk>1↑ρylu)/fim
[ 15]  esse←194 80ρ' '
[ 16]  f←FOLHALA046p
[ 17]  esse[1;]←80↑dhx[1;]
[ 18]  esse[2;]←80↑dhx[2;]
[ 19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[ 20]  esse[4;]←80↑ylu[xk;⍳6]
[ 21]  →(36=1↓ρylu)/zebra
[ 22]  qlinha←(1=∧/[2]f[;⍳5]=((1↑ρf),5)ρ'⍝#005')/⍳1↑ρf
[ 23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[ 24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[ 25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[ 26]  →maiszebra
[ 27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[ 28] maiszebra:
[ 29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[ 30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[ 31]  esse[193;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[ 32]  esse[194;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[ 33] inica:
[ 34]  xx←preenche046 ancora01
[ 35]  aa←⎕FX cpc xx
[ 36]  esse[7+⍳8;]←8 80↑traduzpy046 xx
[ 37]  resp←resp,,⍪aa
[ 38]  xx←preenche046 ancora02
[ 39]  aa←⎕FX cpc xx
```

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[ 40]  esse[15+⍳9;]←9 80↑traduzpy046 xx
[ 41]  resp←resp,,⊂aa
[ 42]  xx←preenche046 ancora03
[ 43]  aa←⎕FX cpc xx
[ 44]  esse[24+⍳9;]←9 80↑traduzpy046 xx
[ 45]  resp←resp,,⊂aa
[ 46]  xx←preenche046 ancora04
[ 47]  aa←⎕FX cpc xx
[ 48]  esse[33+⍳9;]←9 80↑traduzpy046 xx
[ 49]  resp←resp,,⊂aa
[ 50]  xx←preenche046 ancora11
[ 51]  aa←⎕FX cpc xx
[ 52]  esse[42+⍳13;]←13 80↑traduzpy046 xx
[ 53]  resp←resp,,⊂aa
[ 54]  xx←preenche046 ancora12
[ 55]  aa←⎕FX cpc xx
[ 56]  esse[55+⍳14;]←14 80↑traduzpy046 xx
[ 57]  resp←resp,,⊂aa
[ 58]  xx←preenche046 ancora13
[ 59]  aa←⎕FX cpc xx
[ 60]  esse[69+⍳15;]←15 80↑traduzpy046 xx
[ 61]  resp←resp,,⊂aa
[ 62]  xx←preenche046 ancora14
[ 63]  aa←⎕FX cpc xx
[ 64]  esse[84+⍳15;]←15 80↑traduzpy046 xx
[ 65]  resp←resp,,⊂aa
[ 66]  xx←preenche046 ancora01
[ 67]  aa←⎕FX cpc xx
[ 68]  esse[99+⍳8;]←8 80↑traduzpy046 xx
[ 69]  resp←resp,,⊂aa
[ 70]  xx←preenche046 ancora02
[ 71]  aa←⎕FX cpc xx
[ 72]  esse[107+⍳9;]←9 80↑traduzpy046 xx
[ 73]  resp←resp,,⊂aa
[ 74]  xx←preenche046 ancora03
[ 75]  aa←⎕FX cpc xx
[ 76]  esse[116+⍳9;]←9 80↑traduzpy046 xx
[ 77]  resp←resp,,⊂aa
[ 78]  xx←preenche046 ancora04
[ 79]  aa←⎕FX cpc xx
[ 80]  esse[125+⍳9;]←9 80↑traduzpy046 xx
[ 81]  resp←resp,,⊂aa
[ 82]  xx←preenche046 ancora11
[ 83]  aa←⎕FX cpc xx
[ 84]  esse[134+⍳13;]←13 80↑traduzpy046 xx
[ 85]  resp←resp,,⊂aa
[ 86]  xx←preenche046 ancora12
[ 87]  aa←⎕FX cpc xx
[ 88]  esse[147+⍳14;]←14 80↑traduzpy046 xx
[ 89]  resp←resp,,⊂aa
[ 90]  xx←preenche046 ancora13
[ 91]  aa←⎕FX cpc xx
[ 92]  esse[161+⍳15;]←15 80↑traduzpy046 xx
[ 93]  resp←resp,,⊂aa
[ 94]  xx←preenche046 ancora14
[ 95]  aa←⎕FX cpc xx
[ 96]  esse[176+⍳15;]←15 80↑traduzpy046 xx
[ 97]  resp←resp,,⊂aa
[ 98]  xx←4 4⍴1↓resp
[ 99] ⍝ xx
[100]  resu←resu,[1]1 5⍴(1↑resp),,+/[1]xx
[101]  acuja←(f[;2]='#')/⍳1↑⍴f
[102]  f[acuja;⍳80]←esse[⊂,f[acuja;3 4 5],' ';]
```

```
[103]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[104]  ⍞←(⍕xk←xk+1),'-'
[105]  →testa
[106] fim:upag←(1 0+⍴f)⍴' '
[107]  →(1=≡n)/elafa
[108]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[109]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[110]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯'-'edit(lixo1←5 0 8 0 5 0 5 0 5 0)⍕resu
[111]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[112]  →terminando
[113] elafa:aaa←(ylu[;⍳36],'¯'-'edit 6 0⍕0 1↓resu)
[114]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[115]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[116] terminando:
[117]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[118]  relat[1↑⍴relat;;]←upag
[119]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[120]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[121]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[122]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo046q n;CORRECAO;EVENTO;aa;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;ql
      inha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL046q  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA046q←ajusta80 FOLHALA046q
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA046q)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 9⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←203 80⍴' '
[16]  f←FOLHALA046q
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳5]=((1↑⍴f),5)⍴'⍀#005')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[202;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[203;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←preenche046 ancora21
[35]  aa←⎕FX cpc xx
[36]  esse[7+⍳21;]←21 80↑traduzpy046 xx
[37]  resp←resp,,±aa
[38]  xx←preenche046 ancora22
[39]  aa←⎕FX cpc xx
```

```
[40]  esse[28+ι23;]←23 80↑traduzpy046 xx
[41]  resp←resp,,±aa
[42]  xx←preenche046 ancora23
[43]  aa←⎕FX cpc xx
[44]  esse[51+ι23;]←23 80↑traduzpy046 xx
[45]  resp←resp,,±aa
[46]  xx←preenche046 ancora24
[47]  aa←⎕FX cpc xx
[48]  esse[74+ι31;]←31 80↑traduzpy046 xx
[49]  resp←resp,,±aa
[50]  xx←preenche046 ancora25
[51]  aa←⎕FX cpc xx
[52]  esse[105+ι29;]←29 80↑traduzpy046 xx
[53]  resp←resp,,±aa
[54]  xx←preenche046 ancora21
[55]  aa←⎕FX cpc xx
[56]  esse[134+ι21;]←21 80↑traduzpy046 xx
[57]  resp←resp,,±aa
[58]  xx←preenche046 ancora22
[59]  aa←⎕FX cpc xx
[60]  esse[155+ι23;]←23 80↑traduzpy046 xx
[61]  resp←resp,,±aa
[62]  xx←preenche046 ancora23
[63]  aa←⎕FX cpc xx
[64]  esse[178+ι23;]←23 80↑traduzpy046 xx
[65]  resp←resp,,±aa
[66] ⍝ xx
[67]  resu←resu,[1]1 9⍴resp
[68]  acuja←(f[;2]='#')/ι1↑⍴f
[69]  f[acuja;ι80]←esse[±,f[acuja;3 4 5],' ';]
[70]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[71]  ⍞←(⍕xk←xk+1),'-'
[72]  →testa
[73] fim:upag←(1 0+⍴f)⍴' '
[74]  →(1=≡n)/elafa
[75]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[76]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[77]  upag[2+ι1↑⍴resu;ι+/lixo1]←'¯'-'edit(lixo1←5 0,16⍴8 0)⍕resu
[78]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[79]  →terminando
[80] elafa:aaa←(ylu[;ι36],'¯'-'edit 8 0⍕0 1↓resu)
[81]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[82]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[83] terminando:
[84]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[85]  relat[1↑⍴relat;;]←upag
[86]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[87]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[88]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[89]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo047

```
[0]  AVISO
[1]  'demora, e tem um limite entre 40~50'
------------------------------------------------------------
[ 0]  cavaleiro047a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;num;relat;
      resp;resu;upag;x;xixo;xk;ylu;zica;zzz
[ 1]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 2]  FOLHALA047←ajusta80 FOLHALA047
[ 3]  relat←ΔFM'c:\apl2\VIVOBLO1'
```

```
[ 4]  xk←1
[ 5] testa:→(xk>n)/fim
[ 6]  esse←216 80⍴' '
[ 7]  f←FOLHALA047
[ 8]  esse[1;⍳⍴x]←x←'  -- Cavaleiros da Tavola Redonda'
[ 9]  esse[3;]←80↑4 2⍕VERSAOa←1.02
[10]  esse[215;⍳8]←'@000000@'
[11] ini1:
[12]  zica←ge1
[13]  esse[7+⍳18;]←18 80⍴'-¯'edit 80 0⍕zica[;1+⍳6]
[14]  kk←,zica[;1]
[15]  zica←ge2
[16]  esse[25+⍳24;]←24 80⍴'-¯'edit 80 0⍕zica[;1+⍳8]
[17]  resp←+/2*(kk,,zica[;1])/⍳¯1+⍳6
[18]  zica←ge3
[19]  esse[49+⍳18;]←18 80⍴'-¯'edit 80 0⍕zica[;1+⍳6]
[20]  kk←,zica[;1]
[21]  zica←ge4
[22]  esse[67+⍳18;]←18 80⍴'-¯'edit 80 0⍕zica[;1+⍳6]
[23]  resp←resp,+/2*(kk,,zica[;1])/⍳¯1+⍳6
[24]  zica←ge5
[25]  esse[85+⍳18;]←18 80⍴'-¯'edit 80 0⍕zica[;1+⍳6]
[26]  kk←,zica[;1]
[27]  zica←ge6
[28]  esse[103+⍳18;]←18 80⍴'-¯'edit 80 0⍕zica[;1+⍳6]
[29]  resp←resp,+/2*(kk,,zica[;1])/⍳¯1+⍳6
[30]  zica←ge7
[31]  esse[121+⍳12;]←12 80⍴'-¯'edit 80 0⍕zica[;1+⍳4]
[32]  kk←,zica[;1]
[33]  zica←ge8
[34]  esse[133+⍳9;]←9 80⍴'-¯'edit 80 0⍕zica[;1+⍳3]
[35]  resp←resp,+/2*(kk,,zica[;1])/⍳¯1+⍳6
[36]  zica←ge3
[37]  esse[142+⍳18;]←18 80⍴'-¯'edit 80 0⍕zica[;1+⍳6]
[38]  kk←,zica[;1]
[39]  zica←ge4
[40]  esse[160+⍳18;]←18 80⍴'-¯'edit 80 0⍕zica[;1+⍳6]
[41]  resp←resp,+/2*(kk,,zica[;1])/⍳¯1+⍳6
[42]  zica←ge5
[43]  esse[178+⍳18;]←18 80⍴'-¯'edit 80 0⍕zica[;1+⍳6]
[44]  kk←,zica[;1]
[45]  zica←ge6
[46]  esse[196+⍳18;]←18 80⍴'-¯'edit 80 0⍕zica[;1+⍳6]
[47]  resp←resp,+/2*(kk,,zica[;1])/⍳¯1+⍳6
[48]  resp←'¯-'edit⍕resp
[49]  acuja←(f[;2]='#')/⍳1↑⍴f
[50]  f[acuja;]←esse[⍤,f[acuja;3 4 5],' ';]
[51]  ⍞←(⍕xk←xk+1),'-'
[52]  f←(((1↑⍴relat),1↓⍴f)↑relat),[1]f
[53]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'\end{document}'
[54]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'%',resp
[55]  lixo1←f ⎕FM'c:\apl2\CA047a',('00'⍕xk-1),'.tex'
[56]  →testa
[57] fim:
------------------------------------------------------------
[  0]  r←cpc algo;nome;PILHA;nnn;saida;aspa;vv;coma;SALVA;i;j;loca;aaa;pn;pna
[  1] ⍝ versao 1.10
[  2]  PILHA←0 21⍴' ' ⋄ nnn←1 ⋄ saida←0 70⍴' ' ⋄ r←0 70⍴' ' ⋄ aspa←'''' ⋄ loca←'' ⋄ pna←'≤'
[  3]  →(1=⍴⍴algo)/erro90
[  4]  i←1
[  5] t1:→(i>1↑⍴algo)/fim
[  6]  →(algo[i;1]≠'α')/oraviva
[  7]  saida←saida,[1]1 70⍴70↑1↓algo[i;]
```

```
[  8]  →(i=i←i+1)/t1
[  9] oraviva:vv←vetoriza algo[i;]
[ 10]  →('algoritmo'igual⊃vv[1])/ealg
[ 11]  →('fim{algoritmo}'igual⊃vv[1])/ealf
[ 12]  →('fimalgoritmo'igual⊃vv[1])/ealf
[ 13]  →('funcao'igual⊃vv[1])/efun
[ 14]  →('fim{funcao}'igual⊃vv[1])/efuf
[ 15]  →('fimfuncao'igual⊃vv[1])/efuf
[ 16]  →('leia'igual⊃vv[1])/elei
[ 17]  →('imprima'igual⊃vv[1])/eimp
[ 18]  →('escreva'igual⊃vv[1])/eimp ⍝ para compatibilizar com o VG = 19/06/08
[ 19]  →('devolva'igual⊃vv[1])/eimp  ⍝ em teste: sera que devolva = imprima neste contexto
       ???
[ 20]  →('se'igual⊃vv[1])/esex
[ 21]  →('senao'igual⊃vv[1])/esen
[ 22]  →('fim{se}'igual⊃vv[1])/esef
[ 23]  →('fimse'igual⊃vv[1])/esef
[ 24]  →('enquanto'igual⊃vv[1])/eenq
[ 25]  →('fim{enquanto}'igual⊃vv[1])/eenf
[ 26]  →('fimenquanto'igual⊃vv[1])/eenf
[ 27]  →('repita'igual⊃vv[1])/erep
[ 28]  →('ate'igual⊃vv[1])/eate
[ 29]  →('para'igual⊃vv[1])/epar
[ 30]  →('fim{para}'igual⊃vv[1])/epaf
[ 31]  →('fimpara'igual⊃vv[1])/epaf
[ 32]  →('abandone'igual⊃vv[1])/eaba
[ 33]  →('saia'igual⊃vv[1])/esai
[ 34]  →('<-'igual⊃vv[2])/ecad
[ 35]  →('inteiro'igual⊃vv[1])/eint
[ 36]  →('real'igual⊃vv[1])/erea
[ 37]  →('logico'igual⊃vv[1])/elog
[ 38]  →('caracter'igual 8↑⊃vv[1])/ecar
[ 39]  →('vetor'igual⊃vv[1])/evet
[ 40]  →('vetora'igual⊃vv[1])/evaa
[ 41]  r←r,[1]1 70⍴70↑(3⍕i),' - comando desconhecido'
[ 42] soma:→(i=i←i+1)/t1
[ 43] ⍝--------------algoritmo--------------
[ 44] ealg:saida←saida,[1]1 70⍴70↑⊃vv[2]
[ 45]  →soma
[ 46] ealf:→fim
[ 47] ⍝--------------funcao-----------------
[ 48] efun:
[ 49]  →(2≥⍴vv)/naotem
[ 50]  coma←'RRRR←',(⊃vv[2]),' AAAA'
[ 51]  →vmesmo
[ 52] naotem:coma←'RRRR←',(⊃vv[2])
[ 53]  saida←saida,[1]1 70⍴70↑coma
[ 54]  nome←⊃vv[2]
[ 55]  →aca0
[ 56] vmesmo:
[ 57]  saida←saida,[1]1 70⍴70↑coma
[ 58]  nome←⊃vv[2]
[ 59]  j←1
[ 60] voi1:→(j>¯2+⍴vv)/aca0
[ 61]  saida←saida,[1]1 70⍴70↑(⊃vv[j+2]),'←AAAA[',(3 0⍕j),']'
[ 62]  loca←loca,';',⊃vv[j+2]
[ 63]  →(j=j←j+1)/voi1
[ 64] aca0:→soma
[ 65] efuf:→fim
[ 66] ⍝---------------leia-----------------
[ 67] elei:saida←saida,[1]1 70⍴70↑aspa,'LEITURA DA VARIAVEL ',(⊃vv[2]),aspa
[ 68]  saida←saida,[1]1 70⍴70↑(⊃vv[2]),'←□'
[ 69]  →soma
```

```
[ 70] ⍝---------------imprima---------------
[ 71] eimp:→(3=⍴vv)/temmsg
[ 72]  aaa←⊃vv[2]
[ 73]  →(aaa[⍴aaa]=';')/juntaa
[ 74]  saida←saida,[1]1 70⍴70↑aaa
[ 75]  →soma
[ 76] juntaa:saida←saida,[1]1 70⍴70↑'□←⍕',¯1↓aaa
[ 77]  →soma
[ 78] temmsg:aaa←⊃vv[3]
[ 79]  →(aaa[⍴aaa]=';')/juntab
[ 80]  saida←saida,[1]1 70⍴70↑(⊃vv[2]),' ',aaa
[ 81]  →soma
[ 82] juntab:saida←saida,[1]1 70⍴70↑'□←',(⊃vv[2]),' ,⍕',¯1↓aaa
[ 83]  →soma
[ 84] ⍝---------------atribuicao------------
[ 85] ecad:saida←saida,[1]1 70⍴70↑(⊃vv[1]),'←',,⊃2↓vv
[ 86]  aaa←⊃vv[1]
[ 87]  →('['∊aaa)/soma
[ 88]  →(∨/aaa⍷loca)/soma
[ 89]  loca←loca,';',⊃vv[1]
[ 90]  →soma
[ 91] ⍝---------------se--------------------
[ 92] esex:saida←saida,[1]1 70⍴70↑'∆',('000'⍕nnn),'←',⊃vv[2]
[ 93]  saida←saida,[1]1 70⍴70↑'→(~∆',('000'⍕nnn-1),')/∆','000'⍕nnn←nnn+1
[ 94]  PILHA←(1 21⍴21↑'SE',('000'⍕nnn)),[1]PILHA
[ 95]  nnn←nnn+1
[ 96]  →soma
[ 97] ⍝--senao--
[ 98] esen:SALVA←PILHA[1;3 4 5] ⋄ PILHA←1 0↓PILHA
[ 99]  PILHA←(1 21⍴21↑'SE',('000'⍕nnn)),[1]PILHA
[100]  saida←saida,[1]1 70⍴70↑'→∆','000'⍕nnn
[101]  nnn←nnn+1
[102]  saida←saida,[1]1 70⍴70↑'∆',SALVA,':'
[103]  →soma
[104] ⍝--fim{se}--
[105] esef:saida←saida,[1]1 70⍴70↑'∆',PILHA[1;3 4 5],':'
[106]  PILHA←1 0↓PILHA
[107]  →soma
[108] ⍝-------------enquanto--------------------
[109] eenq:saida←saida,[1]1 70⍴70↑'∆',('000'⍕nnn),':'
[110]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[111]  nnn←nnn+1
[112]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[113]  nnn←nnn+1
[114]  saida←saida,[1]1 70⍴70↑'∆',('000'⍕nnn),'←',⊃vv[2]
[115]  nnn←nnn+1
[116]  saida←saida,[1]1 70⍴70↑'→(~∆',('000'⍕nnn-1),')/∆','000'⍕nnn-2
[117]  →soma
[118] ⍝----------fim{enquanto}-----------------
[119] eenf:SALVA←PILHA[1;3 4 5]
[120]  PILHA←1 0↓PILHA
[121]  saida←saida,[1]1 70⍴70↑'→∆',PILHA[1;3 4 5]
[122]  PILHA←1 0↓PILHA
[123]  saida←saida,[1]1 70⍴70↑'∆',SALVA,':'
[124]  →soma
[125] ⍝----------repita-------------------------
[126] erep:saida←saida,[1]1 70⍴70↑'∆',('000'⍕nnn),':'
[127]  PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[128]  nnn←nnn+1
[129]  →soma
[130] ⍝-----------ate--------------------------
[131] eate:PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[132]  nnn←nnn+1
```

```
[133]  saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[134]  SALVA←PILHA[1;3 4 5]
[135]  PILHA←1 0↓PILHA
[136]  saida←saida,[1]1 70ρ70↑'→(Δ',('000'⍕nnn),')/Δ',SALVA
[137]  SALVA←PILHA[1;3 4 5]
[138]  PILHA←1 0↓PILHA
[139]  saida←saida,[1]1 70ρ70↑'→Δ',SALVA
[140]  saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn-1),':'
[141]  nnn←nnn+1 ⍝ inclusao desta linha em 19/04/06. Ainda nao suficientemente testada
[142]  →soma
[143] ⍝----------para-----------------------
[144] epar:saida←saida,[1]1 70ρ70↑(8↑⊃vv[2]),'←',8↑⊃vv[4]
[145]  PILHA←(1 21ρ21↑'PA','000'⍕nnn),[1]PILHA
[146]  saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),':'
[147]  nnn←nnn+1
[148]  →(8≤ρvv)/tempasso
[149]  PILHA←(1 21ρ21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8↑8⍕1),[1]PILHA
[150]  →juntab
[151] tempasso:PILHA←(1 21ρ21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8 2⍕pn←⍎⊃vv[8]),[1]PILHA
[152] ⍝ 'pn=',⍕pn
[153]  pna←'≤≥'[1+pn<0] ⍝ alteracao a 22/06/06, para acertar passo negativo
[154] juntab:nnn←nnn+1
[155]  saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),'←',(⊃vv[2]),pna,⍕⊃vv[6]
[156]  saida←saida,[1]1 70ρ70↑'→(~Δ',('000'⍕nnn),')/Δ','000'⍕nnn-1
[157]  nnn←nnn+1
[158]  →soma
[159] ⍝----------fim{para}------------------
[160] epaf:saida←saida,[1]1 70ρ70↑PILHA[1;5+⍳8],'←',PILHA[1;5+⍳8],'+',PILHA[1;13+⍳8]
[161]  SALVA←PILHA[1;3 4 5]
[162]  PILHA←1 0↓PILHA
[163]  saida←saida,[1]1 70ρ70↑'→Δ',PILHA[1;3 4 5]
[164]  PILHA←1 0↓PILHA
[165]  saida←saida,[1]1 70ρ70↑'Δ',SALVA,':'
[166]  →soma
[167] ⍝-----------abandone--------------------
[168] eaba:→soma
[169] ⍝-----------saia--------------------------
[170] esai:→soma
[171] ⍝-------- definicao de variaveis---------------
[172] eint:
[173]  saida←saida,[1]1 70ρ70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[174]  →soma
[175] erea:
[176]  saida←saida,[1]1 70ρ70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[177]  →soma
[178] elog:
[179]  saida←saida,[1]1 70ρ70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[180]  →soma
[181] ecar:
[182]  saida←saida,[1]1 70ρ70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[183]  →soma
[184] ⍝----------definicao de vetores-----------------
[185] evet:
[186]  saida←saida,[1]1 70ρ70↑(1 parte(⊃vv[2])),'←',(2 parte(⊃vv[2])),'ρ0'
[187]  →soma
[188] evaa:
[189]  saida←saida,[1]1 70ρ70↑(1 parte(⊃vv[2])),'←',(2 parte(⊃vv[2])),'ρ',aspa,' ',aspa
[190]  →soma
[191] fim:
[192]  i←1
[193] tfim:→(i>nnn)/mesmo
[194]  loca←loca,';Δ','000'⍕i
[195]  →(i=i←i+1)/tfim
```

```
[196] mesmo:→(50>⍴loca)/blz1
[197]  saida←((1↑⍴saida),20+⍴loca)↑saida
[198]  saida[1;20+⍳⍴loca]←loca
[199]  →pula22
[200] blz1:saida[1;20+⍳50]←50↑loca
[201] pula22:r←'_ 'edit saida
[202]  →0
[203] erro90:'algoritmo nao e uma matriz'
[204]  →0
-------------------------------------------------------------
[ 0]  r←ge1
[ 1]  r←3 7⍴0
[ 2]  →(1=?2)/cara1
[ 3] coroa1:r[1;]←1,geraex1
[ 4]  →junta1
[ 5] cara1:r[1;]←0,geraex1+0 0 0 0 0,(1 1 1 0 1 1 1/¯4+⍳7)[?6]
[ 6] junta1:
[ 7]  →(1=?2)/cara2
[ 8] coroa2:r[2;]←1,geraex1
[ 9]  →junta2
[10] cara2:r[2;]←0,geraex1+0 0 0 0 0,(1 1 1 0 1 1 1/¯4+⍳7)[?6]
[11] junta2:
[12]  →(1=?2)/cara3
[13] coroa3:r[3;]←1,geraex1
[14]  →junta3
[15] cara3:r[3;]←0,geraex1+0 0 0 0 0,(1 1 1 0 1 1 1/¯4+⍳7)[?6]
[16] junta3:
-------------------------------------------------------------
[ 0]  r←ge2
[ 1]  r←3 9⍴0
[ 2]  →(1=?2)/cara1
[ 3] coroa1:r[1;]←1,geraex2
[ 4]  →junta1
[ 5] cara1:r[1;]←0,geraex2+0 0 0 0 0 0 0,(1 1 1 0 1 1 1/¯4+⍳7)[?6]
[ 6] junta1:
[ 7]  →(1=?2)/cara2
[ 8] coroa2:r[2;]←1,geraex2
[ 9]  →junta2
[10] cara2:r[2;]←0,geraex2+0 0 0 0 0 0 0,(1 1 1 0 1 1 1/¯4+⍳7)[?6]
[11] junta2:
[12]  →(1=?2)/cara3
[13] coroa3:r[3;]←1,geraex2
[14]  →junta3
[15] cara3:r[3;]←0,geraex2+0 0 0 0 0 0 0,(1 1 1 0 1 1 1/¯4+⍳7)[?6]
[16] junta3:
-------------------------------------------------------------
[ 0]  r←ge3
[ 1]  r←3 7⍴0
[ 2]  →(1=?2)/cara1
[ 3] coroa1:r[1;]←1,geraex3
[ 4]  →junta1
[ 5] cara1:r[1;]←0,geraex3+0 0 0 0 0,(1 1 1 0 1 1 1/¯4+⍳7)[?6]
[ 6] junta1:
[ 7]  →(1=?2)/cara2
[ 8] coroa2:r[2;]←1,geraex3
[ 9]  →junta2
[10] cara2:r[2;]←0,geraex3+0 0 0 0 0,(1 1 1 0 1 1 1/¯4+⍳7)[?6]
[11] junta2:
[12]  →(1=?2)/cara3
[13] coroa3:r[3;]←1,geraex3
[14]  →junta3
[15] cara3:r[3;]←0,geraex3+0 0 0 0 0,(1 1 1 0 1 1 1/¯4+⍳7)[?6]
[16] junta3:
```

```
------------------------------------------------------------
[ 0]  r←ge4
[ 1]  r←3 7⍴0
[ 2]  →(1=?2)/cara1
[ 3] coroa1:r[1;]←1,geraex4
[ 4]  →junta1
[ 5] cara1:r[1;]←0,geraex4+0 0 0 0 0,(1 1 1 0 1 1 1/¯4+⍳7)[?6]
[ 6] junta1:
[ 7]  →(1=?2)/cara2
[ 8] coroa2:r[2;]←1,geraex4
[ 9]  →junta2
[10] cara2:r[2;]←0,geraex4+0 0 0 0 0,(1 1 1 0 1 1 1/¯4+⍳7)[?6]
[11] junta2:
[12]  →(1=?2)/cara3
[13] coroa3:r[3;]←1,geraex4
[14]  →junta3
[15] cara3:r[3;]←0,geraex4+0 0 0 0 0,(1 1 1 0 1 1 1/¯4+⍳7)[?6]
[16] junta3:
------------------------------------------------------------
[ 0]  r←ge5
[ 1]  r←3 7⍴0
[ 2]  →(1=?2)/cara1
[ 3] coroa1:r[1;]←1,geraex5
[ 4]  →junta1
[ 5] cara1:r[1;]←0,geraex5+0 0 0 0 0,(1 1 1 0 1 1 1/¯4+⍳7)[?6]
[ 6] junta1:
[ 7]  →(1=?2)/cara2
[ 8] coroa2:r[2;]←1,geraex5
[ 9]  →junta2
[10] cara2:r[2;]←0,geraex5+0 0 0 0 0,(1 1 1 0 1 1 1/¯4+⍳7)[?6]
[11] junta2:
[12]  →(1=?2)/cara3
[13] coroa3:r[3;]←1,geraex5
[14]  →junta3
[15] cara3:r[3;]←0,geraex5+0 0 0 0 0,(1 1 1 0 1 1 1/¯4+⍳7)[?6]
[16] junta3:
------------------------------------------------------------
[ 0]  r←ge6
[ 1]  r←3 7⍴0
[ 2]  →(1=?2)/cara1
[ 3] coroa1:r[1;]←1,geraex6
[ 4]  →junta1
[ 5] cara1:r[1;]←0,geraex6+0 0 0 0 0,(1 1 1 0 1 1 1/¯4+⍳7)[?6]
[ 6] junta1:
[ 7]  →(1=?2)/cara2
[ 8] coroa2:r[2;]←1,geraex6
[ 9]  →junta2
[10] cara2:r[2;]←0,geraex6+0 0 0 0 0,(1 1 1 0 1 1 1/¯4+⍳7)[?6]
[11] junta2:
[12]  →(1=?2)/cara3
[13] coroa3:r[3;]←1,geraex6
[14]  →junta3
[15] cara3:r[3;]←0,geraex6+0 0 0 0 0,(1 1 1 0 1 1 1/¯4+⍳7)[?6]
[16] junta3:
------------------------------------------------------------
[ 0]  r←ge7
[ 1]  r←3 5⍴0
[ 2]  →(1=?2)/cara1
[ 3] coroa1:r[1;]←1,geraex7
[ 4]  →junta1
[ 5] cara1:r[1;]←0,geraex7+0 0 0,(1 1 1 0 1 1 1/¯4+⍳7)[?6]
[ 6] junta1:
[ 7]  →(1=?2)/cara2
```

```
[ 8] coroa2:r[2;]←1,geraex7
[ 9]  →junta2
[10] cara2:r[2;]←0,geraex7+0 0 0,(1 1 1 0 1 1 1/¯4+⍳7)[?6]
[11] junta2:
[12]  →(1=?2)/cara3
[13] coroa3:r[3;]←1,geraex7
[14]  →junta3
[15] cara3:r[3;]←0,geraex7+0 0 0,(1 1 1 0 1 1 1/¯4+⍳7)[?6]
[16] junta3:
------------------------------------------------------------
[ 0]  r←ge8
[ 1]  r←3 4⍴0
[ 2]  →(1=?2)/cara1
[ 3] coroa1:r[1;]←1,geraex8
[ 4]  →junta1
[ 5] cara1:r[1;]←0,geraex8+0 0,(1 1 1 0 1 1 1/¯4+⍳7)[?6]
[ 6] junta1:
[ 7]  →(1=?2)/cara2
[ 8] coroa2:r[2;]←1,geraex8
[ 9]  →junta2
[10] cara2:r[2;]←0,geraex8+0 0,(1 1 1 0 1 1 1/¯4+⍳7)[?6]
[11] junta2:
[12]  →(1=?2)/cara3
[13] coroa3:r[3;]←1,geraex8
[14]  →junta3
[15] cara3:r[3;]←0,geraex8+0 0,(1 1 1 0 1 1 1/¯4+⍳7)[?6]
[16] junta3:
------------------------------------------------------------
[ 0]  r←geraex1;A;B;C;D;E;R;xi;lixo;EX1
[ 1]  A←2+?3
[ 2]  B←2+?3
[ 3]  C←12+?5
[ 4]  D←1+?2
[ 5]  E←1+?2
[ 6]  xi←10 50⍴' '
[ 7]  xi[1;]←50↑'funcao EX1'
[ 8]  xi[2;]←50↑'Z <- ',⍕A
[ 9]  xi[3;]←50↑'X <- ',⍕B
[10]  xi[4;]←50↑'enquanto X ≤ ',⍕C
[11]  xi[5;]←50↑'Z <- Z + ',⍕D
[12]  xi[6;]←50↑'X <- X + ',⍕E
[13]  xi[7;]←50↑'fim{enquanto}'
[14]  xi[8;]←50↑'RRRR <- Z'
[15]  xi[9;]←50↑'fim{funcao}'
[16]  lixo←⎕FX cpc xi
[17]  R←⍎'EX1'
[18]  r←A,B,C,D,E,R
------------------------------------------------------------
[ 0]  r←geraex2;A;B;C;D;E;F;G;R;xi;lixo;EX2
[ 1]  A←2+?3
[ 2]  B←2+?3
[ 3]  C←?5
[ 4]  D←20+?10
[ 5]  E←1+?2
[ 6]  F←1+?2
[ 7]  G←1+?2
[ 8]  xi←11 50⍴' '
[ 9]  xi[1;]←50↑'funcao EX2'
[10]  xi[2;]←50↑'K <- ',⍕A
[11]  xi[3;]←50↑'L <- ',⍕B
[12]  xi[4;]←50↑'M <- ',⍕C
[13]  xi[5;]←50↑'enquanto (K+L) > ',⍕D
[14]  xi[6;]←50↑'M <- M - ',⍕E
```

```
[15]  xi[7;]←50↑'K <- K - ',⍕F
[16]  xi[8;]←50↑'L <- L - ',⍕G
[17]  xi[9;]←50↑'fim{enquanto}'
[18]  xi[10;]←50↑'RRRR <- K + M'
[19]  xi[11;]←50↑'fim{funcao}'
[20]  lixo←⎕FX cpc xi
[21]  R←⍎'EX2'
[22]  r←A,B,C,D,E,F,G,R
-------------------------------------------------------------
[ 0]  r←geraex3;A;B;C;D;E;Y;R;RES;xi;lixo;EX3
[ 1]  A←2+?3
[ 2]  B←2+?3
[ 3]  C←?5
[ 4]  D←2+?4
[ 5]  E←10+?20
[ 6]  xi←9 50⍴' '
[ 7]  xi[1;]←50↑'funcao EX3'
[ 8]  xi[2;]←50↑'T <- ',⍕A
[ 9]  xi[3;]←50↑'Y <- ',⍕B
[10]  xi[4;]←50↑'repita'
[11]  xi[5;]←50↑'R <- C + T + Y'
[12]  xi[6;]←50↑'Y <- Y + D'
[13]  xi[7;]←50↑'ate R > E '
[14]  xi[8;]←50↑'RRRR <- Y'
[15]  xi[9;]←50↑'fim{funcao}'
[16]  lixo←⎕FX cpc xi
[17]  RES←⍎'EX3'
[18]  r←A,B,C,D,E,RES
-------------------------------------------------------------
[ 0]  r←geraex4;A;B;C;D;E;I;R;RES;Y;lixo;xi;EX4
[ 1]  A←2+?3
[ 2]  B←2+?3
[ 3]  C←11+?5
[ 4]  D←2+?4
[ 5]  E←?15
[ 6]  xi←7 50⍴' '
[ 7]  xi[1;]←50↑'funcao EX4'
[ 8]  xi[2;]←50↑'F <- ',⍕A
[ 9]  xi[3;]←50↑'para I de ',(⍕B),' ate ',(⍕C),' passo ',⍕D
[10]  xi[4;]←50↑'F <- F + I + E'
[11]  xi[5;]←50↑'fimpara'
[12]  xi[6;]←50↑'RRRR <- F'
[13]  xi[7;]←50↑'fim{funcao}'
[14]  lixo←⎕FX cpc xi
[15]  RES←⍎'EX4'
[16]  r←A,B,C,D,E,RES
-------------------------------------------------------------
[ 0]  r←geraex5;A;B;C;D;E;Y;R;RES;xi;lixo;EX5
[ 1]  A←1+?3
[ 2]  B←1+?3
[ 3]  C←?11
[ 4]  D←3+?4
[ 5]  E←?3
[ 6]  xi←10 50⍴' '
[ 7]  xi[1;]←50↑'funcao EX5'
[ 8]  xi[2;]←50↑'Q <- ',⍕A
[ 9]  xi[3;]←50↑'R <- ',⍕B
[10]  xi[4;]←50↑'S <- ',⍕C
[11]  xi[5;]←50↑'enquanto (Q+S) ≤ R'
[12]  xi[6;]←50↑'Q <- Q + D'
[13]  xi[7;]←50↑'S <- S - E'
[14]  xi[8;]←50↑'fimenquanto'
[15]  xi[9;]←50↑'RRRR <- 21+Q-S'
```

```
[16]  xi[10;]←50↑'fim{funcao}'
[17]  lixo←⍞FX cpc xi
[18]  RES←⍎'EX5'
[19]  r←A,B,C,D,E,RES
-------------------------------------------------------------
[ 0]  r←geraex6;A;B;C;D;E;Y;R;RES;xi;lixo;EX6
[ 1]  A←1+?3
[ 2]  B←?2
[ 3]  C←11+?11
[ 4]  D←2+?4
[ 5]  E←?3
[ 6]  xi←10 50⍴' '
[ 7]  xi[1;]←50↑'funcao EX6'
[ 8]  xi[2;]←50↑'P <- ',⍕A
[ 9]  xi[3;]←50↑'J <- ',⍕B
[10]  xi[4;]←50↑'J <- J +',(⍕A),' + 25'
[11]  xi[5;]←50↑'enquanto J > C'
[12]  xi[6;]←50↑'P <- P + D'
[13]  xi[7;]←50↑'J <- J - E'
[14]  xi[8;]←50↑'fimenquanto'
[15]  xi[9;]←50↑'RRRR <- P'
[16]  xi[10;]←50↑'fim{funcao}'
[17]  lixo←⍞FX cpc xi
[18]  RES←⍎'EX6'
[19]  r←A,B,C,D,E,RES
-------------------------------------------------------------
[ 0]  r←geraex7;A;B;C;RES;xi;lixo;EX7
[ 1]  A←2+?3
[ 2]  B←2+?3
[ 3]  C←18+?10
[ 4]  xi←7 50⍴' '
[ 5]  xi[1;]←50↑'funcao EX7'
[ 6]  xi[2;]←50↑'W <- ',⍕A
[ 7]  xi[3;]←50↑'repita'
[ 8]  xi[4;]←50↑'W <- W + B'
[ 9]  xi[5;]←50↑'ate W > C'
[10]  xi[6;]←50↑'RRRR <- W + C'
[11]  xi[7;]←50↑'fim{funcao}'
[12]  lixo←⍞FX cpc xi
[13]  RES←⍎'EX7'
[14]  r←A,B,C,RES
-------------------------------------------------------------
[ 0]  r←geraex8;A;B;RES;xi;lixo;EX8
[ 1]  A←?13
[ 2]  B←?13
[ 3]  xi←9 50⍴' '
[ 4]  xi[1;]←50↑'funcao EX8'
[ 5]  xi[2;]←50↑'ALFA <- ',⍕A
[ 6]  xi[3;]←50↑'BETA <- ',⍕B
[ 7]  xi[4;]←50↑'enquanto 0≠11|(ALFA+BETA)'
[ 8]  xi[5;]←50↑'ALFA <- ALFA + 2 '
[ 9]  xi[6;]←50↑'BETA <- BETA - 1 '
[10]  xi[7;]←50↑'fim{enquanto}'
[11]  xi[8;]←50↑'RRRR <- 10+ALFA-BETA'
[12]  xi[9;]←50↑'fim{funcao}'
[13]  lixo←⍞FX cpc xi
[14]  RES←⍎'EX8'
[15]  r←A,B,RES
-------------------------------------------------------------
[0]  r←a igual b;maior
[1]  maior←(1↑⍴a)⌈1↑⍴b
[2]  a←maior↑a ⋄ b←maior↑b
[3]  r←maior=+/a=b
```

```
------------------------------------------------------------
[ 0]  r←vetoriza x;i;rr;letra;aspa;nume
[ 1] ⍝ versao 1.07
[ 2]  aspa←'''' ⋄ nume←'0123456789'
[ 3]  letra←'abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ()',aspa
[ 4] ⍝ tira os brancos
[ 5]  i←1 ⋄ rr←1
[ 6] t2:→(i>¯2+⍴x)/vaiz
[ 7]  →((x[i+1]=' ')∧(x[i]∈letra)∧(x[i+2]∈nume))/mataz
[ 8]  →((x[i+1]=' ')∧(x[i]∈nume)∧(x[i+2]∈letra))/mataz
[ 9]  →((x[i]∈letra)∧(x[i+2]∈letra))/naopode
[10]  →(((x[1]='p')∨(x[1]='P'))∧(x[2]='a')∧(x[i]∈letra)∧((x[i+2]='-')∨(x[i+2]='¯')))/naopo
      de  ⍝ comando incluido para o passo negativo
[11] ⍝ →((x[i]∈letra)∧((x[i+2]='-')∨(x[i+2]='¯')))/naopode  ⍝ comando incluido para o pass
      o negativo
[12] ⍝ os 3 testes iniciais (pPa) foram incluidos porque o comando acima estava
[13] ⍝ fazendo besteira: vetoriza 'A <- A -1' estava gerando 4 tokens e nao 3.
[14] ⍝ correcao em 13/03/12 - P.kantek
[15]  →(x[i+1]≠' ')/naopode
[16] pode:rr←rr,0
[17]  →(i=i←i+1)/t2
[18] mataz:x[i+1]←'!'
[19] naopode:rr←rr,1
[20]  →(i=i←i+1)/t2
[21] vaiz:rr←rr,1
[22]  x←rr/x
[23] ⍝ separa o sinal <-
[24]  →(2≠+/'<-'∈x)/faca
[25]  i←1 ⋄ rr←⍳0
[26] t1:→(i>¯1+⍴x)/vaix
[27]  →((x[i]='<')∧(x[i+1]='-'))/esim
[28]  rr←rr,1
[29]  →(i=i←i+1)/t1
[30] esim:rr←rr,0 1 1 0
[31]  →(i=i←i+2)/t1
[32] vaix:rr←rr,1
[33]  x←rr⌿x
[34] faca:x←'! 'edit x
[35]  r←(~' '=x)⊂x
------------------------------------------------------------
[ 0]  opesq vivo047a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;num;relat
      ;resp;resu;upag;xixo;xk;ylu;zica;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←8 ⋄ EVENTO←'PL047   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⌿apl2⌿',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA047←ajusta80 FOLHALA047
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA047)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⌿apl2⌿VIVOBLO1'
[12]  xk←1 ⋄ resu←0 7⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←216 80⍴' '
[15]  f←FOLHALA047
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←1.03
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
```

```
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[215;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[216;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] ini1:
[26]  zica←ge1
[27]  esse[7+⍳18;]←18 80⍴'-¯'edit 80 0⍕zica[;1+⍳6]
[28]  kk←,zica[;1]
[29]  zica←ge2
[30]  esse[25+⍳24;]←24 80⍴'-¯'edit 80 0⍕zica[;1+⍳8]
[31]  resp←resp,+/2*(kk,,zica[;1])/⌾¯1+⍳6
[32]  zica←ge3
[33]  esse[49+⍳18;]←18 80⍴'-¯'edit 80 0⍕zica[;1+⍳6]
[34]  kk←,zica[;1]
[35]  zica←ge4
[36]  esse[67+⍳18;]←18 80⍴'-¯'edit 80 0⍕zica[;1+⍳6]
[37]  resp←resp,+/2*(kk,,zica[;1])/⌾¯1+⍳6
[38]  zica←ge5
[39]  esse[85+⍳18;]←18 80⍴'-¯'edit 80 0⍕zica[;1+⍳6]
[40]  kk←,zica[;1]
[41]  zica←ge6
[42]  esse[103+⍳18;]←18 80⍴'-¯'edit 80 0⍕zica[;1+⍳6]
[43]  resp←resp,+/2*(kk,,zica[;1])/⌾¯1+⍳6
[44]  zica←ge7
[45]  esse[121+⍳12;]←12 80⍴'-¯'edit 80 0⍕zica[;1+⍳4]
[46]  kk←,zica[;1]
[47]  zica←ge8
[48]  esse[133+⍳9;]←9 80⍴'-¯'edit 80 0⍕zica[;1+⍳3]
[49]  resp←resp,+/2*(kk,,zica[;1])/⌾¯1+⍳6
[50]  zica←ge3
[51]  esse[142+⍳18;]←18 80⍴'-¯'edit 80 0⍕zica[;1+⍳6]
[52]  kk←,zica[;1]
[53]  zica←ge4
[54]  esse[160+⍳18;]←18 80⍴'-¯'edit 80 0⍕zica[;1+⍳6]
[55]  resp←resp,+/2*(kk,,zica[;1])/⌾¯1+⍳6
[56]  zica←ge5
[57]  esse[178+⍳18;]←18 80⍴'-¯'edit 80 0⍕zica[;1+⍳6]
[58]  kk←,zica[;1]
[59]  zica←ge6
[60]  esse[196+⍳18;]←18 80⍴'-¯'edit 80 0⍕zica[;1+⍳6]
[61]  resp←resp,+/2*(kk,,zica[;1])/⌾¯1+⍳6
[62]  resu←resu,[1]1 7⍴resp
[63]  acuja←(f[;2]='#')/⍳1↑⍴f
[64]  f[acuja;]←esse[⍋,f[acuja;3 4 5],' ';]
[65]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[66]  ⍞←(⍕xk←xk+1),'-'
[67]  →testa
[68] fim:upag←(1 0+⍴f)⍴' '
[69]  →(1=≡n)/elafa
[70]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[71]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[72]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←4 0 8 0 4 0 4 0 4 0 4 0 4 0)⍕resu
[73]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[74]  →terminando
[75] elafa:aaa←(ylu,4 0⍕0 1↓resu)
[76]  lixonol←aaa ΔFM('c:\apl2\',((~⌾∧\⌾EVENTO=' ')/EVENTO),'.gpa')
[77]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[78] terminando:
[79]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[80]  relat[1↑⍴relat;;]←upag
[81]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[82]  LIXONOL←lixonol
[83]  lixonol←lixonol ΔFM'c:\apl2\',((~⌾∧\⌾EVENTO=' ')/EVENTO),'.tex'
```

```
[84]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
[85] ⍝ OU
[86]  'LIXONOL[⍳20000;]⎕FM  aspa c:\apl2\a.TEX aspa '
[87]  'LIXONOL[20000+⍳20000;]⎕FM  aspa c:\apl2\b.TEX aspa '
[88]  'LIXONOL[40000+⍳????;]⎕FM  aspa c:\apl2\c.TEX aspa '
-------------------------------------------------------------
```

vivo048

```
[ 0]  RRRR←AA01;A;B;C;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ008;Δ009;Δ010
[ 1]  A←4
[ 2]  B←3
[ 3]  C←7
[ 4]  Δ001←B≥16⍝{
[ 5]  →(~Δ001)/Δ002
[ 6] Δ003:
[ 7]  Δ005←C≤16⍝{
[ 8]  →(~Δ005)/Δ004
[ 9]  B←B-5⍝;
[10]  C←C+2⍝;
[11]  →Δ003
[12] Δ004:
[13]  →Δ006
[14] Δ002:
[15] Δ007:
[16]  Δ009←C≤12⍝{
[17]  →(~Δ009)/Δ008
[18]  B←A+7⍝;
[19]  C←C+1⍝;
[20]  →Δ007
[21] Δ008:
[22] Δ006:
[23]  RRRR←B+B+C⍝;
-------------------------------------------------------------
[ 0]  r←acertafinal x;i;j
[ 1]  r←x
[ 2]  i←1
[ 3] t1:→(i>1↑⍴x)/fim
[ 4]  j←1↓⍴x
[ 5] t2:→(j<1)/soma
[ 6]  →(x[i;j]≠';')/sub
[ 7]  →(i=¯1+1↑⍴x)/acaba
[ 8]  r[i;j]←' '
[ 9]  →soma
[10] sub:
[11]  j←j-1
[12]  →t2
[13] soma:
[14]  i←i+1
[15]  →t1
[16] acaba:r[i;j]←')'
[17] fim:
-------------------------------------------------------------
[0]  r←arrancalinhas x
[1]  r←(~∧/[2]x=' ')/[1]x
-------------------------------------------------------------
[0]  r←contabb lin;i
[1]  i←1
[2] t1:→(i>⍴lin)/deu
[3]  →(lin[i]≠' ')/deu
[4]  i←i+1
[5]  →t1
```

```
[6] deu:r←(i-1)⍴' '
------------------------------------------------------------
[  0]  r←cpc algo;nome;PILHA;nnn;saida;aspa;vv;coma;SALVA;i;j;loca;aaa;pn;pna
[  1] ⍝ versao 1.10
[  2]  PILHA←0 21⍴' ' ⋄ nnn←1 ⋄ saida←0 70⍴' ' ⋄ r←0 70⍴' ' ⋄ aspa←'''' ⋄ loca←'' ⋄ pna←'≤'
[  3]  →(1=⍴⍴algo)/erro90
[  4]  i←1
[  5] t1:→(i>1↑⍴algo)/fim
[  6]  →(algo[i;1]≠'α')/oraviva
[  7]  saida←saida,[1]1 70⍴70↑1↓algo[i;]
[  8]  →(i=i←i+1)/t1
[  9] oraviva:vv←vetoriza algo[i;]
[ 10]  →('algoritmo'igual⊃vv[1])/ealg
[ 11]  →('fim{algoritmo}'igual⊃vv[1])/ealf
[ 12]  →('fimalgoritmo'igual⊃vv[1])/ealf
[ 13]  →('funcao'igual⊃vv[1])/efun
[ 14]  →('fim{funcao}'igual⊃vv[1])/efuf
[ 15]  →('fimfuncao'igual⊃vv[1])/efuf
[ 16]  →('leia'igual⊃vv[1])/elei
[ 17]  →('imprima'igual⊃vv[1])/eimp
[ 18]  →('escreva'igual⊃vv[1])/eimp ⍝ para compatibilizar com o VG = 19/06/08
[ 19]  →('devolva'igual⊃vv[1])/eimp  ⍝ em teste: sera que devolva = imprima neste contexto
      ???
[ 20]  →('se'igual⊃vv[1])/esex
[ 21]  →('senao'igual⊃vv[1])/esen
[ 22]  →('fim{se}'igual⊃vv[1])/esef
[ 23]  →('fimse'igual⊃vv[1])/esef
[ 24]  →('enquanto'igual⊃vv[1])/eenq
[ 25]  →('fim{enquanto}'igual⊃vv[1])/eenf
[ 26]  →('fimenquanto'igual⊃vv[1])/eenf
[ 27]  →('repita'igual⊃vv[1])/erep
[ 28]  →('ate'igual⊃vv[1])/eate
[ 29]  →('para'igual⊃vv[1])/epar
[ 30]  →('fim{para}'igual⊃vv[1])/epaf
[ 31]  →('fimpara'igual⊃vv[1])/epaf
[ 32]  →('abandone'igual⊃vv[1])/eaba
[ 33]  →('saia'igual⊃vv[1])/esai
[ 34]  →('<-'igual⊃vv[2])/ecad
[ 35]  →('inteiro'igual⊃vv[1])/eint
[ 36]  →('real'igual⊃vv[1])/erea
[ 37]  →('logico'igual⊃vv[1])/elog
[ 38]  →('caracter'igual 8↑⊃vv[1])/ecar
[ 39]  →('vetor'igual⊃vv[1])/evet
[ 40]  →('vetora'igual⊃vv[1])/evaa
[ 41]  r←r,[1]1 70⍴70↑(3∓i),' - comando desconhecido'
[ 42] soma:→(i=i←i+1)/t1
[ 43] ⍝--------------algoritmo--------------
[ 44] ealg:saida←saida,[1]1 70⍴70↑⊃vv[2]
[ 45]  →soma
[ 46] ealf:→fim
[ 47] ⍝--------------funcao-----------------
[ 48] efun:
[ 49]  →(2≥⍴vv)/naotem
[ 50]  coma←'RRRR←',(⊃vv[2]),' AAAA'
[ 51]  →vmesmo
[ 52] naotem:coma←'RRRR←',(⊃vv[2])
[ 53]  saida←saida,[1]1 70⍴70↑coma
[ 54]  nome←⊃vv[2]
[ 55]  →aca0
[ 56] vmesmo:
[ 57]  saida←saida,[1]1 70⍴70↑coma
[ 58]  nome←⊃vv[2]
[ 59]  j←1
```

```
[ 60] voi1:→(j>¯2+⍴vv)/aca0
[ 61]  saida←saida,[1]1 70⍴70↑(⊃vv[j+2]),'←AAAA[',(3 0⍕j),']'
[ 62]  loca←loca,';',⊃vv[j+2]
[ 63]  →(j=j←j+1)/voi1
[ 64] aca0:→soma
[ 65] efuf:→fim
[ 66] ⍝---------------leia-----------------
[ 67] elei:saida←saida,[1]1 70⍴70↑aspa,'LEITURA DA VARIAVEL ',(⊃vv[2]),aspa
[ 68]  saida←saida,[1]1 70⍴70↑(⊃vv[2]),'←⍞'
[ 69]  →soma
[ 70] ⍝---------------imprima--------------
[ 71] eimp:→(3=⍴vv)/temmsg
[ 72]  aaa←⊃vv[2]
[ 73]  →(aaa[⍴aaa]=';')/juntaa
[ 74]  saida←saida,[1]1 70⍴70↑aaa
[ 75]  →soma
[ 76] juntaa:saida←saida,[1]1 70⍴70↑'⍞←⍕',¯1↓aaa
[ 77]  →soma
[ 78] temmsg:aaa←⊃vv[3]
[ 79]  →(aaa[⍴aaa]=';')/juntab
[ 80]  saida←saida,[1]1 70⍴70↑(⊃vv[2]),' ',aaa
[ 81]  →soma
[ 82] juntab:saida←saida,[1]1 70⍴70↑'⍞←',(⊃vv[2]),' ,⍕',¯1↓aaa
[ 83]  →soma
[ 84] ⍝---------------atribuicao------------
[ 85] ecad:saida←saida,[1]1 70⍴70↑(⊃vv[1]),'←',,⊃2↓vv
[ 86]  aaa←⊃vv[1]
[ 87]  →('['∈aaa)/soma
[ 88]  →(∨/aaa≤loca)/soma
[ 89]  loca←loca,';',⊃vv[1]
[ 90]  →soma
[ 91] ⍝---------------se--------------------
[ 92] esex:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[ 93]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn←nnn+1
[ 94]  PILHA←(1 21⍴21↑'SE',('000'⍕nnn)),[1]PILHA
[ 95]  nnn←nnn+1
[ 96]  →soma
[ 97] ⍝--senao--
[ 98] esen:SALVA←PILHA[1;3 4 5] ⋄ PILHA←1 0↓PILHA
[ 99]  PILHA←(1 21⍴21↑'SE',('000'⍕nnn)),[1]PILHA
[100]  saida←saida,[1]1 70⍴70↑'→Δ','000'⍕nnn
[101]  nnn←nnn+1
[102]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[103]  →soma
[104] ⍝--fim{se}--
[105] esef:saida←saida,[1]1 70⍴70↑'Δ',PILHA[1;3 4 5],':'
[106]  PILHA←1 0↓PILHA
[107]  →soma
[108] ⍝-------------enquanto--------------------
[109] eenq:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[110]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[111]  nnn←nnn+1
[112]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[113]  nnn←nnn+1
[114]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[115]  nnn←nnn+1
[116]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn-2
[117]  →soma
[118] ⍝----------fim{enquanto}-----------------
[119] eenf:SALVA←PILHA[1;3 4 5]
[120]  PILHA←1 0↓PILHA
[121]  saida←saida,[1]1 70⍴70↑'→Δ',PILHA[1;3 4 5]
[122]  PILHA←1 0↓PILHA
```

```
[123]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[124]  →soma
[125] ⍝----------repita-------------------------
[126] erep:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[127]  PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[128]  nnn←nnn+1
[129]  →soma
[130] ⍝-----------ate--------------------------
[131] eate:PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[132]  nnn←nnn+1
[133]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[134]  SALVA←PILHA[1;3 4 5]
[135]  PILHA←1 0↓PILHA
[136]  saida←saida,[1]1 70⍴70↑'→(Δ',('000'⍕nnn),')/Δ',SALVA
[137]  SALVA←PILHA[1;3 4 5]
[138]  PILHA←1 0↓PILHA
[139]  saida←saida,[1]1 70⍴70↑'→Δ',SALVA
[140]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn-1),':'
[141]  nnn←nnn+1 ⍝ inclusao desta linha em 19/04/06. Ainda nao suficientemente testada
[142]  →soma
[143] ⍝----------para-----------------------
[144] epar:saida←saida,[1]1 70⍴70↑(8↑⊃vv[2]),'←',8↑⊃vv[4]
[145]  PILHA←(1 21⍴21↑'PA','000'⍕nnn),[1]PILHA
[146]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[147]  nnn←nnn+1
[148]  →(8≤⍴vv)/tempasso
[149]  PILHA←(1 21⍴21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8↑8⍕1),[1]PILHA
[150]  →juntab
[151] tempasso:PILHA←(1 21⍴21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8 2⍕pn←±⊃vv[8]),[1]PILHA
[152] ⍝ 'pn=',⍕pn
[153]  pna←'≤≥'[1+pn<0] ⍝ alteracao a 22/06/06, para acertar passo negativo
[154] juntab:nnn←nnn+1
[155]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',(⊃vv[2]),pna,⍕⊃vv[6]
[156]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn),')/Δ','000'⍕nnn-1
[157]  nnn←nnn+1
[158]  →soma
[159] ⍝----------fim{para}------------------
[160] epaf:saida←saida,[1]1 70⍴70↑PILHA[1;5+⍳8],'←',PILHA[1;5+⍳8],'+',PILHA[1;13+⍳8]
[161]  SALVA←PILHA[1;3 4 5]
[162]  PILHA←1 0↓PILHA
[163]  saida←saida,[1]1 70⍴70↑'→Δ',PILHA[1;3 4 5]
[164]  PILHA←1 0↓PILHA
[165]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[166]  →soma
[167] ⍝-----------abandone--------------------
[168] eaba:→soma
[169] ⍝-----------saia--------------------------
[170] esai:→soma
[171] ⍝-------- definicao de variaveis---------------
[172] eint:
[173]  saida←saida,[1]1 70⍴70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[174]  →soma
[175] erea:
[176]  saida←saida,[1]1 70⍴70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[177]  →soma
[178] elog:
[179]  saida←saida,[1]1 70⍴70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[180]  →soma
[181] ecar:
[182]  saida←saida,[1]1 70⍴70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[183]  →soma
[184] ⍝----------definicao de vetores-----------------
[185] evet:
```

```
[186]  saida←saida,[1]1 70⍴70↑(1 parte(⊃vv[2])),'←',(2 parte(⊃vv[2])),'⍴0'
[187]  →soma
[188] evaa:
[189]  saida←saida,[1]1 70⍴70↑(1 parte(⊃vv[2])),'←',(2 parte(⊃vv[2])),'⍴',aspa,' ',aspa
[190]  →soma
[191] fim:
[192]  i←1
[193] tfim:→(i>nnn)/mesmo
[194]  loca←loca,';Δ','000'⍕i
[195]  →(i=i←i+1)/tfim
[196] mesmo:→(50>⍴loca)/blz1
[197]  saida←((1↑⍴saida),20+⍴loca)↑saida
[198]  saida[1;20+⍳⍴loca]←loca
[199]  →pula22
[200] blz1:saida[1;20+⍳50]←50↑loca
[201] pula22:r←'_ 'edit saida
[202]  →0
[203] erro90:'algoritmo nao e uma matriz'
[204]  →0
------------------------------------------------------------
[  0]  r←cpctrace algo;nome;PILHA;nnn;saida;aspa;vv;coma;SALVA;i;j;loca;aaa
[  1]  PILHA←0 21⍴' ' ⋄ nnn←1 ⋄ saida←0 70⍴' ' ⋄ r←0 70⍴' ' ⋄ aspa←'''' ⋄ loca←''
[  2]  i←1
[  3] t1:→(i>1↑⍴algo)/fim
[  4]  vv←vetoriza algo[i;]
[  5]  →('algoritmo'igual⊃vv[1])/ealg
[  6]  →('fimalgoritmo'igual⊃vv[1])/ealf
[  7]  →('funcao'igual⊃vv[1])/efun
[  8]  →('fimfuncao'igual⊃vv[1])/efuf
[  9]  →('leia'igual⊃vv[1])/elei
[ 10]  →('imprima'igual⊃vv[1])/eimp
[ 11]  →('devolva'igual⊃vv[1])/eimp  ⍝ em teste: sera que devolva = imprima neste contexto
       ???
[ 12]  →('se'igual⊃vv[1])/esex
[ 13]  →('senao'igual⊃vv[1])/esen
[ 14]  →('fimse'igual⊃vv[1])/esef
[ 15]  →('enquanto'igual⊃vv[1])/eenq
[ 16]  →('fimenquanto'igual⊃vv[1])/eenf
[ 17]  →('repita'igual⊃vv[1])/erep
[ 18]  →('ate'igual⊃vv[1])/eate
[ 19]  →('para'igual⊃vv[1])/epar
[ 20]  →('fimpara'igual⊃vv[1])/epaf
[ 21]  →('abandone'igual⊃vv[1])/eaba
[ 22]  →('saia'igual⊃vv[1])/esai
[ 23]  →('<-'igual⊃vv[2])/ecad
[ 24]  →('inteiro'igual⊃vv[1])/eint
[ 25]  →('real'igual⊃vv[1])/erea
[ 26]  →('logico'igual⊃vv[1])/elog
[ 27]  →('caracter'igual 8↑⊃vv[1])/ecar
[ 28]  →('vetor'igual⊃vv[1])/evet
[ 29]  r←r,[1]1 70⍴70↑(3⍕i),' - comando desconhecido'
[ 30] soma:→(i=i←i+1)/t1
[ 31] ⍝--------------algoritmo--------------
[ 32] ealg:saida←saida,[1]1 70⍴70↑⊃vv[2]
[ 33]  saida←saida,[1]1 70⍴70↑'TRACE←1 '
[ 34]  →soma
[ 35] ealf:→fim
[ 36] ⍝--------------funcao-----------------
[ 37] efun:
[ 38]  →(2≥⍴vv)/naotem
[ 39]  coma←'RRRR←',(⊃vv[2]),' AAAA'
[ 40]  →vmesmo
[ 41] naotem:coma←'RRRR←',(⊃vv[2])
```

```
[ 42]  saida←saida,[1]1 70⍴70↑coma
[ 43]  saida←saida,[1]1 70⍴70↑'TRACE←1'
[ 44]  nome←⊃vv[2]
[ 45]  →aca0
[ 46] vmesmo:
[ 47]  saida←saida,[1]1 70⍴70↑coma
[ 48]  saida←saida,[1]1 70⍴70↑'TRACE←1'
[ 49]  nome←⊃vv[2]
[ 50]  j←1
[ 51] voi1:→(j>¯2+⍴vv)/aca0
[ 52]  saida←saida,[1]1 70⍴70↑(⊃vv[j+2]),'←AAAA[',(3 0⍕j),']'
[ 53]  loca←loca,';',⊃vv[j+2]
[ 54]  →(j=j←j+1)/voi1
[ 55] aca0:→soma
[ 56] efuf:→fim
[ 57] ⍝---------------leia-----------------
[ 58] elei:saida←saida,[1]1 70⍴70↑aspa,'LEITURA DA VARIAVEL ',(⊃vv[2]),aspa
[ 59]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[ 60]  saida←saida,[1]1 70⍴70↑(⊃vv[2]),'←⍞'
[ 61]  →soma
[ 62] ⍝---------------imprima---------------
[ 63] eimp:
[ 64]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[ 65]  →(3=⍴vv)/temmsg
[ 66]  aaa←⊃vv[2]
[ 67]  →(aaa[⍴aaa]=';')/juntaa
[ 68]  saida←saida,[1]1 70⍴70↑aaa
[ 69]  →soma
[ 70] juntaa:saida←saida,[1]1 70⍴70↑'⍞←⍕',¯1↓aaa
[ 71]  →soma
[ 72] temmsg:aaa←⊃vv[3]
[ 73]  →(aaa[⍴aaa]=';')/juntab
[ 74]  saida←saida,[1]1 70⍴70↑(⊃vv[2]),' ',aaa
[ 75]  →soma
[ 76] juntab:saida←saida,[1]1 70⍴70↑'⍞←',(⊃vv[2]),' ,⍕',¯1↓aaa
[ 77]  →soma
[ 78] ⍝---------------atribuicao------------
[ 79] ecad:saida←saida,[1]1 70⍴70↑(⊃vv[1]),'←',⊃vv[3]
[ 80]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[ 81]  aaa←⊃vv[1]
[ 82]  →('['∊aaa)/soma
[ 83]  →(∨/aaa∈loca)/soma
[ 84]  loca←loca,';',⊃vv[1]
[ 85]  →soma
[ 86] ⍝---------------se--------------------
[ 87] esex:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[ 88]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[ 89]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn←nnn+1
[ 90]  PILHA←(1 21⍴21↑'SE',('000'⍕nnn)),[1]PILHA
[ 91]  nnn←nnn+1
[ 92]  →soma
[ 93] ⍝--senao--
[ 94] esen:SALVA←PILHA[1;3 4 5] ⋄ PILHA←1 0↓PILHA
[ 95]  PILHA←(1 21⍴21↑'SE',('000'⍕nnn)),[1]PILHA
[ 96]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[ 97]  saida←saida,[1]1 70⍴70↑'→Δ','000'⍕nnn
[ 98]  nnn←nnn+1
[ 99]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[100]  →soma
[101] ⍝--fim{se}--
[102] esef:saida←saida,[1]1 70⍴70↑'Δ',PILHA[1;3 4 5],':'
[103]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[104]  PILHA←1 0↓PILHA
```

```
[105]  →soma
[106] ⍝------------enquanto--------------------
[107] eenq:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[108]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[109]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[110]  nnn←nnn+1
[111]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[112]  nnn←nnn+1
[113]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[114]  nnn←nnn+1
[115]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn-2
[116]  →soma
[117] ⍝----------fim{enquanto}------------------
[118] eenf:SALVA←PILHA[1;3 4 5]
[119]  PILHA←1 0↓PILHA
[120]  saida←saida,[1]1 70⍴70↑'→Δ',PILHA[1;3 4 5]
[121]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[122]  PILHA←1 0↓PILHA
[123]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[124]  →soma
[125] ⍝----------repita-------------------------
[126] erep:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[127]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[128]  PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[129]  nnn←nnn+1
[130]  →soma
[131] ⍝-----------ate--------------------------
[132] eate:PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[133]  nnn←nnn+1
[134]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[135]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[136]  SALVA←PILHA[1;3 4 5]
[137]  PILHA←1 0↓PILHA
[138]  saida←saida,[1]1 70⍴70↑'→(Δ',('000'⍕nnn),')/Δ',SALVA
[139]  SALVA←PILHA[1;3 4 5]
[140]  PILHA←1 0↓PILHA
[141]  saida←saida,[1]1 70⍴70↑'→Δ',SALVA
[142]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn-1),':'
[143]  nnn←nnn+1 ⍝ inclusao desta linha em 19/04/06. Ainda nao suficientemente testada
[144]  →soma
[145] ⍝----------para-----------------------
[146] epar:saida←saida,[1]1 70⍴70↑(8↑⊃vv[2]),'←',8↑⊃vv[4]
[147]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[148]  PILHA←(1 21⍴21↑'PA','000'⍕nnn),[1]PILHA
[149]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[150]  nnn←nnn+1
[151]  →(8=⍴vv)/tempasso
[152]  PILHA←(1 21⍴21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8↑8⍕1),[1]PILHA
[153]  →juntab
[154] tempasso:PILHA←(1 21⍴21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8 2⍕⊃vv[8]),[1]PILHA
[155] juntab:nnn←nnn+1
[156]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',(⊃vv[2]),'≤',⍕⊃vv[6]
[157]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn),')/Δ','000'⍕nnn-1
[158]  nnn←nnn+1
[159]  →soma
[160] ⍝----------fim{para}-----------------
[161] epaf:saida←saida,[1]1 70⍴70↑PILHA[1;5+⍳8],'←',PILHA[1;5+⍳8],'+',PILHA[1;13+⍳8]
[162]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[163]  SALVA←PILHA[1;3 4 5]
[164]  PILHA←1 0↓PILHA
[165]  saida←saida,[1]1 70⍴70↑'→Δ',PILHA[1;3 4 5]
[166]  PILHA←1 0↓PILHA
[167]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
```

```
[168]  →soma
[169] ⍝----------abandone--------------------
[170] eaba:→soma
[171] esai:→soma
[172] eint:→soma
[173] erea:→soma
[174] elog:→soma
[175] ecar:→soma
[176] evet:
[177]  saida←saida,[1]1 70⍴70↑(1 parte(⊃vv[2])),'←',(2 parte(⊃vv[2])),'⍴0'
[178]  →soma
[179] fim:
[180]  saida←saida,[1]1 70⍴70↑'TRACE←TRACE, ',⍕i
[181]  i←1
[182] tfim:→(i>nnn)/mesmo
[183]  loca←loca,';Δ','000'⍕i
[184]  →(i=i←i+1)/tfim
[185] mesmo:→(50>⍴loca)/blz1
[186]  saida←((1↑⍴saida),20+⍴loca)↑saida
[187]  saida[1;20+⍳⍴loca]←loca
[188]  →pula22
[189] blz1:saida[1;20+⍳50]←50↑loca
[190] pula22:r←'_ 'edit saida
------------------------------------------------------------
[ 0]  r←docfuncoes ja;aa;i;⎕IO;j;naop;zz;k1;qu;ki1;ki2;ss
[ 1] ⍝ v.1.2
[ 2] ⍝festa funcao gera uma matriz com o conteudo de todas as funcoes no ws exceto algumas
[ 3] ⍝ruma lista cujo ⍴ e (nn,10), contendo nomes de funcoes que nao deverao ser listadas
[ 4] ⍝rpara listar todas chamar com 'docfuncoes 0 10⍴0'
[ 5] ⍝duma matriz caracteres de dimensoes variaveis, conforme o caso
[ 6]  ss←72
[ 7]  aa←⎕NL 3 ⋄ r←(0,ss)⍴'' ⋄ i←1 ⋄ ⎕IO←1
[ 8] t1:→(i>1↑⍴aa)/finhu
[ 9]  j←1 ⋄ naop←0
[10] testaj:→(j>1↑⍴ja)/uba
[11]  →(10≠+/(10↑aa[i;])=ja[j;])/somaj
[12]  naop←1 ⋄ j←100
[13]  →testaj
[14] somaj:→(j=j←j+1)/testaj
[15] uba:→(naop=1)/mandai
[16]  k1←⎕CR aa[i;]
[17]  k1←'[',((((((1↑⍴k1),3)⍴3 0⍕¯1+⍳1↑⍴k1),']'),' '),' '),k1
[18]  →(ss≥1↓⍴k1)/ika
[19]  k1←((1↑⍴k1),(ss×qu←⌈(1↓⍴k1)÷ss))↑k1
[20]  k1←((qu×1↑⍴k1),ss)⍴k1
[21]  k1←(ss≠+/k1=' ')/[1]k1
[22]  →vica
[23] ika:k1←((1↑⍴k1),ss)↑k1
[24] vica:
[25]  ki1←(3=+/k1[;⍳3]=((1↑⍴k1),3)⍴'[  ')/⍳1↑⍴k1
[26]  ki2←(2=+/k1[;⍳2]=((1↑⍴k1),2)⍴'[ ')/⍳1↑⍴k1
[27]  ki2←(~ki2∊ki1)/ki2
[28]  k1[ki1;1 2 3]←((⍴ki1),3)⍴'  ['
[29]  →(0=⍴ki2)/sala
[30]  k1[ki2;1 2]←((⍴ki2),2)⍴' ['
[31] sala:r←r,[1]k1
[32]  r←r,[1](1,ss)⍴'-'
[33] mandai:→(i=i←i+1)/t1
[34] finhu:r←¯1 0↓r
------------------------------------------------------------
[ 0]  r←geraquestaoprova1;zz;u;i;kk;xx;aa
[ 1]  zz←0 78⍴' '
[ 2]  u←2938
```

```
[ 3]  i←1
[ 4] t1:→(i>50)/fim
[ 5]  zz←zz,[1]1 78⍴78↑'$QE',(5 0⍕u),'503      1repeticao em python   '
[ 6]  zz←zz,[1]1 78⍴78↑'\begin{verbatim}'
[ 7]  kk←?6
[ 8]  →(kk=1)/um
[ 9]  →(kk=2)/dois
[10]  →(kk=3)/tres
[11]  →(kk=4)/quatro
[12]  →(kk=5)/cinco
[13] seis:
[14]  xx←traduzcpc048_4a6 caso06
[15]  →junta
[16] cinco:
[17]  xx←traduzcpc048_4a6 caso05
[18]  →junta
[19] quatro:
[20]  xx←traduzcpc048_4a6 caso04
[21]  →junta
[22] tres:
[23]  xx←traduzcpc048_1a3 caso03
[24]  →junta
[25] dois:
[26]  xx←traduzcpc048_1a3 caso02
[27]  →junta
[28] um:
[29]  xx←traduzcpc048_1a3 caso01
[30]  →junta
[31] junta:
[32]  aa←⍞FX cpc xx
[33]  zz←zz,[1]trim2((1↑⍴xx),78)↑traduzpy048 xx
[34]  zz←zz,[1]1 78⍴78↑'\end{verbatim}'
[35]  zz←zz,[1]1 78⍴78↑'$QR',(5 0⍕u)
[36]  zz←zz,[1]1 78⍴78↑⍕aa
[37]  u←u+1
[38]  i←i+1
[39]  →t1
[40] fim:r←zz
------------------------------------------------------------
[0]  r←a igual b;maior
[1]  maior←(1↑⍴a)⌈1↑⍴b
[2]  a←maior↑a ⋄ b←maior↑b
[3]  r←maior=+/a=b
------------------------------------------------------------
[0]  r←ltrim a
[1]  r←(~∧\a=' ')/a
------------------------------------------------------------
[ 0]  r←quem replace depara;de;i;j;k;onde;para
[ 1] ⍝ forma de usar: texto replace 'strin-de' 'string para'
[ 2] ⍝ obviamente eles nao precisam ter o mesmo tamanho
[ 3]  de←,⊃depara[1] ⋄ para←,⊃depara[2]
[ 4]  i←1 ⋄ r←((1↑⍴quem),200)⍴' '
[ 5] t1:→(i>1↑⍴quem)/fim
[ 6]  →(0=∨/onde←de⍷quem[i;])/naotem
[ 7]  j←1 ⋄ k←1
[ 8] t2:→(k>⍴quem[i;])/acabou
[ 9]  →(onde[k]=0)/soma
[10]  r[i;(j-1)+⍳⍴para]←para
[11]  j←j+⍴para
[12]  k←k+⍴de
[13]  →t2
[14] soma:r[i;j]←quem[i;k]
[15]  k←k+1
```

```
[16]  →(j=j←j+1)/t2
[17] naotem:r[i;]←200↑quem[i;]
[18] acabou:→(i=i←i+1)/t1
[19] fim:r←trim4 r
-------------------------------------------------------------
[ 0]  r←traduz048pyse x;z
[ 1]  z←x replace'fim{se}' ''
[ 2]  z←z replace'fim{enquanto}' ''
[ 3]  z←z replace'enquanto' 'while#'
[ 4]  z←z replace'senao' '####'
[ 5]  z←z replace'se' 'if#'
[ 6]  z←z replace'⍝{' ':'
[ 7]  z←z replace'=' '=='
[ 8]  z←z replace'≤' '<='
[ 9]  z←z replace'≥' '>='
[10]  z←z replace'≠' '!='
[11]  z←z replace'∨' ' or '
[12]  z←z replace'∧' ' and '
[13]  z←z replace'~' ' not '
[14]  z←z replace'×' '*'
[15]  z←z replace'<-' '='
[16]  z←z replace'RRRR=' 'print ('
[17]  z←z replace'####' 'else:'
[18]  z←z replace'⍝' ''
[19]  z←z replace'fim{funcao}' ''
[20]  r←z
-------------------------------------------------------------
[ 0]  r←traduz048se x;z
[ 1]  z←x replace'fim{se}' '}'
[ 2]  z←z replace'fim{enquanto}' '}'
[ 3]  z←z replace'senao' '} #### {'
[ 4]  z←z replace'enquanto' 'while ('
[ 5]  z←z replace'se' 'if ('
[ 6]  z←z replace'⍝{' ') {'
[ 7]  z←z replace'=' '=='
[ 8]  z←z replace'≤' '<='
[ 9]  z←z replace'≥' '>='
[10]  z←z replace'≠' '!='
[11]  z←z replace'∨' '||'
[12]  z←z replace'∧' '&&'
[13]  z←z replace'~' '!'
[14]  z←z replace'×' '*'
[15]  z←z replace'<-' '='
[16]  z←z replace'RRRR=' 'cout << '
[17]  z←z replace'####' 'else'
[18]  z←z replace'⍝' ''
[19]  z←z replace'fim{funcao}' ''
[20]  r←z
-------------------------------------------------------------
[ 0]  r←traduzc048 x;z;i;j;troco
[ 1]  z←((1↑⍴x),50)↑x
[ 2]  z[1;]←50↑'int main() {'
[ 3]  z[2;]←50↑'   int A,B,C,D;'
[ 4]  z[3;]←50↑'   A=',(x[2;9]),',B=',(x[3;9]),',C=',(x[4;9]),';'
[ 5]  i←4
[ 6]  j←5
[ 7] t1:→(j>1↑⍴x)/fim
[ 8]  troco←contabb x[j;]
[ 9]  z[i;]←50↑troco,,traduz048se 1 50⍴50↑x[j;]
[10]  i←i+1
[11]  j←j+1
[12]  →t1
[13] fim:
```

```
[14]  r←((i-2),50)↑z
[15]  r←r,[1](1,1↓⍴r)⍴(1↓⍴r)↑'}'
-------------------------------------------------------------
[ 0]  r←traduzcpc048_1a3 x;z;a1;a2;a3;a4;a5;a6;a7;a8;a9;aa;ab;ac;ad;ae;af;ag
[ 1]  a1←⍞?8
[ 2]  a2←⍞?8
[ 3]  a3←⍞?8
[ 4]  a4←'ABC'[?3]
[ 5]  a5←'≤<'[?2]
[ 6]  a6←⍞11+?9
[ 7]  a7←(('ABC'≠a4)/'ABC')[?2]
[ 8]  a8←(('ABC'≠a4)/'ABC')[?2]
[ 9]  a9←'+-++++--'[?9]
[10]  aa←⍞?8
[11]  ab←(('ABC'≠a4)/'ABC')[?2]
[12]  ac←(('ABC'≠a4)/'ABC')[?2]
[13]  ad←'+-++++--'[?9]
[14]  ae←⍞?8
[15]  af←⍞?4
[16]  ag←'><≤≥=≠'[?6]
[17]  z←x replace'#01'a1
[18]  z←z replace'#02'a2
[19]  z←z replace'#03'a3
[20]  z←z replace'#04'a4
[21]  z←z replace'#05'a5
[22]  z←z replace'#06'a6
[23]  z←z replace'#07'a7
[24]  z←z replace'#08'a8
[25]  z←z replace'#09'a9
[26]  z←z replace'#10'aa
[27]  z←z replace'#11'ab
[28]  z←z replace'#12'ac
[29]  z←z replace'#13'ad
[30]  z←z replace'#14'ae
[31]  z←z replace'#15'af
[32]  z←z replace'#16'ag
[33]  z←z replace'#17'a6←⍞11+?7
[34]  z←z replace'#18'af←⍞?3
[35]  r←z
-------------------------------------------------------------
[ 0]  r←traduzcpc048_4a6 x;z;a1;c1;c2;c3;c4;lixo;sobe;desce;c5;ops;zica
[ 1]  zica←4?8
[ 2]  z←x replace'#01'a1←⍞zica[1]
[ 3]  z←z replace'#02'a1←⍞zica[2]
[ 4]  z←z replace'#03'a1←⍞zica[3]
[ 5]  z←z replace'#04'a1←⍞zica[4]
[ 6]  c1←'ABCD'[?4]
[ 7]  c2←(('ABCD'≠c1)/'ABCD')[?3]
[ 8]  lixo←((('ABCD'≠c1)∧('ABCD'≠c2))/'ABCD')
[ 9]  c3←lixo[1]
[10]  c4←lixo[2]
[11]  c5←'ABCD'[?4]
[12]  sobe←'>≥'[?2]
[13]  desce←'<≤'[?2]
[14]  z←z replace'#05'c1
[15]  z←z replace'#06'sobe
[16]  z←z replace'#07'a1←⍞?7
[17]  z←z replace'#08'c3
[18]  z←z replace'#09'c5
[19]  z←z replace'#10'ops←'+-+++--+++'[?10]
[20]  z←z replace'#11'a1←⍞?8
[21]  z←z replace'#12'c2
[22]  z←z replace'#13'desce
```

```
[23]  z←z replace'#14'a1←⍕11+?8
[24]  z←z replace'#15'c5←lixo[?2]
[25]  z←z replace'#16'c5←lixo[?2]
[26]  z←z replace'#17'ops←'+-+++--+++'[?10]
[27]  z←z replace'#18'a1←⍕?8
[28]  z←z replace'#20'a1←⍕?6
[29]  z←z replace'#21'c5←lixo[?2]
[30]  z←z replace'#22'c5←lixo[?2]
[31]  z←z replace'#23'ops←'+-+++--+++'[?10]
[32]  z←z replace'#24'a1←⍕11+?8
[33]  z←z replace'#25'c1
[34]  z←z replace'#26'a1←⍕?4
[35]  z←z replace'#24'a1←⍕11+?8
[36]  z←z replace'#27'c5←'ABCD'[?4]
[37]  z←z replace'#28'c5←'ABCD'[?4]
[38]  z←z replace'#29'c5←'ABCD'[?4]
[39]  z←z replace'#30' '>≤<≥'[?4]
[40]  z←z replace'#31'a1←⍕3+?7
[41]  z←z replace'#32'c5←lixo[?2]
[42]  z←z replace'#33'c5←lixo[?2]
[43]  z←z replace'#34'a1←⍕3+?7
[44]  z←z replace'#35'c5←'ABCD'[?4]
[45]  z←z replace'#36' '>≤<≥'[?4]
[46]  z←z replace'#37'a1←⍕3+?7
[47]  z←z replace'#38'c5←lixo[?2]
[48]  z←z replace'#40'a1←⍕3+?7
[49]  r←z
-------------------------------------------------------------
[ 0]  r←traduzpy048 x;z;i;j;troco;xc
[ 1]  z←((1↑⍴x),50)↑x
[ 2]  z[1;]←50↑'def AA():'
[ 3]  z[2;]←50↑'   A=',(x[2;9]),';B=',(x[3;9]),';C=',(x[4;9]),';'
[ 4]  i←3
[ 5]  j←5
[ 6] t1:→(j>1↑⍴x)/fim
[ 7]  troco←contabb x[j;]
[ 8]  xc←troco,,traduz048pyse 1 50⍴50↑x[j;]
[ 9]  z[i;]←50↑xc
[10]  i←i+1
[11]  j←j+1
[12]  →t1
[13] fim:
[14]  r←((i-2),50)↑z
[15]  r←r,[1](1,1↓⍴r)⍴(1↓⍴r)↑'AA()'
[16]  r←arrancalinhas r
[17]  r←acertafinal r
[18]  r←'# 'edit r
-------------------------------------------------------------
[0]  r←trim2 x;z
[1] ⍝f corta as linhas inferiores que sao brancas
[2]  →(2≠⍴⍴x)/erro
[3]  z←+/[2]x=' '
[4]  r←(z≠1↓⍴x)/[1]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
-------------------------------------------------------------
[0]  r←trim3 x;z
[1] ⍝f corta as colunas direitas que sao 0
[2]  →(2≠⍴⍴x)/erro
[3]  z←+/[1]x=0
[4]  r←(z≠1↑⍴x)/[2]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
```

```
------------------------------------------------------------
[0]  r←trim4 x;z
[1] ⍝f corta as colunas direitas que sao brancos
[2]  →(2≠⍴⍴x)/erro
[3]  z←+/[1]x=' '
[4]  r←(z≠1↑⍴x)/[2]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
------------------------------------------------------------
[ 0]  r←vetoriza x;i;rr;letra;aspa;nume
[ 1] ⍝ versao 1.07
[ 2]  aspa←''''' ⋄ nume←'0123456789'
[ 3]  letra←'abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ()',aspa
[ 4] ⍝ tira os brancos
[ 5]  i←1 ⋄ rr←1
[ 6] t2:→(i>¯2+⍴x)/vaiz
[ 7]  →((x[i+1]=' ')∧(x[i]∈letra)∧(x[i+2]∈nume))/mataz
[ 8]  →((x[i+1]=' ')∧(x[i]∈nume)∧(x[i+2]∈letra))/mataz
[ 9]  →((x[i]∈letra)∧(x[i+2]∈letra))/naopode
[10]  →(((x[1]='p')∨(x[1]='P'))∧(x[2]='a')∧(x[i]∈letra)∧((x[i+2]='-')∨(x[i+2]='¯')))/naopo
      de  ⍝ comando incluido para o passo negativo
[11] ⍝ →((x[i]∈letra)∧((x[i+2]='-')∨(x[i+2]='¯')))/naopode  ⍝ comando incluido para o pass
      o negativo
[12] ⍝ os 3 testes iniciais (pPa) foram incluidos porque o comando acima estava
[13] ⍝ fazendo besteira: vetoriza 'A <- A -1' estava gerando 4 tokens e nao 3.
[14] ⍝ correcao em 13/03/12 - P.kantek
[15]  →(x[i+1]≠' ')/naopode
[16] pode:rr←rr,0
[17]  →(i=i←i+1)/t2
[18] mataz:x[i+1]←'!'
[19] naopode:rr←rr,1
[20]  →(i=i←i+1)/t2
[21] vaiz:rr←rr,1
[22]  x←rr/x
[23] ⍝ separa o sinal <-
[24]  →(2≠+/'<-'∈x)/faca
[25]  i←1 ⋄ rr←⍳0
[26] t1:→(i>¯1+⍴x)/vaix
[27]  →((x[i]='<')∧(x[i+1]='-'))/esim
[28]  rr←rr,1
[29]  →(i=i←i+1)/t1
[30] esim:rr←rr,0 1 1 0
[31]  →(i=i←i+2)/t1
[32] vaix:rr←rr,1
[33]  x←rr⌿x
[34] faca:x←'! 'edit x
[35]  r←(~' '=x)⊂x
------------------------------------------------------------
[ 0]  opesq vivo048c n;CORRECAO;EVENTO;aa;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;ql
      inha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL048c  '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:⌿apl2⌿',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA048c←ajusta80 FOLHALA048c
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA048c)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:⌿apl2⌿VIVOBLO1'
```

```
[13]  xk←1 ⋄ resu←0 11⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←169 80⍴' '
[16]  f←FOLHALA048c
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳5]=((1↑⍴f),5)⍴'⍀#005')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[168;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[169;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←traduzcpc048_1a3 caso01
[35]  aa←⎕FX cpc xx
[36]  esse[7+⍳10;]←10 80↑traduzc048 xx
[37]  resp←resp,,⍪aa
[38]  xx←traduzcpc048_1a3 caso02
[39]  aa←⎕FX cpc xx
[40]  esse[17+⍳14;]←14 80↑traduzc048 xx
[41]  resp←resp,,⍪aa
[42]  xx←traduzcpc048_1a3 caso03
[43]  aa←⎕FX cpc xx
[44]  esse[31+⍳16;]←16 80↑traduzc048 xx
[45]  resp←resp,,⍪aa
[46]  xx←traduzcpc048_4a6 caso04
[47]  aa←⎕FX cpc xx
[48]  esse[47+⍳16;]←16 80↑traduzc048 xx
[49]  resp←resp,,⍪aa
[50]  xx←traduzcpc048_4a6 caso05
[51]  aa←⎕FX cpc xx
[52]  esse[63+⍳20;]←20 80↑traduzc048 xx
[53]  resp←resp,,⍪aa
[54]  xx←traduzcpc048_4a6 caso06
[55]  aa←⎕FX cpc xx
[56]  esse[83+⍳24;]←24 80↑traduzc048 xx
[57]  resp←resp,,⍪aa
[58]  xx←traduzcpc048_1a3 caso01
[59]  aa←⎕FX cpc xx
[60]  esse[107+⍳10;]←10 80↑traduzc048 xx
[61]  resp←resp,,⍪aa
[62]  xx←traduzcpc048_1a3 caso02
[63]  aa←⎕FX cpc xx
[64]  esse[117+⍳14;]←14 80↑traduzc048 xx
[65]  resp←resp,,⍪aa
[66]  xx←traduzcpc048_1a3 caso03
[67]  aa←⎕FX cpc xx
[68]  esse[131+⍳16;]←16 80↑traduzc048 xx
[69]  resp←resp,,⍪aa
[70]  xx←traduzcpc048_4a6 caso05
[71]  aa←⎕FX cpc xx
[72]  esse[147+⍳20;]←20 80↑traduzc048 xx
[73]  resp←resp,,⍪aa
[74]  resu←resu,[1]1 11⍴resp
[75]  acuja←(f[;2]='#')/⍳1↑⍴f
```

```
[76]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4 5],' ';]
[77]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[78]  ⍞←(⍕xk←xk+1),'-'
[79]  →testa
[80] fim:upag←(1 0+⍴f)⍴' '
[81]  →(1=≡n)/elafa
[82]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[83]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[84]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←5 0,20⍴6 0)⍕resu
[85]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[86]  →terminando
[87] elafa:aaa←(ylu[;⍳36],'¯-'edit 6 0⍕0 1↓resu)
[88]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[89]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[90] terminando:
[91]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[92]  relat[1↑⍴relat;;]←upag
[93]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[94]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[95]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[96]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo048p n;CORRECAO;EVENTO;aa;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;ql
      inha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL048p  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA048p←ajusta80 FOLHALA048p
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA048p)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 11⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←148 80⍴' '
[16]  f←FOLHALA048p
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳5]=((1↑⍴f),5)⍴'\#005')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[147;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[148;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←traduzcpc048_1a3 caso01
[35]  aa←⎕FX cpc xx
[36]  esse[7+⍳8;]←8 80↑traduzpy048 xx
[37]  resp←resp,,⍋aa
[38]  xx←traduzcpc048_1a3 caso02
```

```
[39]  aa←⍞FX cpc xx
[40]  esse[15+⍳11;]←11 80↑traduzpy048 xx
[41]  resp←resp,,⊂aa
[42]  xx←traduzcpc048_1a3 caso03
[43]  aa←⍞FX cpc xx
[44]  esse[26+⍳12;]←12 80↑traduzpy048 xx
[45]  resp←resp,,⊂aa
[46]  xx←traduzcpc048_4a6 caso04
[47]  aa←⍞FX cpc xx
[48]  esse[38+⍳13;]←13 80↑traduzpy048 xx
[49]  resp←resp,,⊂aa
[50]  xx←traduzcpc048_4a6 caso05
[51]  aa←⍞FX cpc xx
[52]  esse[51+⍳16;]←16 80↑traduzpy048 xx
[53]  resp←resp,,⊂aa
[54]  xx←traduzcpc048_4a6 caso06
[55]  aa←⍞FX cpc xx
[56]  esse[67+⍳19;]←19 80↑traduzpy048 xx
[57]  resp←resp,,⊂aa
[58]  xx←traduzcpc048_4a6 caso06
[59]  aa←⍞FX cpc xx
[60]  esse[86+⍳19;]←19 80↑traduzpy048 xx
[61]  resp←resp,,⊂aa
[62]  xx←traduzcpc048_4a6 caso05
[63]  aa←⍞FX cpc xx
[64]  esse[105+⍳16;]←16 80↑traduzpy048 xx
[65]  resp←resp,,⊂aa
[66]  xx←traduzcpc048_4a6 caso04
[67]  aa←⍞FX cpc xx
[68]  esse[121+⍳13;]←13 80↑traduzpy048 xx
[69]  resp←resp,,⊂aa
[70]  xx←traduzcpc048_1a3 caso03
[71]  aa←⍞FX cpc xx
[72]  esse[134+⍳12;]←12 80↑traduzpy048 xx
[73]  resp←resp,,⊂aa
[74]  resu←resu,[1]1 11⍴resp
[75]  acuja←(f[;2]='#')/⍳1↑⍴f
[76]  f[acuja;⍳80]←esse[⊂,f[acuja;3 4 5],' ';]
[77]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[78]  ⍞←(⍕xk←xk+1),'-'
[79]  →testa
[80] fim:upag←(1 0+⍴f)⍴' '
[81]  →(1=≡n)/elafa
[82]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[83]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[84]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←5 0,20⍴6 0)⍕resu
[85]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[86]  →terminando
[87] elafa:aaa←(⍳lu[;⍳36],'¯-'edit 6 0⍕0 1↓resu)
[88]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[89]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[90] terminando:
[91]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[92]  relat[1↑⍴relat;;]←upag
[93]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[94]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[95]  lixonol←⍞EX 2 10⍴'quantos   matriz    '
[96]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo049

```
[ 0]  r←gera049d;alfa;te;re
[ 1]  r←2ρ0
[ 2]  te←15 78ρ' '
[ 3]  alfa←10?99
[ 4]  alfa←alfa[⍋alfa]
[ 5]  →(1=?2)/oba1
[ 6]  alfa[?ρalfa]←85+?14
[ 7] oba1:
[ 8]  te[1;]←78↑'1. ',⍕alfa
[ 9]  re←res1d alfa
[10]  alfa←3 3ρ?9ρ9
[11]  alfa[1;1]←alfa[1;1]×2+?5
[12]  alfa[2;2]←alfa[2;2]×2+?5
[13]  alfa[3;3]←alfa[3;3]×2+?5
[14]  te[2 3 4;]←3 78ρ(3 3ρ'2. ',6ρ' '),(3 0⍕alfa),3 66ρ' '
[15]  re←re,res2d alfa
[16]  alfa←0.1×100+?10ρ100
[17]  alfa[5?10]←10+?5ρ10
[18]  te[5;]←78↑'3.',trunca 5 1⍕alfa
[19]  re←re,res3d alfa
[20]  alfa←(5+?3)?1000
[21]  te[6;]←78↑'4. ',⍕alfa
[22]  re←re,res4d alfa
[23]  alfa←(5,(7+?3))ρ55?999
[24]  te[6+⍳5;]←5 78↑(5 3ρ'5. ',12ρ' '),(4 0⍕alfa),5 100ρ' '
[25]  re←re,res5d alfa
[26]  alfa←(5+?13),4+?7
[27]  te[12;]←78↑'6. ',⍕alfa
[28]  re←re,res6d alfa
[29]  alfa←(7+?4)?999
[30]  te[13;]←78↑'7. ',⍕alfa
[31]  re←re,res7d alfa
[32]  →(1=?2)/oba2
[33]  alfa←PRIMO1[?1000]
[34]  →junta
[35] oba2:
[36]  alfa←PRIMO1[?1000]+2
[37] junta:te[14;]←78↑'8. ',⍕alfa
[38]  re←re,primo alfa
[39]  alfa←?15ρ11
[40]  te[15;]←78↑'9. ',⍕alfa
[41]  re←re,res9d alfa
[42]  r[1]←⊂te
[43]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←geracaso049b;x;alfa;res;med
[ 1]  r←2ρ0
[ 2]  x←8 70ρ' '
[ 3]  res←8ρ0
[ 4]  alfa←5?999
[ 5]  x[1;]←1 70ρ70↑5 0⍕alfa
[ 6]  res[1]←+/alfa
[ 7]  alfa←(5+4)?999
[ 8]  x[2;]←1 70ρ70↑4 0⍕alfa
[ 9]  res[2]←±10 1⍕(+/alfa)÷ρalfa
[10]  alfa←(5+4)?999
[11]  x[3;]←1 70ρ70↑4 0⍕alfa
[12]  med←(+/alfa)÷ρalfa
[13]  res[3]←±10 1⍕((+/(alfa-med)*2)÷ρalfa)*0.5
[14]  alfa←(150+?7ρ150)÷10
[15]  x[4;]←1 70ρ70↑6 1⍕alfa
```

```
[16]  res[4]←(⌈/alfa)-⌊/alfa
[17]  alfa←2000+(3+?5)?1600
[18]  x[5;]←1 70⍴70↑5 0⍕alfa
[19]  res[5]←⌈/alfa
[20]  alfa←IJUCA[?1↑⍴IJUCA;]
[21]  x[6;]←1 70⍴70↑,alfa
[22]  res[6]←+/(alfa='P')∨alfa='p'
[23]  alfa←100+?900
[24]  x[7;]←1 70⍴70↑⍕alfa
[25]  →(alfa≥500)/da20
[26]  →(alfa≥200)/da15
[27] nada:res[7]←⍎10 2⍕alfa
[28]  →junta
[29] da15:res[7]←⍎10 2⍕alfa×0.85
[30]  →junta
[31] da20:res[7]←⍎10 2⍕alfa×0.8
[32] junta:
[33]  alfa←200+?3⍴700
[34]  x[8;]←1 70⍴70↑5 0⍕alfa
[35]  res[8]←⍎10 2⍕×/alfa÷1000
[36]  r[1]←⊂x
[37]  r[2]←⊂res
-------------------------------------------------------------
[ 0]  r←primo x;y;d
[ 1]  y←⌈x*0.5
[ 2]  d←2
[ 3]  r←1
[ 4] t1:→(d>y)/aca
[ 5]  →(0=d|x)/naoe
[ 6]  d←d+1
[ 7]  →t1
[ 8] aca:→0
[ 9] naoe:r←0
[10]  →0
-------------------------------------------------------------
[ 0]  r←tam quebra lin;i
[ 1] ⍝ esta funcao quebra a linha lin em linhas de tamanho tam, sem cortar nada - pkantek
      mai/12
[ 2]  r←(0,tam)⍴' '
[ 3]  i←tam
[ 4]  →(i>⍴lin)/erro
[ 5] t1:→(lin[i]=' ')/oba
[ 6]  i←i-1
[ 7]  →(i<2)/erro
[ 8]  →t1
[ 9] oba:r←r,[1](1,tam)⍴tam↑lin[⍳i]
[10]  lin←i↓lin
[11]  i←tam
[12]  →((⍴lin)>tam)/t1
[13]  r←r,[1](1,tam)⍴tam↑lin
[14]  →0
[15] erro:'nao foi possivel cortar'
[16]  r←0 0⍴' '
-------------------------------------------------------------
[ 0]  r←res1d x;j;sent
[ 1]  j←2
[ 2]  sent←1
[ 3] t1:→(j>⍴x)/fim
[ 4]  →(x[j]≥x[j-1])/oba
[ 5]  sent←0
[ 6] oba:
[ 7]  j←j+1
[ 8]  →t1
```

```
[ 9] fim:r←sent
-------------------------------------------------------------
[0]  r←res2d x
[1]  r←(x[1;1]×x[2;2]×x[3;3])+(x[1;2]×x[2;3]×x[3;1])+x[1;3]×x[2;1]×x[3;2]
[2]  r←r-(x[3;1]×x[2;2]×x[1;3])+(x[3;2]×x[2;3]×x[1;1])+x[3;3]×x[2;1]×x[1;2]
-------------------------------------------------------------
[0]  r←res3d x
[1]  r←x⍳⌊/x
-------------------------------------------------------------
[0]  r←res4d x;y;z;i;soma
[1]  y←x[⍒x]
[2]  z←+⍀y
[3]  i←1
[4] t1:→((z[i]÷+/y)>0.5)/fim
[5]  i←i+1
[6]  →t1
[7] fim:r←i-1
-------------------------------------------------------------
[ 0]  r←res5d x;i;j;m;max;maxi;maxj
[ 1]  max←-9999999
[ 2]  i←2
[ 3] t1:→(i>¯1+1↑⍴x)/fim
[ 4]  j←2
[ 5] t2:→(j>¯1+1↓⍴x)/oba
[ 6]  m←x[i-1;j-1]+x[i-1;j]+x[i-1;j+1]
[ 7]  m←m+x[i;j-1]+x[i;j]+x[i;j+1]
[ 8]  m←m+x[i+1;j-1]+x[i+1;j]+x[i+1;j+1]
[ 9]  →(m≤max)/soma
[10]  max←m
[11]  maxi←i
[12]  maxj←j
[13] soma:j←j+1
[14]  →t2
[15] oba:i←i+1
[16]  →t1
[17] fim:r←maxi,maxj
-------------------------------------------------------------
[0]  r←res6d x;qt
[1]  qt←x[1]
[2] t1:
[3]  →(0=x[2]|qt)/acabou
[4]  qt←qt+x[1]
[5]  →t1
[6] acabou:r←qt
-------------------------------------------------------------
[ 0]  r←res7d x;qt;i
[ 1]  qt←0
[ 2]  i←2
[ 3] t1:→(i>¯1+⍴x)/fim
[ 4]  →((x[i]<x[i-1])∨(x[i]<x[i+1]))/soma
[ 5]  qt←qt+1
[ 6] soma:
[ 7]  i←i+1
[ 8]  →t1
[ 9] fim:r←qt
-------------------------------------------------------------
[0]  r←res9d x;i;z
[1]  z←11⍴0
[2]  i←1
[3] t1:→(i>⍴x)/fim
[4]  z[x[i]]←z[x[i]]+1
[5]  i←i+1
[6]  →t1
```

```
[7] fim:r←zι⌈/z
-------------------------------------------------------------
[ 0]  r←trunca x;i
[ 1]  r←''
[ 2]  i←1
[ 3] t1:→(i≥ρx)/fim
[ 4]  →(2=+/x[i+0 1]='.0')/tira
[ 5]  r←r,x[i]
[ 6]  i←i+1
[ 7]  →t1
[ 8] tira:i←i+2
[ 9]  →t1
[10] fim:
[11]  →(i>ρx)/0
[12]  r←r,x[i]
-------------------------------------------------------------
[ 0]  opesq vivo049b n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL049b  '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎ιn
[ 9]  ylu←n grupo ylu
[10]  FOLHALA049b←ajusta80 FOLHALA049b
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALA049b)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 9ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←17 80ρ' '
[16]  f←FOLHALA049b
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOb←1.05
[20]  esse[4;]←80↑ylu[xk;ι6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;ι4]=((1↑ρf),4)ρ'⍀#05')/ι1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+ι30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[16;ι10]←'@',esse[6;5+ι3],esse[4;1+ι5],'@'
[32]  esse[17;]←80↑esse[6;5+ι3],'-',esse[4;1+ι5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracaso049b
[35]  esse[7+ι8;]←8 80↑⊃xx[1]
[36]  resp←resp,⊃xx[2]
[37]  resu←resu,[1]1 9ρresp
[38]  acuja←(f[;2]='#')/ι1↑ρf
[39]  f[acuja;ι80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'⍀clearpage'
[41]  ⍞←(⍎xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+ρf)ρ' '
[44]  →(1=≡n)/elafa
```

```
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳¯7++/lixo1]←(lixo1←5 0 8 0 8 1 8 1 8 1 8 0 3 0 8 2 8 2)⍋resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],8 0 8 1 8 1 8 1 8 0 3 0 8 2 8 2⍋0 1↓resu)
[51]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo049d n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL049d  '
[ 6]  dhx←2 10⍴('05/05/0005'⍋+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍋+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍋⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA049d←ajusta80 FOLHALA049d
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA049d)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 11⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←24 80⍴' '
[16]  f←FOLHALA049d
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍋VERSAOd←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍋resp←xk),' ',opesq
[31]  esse[23;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[24;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera049d
[35]  esse[7+⍳15;]←15 80↑⊃xx[1]
[36]  resp←resp,⊃xx[2]
[37]  resu←resu,[1]1 11⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⍞←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
```

```
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←5 0 3 0 6 0 6 0 6 0 5 0 3 0 6 0 6 0 3 0 6 0
      )⍕resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],'¯-'edit(2↓lixo1)⍕0 1↓resu)
[51]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
----------------------------------------------------------------
[ 0]  opesq vivo049p n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL049p  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA049p←ajusta80 FOLHALA049p
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA049p)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 9⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←17 80⍴' '
[16]  f←FOLHALA049p
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAO⍴←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[16;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[17;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracaso049b
[35]  esse[7+⍳8;]←8 80↑⊃xx[1]
[36]  resp←resp,⊃xx[2]
[37]  resu←resu,[1]1 9⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⍞←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
```

```
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳¯7++/lixo1]←(lixo1←5 0 8 0 8 1 8 1 8 1 8 0 3 0 8 2 8 2)⍋resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],8 0 8 1 8 1 8 1 8 0 3 0 8 2 8 2⍋0 1↓resu)
[51]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[ 0]  opesq vivo049q n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL049q  '
[ 6]  dhx←2 10⍴('05/05/0005'⍋+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍋+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍋⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA049q←ajusta80 FOLHALA049q
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA049q)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 11⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←24 80⍴' '
[16]  f←FOLHALA049q
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍋VERSAOq←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍋resp←xk),' ',opesq
[31]  esse[23;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[24;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera049d
[35]  esse[7+⍳15;]←15 80↑⊃xx[1]
[36]  resp←resp,⊃xx[2]
[37]  resu←resu,[1]1 11⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⍞←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
```

```
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯'-'edit(lixo1←5 0 3 0 6 0 6 0 6 0 5 0 3 0 6 0 6 0 3 0 6 0
      )⍕resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],'¯'-'edit 3 0 6 0 6 0 6 0 5 0 3 0 6 0 6 0 3 0 6 0⍕0 1↓resu)
[51]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo050

```
[ 0]  r←cria050;i;j;x;y;z;ry;rz;rqu;r1;te
[ 1]  x←geraxad
[ 2]  y←0 3⍴0
[ 3]  z←0 3⍴0
[ 4]  i←1
[ 5] t1:→(i>8)/fim
[ 6]  j←1
[ 7] t2:→(j>8)/oba
[ 8]  →((0=|x[i;j])∨(5=|x[i;j])∨(6=|x[i;j]))/soma
[ 9]  →(1=|x[i;j])/eum
[10]  y←y,[1]1 3⍴x[i;j],¯1+i,j
[11]  →soma
[12] eum:
[13]  z←z,[1]1 3⍴x[i;j],¯1+i,j
[14] soma:j←j+1
[15]  →t2
[16] oba:
[17]  i←i+1
[18]  →t1
[19] fim:r←2⍴0
[20]  ry←y[2?1↑⍴y;]
[21]  rz←z[?1↑⍴z;]
[22]  rqu←ry,[1]rz
[23]  rqu←rqu[3?3;]
[24]  r1←1↑(rqu[1;2 3]+1)resoxad x
[25]  r1←r1,1↑(rqu[2;2 3]+1)resoxad x
[26]  r1←r1,1↑(rqu[3;2 3]+1)resoxad x
[27]  te←10 70↑'¯'-'edit 0 numera2 x
[28]  te←te,[1]1 70⍴70↑3 0⍕rqu[1;2 3]
[29]  te←te,[1]1 70⍴70↑3 0⍕rqu[2;2 3]
[30]  te←te,[1]1 70⍴70↑3 0⍕rqu[3;2 3]
[31]  r[1]←⊂te
[32]  r[2]←⊂r1
------------------------------------------------------------
[  0]  r←geraxad;c;cc;l;ponde;t;xx
[  1]  t←8 8⍴0
[  2]  t[1;5]←¯6 ⋄ t[8;5]←6
[  3] ⍝ alocacao de peoes
[  4]  c←1
[  5] t1:→(c>8)/f1
[  6]  ponde←(3 4 5 6)[2?4]
```

```
[  7]  ponde←ponde[4ponde]
[  8]  cc←?4
[  9]  →(cc=1)/peaofora
[ 10]  →(cc=2)/peaoparado
[ 11]  →(cc>2)/peaoanda
[ 12] peaofora:→pbra
[ 13] peaoparado:t[2;c]←¯1
[ 14]  →pbra
[ 15] peaoanda:t[ponde[1];c]←¯1
[ 16] pbra:
[ 17]  cc←?4
[ 18]  →(cc=1)/peabfora
[ 19]  →(cc=2)/peabparado
[ 20]  →(cc>2)/peabanda
[ 21] peabfora:→psom
[ 22] peabparado:t[7;c]←1
[ 23]  →psom
[ 24] peabanda:t[ponde[2];c]←1
[ 25] psom:
[ 26]  c←c+1
[ 27]  →t1
[ 28] f1:
[ 29] A colocacao das torres
[ 30]  cc←?4
[ 31]  →(cc=1)/torn1fora
[ 32]  →(cc=2)/torn1parado
[ 33]  →(cc>2)/torn1anda
[ 34] torn1fora:→tor2n
[ 35] torn1parado:t[1;1]←¯2
[ 36]  →tor2n
[ 37] torn1anda:xx←t[l←?8;c←?8]
[ 38]  →(xx≠0)/torn1anda
[ 39]  t[l;c]←¯2
[ 40] tor2n:
[ 41]  cc←?4
[ 42]  →(cc=1)/torn2fora
[ 43]  →(cc=2)/torn2parado
[ 44]  →(cc>2)/torn2anda
[ 45] torn2fora:→tor1b
[ 46] torn2parado:t[1;8]←¯2
[ 47]  →tor1b
[ 48] torn2anda:xx←t[l←?8;c←?8]
[ 49]  →(xx≠0)/torn2anda
[ 50]  t[l;c]←¯2
[ 51] tor1b:
[ 52]  cc←?4
[ 53]  →(cc=1)/torb1fora
[ 54]  →(cc=2)/torb1parado
[ 55]  →(cc>2)/torb1anda
[ 56] torb1fora:→tor2b
[ 57] torb1parado:t[8;1]←2
[ 58]  →tor2b
[ 59] torb1anda:xx←t[l←?8;c←?8]
[ 60]  →(xx≠0)/torb1anda
[ 61]  t[l;c]←2
[ 62] tor2b:
[ 63]  cc←?4
[ 64]  →(cc=1)/torb2fora
[ 65]  →(cc=2)/torb2parado
[ 66]  →(cc>2)/torb2anda
[ 67] torb2fora:→cav1n
[ 68] torb2parado:t[8;8]←2
[ 69]  →cav1n
```

```
[ 70] torb2anda:xx←t[l←?8;c←?8]
[ 71]  →(xx≠0)/torb2anda
[ 72]  t[l;c]←2
[ 73] cav1n:
[ 74] ⍝ colocacao dos cavalos
[ 75]  cc←?4
[ 76]  →(cc=1)/cavn1fora
[ 77]  →(cc=2)/cavn1parado
[ 78]  →(cc>2)/cavn1anda
[ 79] cavn1fora:→cav2n
[ 80] cavn1parado:t[1;2]←¯3
[ 81]  →cav2n
[ 82] cavn1anda:xx←t[l←?8;c←?8]
[ 83]  →(xx≠0)/cavn1anda
[ 84]  t[l;c]←¯3
[ 85] cav2n:
[ 86]  cc←?4
[ 87]  →(cc=1)/cavn2fora
[ 88]  →(cc=2)/cavn2parado
[ 89]  →(cc>2)/cavn2anda
[ 90] cavn2fora:→cav1b
[ 91] cavn2parado:t[1;7]←¯3
[ 92]  →cav1b
[ 93] cavn2anda:xx←t[l←?8;c←?8]
[ 94]  →(xx≠0)/cavn2anda
[ 95]  t[l;c]←¯3
[ 96] cav1b:
[ 97]  cc←?4
[ 98]  →(cc=1)/cavb1fora
[ 99]  →(cc=2)/cavb1parado
[100]  →(cc>2)/cavb1anda
[101] cavb1fora:→cav2b
[102] cavb1parado:t[8;2]←3
[103]  →cav2b
[104] cavb1anda:xx←t[l←?8;c←?8]
[105]  →(xx≠0)/cavb1anda
[106]  t[l;c]←3
[107] cav2b:
[108]  cc←?4
[109]  →(cc=1)/cavb2fora
[110]  →(cc=2)/cavb2parado
[111]  →(cc>2)/cavb2anda
[112] cavb2fora:→bis1n
[113] cavb2parado:t[8;2]←3
[114]  →bis1n
[115] cavb2anda:xx←t[l←?8;c←?8]
[116]  →(xx≠0)/cavb2anda
[117]  t[l;c]←3
[118] ⍝ colocacao dos bispos
[119] bis1n:
[120]  cc←?4
[121]  →(cc=1)/bisn1fora
[122]  →(cc=2)/bisn1parado
[123]  →(cc>2)/bisn1anda
[124] bisn1fora:→bis2n
[125] bisn1parado:t[1;3]←¯4
[126]  →bis2n
[127] bisn1anda:xx←t[l←?8;c←?8]
[128]  →((t[2;2]=¯1)∧(t[2;4]=¯1))/bisn1parado
[129]  →((xx≠0)∨(1=2|c+8×l-1))/bisn1anda
[130]  t[l;c]←¯4
[131] bis2n:
[132]  cc←?4
```

```
[133]  →(cc=1)/bisn2fora
[134]  →(cc=2)/bisn2parado
[135]  →(cc>2)/bisn2anda
[136] bisn2fora:→bis1b
[137] bisn2parado:t[1;6]←¯4
[138]  →bis1b
[139] bisn2anda:xx←t[l←?8;c←?8]
[140]  →((t[2;5]=¯1)∧(t[2;7]=¯1))/bisn2parado
[141]  →((xx≠0)∨(0=2|c+8×l-1))/bisn2anda
[142]  t[l;c]←¯4
[143] bis1b:
[144]  cc←?4
[145]  →(cc=1)/bisb1fora
[146]  →(cc=2)/bisb1parado
[147]  →(cc>2)/bisb1anda
[148] bisb1fora:→bis2b
[149] bisb1parado:t[8;3]←4
[150]  →bis2b
[151] bisb1anda:xx←t[l←?8;c←?8]
[152]  →((t[7;2]=1)∧(t[7;4]=1))/bisb1parado
[153]  →((xx≠0)∨(1=2|c+8×l-1))/bisb1anda
[154]  t[l;c]←4
[155] bis2b:
[156]  cc←?4
[157]  →(cc=1)/bisb2fora
[158]  →(cc=2)/bisb2parado
[159]  →(cc>2)/bisb2anda
[160] bisb2fora:→damn
[161] bisb2parado:t[8;6]←4
[162]  →damn
[163] bisb2anda:xx←t[l←?8;c←?8]
[164] ⍝ l,c
[165]  →((t[7;5]=1)∧(t[7;7]=1))/bisb2parado
[166]  →((xx≠0)∨(0=2|c+8×l-1))/bisb2anda
[167]  t[l;c]←4
[168] ⍝ movimento da dama
[169] damn:
[170]  cc←?4
[171]  →(cc=1)/damnfora
[172]  →(cc=2)/damnparado
[173]  →(cc>2)/damnanda
[174] damnfora:→damb
[175] damnparado:t[1;4]←¯5
[176]  →damb
[177] damnanda:xx←t[l←?8;c←?8]
[178]  →((t[2;3]=¯1)∧(t[2;4]=¯1)∧(t[2;5]=¯1))/damnparado
[179]  →(xx≠0)/damnanda
[180]  t[l;c]←¯5
[181] damb:
[182]  cc←?4
[183]  →(cc=1)/dambfora
[184]  →(cc=2)/dambparado
[185]  →(cc>2)/dambanda
[186] dambfora:→acabou
[187] dambparado:t[8;4]←5
[188]  →acabou
[189] dambanda:xx←t[l←?8;c←?8]
[190]  →((t[7;3]=1)∧(t[7;4]=1)∧(t[7;5]=1))/dambparado
[191]  →(xx≠0)/dambanda
[192]  t[l;c]←5
[193] acabou:r←t
-------------------------------------------------------------
[ 0]  r←montaskak t;zeros;i;j;lin
```

```
[ 1]  r←'\fenboard{'
[ 2]  i←1
[ 3] t1:→(i>8)/fi1
[ 4]  j←1
[ 5]  zeros←0
[ 6]  lin←''
[ 7] t2:→(j>8)/soma
[ 8]  →(t[i;j]=0)/soz
[ 9]  →(zeros=0)/okz
[10]  lin←lin,⍕zeros
[11]  zeros←0
[12] okz:
[13]  lin←lin,traduz t[i;j]
[14] mais:
[15]  j←j+1
[16]  →t2
[17] soz:zeros←zeros+1
[18]  →mais
[19] soma:
[20]  →(zeros=0)/oba
[21]  lin←lin,⍕zeros
[22]  zeros←0
[23] oba:
[24]  →(i=1)/fui
[25]  r←r,'/'
[26] fui:
[27]  r←r,lin
[28]  i←i+1
[29]  →t1
[30] fi1:r←r,' w - - 0 1}'
-------------------------------------------------------------
[0]  r←orig numera2 oper;aa;⎕IO
[1]  ⎕IO←orig
[2]  r←4 0⍕oper
[3]  r←(((3 0⍕(((1↑poper),1)⍴⍳1↑poper)),[⎕IO+1]'|'),[⎕IO+1]' '),r
[4]  r←((1,aa)⍴'     ',4 0⍕⍳1↓poper),[⎕IO]((1,aa←5+4×1↓poper)⍴'   +',100⍴'-'),[⎕IO]r
-------------------------------------------------------------
[0]  r←orig numera3 oper;aa;⎕IO
[1]  ⎕IO←orig
[2]  r←4 0⍕oper
[3]  r←(((3 0⍕(((1↑poper),1)⍴⍳1↑poper)),[⎕IO+1]⎕AV[179+⎕IO]),[⎕IO+1]' '),r
[4]  r←((1,aa)⍴'     ',4 0⍕⍳1↓poper),[⎕IO]((1,aa←5+4×1↓poper)⍴'   ',⎕AV[218+⎕IO],100⍴⎕AV[
      196+⎕IO]),[⎕IO]r
-------------------------------------------------------------
[0]  r←orig numera4 oper;aa;⎕IO
[1]  ⎕IO←orig
[2]  r←4 0⍕oper
[3]  r←(((3 0⍕(((1↑poper),1)⍴⍳1↑poper)),[⎕IO+1]⎕AV[186+⎕IO]),[⎕IO+1]' '),r
[4]  r←((1,aa)⍴'     ',4 0⍕⍳1↓poper),[⎕IO]((1,aa←5+4×1↓poper)⍴'   ',⎕AV[201+⎕IO],100⍴⎕AV[
      205+⎕IO]),[⎕IO]r
-------------------------------------------------------------
[  0]  r←onde resoxad x;c;casas;mater;l;lt;ct
[  1]  l←onde[1] ⋄ c←onde[2]
[  2]  →(x[l;c]>0)/pos
[  3]  x←⌽[1]-x ⍝ invertendo e negando, para tratar todo mundo igual (como positivo)
[  4]  l←9-l
[  5] pos:
[  6]  →((x[l;c]≠0)∧(6≠|x[l;c]))/vai
[  7]  r←0 0
[  8]  →0
[  9] vai:
[ 10]  casas←0 ⋄ mater←0
[ 11]  →(x[l;c]=1)/peao
```

```
[ 12]  →(x[l;c]=2)/torre
[ 13]  →(x[l;c]=3)/cavalo
[ 14]  →(x[l;c]=4)/bispo
[ 15]  →(x[l;c]=5)/dama
[ 16]  →(x[l;c]=6)/rei
[ 17] peao:→(x[l-1;c]<0)/tt1
[ 18]  →((l≠7)∨((x[6;c]≠0)∨(x[5;c]≠0)))/eum
[ 19]  casas←1
[ 20] eum:casas←casas+1
[ 21] tt1:
[ 22]  →(c=1)/p1
[ 23]  →(x[l-1;c-1]≥0)/p1
[ 24]  mater←mater+|x[l-1;c-1]
[ 25]  casas←casas+1
[ 26] p1:
[ 27]  →(c=8)/p2
[ 28]  →(x[l-1;c+1]≥0)/p2
[ 29]  mater←mater+|x[l-1;c+1]
[ 30]  casas←casas+1
[ 31] p2:→final  ⍝ nao tem en-passant
[ 32] torre:
[ 33]  lt←l-1
[ 34] t1:→(lt<1)/g2
[ 35]  →(x[lt;c]≠0)/r1
[ 36]  casas←casas+1
[ 37]  lt←lt-1
[ 38]  →t1
[ 39] r1:→(x[lt;c]>0)/g2
[ 40]  mater←mater+|x[lt;c]
[ 41]  casas←casas+1
[ 42] g2:
[ 43]  lt←l+1
[ 44] t4:→(lt>8)/g4
[ 45]  →(x[lt;c]≠0)/p4
[ 46]  casas←casas+1
[ 47]  lt←lt+1
[ 48]  →t4
[ 49] p4:→(x[lt;c]>0)/g4
[ 50]  mater←mater+|x[lt;c]
[ 51]  casas←casas+1
[ 52] g4:
[ 53]  ct←c-1
[ 54] t5:→(ct<1)/g5
[ 55]  →(x[l;ct]≠0)/p5
[ 56]  casas←casas+1
[ 57]  ct←ct-1
[ 58]  →t5
[ 59] p5:→(x[l;ct]>0)/g5
[ 60]  mater←mater+|x[l;ct]
[ 61]  casas←casas+1
[ 62] g5:
[ 63]  ct←c+1
[ 64] t9:→(ct>8)/g6
[ 65]  →(x[l;ct]≠0)/p6
[ 66]  casas←casas+1
[ 67]  ct←ct+1
[ 68]  →t9
[ 69] p6:→(x[l;ct]>0)/g6
[ 70]  mater←mater+|x[l;ct]
[ 71]  casas←casas+1
[ 72] g6:
[ 73]  →final
[ 74] cavalo:
```

```
[ 75]  →((l<3)∨(c<2))/k1
[ 76]  →(x[l-2;c-1]>0)/k1
[ 77]  →(x[l-2;c-1]=0)/sk1
[ 78]  mater←mater+|x[l-2;c-1]
[ 79] sk1:casas←casas+1
[ 80] k1:
[ 81]  →((l<3)∨(c>7))/k2
[ 82]  →(x[l-2;c+1]>0)/k2
[ 83]  →(x[l-2;c+1]=0)/sk2
[ 84]  mater←mater+|x[l-2;c+1]
[ 85] sk2:casas←casas+1
[ 86] k2:
[ 87]  →((l<2)∨(c>6))/k3
[ 88]  →(x[l-1;c+2]>0)/k3
[ 89]  →(x[l-1;c+2]=0)/sk3
[ 90]  mater←mater+|x[l-1;c+2]
[ 91] sk3:casas←casas+1
[ 92] k3:
[ 93]  →((l>7)∨(c>6))/k4
[ 94]  →(x[l+1;c+2]>0)/k4
[ 95]  →(x[l+1;c+2]=0)/sk4
[ 96]  mater←mater+|x[l+1;c+2]
[ 97] sk4:casas←casas+1
[ 98] k4:
[ 99]  →((l>6)∨(c>7))/k5
[100]  →(x[l+2;c+1]>0)/k5
[101]  →(x[l+2;c+1]=0)/sk5
[102]  mater←mater+|x[l+2;c+1]
[103] sk5:casas←casas+1
[104] k5:
[105]  →((l>6)∨(c<2))/k6
[106]  →(x[l+2;c-1]>0)/k6
[107]  →(x[l+2;c-1]=0)/sk6
[108]  mater←mater+|x[l+2;c-1]
[109] sk6:casas←casas+1
[110] k6:
[111]  →((l>7)∨(c<3))/k7
[112]  →(x[l+1;c-2]>0)/k7
[113]  →(x[l+1;c-2]=0)/sk7
[114]  mater←mater+|x[l+1;c-2]
[115] sk7:casas←casas+1
[116] k7:
[117]  →((l<2)∨(c<3))/k8
[118]  →(x[l-1;c-2]>0)/k8
[119]  →(x[l-1;c-2]=0)/sk8
[120]  mater←mater+|x[l-1;c-2]
[121] sk8:casas←casas+1
[122] k8:
[123]  →final
[124] bispo:
[125] j1:lt←l-1 ⋄ ct←c-1
[126] j2:→((lt<1)∨(ct<1))/j4
[127]  →(x[lt;ct]≠0)/j3
[128]  casas←casas+1
[129]  lt←lt-1 ⋄ ct←ct-1
[130]  →j2
[131] j3:
[132]  →(x[lt;ct]>0)/j4
[133]  mater←mater+|x[lt;ct] ⋄ casas←casas+1
[134] j4:
[135]  lt←l-1 ⋄ ct←c+1
[136] j5:→((lt<1)∨(ct>8))/j7
[137]  →(x[lt;ct]≠0)/j6
```

```
[138]  casas←casas+1
[139]  lt←lt-1 ◊ ct←ct+1
[140]  →j5
[141] j6:
[142]  →(x[lt;ct]>0)/j7
[143]  mater←mater+|x[lt;ct] ◊ casas←casas+1
[144] j7:
[145]  lt←l+1 ◊ ct←c+1
[146] j8:→((lt>8)∨(ct>8))/j10
[147]  →(x[lt;ct]≠0)/j9
[148]  casas←casas+1
[149]  lt←lt+1 ◊ ct←ct+1
[150]  →j8
[151] j9:
[152]  →(x[lt;ct]>0)/j10
[153]  mater←mater+|x[lt;ct] ◊ casas←casas+1
[154] j10:
[155]  lt←l+1 ◊ ct←c-1
[156] j11:→((lt>8)∨(ct<1))/j13
[157]  →(x[lt;ct]≠0)/j12
[158]  casas←casas+1
[159]  lt←lt+1 ◊ ct←ct-1
[160]  →j11
[161] j12:
[162]  →(x[lt;ct]>0)/j13
[163]  mater←mater+|x[lt;ct] ◊ casas←casas+1
[164] j13:
[165]  →final
[166] dama:
[167]  lt←l-1
[168] dt1:→(lt<1)/dg2
[169]  →(x[lt;c]≠0)/dr1
[170]  casas←casas+1
[171]  lt←lt-1
[172]  →dt1
[173] dr1:→(x[lt;c]>0)/dg2
[174]  mater←mater+|x[lt;c]
[175]  casas←casas+1
[176] dg2:
[177]  lt←l+1
[178] dt4:→(lt>8)/dg4
[179]  →(x[lt;c]≠0)/dp4
[180]  casas←casas+1
[181]  lt←lt+1
[182]  →dt4
[183] dp4:→(x[lt;c]>0)/dg4
[184]  mater←mater+|x[lt;c]
[185]  casas←casas+1
[186] dg4:
[187]  ct←c-1
[188] dt5:→(ct<1)/dg5
[189]  →(x[l;ct]≠0)/dp5
[190]  casas←casas+1
[191]  ct←ct-1
[192]  →dt5
[193] dp5:→(x[l;ct]>0)/dg5
[194]  mater←mater+|x[l;ct]
[195]  casas←casas+1
[196] dg5:
[197]  ct←c+1
[198] dt9:→(ct>8)/dg6
[199]  →(x[l;ct]≠0)/dp6
[200]  casas←casas+1
```

```
[201]  ct←ct+1
[202]  →dt9
[203] dp6:→(x[l;ct]>0)/dg6
[204]  mater←mater+|x[l;ct]
[205]  casas←casas+1
[206] dg6:
[207] dj1:lt←l-1 ⋄ ct←c-1
[208] dj2:→((lt<1)∨(ct<1))/dj4
[209]  →(x[lt;ct]≠0)/dj3
[210]  casas←casas+1
[211]  lt←lt-1 ⋄ ct←ct-1
[212]  →dj2
[213] dj3:
[214]  →(x[lt;ct]>0)/dj4
[215]  mater←mater+|x[lt;ct] ⋄ casas←casas+1
[216] dj4:
[217]  lt←l-1 ⋄ ct←c+1
[218] dj5:→((lt<1)∨(ct>8))/dj7
[219]  →(x[lt;ct]≠0)/dj6
[220]  casas←casas+1
[221]  lt←lt-1 ⋄ ct←ct+1
[222]  →dj5
[223] dj6:
[224]  →(x[lt;ct]>0)/dj7
[225]  mater←mater+|x[lt;ct] ⋄ casas←casas+1
[226] dj7:
[227]  lt←l+1 ⋄ ct←c+1
[228] dj8:→((lt>8)∨(ct>8))/dj10
[229]  →(x[lt;ct]≠0)/dj9
[230]  casas←casas+1
[231]  lt←lt+1 ⋄ ct←ct+1
[232]  →dj8
[233] dj9:
[234]  →(x[lt;ct]>0)/dj10
[235]  mater←mater+|x[lt;ct] ⋄ casas←casas+1
[236] dj10:
[237]  lt←l+1 ⋄ ct←c-1
[238] dj11:→((lt>8)∨(ct<1))/dj13
[239]  →(x[lt;ct]≠0)/dj12
[240]  casas←casas+1
[241]  lt←lt+1 ⋄ ct←ct-1
[242]  →dj11
[243] dj12:
[244]  →(x[lt;ct]>0)/dj13
[245]  mater←mater+|x[lt;ct] ⋄ casas←casas+1
[246] dj13:
[247]  →final
[248] rei:'erro: mandou olhar o rei'
[249]  →0
[250] final:r←casas,mater
-------------------------------------------------------------
[ 0]  opesq vivo050c n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL050c  '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
```

```
[10]  FOLHALA050c←ajusta80 FOLHALA050c
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA050c)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 4⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←22 80⍴' '
[16]  f←FOLHALA050c
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.06
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[21;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[22;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←cria050
[35]  esse[7+⍳13;]←13 80↑⊃xx[1]
[36]  resp←resp,,⊃xx[2]
[37]  resu←resu,[1]1 4⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⍞←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 5 0)⍕resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],5 0⍕0 1↓resu)
[51]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo050p n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL050p  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
```

```
[10]  FOLHALA050p←ajusta80 FOLHALA050p
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA050p)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 4⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←22 80⍴' '
[16]  f←FOLHALA050p
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[21;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[22;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←cria050
[35]  esse[7+⍳13;]←13 80↑⊃xx[1]
[36]  resp←resp,,⊃xx[2]
[37]  resu←resu,[1]1 4⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⍞←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 5 0)⍕resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],5 0⍕0 1↓resu)
[51]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo051

```
[0]  AVISO
[1]  'Tem um 051h incompleto... O que fazer ?'
-------------------------------------------------------------
[0]  r←gera3np1;x;mai;zz;qtd
[1]  r←(500+2?500)
[2]  x←r
[3]  x←x[⍋x]
[4]  r←r,reso3np1 x
```

```
------------------------------------------------------------
[ 0]  r←gerac1;a;li;ls;ct;z;i;k;aa
[ 1]  a←120?200
[ 2]  li←20+?60
[ 3]  ls←130+?60
[ 4]  ct←+/(a≥li)∧(a<ls)
[ 5]  z←('559,'⍕10 12⍴a)
[ 6]  z[10;48]←' '  ⍝ mata a ultima virgula
[ 7]  k←juntat z
[ 8]  r←3⍴0
[ 9]  r[1]←⊂k
[10]  r[2]←⊂li,ls
[11]  r[3]←⊂ct
[12]  →0
[13] deu:'deu xabu'
------------------------------------------------------------
[ 0]  r←gerac2;a;b;dp;ds;i;k
[ 1]  a←12 12⍴?144⍴120
[ 2]  dp←0 ⋄ ds←0
[ 3]  i←1
[ 4] t1:→(i>12)/fi
[ 5]  dp←dp+a[i;i]
[ 6]  ds←ds+a[13-i;i]
[ 7]  i←i+1
[ 8]  →t1
[ 9] fi:
[10]  b←'559,'⍕a
[11]  k←juntatc b
[12]  r←2⍴0
[13]  r[1]←⊂k
[14]  r[2]←⊂dp-ds
------------------------------------------------------------
[ 0]  r←gerac3;a;amp;b;c;ct;li;lis;z1
[ 1]  li←?(30⍴250),(30⍴200),(30⍴150),30⍴100
[ 2]  →(1=?2)/coroa
[ 3] cara:li←⊖li
[ 4] coroa:
[ 5]  a←12 10⍴0.1×100+li
[ 6]  b←,a
[ 7]  amp←(⌈/b)-⌊/b
[ 8]  z1←amp÷4
[ 9]  lis←(⌊/b),z1+⌊/b
[10]  ct←+/(b≥lis[1])∧(b≤lis[2])
[11]  c←'559.5,'⍕a
[12]  c[12;60]←' '
[13]  r←2⍴0
[14]  r[1]←⊂juntat c
[15]  r[2]←⊂ct
------------------------------------------------------------
[0]  r←gerac4;ct;ict;me;y;z
[1]  z←?195⍴180
[2]  ict←z∈PRIMO200
[3]  me←(+/ict/z)÷+/ict
[4]  y←'559,'⍕15 13⍴z
[5]  y[15;52]←' '
[6]  r←2⍴0
[7]  r[1]←⊂juntat y
[8]  r[2]←⊂me
------------------------------------------------------------
[ 0]  r←gerac5;z;cts;i;y
[ 1]  z←?390⍴150
[ 2]  cts←150⍴0
[ 3]  i←1
```

```
[ 4] t1:→(i>390)/fi
[ 5]  cts[z[i]]←cts[z[i]]+1
[ 6]  i←i+1
[ 7]  →t1
[ 8] fi:y←'559,'⍕30 13⍴z
[ 9]  r←2⍴0
[10]  r[1]←⊂juntatc y
[11]  r[2]←c+/cts=1
-------------------------------------------------------------
[ 0]  r←geracaso051c nome;f1;f2;f3;f4;f5;lixo;quica;resp;z1;z2;z3;z4;z5
[ 1]  z1←gerac1
[ 2]  f1←12 79⍴' '
[ 3]  f1[⍳10;]←trocacolcha 10 79⍴⊃z1[1]
[ 4]  f1[11;]←79⍴⍕(⊃z1[2])[1]
[ 5]  f1[12;]←79⍴⍕(⊃z1[2])[2]
[ 6]  resp←⊃z1[3]
[ 7]  z2←gerac2
[ 8]  f2←trocacolcha 12 79⍴⊃z2[1]
[ 9]  resp←resp,⊃z2[2]
[10]  z3←gerac3
[11]  f3←trocacolcha 12 79⍴⊃z3[1]
[12]  resp←resp,⊃z3[2]
[13]  z4←gerac4
[14]  f4←trocacolcha 15 79⍴⊃z4[1]
[15]  resp←resp,⊃z4[2]
[16]  z5←gerac5
[17]  f5←trocacolcha 30 79⍴⊃z5[1]
[18]  resp←resp,⊃z5[2]
[19]  quica←f1,[1]f2,[1]f3,[1]f4,[1]f5
[20]  lixo←quica ⎕FM'c:\apl2\',nome
[21]  r←2⍴0
[22]  r[1]←⊂quica
[23]  r[2]←⊂resp
-------------------------------------------------------------
[ 0]  r←geracaso051d nome;aux;c1;c2;c3;c4;c5;c6;c7;c8;c9;ca;eixo;i;lixo;n;pri;r1;r2;r3;r4;
      r5;r6;r7;r8;r9;ra;z
[ 1]  z←0 70⍴' '
[ 2]  c1←(70+?30)?999
[ 3]  r1←(⌈/c1)-⌊/c1
[ 4]  aux←(4 0⍕c1),200⍴' '
[ 5]  i←1
[ 6] t1:→(5=+/' '=5⍴aux)/p2
[ 7]  z←z,[1]1 70⍴70⍴'F01 ',60⍴aux
[ 8]  aux←60↓aux
[ 9]  →t1
[10] p2:
[11]  c2←(70+?30)?999
[12]  r2←+/0=7|c2
[13]  aux←(4 0⍕c2),200⍴' '
[14]  i←1
[15] t2:→(5=+/' '=5⍴aux)/p3
[16]  z←z,[1]1 70⍴70⍴'F02 ',60⍴aux
[17]  aux←60↓aux
[18]  →t2
[19] p3:
[20]  c3←(70+?30)?999
[21]  r3←testa3d c3
[22]  aux←(4 0⍕c3),200⍴' '
[23]  i←1
[24] t3:→(5=+/' '=5⍴aux)/p4
[25]  z←z,[1]1 70⍴70⍴'F03 ',60⍴aux
[26]  aux←60↓aux
[27]  →t3
```

```
[28] p4:
[29]  c4←(70+?30)?999
[30]  r4←testa4d c4
[31]  aux←(4 0⍕c4),200⍴' '
[32]  i←1
[33] t4:→(5=+/' '=5↑aux)/p5
[34]  z←z,[1]1 70⍴70↑'F04 ',60↑aux
[35]  aux←60↓aux
[36]  →t4
[37] p5:
[38]  c5←625?999
[39]  r5←testa5d c5
[40]  aux←(4 0⍕c5),200⍴' '
[41]  i←1
[42] t5:→(5=+/' '=5↑aux)/p6
[43]  z←z,[1]1 70⍴70↑'F05 ',60↑aux
[44]  aux←60↓aux
[45]  →t5
[46] p6:
[47]  c6←4+(n←70+?60)×4
[48]  r6←n*2
[49]  z←z,[1]1 70⍴70↑'F06 ',⍕c6
[50] p7:
[51]  c7←1000+?1000
[52]  z←z,[1]1 70⍴70↑'F07 ',('ABCDEFGH'[eixo←?8]),' ',⍕c7
[53]  eixo←eixo-1
[54] t7:→(eixo=8|c7)/blz7
[55]  c7←c7+1
[56]  →t7
[57] blz7:r7←c7
[58] p8:
[59]  c8←(40+?200)?999
[60]  r8←testa8d c8
[61]  aux←(4 0⍕c8),200⍴' '
[62]  i←1
[63] t8:→(5=+/' '=5↑aux)/p9
[64]  z←z,[1]1 70⍴70↑'F08 ',60↑aux
[65]  aux←60↓aux
[66]  →t8
[67] p9:
[68]  pri←PRIMO[2+⍳8]
[69]  pri←pri[2?8]
[70]  c9←(×/pri)?999
[71]  r9←testa9d c9
[72]  aux←(4 0⍕c9),200⍴' '
[73]  i←1
[74] t9:→(5=+/' '=5↑aux)/pa
[75]  z←z,[1]1 70⍴70↑'F09 ',60↑aux
[76]  aux←60↓aux
[77]  →t9
[78] pa:
[79]  ca←(BACANA[(10+?10)?⍴BACANA]),99?1995
[80]  ra←+/ca∈BACANA
[81]  aux←(5 0⍕ca),200⍴' '
[82]  i←1
[83] ta:→(6=+/' '=6↑aux)/pb
[84]  z←z,[1]1 70⍴70↑'F10 ',60↑aux
[85]  aux←60↓aux
[86]  →ta
[87] pb:
[88]  lixo←z ΔFM'c:\apl2\',nome
[89]  r←r1,r2,r3,r4,r5,r6,r7,r8,r9,ra
-------------------------------------------------------------
```

```
[ 0]  r←geracaso051e nome;cida;erme;joia;lixo;macn;msga;poke;r1;r2;r3;r4;r5;r6;r7;subm;va;
      z
[ 1]  erme←gerae1
[ 2]  r1←resoe1 erme
[ 3] ⍝-----------------------
[ 4]  macn←gerae2
[ 5]  va←50+?50
[ 6]  r2←va resoe2 macn
[ 7] ⍝--------------------------
[ 8]  msga←'ABCDEFGHIJKLMNOPQRSTUVWXYZ'[?2000⍴26]
[ 9]  subm←'ABCDEFGHIJKLMNOPQRSTUVWXYZ'[?(6+?5)⍴26]
[10]  →(1=?2)/oba
[11]  msga[(1000+?700)+⍳⍴subm]←subm
[12] oba:
[13]  r3←1↑(subm≤msga)/⍳2000
[14]  →(r3=0)/feito
[15]  r3←r3-1
[16] feito:
[17]  msga←50 40⍴msga
[18] ⍝--------------------------
[19]  joia←gerae4
[20]  r4←resoe4 joia
[21] ⍝--------------------------
[22]  cida←gerae5
[23]  r5←resoe5 cida
[24] ⍝--------------------------
[25]  poke←gerae6
[26]  r6←resoe6 poke
[27] ⍝----------------------------
[28]  z←150 50↑5 0⍪erme
[29]  z←z,[1]200 50↑5 0⍪macn
[30]  z←z,[1]50 50↑msga
[31]  z←z,[1]200 50↑5 0⍪joia
[32]  z←z,[1]100 50↑5 0⍪100 1⍴cida
[33]  z←z,[1]200 50↑5 0⍪poke
[34]  lixo←z ⎕FM'c:\apl2\',nome
[35]  r←3⍴0
[36]  r[1]←⊂va
[37]  r[2]←⊂subm
[38]  r[3]←⊂r1,r2[2],r3,r4,r5,r6
------------------------------------------------------------
[ 0]  r←geracaso051p nome;f1;f2;f3;f4;f5;lixo;quica;resp;z1;z2;z3;z4;z5
[ 1]  z1←gerac1
[ 2]  f1←12 79⍴' '
[ 3]  f1[⍳10;]←10 79↑⊃z1[1]
[ 4]  f1[11;]←79↑⍪(⊃z1[2])[1]
[ 5]  f1[12;]←79↑⍪(⊃z1[2])[2]
[ 6]  resp←⊃z1[3]
[ 7]  z2←gerac2
[ 8]  f2←12 79↑⊃z2[1]
[ 9]  resp←resp,⊃z2[2]
[10]  z3←gerac3
[11]  f3←12 79↑⊃z3[1]
[12]  resp←resp,⊃z3[2]
[13]  z4←gerac4
[14]  f4←15 79↑⊃z4[1]
[15]  resp←resp,⊃z4[2]
[16]  z5←gerac5
[17]  f5←30 79↑⊃z5[1]
[18]  resp←resp,⊃z5[2]
[19]  quica←f1,[1]f2,[1]f3,[1]f4,[1]f5
[20]  lixo←quica ⎕FM'c:\apl2\',nome
[21]  r←2⍴0
```

```
[22]  r[1]←⊂quica
[23]  r[2]←⊂resp
-------------------------------------------------------------
[0]  r←gerae1
[1]  r←⍉2 150⍴(?150⍴5),?150⍴20
-------------------------------------------------------------
[0]  r←gerae2
[1]  r←200 3⍴?600⍴4
-------------------------------------------------------------
[ 0]  r←gerae4;joia;i
[ 1]  joia←200 10⍴?2000⍴10
[ 2]  i←1
[ 3] t1:→(i>200)/fim
[ 4]  joia[i;]←joia[i;⍒joia[i;]]
[ 5]  →(1=?3)/arruma
[ 6]  i←i+1
[ 7]  →t1
[ 8] arruma:
[ 9]  joia[i;]←joia[i;]×?5
[10]  i←i+1
[11]  →t1
[12] fim:r←joia×100
-------------------------------------------------------------
[ 0]  r←gerae5;i;x
[ 1]  r←100⍴0
[ 2]  x←900+?100
[ 3]  i←2
[ 4]  r[1]←x
[ 5] t1:→(i>100)/fim
[ 6]  r[i]←x+¯17+?30
[ 7]  x←r[i]
[ 8]  i←i+1
[ 9]  →t1
[10] fim:
-------------------------------------------------------------
[ 0]  r←gerae6;i;xx
[ 1]  r←200 5⍴0
[ 2]  i←1
[ 3] t1:→(i>200)/fim
[ 4]  xx←gerapoker
[ 5]  xx←xx[⍋xx]
[ 6]  r[i;]←xx
[ 7]  i←i+1
[ 8]  →t1
[ 9] fim:
-------------------------------------------------------------
[0]  r←gerafibo
[1] novo:r←1000 10000+?10000 100000000
[2]  r←r[⍋r]
[3]  →(r[1]>r[2])/novo
-------------------------------------------------------------
[ 0]  r←gerapoker;kk;zz
[ 1]  →(1=?2)/blz
[ 2]  r←52⍴⍳13
[ 3]  r←r[5?52]
[ 4]  →0
[ 5] blz:→(1=?4)/seq
[ 6]  kk←(⍳13),⍳13
[ 7]  zz←20⍴kk[(?13)+⍳5]
[ 8]  r←zz[5?20]
[ 9]  →0
[10] seq:
[11]  zz←⍳13
```

```
[12]  zz←zz[(?5)+⍳5]
[13]  zz←zz[5?5]
[14]  r←zz
------------------------------------------------------------
[ 0]  r←juntat x;aa;i;kk;tam
[ 1]  i←1 ⋄ kk←((1↑⍴x),50)⍴' '
[ 2]  tam←0
[ 3] t1:→(i>1↑⍴x)/aca
[ 4]  aa←(x[i;]≠' ')/x[i;]
[ 5]  tam←tam⌈⍴aa
[ 6]  →(i≠1↑⍴x)/oba
[ 7]  kk[i;]←50↑aa,']'
[ 8]  →soma
[ 9] oba:
[10]  kk[i;]←50↑aa
[11] soma:
[12]  i←i+1
[13]  →t1
[14] aca:
[15]  →(tam>50)/deu
[16]  r←((1↑⍴x),tam)↑kk
[17]  →0
[18] deu:'deu xabu'
[19]  tam
------------------------------------------------------------
[ 0]  r←juntatc x;aa;i;kk;tam;vv
[ 1]  i←1 ⋄ kk←((1↑⍴x),60)⍴' '
[ 2]  tam←0
[ 3] t1:→(i>1↑⍴x)/aca
[ 4]  aa←(x[i;]≠' ')/x[i;]
[ 5]  tam←tam⌈2+⍴aa
[ 6]  →(i≠1↑⍴x)/oba
[ 7]  vv←'[',59↑(¯1↓aa),']]'
[ 8]  →junta
[ 9] oba:
[10]  vv←'[',59↑(¯1↓aa),'],'
[11] junta:
[12]  kk[i;]←vv
[13]  i←i+1
[14]  →t1
[15] aca:
[16]  →(tam>55)/deu
[17]  r←((1↑⍴x),tam)↑kk
[18]  →0
[19] deu:'deu xabu'
[20]  tam
------------------------------------------------------------
[ 0]  r←qtdivisb x;qt;i
[ 1]  qt←2
[ 2]  i←2
[ 3] t1:→(i≥x)/fim
[ 4]  →(0=i|x)/soma
[ 5] uha:
[ 6]  i←i+1
[ 7]  →t1
[ 8] soma:
[ 9]  qt←qt+1
[10]  →uha
[11] fim:r←qt
------------------------------------------------------------
[ 0]  r←qtdivisd x;qt;i
[ 1]  qt←2
[ 2]  i←2
```

```
[ 3] t1:→(i≥x)/fim
[ 4]  →(0=i|x)/soma
[ 5] uha:
[ 6]  i←i+1
[ 7]  →t1
[ 8] soma:
[ 9]  qt←qt+1
[10]  →uha
[11] fim:r←qt
-------------------------------------------------------------
[ 0]  r←resoe1 am;x;y;i;ant
[ 1]  x←0
[ 2]  y←0
[ 3]  i←1
[ 4]  ant←1
[ 5] t1:→(i>150)/fim
[ 6]  →(am[i;1]=1)/eum
[ 7]  →(am[i;1]=2)/edo
[ 8]  →(am[i;1]=3)/etr
[ 9]  →(am[i;1]=4)/equ
[10]  →(am[i;1]=5)/eci
[11] erro:'deu xabu'
[12]  →0
[13] eum:y←y+am[i;2]
[14]  ant←1
[15]  →junta
[16] edo:x←x+am[i;2]
[17]  ant←2
[18]  →junta
[19] etr:y←y-am[i;2]
[20]  ant←3
[21]  →junta
[22] equ:x←x-am[i;2]
[23]  ant←4
[24]  →junta
[25] eci:
[26]  →(ant=1)/eum
[27]  →(ant=2)/edo
[28]  →(ant=3)/etr
[29]  →(ant=4)/equ
[30] junta:
[31]  i←i+1
[32]  →t1
[33] fim:
[34]  r←⌊((x*2)+(y*2))*0.5
-------------------------------------------------------------
[ 0]  r←valor resoe2 ma;i;vi
[ 1]  RES2←0 30⍴' '
[ 2]  vi←valor
[ 3]  i←1
[ 4] t1:→((i≥201)∨(valor<3))/foi
[ 5]  →((ma[i;1]=1)∧(ma[i;2]=1)∧(ma[i;3]=1))/g20
[ 6]  →((ma[i;1]=2)∧(ma[i;2]=2)∧(ma[i;3]=2))/g15
[ 7]  →((ma[i;1]=3)∧(ma[i;2]=3)∧(ma[i;3]=3))/g5
[ 8]  →((ma[i;1]=4)∧(ma[i;2]=4)∧(ma[i;3]=4))/g3
[ 9]  →((ma[i;1]=4)∧(ma[i;2]=4))/g2
[10]  →(ma[i;1]=4)/g1
[11]  valor←valor-3
[12] soma:
[13]  RES2←RES2,[1]1 30⍴30↑(⍕ma[i;]),'  Restam ',(⍕valor)
[14]  i←i+1
[15]  →t1
[16] g20:
```

```
[17]  valor←valor+20
[18]  →soma
[19] g15:
[20]  valor←valor+15
[21]  →soma
[22] g5:
[23]  valor←valor+5
[24]  →soma
[25] g3:
[26]  valor←valor+3
[27]  →soma
[28] g2:
[29]  valor←valor+2
[30]  →soma
[31] g1:
[32]  valor←valor+1
[33]  →soma
[34] foi:
[35]  →(i=201)/volta200
[36]  r←vi,i-1
[37]  →0
[38] volta200:
[39]  r←vi,200
-------------------------------------------------------------
[ 0]  r←resoe4 jo;ctd;i;al1;al2;al3;al4;al5;al6;al7;al8;al9;be1;be2;be3;be4;be5;be6;be7;be
      8;be9
[ 1]  ctd←0
[ 2]  i←1
[ 3] t1:→(i>200)/fim
[ 4]  al1←jo[i;1]
[ 5]  be1←+/jo[i;1+⍳9]
[ 6]  al2←+/jo[i;⍳2]
[ 7]  be2←+/jo[i;2+⍳8]
[ 8]  al3←+/jo[i;⍳3]
[ 9]  be3←+/jo[i;3+⍳7]
[10]  al4←+/jo[i;⍳4]
[11]  be4←+/jo[i;4+⍳6]
[12]  al5←+/jo[i;⍳5]
[13]  be5←+/jo[i;5+⍳5]
[14]  al6←+/jo[i;⍳6]
[15]  be6←+/jo[i;6+⍳4]
[16]  al7←+/jo[i;⍳7]
[17]  be7←+/jo[i;7+⍳3]
[18]  al8←+/jo[i;⍳8]
[19]  be8←+/jo[i;8+⍳2]
[20]  al9←+/jo[i;⍳9]
[21]  be9←jo[i;10]
[22]  →((al1=be1)∨(al2=be2)∨(al3=be3)∨(al4=be4)∨(al5=be5)∨(al6=be6)∨(al7=be7)∨(al8=be8)∨(a
      l9=be9))/sim
[23] nao:
[24]  i←i+1
[25]  →t1
[26] sim:
[27]  ctd←ctd+1
[28]  →nao
[29] fim:
[30]  r←ctd
-------------------------------------------------------------
[ 0]  r←resoe5 x;i;alt;ctd
[ 1]  alt←x[1]
[ 2]  i←2
[ 3]  ctd←1
[ 4] t1:→(i>100)/fim
```

```
[ 5]  →(x[i]≤alt)/suba
[ 6]  i←i+1
[ 7]  →t1
[ 8] suba:
[ 9]  alt←x[i]
[10]  ctd←ctd+1
[11]  i←i+1
[12]  →t1
[13] fim:r←ctd
-------------------------------------------------------------
[0]  r←resoe6 x;pon;i
[1]  i←1
[2]  pon←0
[3] t1:→(i>1↑⍴x)/fim
[4]  pon←pon+resolvepoker x[i;]
[5]  i←i+1
[6]  →t1
[7] fim:r←pon
-------------------------------------------------------------
[ 0]  r←resofibo z;x;y;a1;a2;a3;ct
[ 1]  x←z[1]
[ 2]  y←z[2]
[ 3]  a1←1
[ 4]  a2←1
[ 5]  ct←0
[ 6] novo:a3←a1+a2
[ 7]  →(a3≥x)/eagora
[ 8]  a1←a2
[ 9]  a2←a3
[10]  →novo
[11] eagora:→(a3>y)/acabou
[12]  a1←a2
[13]  a2←a3
[14]  ct←ct+1
[15]  →novo
[16] acabou:r←ct
-------------------------------------------------------------
[ 0]  r←resolvepoker x
[ 1]  x←x[⍋x]
[ 2] ⍝ 'x=',⍕x
[ 3]  →((x[5]=x[4]+1)∧(x[4]=x[3]+1)∧(x[3]=x[2]+1)∧(x[2]=x[1]+1))/seq
[ 4]  →(((x[4]=x[3])∧(x[3]=x[2])∧(x[2]=x[1]))∨((x[5]=x[4])∧(x[4]=x[3])∧(x[3]=x[2])))/quad
[ 5]  →((x[5]=x[4])∧(x[3]=x[2])∧(x[2]=x[1]))/full1
[ 6]  →((x[5]=x[4])∧(x[4]=x[3])∧(x[2]=x[1]))/full5
[ 7]  →(((x[5]=x[4])∧(x[4]=x[3]))∨((x[4]=x[3])∧(x[3]=x[2]))∨((x[3]=x[2])∧(x[2]=x[1])))/tri
      n
[ 8]  →((x[5]=x[4])∧(x[3]=x[2]))/du53
[ 9]  →((x[5]=x[4])∧(x[2]=x[1]))/du52
[10]  →((x[4]=x[3])∧(x[2]=x[1]))/du42
[11]  →(x[5]=x[4])/u5
[12]  →(x[4]=x[3])/u4
[13]  →(x[3]=x[2])/u3
[14]  →(x[2]=x[1])/u2
[15]  r←0
[16]  →0
[17] seq:
[18] ⍝ 'seq'
[19]  r←x[1]+200
[20]  →0
[21] quad:
[22] ⍝ 'qua'
[23]  r←x[3]+180
[24]  →0
```

```
[25] full1:
[26] ⍝ 'full1'
[27]  r←x[1]+160
[28]  →0
[29] full5:
[30] ⍝ 'full5'
[31]  r←x[5]+160
[32]  →0
[33] trin:
[34] ⍝ 'trin'
[35]  r←x[3]+140
[36]  →0
[37] du53:
[38] ⍝ 'du53'
[39]  r←(3×x[5])+(2×x[3])+20
[40]  →0
[41] du52:
[42] ⍝ 'du52'
[43]  r←(3×x[5])+(2×x[2])+20
[44]  →0
[45] du42:
[46] ⍝ 'du42'
[47]  r←(3×x[4])+(2×x[2])+20
[48]  →0
[49] u5:r←x[5]
[50]  →0
[51] u4:r←x[4]
[52]  →0
[53] u3:r←x[3]
[54]  →0
[55] u2:r←x[2]
[56]  →0
-------------------------------------------------------------
[ 0]  r←testa3d x;i;ct
[ 1]  i←2
[ 2]  ct←0
[ 3] t1:→(i=⍴x)/fim
[ 4]  →((x[i-1]<x[i])∧(x[i]<x[i+1]))/soma
[ 5] oba:i←i+1
[ 6]  →t1
[ 7] soma:ct←ct+1
[ 8]  →oba
[ 9] fim:r←ct
-------------------------------------------------------------
[0]  r←testa4d x;qt;i
[1]  qt←(⍴x)⍴0
[2]  i←1
[3] t1:→(i>⍴x)/fim
[4]  qt[i]←qtdivisd x[i]
[5]  i←i+1
[6]  →t1
[7] fim:
[8]  r←(+/,qt>4)-(+/,qt<4)
-------------------------------------------------------------
[ 0]  r←testa5d x;t;y;i;prin;sec
[ 1]  →(625≠⍴x)/erro
[ 2]  y←25 25⍴x
[ 3]  i←1
[ 4]  prin←0
[ 5]  sec←0
[ 6] t1:→(i>25)/fim
[ 7]  prin←prin+y[i;i]
[ 8]  sec←sec+y[i;(25-i)+1]
```

```
[ 9]  i←i+1
[10]  →t1
[11] fim:r←|prin-sec
[12]  →0
[13] erro:'matriz nao pode ser 25 x 25'
-------------------------------------------------------------
[0]  r←testa8d x;t;y;mai
[1]  t←⌊(⍴x)*0.5
[2]  y←(t,t)⍴x
[3]  mai←⌈/,y
[4]  r←(∨/[1]mai=y)/⍳t
-------------------------------------------------------------
[ 0]  r←testa9d x;pri;a;b;qtl;iqtl;i;mai
[ 1]  pri←PRIMO[2+⍳8]
[ 2]  a←(⍴x)÷pri
[ 3]  a←(a=⌊a)/a
[ 4]  a←a[⍋a]
[ 5]  b←a⍴x
[ 6]  qtl←+/[2]0=3|b
[ 7]  i←1
[ 8]  mai←-9999
[ 9] t1:→(i>1↑⍴b)/fim
[10]  →(qtl[i]≥mai)/troca
[11] soma:i←i+1
[12]  →t1
[13] troca:
[14]  mai←qtl[i]
[15]  iqtl←i
[16]  →soma
[17] fim:r←iqtl
-------------------------------------------------------------
[0]  r←trocacolcha x;y
[1]  y←'[{'edit x
[2]  r←']}'edit y
-------------------------------------------------------------
[ 0]  opesq vivo051c n;CORRECAO;EVENTO;S;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qli
      nha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL051c  '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ S←⍎n[5]
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n ⋄ S←'0'
[ 9]  ylu←n grupo ylu
[10]  FOLHALA051c←ajusta80 FOLHALA051c
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA051c)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 6⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←91 80⍴' '
[16]  f←FOLHALA051c
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOc←1.02
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
```

```
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[90;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[91;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracaso051c'C051',S,('00'⍕xk),'.myd'
[35]  esse[89;]←1 80⍴80↑'C051',S,('00'⍕xk),'.myd'
[36]  esse[7+⍳81;]←81 80↑⊃xx[1]
[37]  resp←resp,,⊃xx[2]
[38]  resu←resu,[1]1 6⍴resp
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[42]  ⍞←(⍕xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳¯2++/lixo1]←'¯-'edit(lixo1←5 0 10 0 6 0 6 0 8 2 6 0)⍕resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],'¯-'edit 6 0 6 0 6 0 8 2 6 0⍕0 1↓resu)
[52]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo051d n;CORRECAO;EVENTO;S;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qli
      nha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL051d  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ S←⍕n[5]
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n ⋄ S←'0'
[ 9]  ylu←n grupo ylu
[10]  FOLHALA051d←ajusta80 FOLHALA051d
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA051d)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 11⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALA051d
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOd←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
```

```
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracaso051d'F051',S,('00'⍕xk),'.myd'
[35]  esse[8;]←1 80⍴80↑'F051',S,('00'⍕xk),'.myd'
[36]  resp←resp,,xx
[37]  resu←resu,[1]1 11⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⌸,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⎕←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0,18⍴7 0)⍕resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],7 0⍕0 1↓resu)
[51]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo051e n;CORRECAO;EVENTO;S;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qli
      nha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL051e  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ S←n[4 5]
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n ⋄ S←'00'
[ 9]  ylu←n grupo ylu
[10]  FOLHALA051e←ajusta80 FOLHALA051e
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA051e)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 7⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALA051e
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOe←1.06
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
```

```
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracaso051e'F51E',S,('00'⍕xk),'.myd'
[35]  esse[8;]←1 80⍴80↑5 0⍕⊃xx[1]
[36]  esse[9;]←1 80⍴80↑⊃xx[2]
[37]  esse[10;]←1 80⍴80↑'F51E',S,('00'⍕xk),'.myd'
[38]  resp←resp,,⊃xx[3]
[39]  resu←resu,[1]1 7⍴resp
[40]  acuja←(f[;2]='#')/⍳1↑⍴f
[41]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[42]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[43]  ⎕←(⍕xk←xk+1),'-'
[44]  →testa
[45] fim:upag←(1 0+⍴f)⍴' '
[46]  →(1=≡n)/elafa
[47]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[48]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[49]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 5 0 5 0 5 0 7 0)⍕resu
[50]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[51]  →terminando
[52] elafa:aaa←(ylu[;⍳36],7 0⍕0 1↓resu)
[53]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[54]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[55] terminando:
[56]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[57]  relat[1↑⍴relat;;]←upag
[58]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[59]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[60]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[61]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo051h n;CORRECAO;EVENTO;S;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qli
      nha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL051h  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ S←n[4 5]
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n ⋄ S←'00'
[ 9]  ylu←n grupo ylu
[10]  FOLHALA051h←ajusta80 FOLHALA051h
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA051h)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 7⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALA051h
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOh←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
```

```
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34] ⍝ xx←geracaso051h 'F51E',S,('OO'⍕xk),'.myd'
[35] ⍝ esse[8;]←1 80⍴80↑5 0⍕⊃xx[1]
[36] ⍝ esse[9;]←1 80⍴80↑⊃xx[2]
[37] ⍝ esse[10;]←1 80⍴80↑'F51E',S,('OO'⍕xk),'.myd'
[38] ⍝ resp←resp,,⊃xx[3]
[39]  resu←resu,[1]1 7⍴resp
[40]  acuja←(f[;2]='#')/⍳1↑⍴f
[41]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[42]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[43]  ⍞←(⍕xk←xk+1),'-'
[44]  →testa
[45] fim:upag←(1 0+⍴f)⍴' '
[46]  →(1=≡n)/elafa
[47]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[48]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[49]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 5 0 5 0 5 0 7 0)⍕resu
[50]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[51]  →terminando
[52] elafa:aaa←(ylu[;⍳36],7 0⍕0 1↓resu)
[53]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[54]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[55] terminando:
[56]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[57]  relat[1↑⍴relat;;]←upag
[58]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[59]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[60]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[61]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo051p n;CORRECAO;EVENTO;S;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qli
      nha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL051p  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ S←⍕n[5]
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n ⋄ S←'0'
[ 9]  ylu←n grupo ylu
[10]  FOLHALA051p←ajusta80 FOLHALA051p
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA051p)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 6⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←91 80⍴' '
[16]  f←FOLHALA051p
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOp←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
```

```
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'↖#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[90;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[91;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracaso051p'C051',S,('00'⍕xk),'.myd'
[35]  esse[89;]←1 80⍴80↑'C051',S,('00'⍕xk),'.myd'
[36]  esse[7+⍳81;]←81 80↑⊃xx[1]
[37]  resp←resp,,⊃xx[2]
[38]  resu←resu,[1]1 6⍴resp
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'↖clearpage'
[42]  ⎕←(⍕xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'↖begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳¯2++/lixo1]←'¯-'edit(lixo1←5 0 10 0 6 0 6 0 8 2 6 0)⍕resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'↖end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],'¯-'edit 6 0 6 0 6 0 8 2 6 0⍕0 1↓resu)
[52]  lixonol←aaa ΔFM('c:↖apl2↖',((~⍷∧↖⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'↖end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol ΔFM'c:↖apl2↖',((~⍷∧↖⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:↖apl2↖',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo052

```
[ 0]  r←caso1 alfa;h;j;k;n;z;z1;zaux
[ 1]  z←alfa[1]
[ 2]  n←alfa[2]
[ 3]  k←alfa[3]
[ 4]  h←0
[ 5]  z1←z
[ 6] t1:→(z1>1000)/fim
[ 7]  zaux←z
[ 8]  h←h+n
[ 9]  j←1
[10] t7:→(j>zaux)/t1
[11] t2:→(2=?2)/coroa
[12] cara:z1←z1-1
[13]  →t8
[14] coroa:
[15]  z1←z1+k
[16]  →t8
[17] t8:j←j+1
```

```
[18]  →t7
[19] fim:
[20]  r←h÷24
-------------------------------------------------------------
[ 0]  r←caso2 x;com;nota;moedas;troco
[ 1]  com←x[1]×100
[ 2]  nota←x[2]×100
[ 3]  moedas←6⍴0
[ 4]  troco←nota-com
[ 5] t1:→(troco<100)/prox1
[ 6]  moedas[1]←moedas[1]+1
[ 7]  troco←troco-100
[ 8]  →t1
[ 9] prox1:
[10]  →(troco<50)/prox2
[11]  moedas[2]←moedas[2]+1
[12]  troco←troco-50
[13]  →prox1
[14] prox2:
[15]  →(troco<25)/prox3
[16]  moedas[3]←moedas[3]+1
[17]  troco←troco-25
[18]  →prox2
[19] prox3:
[20]  →(troco<10)/prox4
[21]  moedas[4]←moedas[4]+1
[22]  troco←troco-10
[23]  →prox3
[24] prox4:
[25]  →(troco<5)/prox5
[26]  moedas[5]←moedas[5]+1
[27]  troco←troco-5
[28] prox5:
[29]  moedas[6]←moedas[6]+troco
[30]  r←+/moedas
-------------------------------------------------------------
[0]  r←caso3 x;y;z;p
[1]  p←100 150 100 100 80 50
[2]  y←x÷p
[3] ⍎ y
[4]  z←⌊/y
[5] ⍎ z
[6] ⍎ z×p
[7]  r←0.001×+/z×p
-------------------------------------------------------------
[ 0]  r←lim caso4 x;n;d;menor;can;oldd;oldn
[ 1]  n←1
[ 2]  x←⍋x
[ 3]  menor←9999999
[ 4] t1:→(n>lim)/fim
[ 5]  d←1
[ 6] t2:→(d>lim)/soman
[ 7]  can←n÷d
[ 8]  →((|can-x)<menor)/muda
[ 9]  d←d+1
[10]  →t2
[11] muda:
[12]  menor←|can-x
[13]  oldn←n
[14]  oldd←d
[15]  d←d+1
[16]  →t2
[17] soman:
```

```
[18]  n←n+1
[19]  →t1
[20] fim:r←oldn,oldd
------------------------------------------------------------
[0]  vezes execu1 vetor;q;s
[1]  q←0
[2]  s←0
[3] t1:→(q>vezes)/fim
[4]  s←s+caso1 vetor
[5]  q←q+1
[6]  →t1
[7] fim:s÷vezes
------------------------------------------------------------
[0]  r←geracaso1
[1]  r←3ρ0
[2]  r[1]←2+?10
[3]  r[2]←14+?10
[4]  r[3]←3+?8
------------------------------------------------------------
[ 0]  r←geracaso2
[ 1]  r←2ρ0
[ 2]  r[1]←(800+?900)÷100
[ 3]  →(r[1]>10)/vinte
[ 4] dez:
[ 5]  r[2]←10
[ 6]  →0
[ 7] vinte:
[ 8]  →(1=?2)/cinq
[ 9]  r[2]←20
[10]  →0
[11] cinq:
[12]  r[2]←50
------------------------------------------------------------
[0]  r←geracaso3
[1]  r←6ρ0
[2]  r[1]←600+100×?9
[3]  r[2]←750+100×?15
[4]  r[3]←150+50×?9
[5]  r[4]←150+50×?8
[6]  r[5]←100+50×?8
[7]  r[6]←1000+100×?5
------------------------------------------------------------
[0]  r←geracaso4;x
[1]  x←(⍕1+?7),'.'
[2] t1:→(9<ρx)/fim
[3]  x←x,⍕?9
[4]  →t1
[5] fim:
[6]  r←x
------------------------------------------------------------
[ 0]  opesq vivo052a n;CORRECAO;EVENTO;S;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qli
      nha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL052   '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ S←⍎n[5]
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n ⋄ S←'0'
[ 9]  ylu←n grupo ylu
[10]  FOLHALA052←ajusta80 FOLHALA052
```

```
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA052)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 8⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←13 80⍴' '
[16]  f←FOLHALA052
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[12;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[13;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracaso1
[35]  esse[8;]←1 80⍴80↑⍕xx
[36]  resp←resp,,caso1 xx
[37]  xx←geracaso2
[38]  esse[9;]←1 80⍴80↑⍕xx
[39]  resp←resp,,caso2 xx
[40]  xx←geracaso3
[41]  esse[10;]←1 80⍴80↑⍕xx
[42]  resp←resp,,caso3 xx
[43]  xx←geracaso4
[44]  esse[11;]←1 80⍴80↑⍕xx
[45]  resp←resp,,(99 caso4 xx),999 caso4 xx
[46]  resu←resu,[1]1 8⍴resp
[47]  acuja←(f[;2]='#')/⍳1↑⍴f
[48]  f[acuja;⍳80]←esse[⌽,f[acuja;3 4],' ';]
[49]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[50]  ⍞←(⍕xk←xk+1),'-'
[51]  →testa
[52] fim:upag←(1 0+⍴f)⍴' '
[53]  →(1=≡n)/elafa
[54]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[55]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[56]  upag[2+⍳1↑⍴resu;⍳52]←5 0 10 2 6 0 10 3 10 0 3 0 4 0 4 0⍕resu
[57]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[58]  →terminando
[59] elafa:aaa←(ylu[;⍳36],10 2 4 0 8 3 10 0 3 0 4 0 4 0⍕0 1↓resu)
[60]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[61]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[62] terminando:
[63]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[64]  relat[1↑⍴relat;;]←upag
[65]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[66]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[67]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[68]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo053

```
[0]  r←ger
------------------------------------------------------------
[ 0]  r←geracaso1;ent;sai;pre
[ 1]  ent←(?12),(?59)
[ 2]  →(1=?2)/grande
[ 3] pequeno:
[ 4]  sai←(ent[1]+?2),?59
[ 5]  →precos
[ 6] grande:
[ 7]  sai←(12+?12),?59
[ 8] precos:
[ 9]  pre←(5 5.5 6 6.5 7 7.5)[?6]
[10]  pre←pre,(8 9 10 11)[?4]
[11]  pre←pre,(12 13 14 15 16 17)[?6]
[12]  pre←pre,(20 25 30 40)[?4]
[13]  r←ent,sai,pre
------------------------------------------------------------
[ 0]  r←geracaso2;i;insta;reso;qual;in
[ 1]  r←2⍴0
[ 2]  i←1
[ 3]  insta←4 80⍴' '
[ 4]  reso←4⍴0
[ 5] t1:→(i>4)/fim
[ 6]  qual←5 2⍴'C E1E2E3E4'
[ 7]  in←?5
[ 8]  insta[i;]←80↑geraexpress qual[in;]
[ 9]  reso[i]←in=1
[10]  i←i+1
[11]  →t1
[12] fim:
[13]  r[1]←⊂insta
[14]  r[2]←⊂reso
------------------------------------------------------------
[0]  r←geracaso3;t;p
[1]  t←'ABCDEFGH'[?60⍴8]
[2]  p←'ABCDEFGH'[?(1+?3)⍴8]
[3] aca:
[4]  r←2 60⍴t,60↑p
[5]  →(1=?2)/0
[6]  t[(3+?50)+⍳⍴p]←p
[7]  →aca
------------------------------------------------------------
[0]  r←geracaso4
[1]  r←((?10000)÷10000),((?10000)÷10000)
------------------------------------------------------------
[ 0]  r←geraexpress qual;a;b
[ 1]  r←''
[ 2]  →('C'=1↑qual)/certo
[ 3]  →(2=+/'E1'=qual)/c1   ⍝ abre 1 e fecha 2
[ 4]  →(2=+/'E2'=qual)/c2
[ 5]  →(2=+/'E3'=qual)/c3
[ 6]  →c4   ⍝ abre 2 e fecha 1
[ 7] certo:
[ 8]  a←'(',('12345'[?5]),('+-*/'[?4]),('123456789'[?9]),')'
[ 9]  b←'(',('12345'[?5]),('+-*/'[?4]),('123456789'[?9]),')'
[10]  r←a,('+-*/'[?4]),b
[11]  →(1=?2)/fimc
[12]  a←'(',('12345'[?5]),('+-*/'[?4]),('123456789'[?9]),')'
[13]  b←'(',('12345'[?5]),('+-*/'[?4]),('123456789'[?9]),')'
[14]  r←'(',r,')',('+-*/'[?4]),a
[15]  →(1=?2)/fimc
```

```
[16]  r←'(',r,')',('+-*/'[?4]),b
[17] fimc:
[18]  r←r,'.'
[19]  →0
[20] c1:
[21]  a←'(',('12345'[?5]),('+-*/'[?4]),('123456789'[?9]),')'
[22]  b←('12345'[?5]),('+-*/'[?4]),('123456789'[?9]),')'  ⍝ falta o (
[23]  r←a,('+-*/'[?4]),b
[24]  →(1=?2)/fime1
[25]  a←'(',('12345'[?5]),('+-*/'[?4]),('123456789'[?9]),')'
[26]  b←'(',('12345'[?5]),('+-*/'[?4]),('123456789'[?9]),')'
[27]  r←'(',r,')',('+-*/'[?4]),a
[28]  →(1=?2)/fime1
[29]  r←'(',r,')',('+-*/'[?4]),b
[30] fime1:
[31]  r←r,'.'
[32]  →0
[33] c2:
[34]  a←'(',('12345'[?5]),('+-*/'[?4]),('123456789'[?9]),')'
[35]  b←'(',('12345'[?5]),('+-*/'[?4]),('123456789'[?9]),(1+?2)⍴')'   ⍝erro aqui
[36]  r←a,('+-*/'[?4]),b
[37]  a←'(',('12345'[?5]),('+-*/'[?4]),('123456789'[?9]),')'
[38]  b←'(',('12345'[?5]),('+-*/'[?4]),('123456789'[?9]),')'
[39]  r←'(',r,')',('+-*/'[?4]),a
[40]  →(1=?2)/fime2
[41]  r←'(',r,')',('+-*/'[?4]),b
[42] fime2:
[43]  r←r,'.'
[44]  →0
[45] c3:
[46]  a←'(',('12345'[?5]),('+-*/'[?4]),('123456789'[?9]),')'
[47]  b←'(',('12345'[?5]),('+-*/'[?4]),('123456789'[?9]) ⍝ nao fecha aqui
[48]  r←a,('+-*/'[?4]),b
[49]  a←'(',('12345'[?5]),('+-*/'[?4]),('123456789'[?9]),')'
[50]  b←'(',('12345'[?5]),('+-*/'[?4]),('123456789'[?9]),')'
[51]  r←'(',r,')',('+-*/'[?4]),a
[52]  →(1=?2)/fime3
[53]  r←'(',r,')',('+-*/'[?4]),b
[54] fime3:
[55]  r←r,'.'
[56]  →0
[57] c4:
[58]  a←'(',('12345'[?5]),('+-*/'[?4]),('123456789'[?9])  ⍝ erro aqui
[59]  b←'(',('12345'[?5]),('+-*/'[?4]),('123456789'[?9]),')'
[60]  r←a,('+-*/'[?4]),b
[61]  →(1=?2)/fime4
[62]  a←'(',('12345'[?5]),('+-*/'[?4]),('123456789'[?9]),')'
[63]  b←'(',('12345'[?5]),('+-*/'[?4]),('123456789'[?9]),')'
[64]  r←'(',r,')',('+-*/'[?4]),a
[65]  →(1=?2)/fime4
[66]  r←'(',r,')',('+-*/'[?4]),b
[67] fime4:
[68]  r←r,'.'
[69]  →0
-------------------------------------------------------------
[ 0]  r←resolvecaso1 x;est
[ 1]  est←(x[4]+x[3]×60)-(x[2]+x[1]×60)
[ 2]  →(est<31)/pagamin
[ 3]  est←⌈est÷60
[ 4]  →(est≤2)/paga2
[ 5]  →(est≤6)/paga6
[ 6] pagamais:
[ 7]  r←x[8]
```

```
[ 8]  →0
[ 9] paga6:
[10]  r←x[7]
[11]  →0
[12] paga2:
[13]  r←x[6]
[14]  →0
[15] pagamin:
[16]  r←x[5]
[17]  →0
------------------------------------------------------------
[ 0]  r←t resolvecaso3 p;i;j;inds
[ 1]  p←,p
[ 2]  i←1
[ 3]  r←0⍴0
[ 4] t1:→(i>⍴t)/fim
[ 5]  →(t[i]≠p[1])/soma
[ 6]  j←1
[ 7] t2:→((j+1)>⍴p)/achou
[ 8]  →((i+j)>⍴t)/fim
[ 9]  →(t[i+j]≠p[j+1])/furou
[10]  j←j+1
[11]  →t2
[12] furou:
[13]  →soma
[14] achou:
[15]  r←r,i
[16] soma:
[17]  i←i+1
[18]  →t1
[19] fim:
[20]  →(1≠MOSTRA3)/0
[21]  t
[22]  inds←(⍴t)⍴0
[23]  i←1
[24] t3:→(i>⍴r)/mesmo
[25]  inds[¯1+r[i]+⍳⍴p]←1+inds[¯1+r[i]+⍳⍴p]
[26]  i←i+1
[27]  →t3
[28] mesmo:
[29]  ' -=≡*********************************'[1+inds]
------------------------------------------------------------
[ 0]  r←resolvecaso4 c;zn;i;zp;hip
[ 1]  i←1
[ 2]  zn←0,0
[ 3] t1:→(i>200)/acabou
[ 4]  i←i+1
[ 5]  zp←(zn*2)+c
[ 6]  hip←(+/zp*2)*0.5
[ 7]  →(hip>2)/saiu
[ 8]  zn←zp
[ 9]  →t1
[10] saiu:r←i
[11]  →0
[12] acabou:r←¯1
------------------------------------------------------------
[ 0]  opesq vivo053a n;CORRECAO;EVENTO;S;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qli
      nha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL053   '
```

```
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ S←⍕n[5]
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n ⋄ S←'0'
[ 9]  ylu←n grupo ylu
[10]  FOLHALA053←ajusta80 FOLHALA053
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA053)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 12⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←27 80⍴' '
[16]  f←FOLHALA053
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[26;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[27;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracaso1
[35]  esse[7+⍳8;]←8 80⍴80 0⍕xx
[36]  resp←resp,resolvecaso1 xx
[37]  xx←geracaso2
[38]  esse[15+⍳4;]←⊃xx[1]
[39]  resp←resp,⊃xx[2]
[40]  xx←geracaso3
[41]  esse[20;]←1 80⍴80↑xx[1;⍳30]
[42]  esse[21;]←1 80⍴80↑xx[1;30+⍳30]
[43]  esse[22;]←1 80⍴80↑xx[;2]
[44]  zz←xx[1;]resolvecaso3 trim xx[2;]
[45]  resp←resp,3↑zz
[46]  esse[23;]←1 80⍴80↑⍕xx←geracaso4
[47]  resp←resp,resolvecaso4 xx
[48]  esse[24;]←1 80⍴80↑⍕xx←geracaso4
[49]  resp←resp,resolvecaso4 xx
[50]  esse[25;]←1 80⍴80↑⍕xx←geracaso4
[51]  resp←resp,resolvecaso4 xx
[52]  resu←resu,[1]1 12⍴resp
[53]  acuja←(f[;2]='#')/⍳1↑⍴f
[54]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[55]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[56]  ⍞←(⍕xk←xk+1),'-'
[57]  →testa
[58] fim:upag←(1 0+⍴f)⍴' '
[59]  →(1=≡n)/elafa
[60]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[61]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[62]  upag[2+⍳1↑⍴resu;⍳50]←'¯-'edit 5 0 10 2 5 0 2 0 2 0 2 0 6 0 3 0 3 0 6 0 3 0 3 0⍕resu
[63]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[64]  →terminando
[65] elafa:aaa←(ylu[;⍳36],'¯-'edit 10 2 5 0 2 0 2 0 2 0 6 0 3 0 3 0 6 0 3 0 3 0⍕0 1↓resu)
[66]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[67]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
```

```
[68] terminando:
[69]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[70]  relat[1↑⍴relat;;]←upag
[71]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[72]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.tex'
[73]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[74]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo054

```
[  0]  r←cpc algo;nome;PILHA;nnn;saida;aspa;vv;coma;SALVA;i;j;loca;aaa;pn;pna
[  1] ⍝ versao 1.10
[  2]  PILHA←0 21⍴' ' ⋄ nnn←1 ⋄ saida←0 70⍴' ' ⋄ r←0 70⍴' ' ⋄ aspa←'''' ⋄ loca←'' ⋄ pna←'≤'
[  3]  →(1=⍴⍴algo)/erro90
[  4]  i←1
[  5] t1:→(i>1↑⍴algo)/fim
[  6]  →(algo[i;1]≠'α')/oraviva
[  7]  saida←saida,[1]1 70⍴70↑1↓algo[i;]
[  8]  →(i=i←i+1)/t1
[  9] oraviva:vv←vetoriza algo[i;]
[ 10]  →('algoritmo'igual⊃vv[1])/ealg
[ 11]  →('fim{algoritmo}'igual⊃vv[1])/ealf
[ 12]  →('fimalgoritmo'igual⊃vv[1])/ealf
[ 13]  →('funcao'igual⊃vv[1])/efun
[ 14]  →('fim{funcao}'igual⊃vv[1])/efuf
[ 15]  →('fimfuncao'igual⊃vv[1])/efuf
[ 16]  →('leia'igual⊃vv[1])/elei
[ 17]  →('imprima'igual⊃vv[1])/eimp
[ 18]  →('escreva'igual⊃vv[1])/eimp ⍝ para compatibilizar com o VG = 19/06/08
[ 19]  →('devolva'igual⊃vv[1])/eimp  ⍝ em teste: sera que devolva = imprima neste contexto
       ???
[ 20]  →('se'igual⊃vv[1])/esex
[ 21]  →('senao'igual⊃vv[1])/esen
[ 22]  →('fim{se}'igual⊃vv[1])/esef
[ 23]  →('fimse'igual⊃vv[1])/esef
[ 24]  →('enquanto'igual⊃vv[1])/eenq
[ 25]  →('fim{enquanto}'igual⊃vv[1])/eenf
[ 26]  →('fimenquanto'igual⊃vv[1])/eenf
[ 27]  →('repita'igual⊃vv[1])/erep
[ 28]  →('ate'igual⊃vv[1])/eate
[ 29]  →('para'igual⊃vv[1])/epar
[ 30]  →('fim{para}'igual⊃vv[1])/epaf
[ 31]  →('fimpara'igual⊃vv[1])/epaf
[ 32]  →('abandone'igual⊃vv[1])/eaba
[ 33]  →('saia'igual⊃vv[1])/esai
[ 34]  →('<-'igual⊃vv[2])/ecad
[ 35]  →('inteiro'igual⊃vv[1])/eint
[ 36]  →('real'igual⊃vv[1])/erea
[ 37]  →('logico'igual⊃vv[1])/elog
[ 38]  →('caracter'igual 8↑⊃vv[1])/ecar
[ 39]  →('vetor'igual⊃vv[1])/evet
[ 40]  →('vetora'igual⊃vv[1])/evaa
[ 41]  r←r,[1]1 70⍴70↑(3⍕i),' - comando desconhecido'
[ 42] soma:→(i=i←i+1)/t1
[ 43] ⍝--------------algoritmo--------------
[ 44] ealg:saida←saida,[1]1 70⍴70↑⊃vv[2]
[ 45]  →soma
[ 46] ealf:→fim
[ 47] ⍝--------------funcao-----------------
[ 48] efun:
[ 49]  →(2≥⍴vv)/naotem
```

```
[ 50]  coma←'RRRR←',(⊃vv[2]),' AAAA'
[ 51]  →vmesmo
[ 52] naotem:coma←'RRRR←',(⊃vv[2])
[ 53]  saida←saida,[1]1 70⍴70↑coma
[ 54]  nome←⊃vv[2]
[ 55]  →aca0
[ 56] vmesmo:
[ 57]  saida←saida,[1]1 70⍴70↑coma
[ 58]  nome←⊃vv[2]
[ 59]  j←1
[ 60] voi1:→(j>¯2+⍴vv)/aca0
[ 61]  saida←saida,[1]1 70⍴70↑(⊃vv[j+2]),'←AAAA[',(3 0⍕j),']'
[ 62]  loca←loca,';',⊃vv[j+2]
[ 63]  →(j=j←j+1)/voi1
[ 64] aca0:→soma
[ 65] efuf:→fim
[ 66] ⍝---------------leia------------------
[ 67] elei:saida←saida,[1]1 70⍴70↑aspa,'LEITURA DA VARIAVEL ',(⊃vv[2]),aspa
[ 68]  saida←saida,[1]1 70⍴70↑(⊃vv[2]),'←□'
[ 69]  →soma
[ 70] ⍝---------------imprima---------------
[ 71] eimp:→(3=⍴vv)/temmsg
[ 72]  aaa←⊃vv[2]
[ 73]  →(aaa[⍴aaa]=';')/juntaa
[ 74]  saida←saida,[1]1 70⍴70↑aaa
[ 75]  →soma
[ 76] juntaa:saida←saida,[1]1 70⍴70↑'□←⍕',¯1↓aaa
[ 77]  →soma
[ 78] temmsg:aaa←⊃vv[3]
[ 79]  →(aaa[⍴aaa]=';')/juntab
[ 80]  saida←saida,[1]1 70⍴70↑(⊃vv[2]),' ',aaa
[ 81]  →soma
[ 82] juntab:saida←saida,[1]1 70⍴70↑'□←',(⊃vv[2]),' ,⍕',¯1↓aaa
[ 83]  →soma
[ 84] ⍝---------------atribuicao------------
[ 85] ecad:saida←saida,[1]1 70⍴70↑(⊃vv[1]),'←',,⊃2↓vv
[ 86]  aaa←⊃vv[1]
[ 87]  →('['∈aaa)/soma
[ 88]  →(∨/aaa≤loca)/soma
[ 89]  loca←loca,';',⊃vv[1]
[ 90]  →soma
[ 91] ⍝---------------se--------------------
[ 92] esex:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[ 93]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn←nnn+1
[ 94]  PILHA←(1 21⍴21↑'SE',('000'⍕nnn)),[1]PILHA
[ 95]  nnn←nnn+1
[ 96]  →soma
[ 97] ⍝--senao--
[ 98] esen:SALVA←PILHA[1;3 4 5] ⋄ PILHA←1 0↓PILHA
[ 99]  PILHA←(1 21⍴21↑'SE',('000'⍕nnn)),[1]PILHA
[100]  saida←saida,[1]1 70⍴70↑'→Δ','000'⍕nnn
[101]  nnn←nnn+1
[102]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[103]  →soma
[104] ⍝--fim{se}--
[105] esef:saida←saida,[1]1 70⍴70↑'Δ',PILHA[1;3 4 5],':'
[106]  PILHA←1 0↓PILHA
[107]  →soma
[108] ⍝-------------enquanto--------------------
[109] eenq:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[110]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[111]  nnn←nnn+1
[112]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
```

```
[113]  nnn←nnn+1
[114]  saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[115]  nnn←nnn+1
[116]  saida←saida,[1]1 70ρ70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn-2
[117]  →soma
[118] ⍝----------fim{enquanto}-----------------
[119] eenf:SALVA←PILHA[1;3 4 5]
[120]  PILHA←1 0↓PILHA
[121]  saida←saida,[1]1 70ρ70↑'→Δ',PILHA[1;3 4 5]
[122]  PILHA←1 0↓PILHA
[123]  saida←saida,[1]1 70ρ70↑'Δ',SALVA,':'
[124]  →soma
[125] ⍝----------repita-------------------------
[126] erep:saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),':'
[127]  PILHA←(1 21ρ21↑'RE','000'⍕nnn),[1]PILHA
[128]  nnn←nnn+1
[129]  →soma
[130] ⍝-----------ate--------------------------
[131] eate:PILHA←(1 21ρ21↑'RE','000'⍕nnn),[1]PILHA
[132]  nnn←nnn+1
[133]  saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[134]  SALVA←PILHA[1;3 4 5]
[135]  PILHA←1 0↓PILHA
[136]  saida←saida,[1]1 70ρ70↑'→(Δ',('000'⍕nnn),')/Δ',SALVA
[137]  SALVA←PILHA[1;3 4 5]
[138]  PILHA←1 0↓PILHA
[139]  saida←saida,[1]1 70ρ70↑'→Δ',SALVA
[140]  saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn-1),':'
[141]  nnn←nnn+1 ⍝ inclusao desta linha em 19/04/06. Ainda nao suficientemente testada
[142]  →soma
[143] ⍝----------para-----------------------
[144] epar:saida←saida,[1]1 70ρ70↑(8↑⊃vv[2]),'←',8↑⊃vv[4]
[145]  PILHA←(1 21ρ21↑'PA','000'⍕nnn),[1]PILHA
[146]  saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),':'
[147]  nnn←nnn+1
[148]  →(8≤ρvv)/tempasso
[149]  PILHA←(1 21ρ21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8↑8⍕1),[1]PILHA
[150]  →juntab
[151] tempasso:PILHA←(1 21ρ21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8 2⍕pn←±⊃vv[8]),[1]PILHA
[152] ⍝ 'pn=',⍕pn
[153]  pna←'≤≥'[1+pn<0] ⍝ alteracao a 22/06/06, para acertar passo negativo
[154] juntab:nnn←nnn+1
[155]  saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),'←',(⊃vv[2]),pna,⍕⊃vv[6]
[156]  saida←saida,[1]1 70ρ70↑'→(~Δ',('000'⍕nnn),')/Δ','000'⍕nnn-1
[157]  nnn←nnn+1
[158]  →soma
[159] ⍝----------fim{para}-----------------
[160] epaf:saida←saida,[1]1 70ρ70↑PILHA[1;5+⍳8],'←',PILHA[1;5+⍳8],'+',PILHA[1;13+⍳8]
[161]  SALVA←PILHA[1;3 4 5]
[162]  PILHA←1 0↓PILHA
[163]  saida←saida,[1]1 70ρ70↑'→Δ',PILHA[1;3 4 5]
[164]  PILHA←1 0↓PILHA
[165]  saida←saida,[1]1 70ρ70↑'Δ',SALVA,':'
[166]  →soma
[167] ⍝-----------abandone--------------------
[168] eaba:→soma
[169] ⍝-----------saia--------------------------
[170] esai:→soma
[171] ⍝-------- definicao de variaveis---------------
[172] eint:
[173]  saida←saida,[1]1 70ρ70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[174]  →soma
[175] erea:
```

```
[176]  saida←saida,[1]1 70ρ70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[177]  →soma
[178] elog:
[179]  saida←saida,[1]1 70ρ70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[180]  →soma
[181] ecar:
[182]  saida←saida,[1]1 70ρ70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[183]  →soma
[184] ⍝----------definicao de vetores-----------------
[185] evet:
[186]  saida←saida,[1]1 70ρ70↑(1 parte(⊃vv[2])),'←',(2 parte(⊃vv[2])),'ρ0'
[187]  →soma
[188] evaa:
[189]  saida←saida,[1]1 70ρ70↑(1 parte(⊃vv[2])),'←',(2 parte(⊃vv[2])),'ρ',aspa,' ',aspa
[190]  →soma
[191] fim:
[192]  i←1
[193] tfim:→(i>nnn)/mesmo
[194]  loca←loca,';Δ','000'⍕i
[195]  →(i=i←i+1)/tfim
[196] mesmo:→(50>ρloca)/blz1
[197]  saida←((1↑ρsaida),20+ρloca)↑saida
[198]  saida[1;20+⍳ρloca]←loca
[199]  →pula22
[200] blz1:saida[1;20+⍳50]←50↑loca
[201] pula22:r←'_ 'edit saida
[202]  →0
[203] erro90:'algoritmo nao e uma matriz'
[204]  →0
------------------------------------------------------------
[ 0]  r←geracaso11
[ 1]  r←0 60ρ' '
[ 2]  r←r,[1]1 60ρ60↑'funcao A11'
[ 3]  →(1=?2)/desce
[ 4] sobe:
[ 5]  r←r,[1]1 60ρ60↑'X <- ',2 0⍕3+?7
[ 6]  r←r,[1]1 60ρ60↑'enquanto X ',('≤<'[?2]),' ',(2 0⍕12+?6)
[ 7]  r←r,[1]1 60ρ60↑'X <- X +',2 0⍕1+?3
[ 8]  r←r,[1]1 60ρ60↑'fim{enquanto}'
[ 9]  r←r,[1]1 60ρ60↑'RRRR<-X'
[10]  r←r,[1]1 60ρ60↑'fim{funcao}'
[11]  →fim
[12] desce:
[13]  r←r,[1]1 60ρ60↑'X <- ',2 0⍕13+?7
[14]  r←r,[1]1 60ρ60↑'enquanto X ',('≥>'[?2]),(2 0⍕2+?6)
[15]  r←r,[1]1 60ρ60↑'X <- X -',2 0⍕1+?3
[16]  r←r,[1]1 60ρ60↑'fim{enquanto}'
[17]  r←r,[1]1 60ρ60↑'RRRR<-X'
[18]  r←r,[1]1 60ρ60↑'fim{funcao}'
[19] fim:
------------------------------------------------------------
[ 0]  r←geracaso12
[ 1]  r←0 40ρ' '
[ 2]  r←r,[1]1 40ρ40↑'funcao A12'
[ 3]  →(1=?2)/desce
[ 4] sobe:
[ 5]  r←r,[1]1 40ρ40↑'X <- ',2 0⍕3+?7
[ 6]  r←r,[1]1 40ρ40↑'Y <- ',2 0⍕3+?7
[ 7]  r←r,[1]1 40ρ40↑'enquanto X ',('≤<'[?2]),' ',(2 0⍕12+?6)
[ 8]  r←r,[1]1 40ρ40↑'Y <- Y +',2 0⍕1+?3
[ 9]  r←r,[1]1 40ρ40↑'X <- X +',2 0⍕1+?3
[10]  r←r,[1]1 40ρ40↑'fim{enquanto}'
[11]  r←r,[1]1 40ρ40↑'RRRR<-Y'
```

```
[12]  r←r,[1]1 40ρ40↑'fim{funcao}'
[13]  →fim
[14] desce:
[15]  r←r,[1]1 40ρ40↑'X <- ',2 0⍕13+?7
[16]  r←r,[1]1 40ρ40↑'Y <- ',2 0⍕3+?7
[17]  r←r,[1]1 40ρ40↑'enquanto X ',('≥>'[?2]),(2 0⍕2+?6)
[18]  r←r,[1]1 40ρ40↑'Y <- Y +',2 0⍕1+?3
[19]  r←r,[1]1 40ρ40↑'X <- X -',2 0⍕1+?3
[20]  r←r,[1]1 40ρ40↑'fim{enquanto}'
[21]  r←r,[1]1 40ρ40↑'RRRR<-Y'
[22]  r←r,[1]1 40ρ40↑'fim{funcao}'
[23] fim:
------------------------------------------------------------
[ 0]  r←geracaso13
[ 1]  r←0 40ρ' '
[ 2]  r←r,[1]1 40ρ40↑'funcao A13'
[ 3]  →(1=?2)/desce
[ 4] sobe:
[ 5]  r←r,[1]1 40ρ40↑'X <- ',2 0⍕3+?7
[ 6]  r←r,[1]1 40ρ40↑'Y <- ',2 0⍕3+?7
[ 7]  r←r,[1]1 40ρ40↑'enquanto X ',('≤<'[?2]),' ',(2 0⍕12+?6)
[ 8]  r←r,[1]1 40ρ40↑'Y <- Y + X +',2 0⍕1+?3
[ 9]  r←r,[1]1 40ρ40↑'X <- X +',2 0⍕1+?3
[10]  r←r,[1]1 40ρ40↑'fim{enquanto}'
[11]  r←r,[1]1 40ρ40↑'RRRR<-Y'
[12]  r←r,[1]1 40ρ40↑'fim{funcao}'
[13]  →fim
[14] desce:
[15]  r←r,[1]1 40ρ40↑'X <- ',2 0⍕13+?7
[16]  r←r,[1]1 40ρ40↑'Y <- ',2 0⍕13+?7
[17]  r←r,[1]1 40ρ40↑'enquanto X ',('≥>'[?2]),(2 0⍕2+?6)
[18]  r←r,[1]1 40ρ40↑'Y <- Y + X +',2 0⍕1+?3
[19]  r←r,[1]1 40ρ40↑'X <- X -',2 0⍕1+?3
[20]  r←r,[1]1 40ρ40↑'fim{enquanto}'
[21]  r←r,[1]1 40ρ40↑'RRRR<-Y'
[22]  r←r,[1]1 40ρ40↑'fim{funcao}'
[23] fim:
------------------------------------------------------------
[ 0]  r←geracaso21
[ 1]  r←0 40ρ' '
[ 2]  r←r,[1]1 40ρ40↑'funcao A21'
[ 3]  →(1=?2)/desce
[ 4] sobe:
[ 5]  r←r,[1]1 40ρ40↑'X <- ',2 0⍕3+?7
[ 6]  r←r,[1]1 40ρ40↑'repita'
[ 7]  r←r,[1]1 40ρ40↑'X <- X +',2 0⍕1+?3
[ 8]  r←r,[1]1 40ρ40↑'ate X ',('≥>'[?2]),' ',(2 0⍕12+?6)
[ 9]  r←r,[1]1 40ρ40↑'RRRR<-X'
[10]  r←r,[1]1 40ρ40↑'fim{funcao}'
[11]  →fim
[12] desce:
[13]  r←r,[1]1 40ρ40↑'X <- ',2 0⍕13+?7
[14]  r←r,[1]1 40ρ40↑'repita'
[15]  r←r,[1]1 40ρ40↑'X <- X -',2 0⍕1+?3
[16]  r←r,[1]1 40ρ40↑'ate X ',('<≤'[?2]),(2 0⍕3+?7)
[17]  r←r,[1]1 40ρ40↑'RRRR<-X'
[18]  r←r,[1]1 40ρ40↑'fim{funcao}'
[19] fim:
------------------------------------------------------------
[ 0]  r←geracaso22
[ 1]  r←0 40ρ' '
[ 2]  r←r,[1]1 40ρ40↑'funcao A22'
[ 3]  →(1=?2)/desce
```

```
[ 4] sobe:
[ 5]  r←r,[1]1 40ρ40↑'X <- ',2 0⍕3+?7
[ 6]  r←r,[1]1 40ρ40↑'Y <- ',2 0⍕3+?7
[ 7]  r←r,[1]1 40ρ40↑'repita'
[ 8]  r←r,[1]1 40ρ40↑'Y <- Y +',2 0⍕1+?3
[ 9]  r←r,[1]1 40ρ40↑'X <- X +',2 0⍕1+?3
[10]  r←r,[1]1 40ρ40↑'ate X ',('≥>'[?2]),' ',(2 0⍕12+?6)
[11]  r←r,[1]1 40ρ40↑'RRRR<-Y'
[12]  r←r,[1]1 40ρ40↑'fim{funcao}'
[13]  →fim
[14] desce:
[15]  r←r,[1]1 40ρ40↑'X <- ',2 0⍕13+?7
[16]  r←r,[1]1 40ρ40↑'Y <- ',2 0⍕13+?7
[17]  r←r,[1]1 40ρ40↑'repita'
[18]  r←r,[1]1 40ρ40↑'Y <- Y +',2 0⍕1+?3
[19]  r←r,[1]1 40ρ40↑'X <- X -',2 0⍕1+?3
[20]  r←r,[1]1 40ρ40↑'ate X ',('<≤'[?2]),(2 0⍕3+?7)
[21]  r←r,[1]1 40ρ40↑'RRRR<-Y'
[22]  r←r,[1]1 40ρ40↑'fim{funcao}'
[23] fim:
------------------------------------------------------------
[ 0]  r←geracaso23
[ 1]  r←0 40ρ' '
[ 2]  r←r,[1]1 40ρ40↑'funcao A23'
[ 3]  →(1=?2)/desce
[ 4] sobe:
[ 5]  r←r,[1]1 40ρ40↑'X <- ',2 0⍕3+?7
[ 6]  r←r,[1]1 40ρ40↑'Y <- ',2 0⍕3+?7
[ 7]  r←r,[1]1 40ρ40↑'repita'
[ 8]  r←r,[1]1 40ρ40↑'Y <- Y + X +',2 0⍕1+?3
[ 9]  r←r,[1]1 40ρ40↑'X <- X +',2 0⍕1+?3
[10]  r←r,[1]1 40ρ40↑'ate X ',('≥>'[?2]),' ',(2 0⍕12+?6)
[11]  r←r,[1]1 40ρ40↑'RRRR<-Y'
[12]  r←r,[1]1 40ρ40↑'fim{funcao}'
[13]  →fim
[14] desce:
[15]  r←r,[1]1 40ρ40↑'X <- ',2 0⍕13+?7
[16]  r←r,[1]1 40ρ40↑'Y <- ',2 0⍕13+?7
[17]  r←r,[1]1 40ρ40↑'repita'
[18]  r←r,[1]1 40ρ40↑'Y <- Y + X +',2 0⍕1+?3
[19]  r←r,[1]1 40ρ40↑'X <- X -',2 0⍕1+?3
[20]  r←r,[1]1 40ρ40↑'ate X ',('<≤'[?2]),(2 0⍕3+?7)
[21]  r←r,[1]1 40ρ40↑'RRRR<-Y'
[22]  r←r,[1]1 40ρ40↑'fim{funcao}'
[23] fim:
------------------------------------------------------------
[ 0]  r←geracaso32
[ 1]  r←0 40ρ' '
[ 2]  r←r,[1]1 40ρ40↑'funcao A32'
[ 3]  →(1=?2)/desce
[ 4] sobe:
[ 5]  r←r,[1]1 40ρ40↑'X <- 0'
[ 6]  r←r,[1]1 40ρ40↑'para Y de',(2 0⍕2+?4),' a ',(2 0⍕12+?9),' passo ',1 0⍕1+?2
[ 7]  r←r,[1]1 40ρ40↑'X <- X + Y'
[ 8]  r←r,[1]1 40ρ40↑'fim{para}'
[ 9]  r←r,[1]1 40ρ40↑'RRRR<-X'
[10]  r←r,[1]1 40ρ40↑'fim{funcao}'
[11]  →fim
[12] desce:
[13]  r←r,[1]1 40ρ40↑'X <- 1'
[14]  r←r,[1]1 40ρ40↑'para Y de ',(2 0⍕13+?7),' a ',(1 0⍕3+?6),' passo -',⍕1+?2
[15]  r←r,[1]1 40ρ40↑'X <- X + Y'
[16]  r←r,[1]1 40ρ40↑'fim{para}'
```

```
[17]  r←r,[1]1 40ρ40↑'RRRR<-X'
[18]  r←r,[1]1 40ρ40↑'fim{funcao}'
[19] fim:
------------------------------------------------------------
[ 0]  r←geracaso33
[ 1]  r←0 40ρ' '
[ 2]  r←r,[1]1 40ρ40↑'funcao A33'
[ 3]  →(1=?2)/desce
[ 4] sobe:
[ 5]  r←r,[1]1 40ρ40↑'X <- ',1 0⍕?7
[ 6]  r←r,[1]1 40ρ40↑'para Y de',(2 0⍕2+?4),' a ',(2 0⍕12+?9),' passo ',1 0⍕1+?2
[ 7]  r←r,[1]1 40ρ40↑'X <- X + Y + ',1 0⍕2+?7
[ 8]  r←r,[1]1 40ρ40↑'fim{para}'
[ 9]  r←r,[1]1 40ρ40↑'RRRR<-X'
[10]  r←r,[1]1 40ρ40↑'fim{funcao}'
[11]  →fim
[12] desce:
[13]  r←r,[1]1 40ρ40↑'X <- ',1 0⍕2+?7
[14]  r←r,[1]1 40ρ40↑'para Y de ',(2 0⍕13+?7),' a ',(1 0⍕3+?6),' passo -',⍕1+?2
[15]  r←r,[1]1 40ρ40↑'X <- X + Y + ',1 0⍕2+?7
[16]  r←r,[1]1 40ρ40↑'fim{para}'
[17]  r←r,[1]1 40ρ40↑'RRRR<-X'
[18]  r←r,[1]1 40ρ40↑'fim{funcao}'
[19] fim:
------------------------------------------------------------
[ 0]  r←geracaso34
[ 1]  r←0 40ρ' '
[ 2]  r←r,[1]1 40ρ40↑'funcao A34'
[ 3]  →(1=?2)/desce
[ 4] sobe:
[ 5]  r←r,[1]1 40ρ40↑'X <- ',1 0⍕?7
[ 6]  r←r,[1]1 40ρ40↑'para Y de',(2 0⍕2+?4),' a ',(2 0⍕12+?9),' passo ',1 0⍕1+?2
[ 7]  r←r,[1]1 40ρ40↑'se (2|Y) = 0'
[ 8]  r←r,[1]1 40ρ40↑'X <- X + Y + ',1 0⍕3+?3
[ 9]  r←r,[1]1 40ρ40↑'senao'
[10]  r←r,[1]1 40ρ40↑'X <- X + Y + ',1 0⍕?3
[11]  r←r,[1]1 40ρ40↑'fim{se}'
[12]  r←r,[1]1 40ρ40↑'fim{para}'
[13]  r←r,[1]1 40ρ40↑'RRRR<-X'
[14]  r←r,[1]1 40ρ40↑'fim{funcao}'
[15]  →fim
[16] desce:
[17]  r←r,[1]1 40ρ40↑'X <- ',1 0⍕2+?7
[18]  r←r,[1]1 40ρ40↑'para Y de ',(2 0⍕13+?7),' a ',(1 0⍕3+?6),' passo -',⍕1+?2
[19]  r←r,[1]1 40ρ40↑'se (2|Y) = 0'
[20]  r←r,[1]1 40ρ40↑'X <- X + Y + ',1 0⍕3+?3
[21]  r←r,[1]1 40ρ40↑'senao'
[22]  r←r,[1]1 40ρ40↑'X <- X + Y + ',1 0⍕?3
[23]  r←r,[1]1 40ρ40↑'fim{se}'
[24]  r←r,[1]1 40ρ40↑'fim{para}'
[25]  r←r,[1]1 40ρ40↑'RRRR<-X'
[26]  r←r,[1]1 40ρ40↑'fim{funcao}'
[27] fim:
------------------------------------------------------------
[ 0]  r←geracaso41
[ 1]  r←0 40ρ' '
[ 2]  r←r,[1]1 40ρ40↑'funcao A41'
[ 3]  r←r,[1]1 40ρ40↑'X <- ',1 0⍕?7
[ 4]  r←r,[1]1 40ρ40↑'Y <- ',1 0⍕?7
[ 5]  r←r,[1]1 40ρ40↑'se X ',('><≥≤=≠'[?6]),' ',(1 0⍕?9)
[ 6]  r←r,[1]1 40ρ40↑'Y <- Y + X + ',1 0⍕?9
[ 7]  r←r,[1]1 40ρ40↑'senao'
[ 8]  r←r,[1]1 40ρ40↑'Y <- Y - (X + ',(2 0⍕9+?3),')'
```

```
[ 9]  r←r,[1]1 40⍴40↑'fim{se}'
[10]  r←r,[1]1 40⍴40↑'RRRR<-Y'
[11]  r←r,[1]1 40⍴40↑'fim{funcao}'
------------------------------------------------------------
[ 0]  r←geracaso42
[ 1]  r←0 40⍴' '
[ 2]  r←r,[1]1 40⍴40↑'funcao A41'
[ 3]  r←r,[1]1 40⍴40↑'X <- ',1 0⍕?7
[ 4]  r←r,[1]1 40⍴40↑'Y <- ',1 0⍕?7
[ 5]  r←r,[1]1 40⍴40↑'se (X ',('><≥≤=≠'[?6]),' ',(1 0⍕?9),') ',('∨∧'[?2]),' (Y ',('><≥≤=≠'
      [?6]),(' ',1 0⍕?9),')'
[ 6]  r←r,[1]1 40⍴40↑'Y <- Y + X + ',1 0⍕?9
[ 7]  r←r,[1]1 40⍴40↑'senao'
[ 8]  r←r,[1]1 40⍴40↑'Y <- Y - X + ',2 0⍕9+?3
[ 9]  r←r,[1]1 40⍴40↑'fim{se}'
[10]  r←r,[1]1 40⍴40↑'RRRR<-Y'
[11]  r←r,[1]1 40⍴40↑'fim{funcao}'
------------------------------------------------------------
[0]  r←a igual b;maior
[1]  maior←(1↑⍴a)⌈1↑⍴b
[2]  a←maior↑a ⋄ b←maior↑b
[3]  r←maior=+/a=b
------------------------------------------------------------
[0]  r←instancia qual;xx;yy;zz
[1]  xx←⍎'geracaso',2 0⍕qual
[2]  yy←⎕FX cpc xx
[3]  zz←⍎yy
[4]  xx←tradfunca xx
[5]  r←xx zz
------------------------------------------------------------
[0]  r←pedemail x
[1]  →(40≠+/' '=x)/aindanao
[2]  r←80↑'Por favor, informe seu e-mail: ϟ_ϟ_ϟ_ϟ_ϟ_ϟ_ϟ_ϟ_ϟ_ϟ_ϟ_ϟ_ϟ_ϟ_ϟ_'
[3]  →junnao
[4] aindanao:r←80↑'e-mail cadastrado: ',x
[5] junnao:
------------------------------------------------------------
[ 0]  r←quem replace depara;de;i;j;k;onde;para
[ 1] ⍝ forma de usar: texto replace 'strin-de' 'string para'
[ 2] ⍝ obviamente eles nao precisam ter o mesmo tamanho
[ 3]  de←,⊃depara[1] ⋄ para←,⊃depara[2]
[ 4]  i←1 ⋄ r←((1↑⍴quem),200)⍴' '
[ 5] t1:→(i>1↑⍴quem)/fim
[ 6]  →(0=∨/onde←de⍷quem[i;])/naotem
[ 7]  j←1 ⋄ k←1
[ 8] t2:→(k>⍴quem[i;])/acabou
[ 9]  →(onde[k]=0)/soma
[10]  r[i;(j-1)+⍳⍴para]←para
[11]  j←j+⍴para
[12]  k←k+⍴de
[13]  →t2
[14] soma:r[i;j]←quem[i;k]
[15]  k←k+1
[16]  →(j=j←j+1)/t2
[17] naotem:r[i;]←200↑quem[i;]
[18] acabou:→(i=i←i+1)/t1
[19] fim:r←trim4 r
------------------------------------------------------------
[ 0]  r←tradcoma x;i;j
[ 1]  i←j←1 ⋄ r←100⍴' '
[ 2] t1:→(i>⍴x)/fim
[ 3]  →(i=⍴x)/pula
[ 4]  →((x[i]='<')∧(x[i+1]='-'))/recebe
```

```
[ 5] pula:→(x[i]='∨')/ou
[ 6]  →(x[i]='∧')/e
[ 7]  →(x[i]='~')/nao
[ 8]  →(x[i]='≠')/diferente
[ 9]  →(x[i]='≤')/menig
[10]  →(x[i]='≥')/maiig
[11]  →(x[i]='×')/vezes
[12]  →(x[i]='>')/maior
[13]  →(x[i]='<')/menor
[14] nada:r[j]←x[i]
[15]  i←i+1
[16]  j←j+1
[17]  →t1
[18] recebe:r[j+¯1+⍳7]←'$⍀gets$'
[19]  j←j+7
[20]  i←i+2
[21]  →t1
[22] ou:r[j+¯1+⍳6]←'$⍀lor$'
[23]  j←j+6
[24]  i←i+1
[25]  →t1
[26] nao:r[j+¯1+⍳6]←'$⍀sim$'
[27]  j←j+6
[28]  i←i+1
[29]  →t1
[30] e:r[j+¯1+⍳7]←'$⍀land$'
[31]  j←j+7
[32]  i←i+1
[33]  →t1
[34] diferente:r[j+¯1+⍳6]←'$⍀neq$'
[35]  j←j+6
[36]  i←i+1
[37]  →t1
[38] menig:r[j+¯1+⍳5]←'$⍀le$'
[39]  j←j+5
[40]  i←i+1
[41]  →t1
[42] maiig:r[j+¯1+⍳5]←'$⍀ge$'
[43]  j←j+5
[44]  i←i+1
[45]  →t1
[46] vezes:r[j+¯1+⍳8]←'$⍀times$'
[47]  j←j+8
[48]  i←i+1
[49]  →t1
[50] maior:r[j+¯1+⍳3]←'$>$'
[51]  j←j+3
[52]  i←i+1
[53]  →t1
[54] menor:r[j+¯1+⍳3]←'$<$'
[55]  j←j+3
[56]  i←i+1
[57]  →t1
[58] fim:r←trim r
------------------------------------------------------------
[ 0]  r←tradfunca fun;y;aaa;i
[ 1]  fun←'({'edit')}'edit fun
[ 2]  y←fun replace'se ' '⍀IF {'
[ 3]  y←y replace'enquanto ' '⍀WHILE {'
[ 4]  y←y replace'repita' '⍀REPEAT'
[ 5]  y←y replace'senao' '⍀ELSE'
[ 6]  y←y replace'fim{se}' '⍀ENDIF'
[ 7]  y←y replace'fim{enquanto}' '⍀ENDWHILE'
```

```
[ 8]  y←y replace'ate' '⍀UNTIL {'
[ 9]  y←y replace'fim{para}' '⍀ENDFOR'
[10]  y←y replace'para' '⍀FOR {'
[11]  y←y replace'fim{funcao}' 'fimfuncao'
[12]  y←y replace'RRRR<-' 'escreva '
[13]  y←((1↑⍴y),60)↑y
[14]  y←((1,1↓⍴y)⍴100↑'⍀begin{algorithmic}[1]'),[1]y
[15]  y←y,[1](1,1↓⍴y)⍴100↑'⍀end{algorithmic}'
[16]  i←1
[17]  r←((1↑⍴y),100)⍴' '
[18] t1:→(i>1↑⍴r)/fim
[19]  aaa←100↑tradcoma y[i;]
[20]  →(aaa[1]='⍀')/blz
[21]  aaa←100↑'⍀STATE ',aaa
[22] blz:r[i;]←aaa
[23]  →(i=i←i+1)/t1
[24] fim:i←1
[25] test34:→(i>1↑⍴r)/acabou
[26]  →(5=+/r[i;⍳5]='⍀IF {')/poe
[27]  →(5=+/r[i;⍳5]='⍀WHIL')/poe
[28]  →(5=+/r[i;⍳5]='⍀UNTI')/poe
[29]  →(5=+/r[i;⍳5]='⍀FOR ')/poe
[30]  →(i=i←i+1)/test34
[31] poe:
[32]  r[i;]←100↑(trim r[i;]),'}'
[33]  →(i=i←i+1)/test34
[34] acabou:r←trim4 r
-------------------------------------------------------------
[0]  r←trim4 x;z
[1] ⍝f corta as colunas direitas que sao brancos
[2]  →(2≠⍴⍴x)/erro
[3]  z←+/[1]x=' '
[4]  r←(z≠1↑⍴x)/[2]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
-------------------------------------------------------------
[ 0]  r←vetoriza x;i;rr;letra;aspa;nume
[ 1] ⍝ versao 1.07
[ 2]  aspa←'''' ⋄ nume←'0123456789'
[ 3]  letra←'abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ()',aspa
[ 4] ⍝ tira os brancos
[ 5]  i←1 ⋄ rr←1
[ 6] t2:→(i>¯2+⍴x)/vaiz
[ 7]  →((x[i+1]=' ')∧(x[i]∈letra)∧(x[i+2]∈nume))/mataz
[ 8]  →((x[i+1]=' ')∧(x[i]∈nume)∧(x[i+2]∈letra))/mataz
[ 9]  →((x[i]∈letra)∧(x[i+2]∈letra))/naopode
[10]  →(((x[1]='p')∨(x[1]='P'))∧(x[2]='a')∧(x[i]∈letra)∧((x[i+2]='-')∨(x[i+2]='¯')))/naopo
      de  ⍝ comando incluido para o passo negativo
[11] ⍝ →((x[i]∈letra)∧((x[i+2]='-')∨(x[i+2]='¯')))/naopode  ⍝ comando incluido para o pass
      o negativo
[12] ⍝ os 3 testes iniciais (pPa) foram incluidos porque o comando acima estava
[13] ⍝ fazendo besteira: vetoriza 'A <- A -1' estava gerando 4 tokens e nao 3.
[14] ⍝ correcao em 13/03/12 - P.kantek
[15]  →(x[i+1]≠' ')/naopode
[16] pode:rr←rr,0
[17]  →(i=i←i+1)/t2
[18] mataz:x[i+1]←'!'
[19] naopode:rr←rr,1
[20]  →(i=i←i+1)/t2
[21] vaiz:rr←rr,1
[22]  x←rr/x
[23] ⍝ separa o sinal <-
[24]  →(2≠+/'<-'∈x)/faca
```

```
[25]  i←1 ⋄ rr←⍳0
[26] t1:→(i>¯1+⍴x)/vaix
[27]  →((x[i]='<')∧(x[i+1]='-'))/esim
[28]  rr←rr,1
[29]  →(i=i←i+1)/t1
[30] esim:rr←rr,0 1 1 0
[31]  →(i=i←i+2)/t1
[32] vaix:rr←rr,1
[33]  x←rr⌿x
[34] faca:x←'! 'edit x
[35]  r←(~' '=x)⊂x
-------------------------------------------------------------
[  0]  opesq vivo054a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;f2;fi;kk;lixo1;lixonol;num
      ;relat;resp;resu;ri;upag;xixo;xk;ylu
[  1]  →(0≠⎕NC'opesq')/qveio
[  2]  opesq←10⍴' '
[  3] qveio:
[  4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[  5]  CORRECAO←4 ⋄ EVENTO←'PL054   '
[  6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[  7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⌿apl2⌿',(5↑n),'.ALU' ⋄ EVENTO←n
[  8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍕⍳n
[  9]  FOLHALA054←ajusta80 FOLHALA054
[ 10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA054)⍴' '
[ 11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⌿apl2⌿VIVOBLO1'
[ 12]  xk←1 ⋄ resu←0 6⍴0
[ 13] testa:→(xk>1↑⍴ylu)/fim
[ 14]  esse←264 80⍴' '
[ 15]  f←FOLHALA054
[ 16]  esse[1;]←80↑dhx[1;]
[ 17]  esse[2;]←80↑dhx[2;]
[ 18]  esse[3;]←80↑4 2⍕VERSAOa←4.07
[ 19]  esse[4;]←80↑ylu[xk;⍳6]
[ 20]  esse[5;]←80↑ylu[xk;6+⍳30]
[ 21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[ 22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[ 23]  esse[263;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[ 24]  esse[264;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[ 25] ini1:
[ 26]  kk←instancia 11
[ 27]  esse[7+⍳9;]←9 80↑⊃kk[1]
[ 28]  ri←,⊃kk[2]
[ 29]  kk←instancia 21
[ 30]  esse[16+⍳9;]←9 80↑⊃kk[1]
[ 31]  ri←ri,⊃kk[2]
[ 32]  kk←instancia 32
[ 33]  esse[25+⍳9;]←9 80↑⊃kk[1]
[ 34]  ri←ri,⊃kk[2]
[ 35]  kk←instancia 12
[ 36]  esse[34+⍳11;]←11 80↑⊃kk[1]
[ 37]  ri←ri,⊃kk[2]
[ 38] ⍝---exe 5---
[ 39]  kk←instancia 33
[ 40]  esse[45+⍳9;]←9 80↑⊃kk[1]
[ 41]  ri←ri,⊃kk[2]
[ 42]  kk←instancia 13
[ 43]  esse[54+⍳11;]←11 80↑⊃kk[1]
[ 44]  ri←ri,⊃kk[2]
[ 45]  kk←instancia 41
[ 46]  esse[65+⍳12;]←12 80↑⊃kk[1]
[ 47]  ri←ri,⊃kk[2]
[ 48]  kk←instancia 22
```

```
[ 49]  esse[77+⍳11;]←11 80⍴⊃kk[1]
[ 50]  ri←ri,⊃kk[2]
[ 51]  kk←instancia 34  ⍝ trocar |
[ 52]  esse[88+⍳13;]←13 80⍴⊃kk[1]
[ 53]  esse[93;5+⍳20]←20⍴'(Y mod 2) = 0}'
[ 54]  ri←ri,⊃kk[2]
[ 55]  kk←instancia 42
[ 56]  esse[101+⍳12;]←12 80⍴⊃kk[1]
[ 57]  ri←ri,⊃kk[2]
[ 58] ⍝---11 ---
[ 59]  kk←instancia 23
[ 60]  esse[113+⍳11;]←11 80⍴⊃kk[1]
[ 61]  ri←ri,⊃kk[2]
[ 62]  kk←instancia 11
[ 63]  esse[124+⍳9;]←9 80⍴⊃kk[1]
[ 64]  ri←ri,⊃kk[2]
[ 65]  kk←instancia 32
[ 66]  esse[133+⍳9;]←9 80⍴⊃kk[1]
[ 67]  ri←ri,⊃kk[2]
[ 68] ⍝---14----
[ 69]  kk←instancia 21
[ 70]  esse[142+⍳9;]←9 80⍴⊃kk[1]
[ 71]  ri←ri,⊃kk[2]
[ 72]  kk←instancia 41
[ 73]  esse[151+⍳12;]←12 80⍴⊃kk[1]
[ 74]  ri←ri,⊃kk[2]
[ 75]  kk←instancia 13
[ 76]  esse[163+⍳11;]←11 80⍴⊃kk[1]
[ 77]  ri←ri,⊃kk[2]
[ 78]  kk←instancia 33
[ 79]  esse[174+⍳9;]←9 80⍴⊃kk[1]
[ 80] ⍝
[ 81]  esse[73;22]←esse[109;21]←esse[159;22]←'('
[ 82]  esse[73;29]←esse[109;28]←esse[159;29]←')'
[ 83] ⍝
[ 84]  ri←ri,⊃kk[2]
[ 85]  kk←instancia 11
[ 86]  esse[183+⍳9;]←9 80⍴⊃kk[1]
[ 87]  ri←ri,⊃kk[2]
[ 88]  kk←instancia 21
[ 89]  esse[192+⍳9;]←9 80⍴⊃kk[1]
[ 90]  ri←ri,⊃kk[2]
[ 91]  kk←instancia 32
[ 92]  esse[201+⍳9;]←9 80⍴⊃kk[1]
[ 93]  ri←ri,⊃kk[2]
[ 94]  kk←instancia 12
[ 95]  esse[210+⍳11;]←11 80⍴⊃kk[1]
[ 96]  ri←ri,⊃kk[2]
[ 97]  kk←instancia 33
[ 98]  esse[221+⍳9;]←9 80⍴⊃kk[1]
[ 99]  ri←ri,⊃kk[2]
[100]  kk←instancia 13
[101]  esse[230+⍳11;]←11 80⍴⊃kk[1]
[102]  ri←ri,⊃kk[2]
[103]  kk←instancia 23
[104]  esse[241+⍳12;]←12 80⍴⊃kk[1]
[105]  ri←ri,⊃kk[2]
[106]  kk←instancia 32
[107]  esse[253+⍳9;]←9 80⍴⊃kk[1]
[108]  ri←ri,⊃kk[2]
[109]  ri←5 5⍴ri
[110]  resp←resp,,+/[2]ri
[111]  resu←resu,[1]1 6⍴resp
```

```
[112]  acuja←(f[;2]='#')/⍳1↑⍴f
[113]  f[acuja;]←esse[⍋,f[acuja;3 4 5],' ';]
[114]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[115]  □←(⍕xk←xk+1),'-'
[116]  →testa
[117] fim:upag←(1 0+⍴f)⍴' '
[118]  f2←3 0 7 0 5 0 5 0 5 0 5 0
[119]  →(1=≡n)/elafa
[120]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[121]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[122]  upag[2+⍳1↑⍴resu;⍳+/f2]←'⍞-'edit f2⍕resu
[123]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[124]  →terminando
[125] elafa:
[126]  aaa←(ylu,'⍞-'edit 5 0⍕0 1↓resu)
[127]  lixonol←aaa ⎕FM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[128]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[129] terminando:
[130]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[131]  relat[1↑⍴relat;;]←upag
[132]  lixonol←(((×/2↑⍴relat),⍞1↑⍴relat)⍴relat)
[133] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[134]  lixonol←lixonol ⎕FM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[135]  lixonol←⎕EX 11 3⍴'A11A12A13A21A22A23A32A33A34A41A42'
[136] ⍝ lixonol←⎕EX 6 1⍴'ABCDEF'
[137] ⍝ lixonol←⎕EX 6 3⍴'EX1EX2EX3EX4EX5EX6'
[138]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo055

```
[ 0]  r←x achaq3 in;i;j;viz;k;qtv;val
[ 1]  i←in[1]
[ 2]  j←in[2]
[ 3]  viz←8 2⍴((i-1),j-1),((i-1),j),((i-1),j+1),(i,j-1),(i,j+1),((i+1),j-1),((i+1),j),((i+
      1),j+1)
[ 4]  viz←viz,0
[ 5]  k←1
[ 6]  qtv←0
[ 7]  val←0
[ 8] t2:
[ 9]  →(k>8)/fim
[10]  →(x[i;j]≠0)/soma
[11]  →((viz[k;1]<1)∨(viz[k;1]>1↑⍴x)∨(viz[k;2]<1)∨(viz[k;2]>1↑⍴x))/soma
[12]  →(x[viz[k;1];viz[k;2]]=0)/soma
[13]  qtv←qtv+1
[14]  val←val+x[viz[k;1];viz[k;2]]
[15] soma:
[16]  k←k+1
[17]  →t2
[18] fim:r←val,qtv
------------------------------------------------------------
[ 0]  r←abcd calc055 ab
[ 1]  →(1=abcd)/eum
[ 2]  →(2=abcd)/edo
[ 3]  →(3=abcd)/etr
[ 4]  →(4=abcd)/equ
[ 5]  'erro: indicador invalido'
[ 6]  →0
[ 7] eum:r←(ab[1]×ab[2])+ab[1]
[ 8]  →0
[ 9] edo:r←(ab[1]×ab[2])+ab[2]
```

```
[10]  →0
[11] etr:r←(ab[1]+ab[2])×ab[1]
[12]  →0
[13] equ:r←(ab[1]+ab[2])×ab[2]
[14]  →0
-------------------------------------------------------------
[0]  r←empe x;c;l
[1]  c←1+8|¯1+x
[2]  l←⌈x÷8
[3]  r←⍉(2,(⍴c))⍴l,c
-------------------------------------------------------------
[ 0]  r←gera055_1;soma;i;t;y;l;c;z;w;lixo
[ 1]  soma←0 0
[ 2]  w←0 8⍴0
[ 3]  i←1
[ 4]  r←2⍴0
[ 5] t1:→(i>50)/fica
[ 6]  t←geraxad
[ 7]  y←(l←?8),(c←?8),6⍴999
[ 8]  →(1=?5)/vai
[ 9]  →(t[l;c]=0)/t1
[10] vai:
[11]  z←(1 8⍴y),[1]t
[12]  soma←soma+(l,c)resoxad t
[13]  w←w,[1]z
[14]  i←i+1
[15]  →t1
[16] fica:
[17]  w←'¯'-'edit 4 0⍕w
[18]  r[1]←⊂w
[19]  r[2]←⊂soma
-------------------------------------------------------------
[ 0]  r←gera055_2;a;alfa;alfanum;b;i;op;respo;resto;rr
[ 1]  alfa←'ABCD'[alfanum←4?4]
[ 2]  i←1
[ 3]  resto←0 20⍴' '
[ 4]  respo←0
[ 5] t1:→(i>95)/fim
[ 6]  a←?9
[ 7]  b←?9
[ 8]  op←?4
[ 9]  resto←resto,[1]1 20⍴20↑((⍕a),' ',alfa[op],' ',⍕b),' = ',⍕rr←⍎(⍕alfanum[op]),' calc05
      5 ',(⍕a),' ',⍕b
[10]  →(i<45)/oba
[11]  respo←respo+rr
[12] oba:
[13]  i←i+1
[14]  →t1
[15] fim:
[16]  r←3⍴0
[17]  r[1]←⊂resto[⍳45;]
[18]  r[2]←⊂resto[45+⍳50;⍳5]
[19]  r[3]←⊂respo
-------------------------------------------------------------
[ 0]  r←gera055_3;i;z;y;w;m
[ 1]  r←2⍴0
[ 2]  m←0 20⍴' '
[ 3]  w←0
[ 4]  i←1
[ 5] t1:→(i>20)/fim
[ 6]  z←geraq3 5 5
[ 7]  y←resq3 z
[ 8]  w←w+y
```

```
[ 9]  m←m,[1]4 0⍕z
[10]  m←m,[1]1 20⍴4 0⍕4⍴999
[11]  i←i+1
[12]  →t1
[13] fim:
[14]  r[1]←⊂m
[15]  r[2]←⊂w
-------------------------------------------------------------
[ 0]  r←gera055_4;a;aux;b;ct;i;prima;primb;rr;rz;s1;s2;z
[ 1]  r←0 54⍴' '
[ 2]  i←1
[ 3] novo:→(i>25)/fica
[ 4]  prima←a←2+?49
[ 5]  primb←b←2+?49
[ 6]  →(a≥b)/novo
[ 7]  rr←a,b
[ 8]  z←0
[ 9] t1:→(z>99999999999)/fim
[10]  z←a+b
[11]  rr←rr,z
[12]  a←b
[13]  b←z
[14]  →t1
[15] fim:
[16]  s1←100000+?9999999
[17]  s2←10000000+?99999999
[18]  ct←+/(rr≥s1)∧(rr≤s2)
[19]  rz←prima,primb,s1,s2,ct
[20]  r←r,[1]1 54⍴(5 0 5 0 15 0 17 0⍕rz[⍳4]),'    --> ',4 0⍕rz[5]
[21]  i←i+1
[22]  →novo
[23] fica:
-------------------------------------------------------------
[0]  r←geraq3 tam;vv
[1]  vv←(×/tam)⍴0
[2]  vv[4?(×/tam)]←1 2,(3 10 4 0 5 15 6)[2?7]
[3]  r←tam⍴vv
-------------------------------------------------------------
[  0]  r←geraxad;c;cc;l;ponde;t;xx
[  1]  t←8 8⍴0
[  2]  t[1;5]←¯6 ⋄ t[8;5]←6
[  3] ⍝ alocacao de peoes
[  4]  c←1
[  5] t1:→(c>8)/f1
[  6]  ponde←(3 4 5 6)[2?4]
[  7]  ponde←ponde[⍋ponde]
[  8]  cc←?4
[  9]  →(cc=1)/peaofora
[ 10]  →(cc=2)/peaoparado
[ 11]  →(cc>2)/peaoanda
[ 12] peaofora:→pbra
[ 13] peaoparado:t[2;c]←¯1
[ 14]  →pbra
[ 15] peaoanda:t[ponde[1];c]←¯1
[ 16] pbra:
[ 17]  cc←?4
[ 18]  →(cc=1)/peabfora
[ 19]  →(cc=2)/peabparado
[ 20]  →(cc>2)/peabanda
[ 21] peabfora:→psom
[ 22] peabparado:t[7;c]←1
[ 23]  →psom
[ 24] peabanda:t[ponde[2];c]←1
```

```
[ 25] psom:
[ 26]  c←c+1
[ 27]  →t1
[ 28] f1:
[ 29] ⍝ colocacao das torres
[ 30]  cc←?4
[ 31]  →(cc=1)/torn1fora
[ 32]  →(cc=2)/torn1parado
[ 33]  →(cc>2)/torn1anda
[ 34] torn1fora:→tor2n
[ 35] torn1parado:t[1;1]←¯2
[ 36]  →tor2n
[ 37] torn1anda:xx←t[l←?8;c←?8]
[ 38]  →(xx≠0)/torn1anda
[ 39]  t[l;c]←¯2
[ 40] tor2n:
[ 41]  cc←?4
[ 42]  →(cc=1)/torn2fora
[ 43]  →(cc=2)/torn2parado
[ 44]  →(cc>2)/torn2anda
[ 45] torn2fora:→tor1b
[ 46] torn2parado:t[1;8]←¯2
[ 47]  →tor1b
[ 48] torn2anda:xx←t[l←?8;c←?8]
[ 49]  →(xx≠0)/torn2anda
[ 50]  t[l;c]←¯2
[ 51] tor1b:
[ 52]  cc←?4
[ 53]  →(cc=1)/torb1fora
[ 54]  →(cc=2)/torb1parado
[ 55]  →(cc>2)/torb1anda
[ 56] torb1fora:→tor2b
[ 57] torb1parado:t[8;1]←2
[ 58]  →tor2b
[ 59] torb1anda:xx←t[l←?8;c←?8]
[ 60]  →(xx≠0)/torb1anda
[ 61]  t[l;c]←2
[ 62] tor2b:
[ 63]  cc←?4
[ 64]  →(cc=1)/torb2fora
[ 65]  →(cc=2)/torb2parado
[ 66]  →(cc>2)/torb2anda
[ 67] torb2fora:→cav1n
[ 68] torb2parado:t[8;8]←2
[ 69]  →cav1n
[ 70] torb2anda:xx←t[l←?8;c←?8]
[ 71]  →(xx≠0)/torb2anda
[ 72]  t[l;c]←2
[ 73] cav1n:
[ 74] ⍝ colocacao dos cavalos
[ 75]  cc←?4
[ 76]  →(cc=1)/cavn1fora
[ 77]  →(cc=2)/cavn1parado
[ 78]  →(cc>2)/cavn1anda
[ 79] cavn1fora:→cav2n
[ 80] cavn1parado:t[1;2]←¯3
[ 81]  →cav2n
[ 82] cavn1anda:xx←t[l←?8;c←?8]
[ 83]  →(xx≠0)/cavn1anda
[ 84]  t[l;c]←¯3
[ 85] cav2n:
[ 86]  cc←?4
[ 87]  →(cc=1)/cavn2fora
```

```
[ 88]  →(cc=2)/cavn2parado
[ 89]  →(cc>2)/cavn2anda
[ 90] cavn2fora:→cav1b
[ 91] cavn2parado:t[1;7]←¯3
[ 92]  →cav1b
[ 93] cavn2anda:xx←t[l←?8;c←?8]
[ 94]  →(xx≠0)/cavn2anda
[ 95]  t[l;c]←¯3
[ 96] cav1b:
[ 97]  cc←?4
[ 98]  →(cc=1)/cavb1fora
[ 99]  →(cc=2)/cavb1parado
[100]  →(cc>2)/cavb1anda
[101] cavb1fora:→cav2b
[102] cavb1parado:t[8;2]←3
[103]  →cav2b
[104] cavb1anda:xx←t[l←?8;c←?8]
[105]  →(xx≠0)/cavb1anda
[106]  t[l;c]←3
[107] cav2b:
[108]  cc←?4
[109]  →(cc=1)/cavb2fora
[110]  →(cc=2)/cavb2parado
[111]  →(cc>2)/cavb2anda
[112] cavb2fora:→bis1n
[113] cavb2parado:t[8;2]←3
[114]  →bis1n
[115] cavb2anda:xx←t[l←?8;c←?8]
[116]  →(xx≠0)/cavb2anda
[117]  t[l;c]←3
[118] A colocacao dos bispos
[119] bis1n:
[120]  cc←?4
[121]  →(cc=1)/bisn1fora
[122]  →(cc=2)/bisn1parado
[123]  →(cc>2)/bisn1anda
[124] bisn1fora:→bis2n
[125] bisn1parado:t[1;3]←¯4
[126]  →bis2n
[127] bisn1anda:xx←t[l←?8;c←?8]
[128]  →((t[2;2]=¯1)∧(t[2;4]=¯1))/bisn1parado
[129]  →((xx≠0)∨(1=2|c+8×l-1))/bisn1anda
[130]  t[l;c]←¯4
[131] bis2n:
[132]  cc←?4
[133]  →(cc=1)/bisn2fora
[134]  →(cc=2)/bisn2parado
[135]  →(cc>2)/bisn2anda
[136] bisn2fora:→bis1b
[137] bisn2parado:t[1;6]←¯4
[138]  →bis1b
[139] bisn2anda:xx←t[l←?8;c←?8]
[140]  →((t[2;5]=¯1)∧(t[2;7]=¯1))/bisn2parado
[141]  →((xx≠0)∨(0=2|c+8×l-1))/bisn2anda
[142]  t[l;c]←¯4
[143] bis1b:
[144]  cc←?4
[145]  →(cc=1)/bisb1fora
[146]  →(cc=2)/bisb1parado
[147]  →(cc>2)/bisb1anda
[148] bisb1fora:→bis2b
[149] bisb1parado:t[8;3]←4
[150]  →bis2b
```

```
[151] bisb1anda:xx←t[l←?8;c←?8]
[152]  →((t[7;2]=1)∧(t[7;4]=1))/bisb1parado
[153]  →((xx≠0)∨(1=2|c+8×l-1))/bisb1anda
[154]  t[l;c]←4
[155] bis2b:
[156]  cc←?4
[157]  →(cc=1)/bisb2fora
[158]  →(cc=2)/bisb2parado
[159]  →(cc>2)/bisb2anda
[160] bisb2fora:→damn
[161] bisb2parado:t[8;6]←4
[162]  →damn
[163] bisb2anda:xx←t[l←?8;c←?8]
[164] ⍝ l,c
[165]  →((t[7;5]=1)∧(t[7;7]=1))/bisb2parado
[166]  →((xx≠0)∨(0=2|c+8×l-1))/bisb2anda
[167]  t[l;c]←4
[168] ⍝ movimento da dama
[169] damn:
[170]  cc←?4
[171]  →(cc=1)/damnfora
[172]  →(cc=2)/damnparado
[173]  →(cc>2)/damnanda
[174] damnfora:→damb
[175] damnparado:t[1;4]←¯5
[176]  →damb
[177] damnanda:xx←t[l←?8;c←?8]
[178]  →((t[2;3]=¯1)∧(t[2;4]=¯1)∧(t[2;5]=¯1))/damnparado
[179]  →(xx≠0)/damnanda
[180]  t[l;c]←¯5
[181] damb:
[182]  cc←?4
[183]  →(cc=1)/dambfora
[184]  →(cc=2)/dambparado
[185]  →(cc>2)/dambanda
[186] dambfora:→acabou
[187] dambparado:t[8;4]←5
[188]  →acabou
[189] dambanda:xx←t[l←?8;c←?8]
[190]  →((t[7;3]=1)∧(t[7;4]=1)∧(t[7;5]=1))/dambparado
[191]  →(xx≠0)/dambanda
[192]  t[l;c]←5
[193] acabou:r←t
-------------------------------------------------------------
[ 0]  r←montaskak t;zeros;i;j;lin
[ 1]  r←'\fenboard{'
[ 2]  i←1
[ 3] t1:→(i>8)/fi1
[ 4]  j←1
[ 5]  zeros←0
[ 6]  lin←''
[ 7] t2:→(j>8)/soma
[ 8]  →(t[i;j]=0)/soz
[ 9]  →(zeros=0)/okz
[10]  lin←lin,⍕zeros
[11]  zeros←0
[12] okz:
[13]  lin←lin,traduz t[i;j]
[14] mais:
[15]  j←j+1
[16]  →t2
[17] soz:zeros←zeros+1
[18]  →mais
```

```
[19] soma:
[20]  →(zeros=0)/oba
[21]  lin←lin,⍪zeros
[22]  zeros←0
[23] oba:
[24]  →(i=1)/fui
[25]  r←r,'/'
[26] fui:
[27]  r←r,lin
[28]  i←i+1
[29]  →t1
[30] fi1:r←r,' w - - 0 1}'
------------------------------------------------------------
[0]  r←orig numera2 oper;aa;⎕IO
[1]  ⎕IO←orig
[2]  r←4 0⍪oper
[3]  r←(((3 0⍪(((1↑⍴oper),1)⍴⍳1↑⍴oper)),[⎕IO+1]'|'),[⎕IO+1]' '),r
[4]  r←((1,aa)⍴'     ',4 0⍪⍳1↓⍴oper),[⎕IO]((1,aa←5+4×1↓⍴oper)⍴'   +',100⍴'-'),[⎕IO]r
------------------------------------------------------------
[  0]  r←onde resoxad x;c;casas;mater;l;lt;ct
[  1]  l←onde[1] ⋄ c←onde[2]
[  2]  →(x[l;c]>0)/pos
[  3]  x←⌽[1]-x ⍝ invertendo e negando, para tratar todo mundo igual (como positivo)
[  4]  l←9-l
[  5] pos:
[  6]  →((x[l;c]≠0)∧(6≠|x[l;c]))/vai
[  7]  r←0 0
[  8]  →0
[  9] vai:
[ 10]  casas←0 ⋄ mater←0
[ 11]  →(x[l;c]=1)/peao
[ 12]  →(x[l;c]=2)/torre
[ 13]  →(x[l;c]=3)/cavalo
[ 14]  →(x[l;c]=4)/bispo
[ 15]  →(x[l;c]=5)/dama
[ 16]  →(x[l;c]=6)/rei
[ 17] peao:→(x[l-1;c]<0)/tt1
[ 18]  →((l≠7)∨((x[6;c]≠0)∨(x[5;c]≠0)))/eum
[ 19]  casas←1
[ 20] eum:casas←casas+1
[ 21] tt1:
[ 22]  →(c=1)/p1
[ 23]  →(x[l-1;c-1]≥0)/p1
[ 24]  mater←mater+|x[l-1;c-1]
[ 25]  casas←casas+1
[ 26] p1:
[ 27]  →(c=8)/p2
[ 28]  →(x[l-1;c+1]≥0)/p2
[ 29]  mater←mater+|x[l-1;c+1]
[ 30]  casas←casas+1
[ 31] p2:→final  ⍝ nao tem en-passant
[ 32] torre:
[ 33]  lt←l-1
[ 34] t1:→(lt<1)/g2
[ 35]  →(x[lt;c]≠0)/r1
[ 36]  casas←casas+1
[ 37]  lt←lt-1
[ 38]  →t1
[ 39] r1:→(x[lt;c]>0)/g2
[ 40]  mater←mater+|x[lt;c]
[ 41]  casas←casas+1
[ 42] g2:
[ 43]  lt←l+1
```

```
[ 44] t4:→(lt>8)/g4
[ 45]  →(x[lt;c]≠0)/p4
[ 46]  casas←casas+1
[ 47]  lt←lt+1
[ 48]  →t4
[ 49] p4:→(x[lt;c]>0)/g4
[ 50]  mater←mater+|x[lt;c]
[ 51]  casas←casas+1
[ 52] g4:
[ 53]  ct←c-1
[ 54] t5:→(ct<1)/g5
[ 55]  →(x[l;ct]≠0)/p5
[ 56]  casas←casas+1
[ 57]  ct←ct-1
[ 58]  →t5
[ 59] p5:→(x[l;ct]>0)/g5
[ 60]  mater←mater+|x[l;ct]
[ 61]  casas←casas+1
[ 62] g5:
[ 63]  ct←c+1
[ 64] t9:→(ct>8)/g6
[ 65]  →(x[l;ct]≠0)/p6
[ 66]  casas←casas+1
[ 67]  ct←ct+1
[ 68]  →t9
[ 69] p6:→(x[l;ct]>0)/g6
[ 70]  mater←mater+|x[l;ct]
[ 71]  casas←casas+1
[ 72] g6:
[ 73]  →final
[ 74] cavalo:
[ 75]  →((l<3)∨(c<2))/k1
[ 76]  →(x[l-2;c-1]>0)/k1
[ 77]  →(x[l-2;c-1]=0)/sk1
[ 78]  mater←mater+|x[l-2;c-1]
[ 79] sk1:casas←casas+1
[ 80] k1:
[ 81]  →((l<3)∨(c>7))/k2
[ 82]  →(x[l-2;c+1]>0)/k2
[ 83]  →(x[l-2;c+1]=0)/sk2
[ 84]  mater←mater+|x[l-2;c+1]
[ 85] sk2:casas←casas+1
[ 86] k2:
[ 87]  →((l<2)∨(c>6))/k3
[ 88]  →(x[l-1;c+2]>0)/k3
[ 89]  →(x[l-1;c+2]=0)/sk3
[ 90]  mater←mater+|x[l-1;c+2]
[ 91] sk3:casas←casas+1
[ 92] k3:
[ 93]  →((l>7)∨(c>6))/k4
[ 94]  →(x[l+1;c+2]>0)/k4
[ 95]  →(x[l+1;c+2]=0)/sk4
[ 96]  mater←mater+|x[l+1;c+2]
[ 97] sk4:casas←casas+1
[ 98] k4:
[ 99]  →((l>6)∨(c>7))/k5
[100]  →(x[l+2;c+1]>0)/k5
[101]  →(x[l+2;c+1]=0)/sk5
[102]  mater←mater+|x[l+2;c+1]
[103] sk5:casas←casas+1
[104] k5:
[105]  →((l>6)∨(c<2))/k6
[106]  →(x[l+2;c-1]>0)/k6
```

```
[107]  →(x[l+2;c-1]=0)/sk6
[108]  mater←mater+|x[l+2;c-1]
[109] sk6:casas←casas+1
[110] k6:
[111]  →((l>7)∨(c<3))/k7
[112]  →(x[l+1;c-2]>0)/k7
[113]  →(x[l+1;c-2]=0)/sk7
[114]  mater←mater+|x[l+1;c-2]
[115] sk7:casas←casas+1
[116] k7:
[117]  →((l<2)∨(c<3))/k8
[118]  →(x[l-1;c-2]>0)/k8
[119]  →(x[l-1;c-2]=0)/sk8
[120]  mater←mater+|x[l-1;c-2]
[121] sk8:casas←casas+1
[122] k8:
[123]  →final
[124] bispo:
[125] j1:lt←l-1 ⋄ ct←c-1
[126] j2:→((lt<1)∨(ct<1))/j4
[127]  →(x[lt;ct]≠0)/j3
[128]  casas←casas+1
[129]  lt←lt-1 ⋄ ct←ct-1
[130]  →j2
[131] j3:
[132]  →(x[lt;ct]>0)/j4
[133]  mater←mater+|x[lt;ct] ⋄ casas←casas+1
[134] j4:
[135]  lt←l-1 ⋄ ct←c+1
[136] j5:→((lt<1)∨(ct>8))/j7
[137]  →(x[lt;ct]≠0)/j6
[138]  casas←casas+1
[139]  lt←lt-1 ⋄ ct←ct+1
[140]  →j5
[141] j6:
[142]  →(x[lt;ct]>0)/j7
[143]  mater←mater+|x[lt;ct] ⋄ casas←casas+1
[144] j7:
[145]  lt←l+1 ⋄ ct←c+1
[146] j8:→((lt>8)∨(ct>8))/j10
[147]  →(x[lt;ct]≠0)/j9
[148]  casas←casas+1
[149]  lt←lt+1 ⋄ ct←ct+1
[150]  →j8
[151] j9:
[152]  →(x[lt;ct]>0)/j10
[153]  mater←mater+|x[lt;ct] ⋄ casas←casas+1
[154] j10:
[155]  lt←l+1 ⋄ ct←c-1
[156] j11:→((lt>8)∨(ct<1))/j13
[157]  →(x[lt;ct]≠0)/j12
[158]  casas←casas+1
[159]  lt←lt+1 ⋄ ct←ct-1
[160]  →j11
[161] j12:
[162]  →(x[lt;ct]>0)/j13
[163]  mater←mater+|x[lt;ct] ⋄ casas←casas+1
[164] j13:
[165]  →final
[166] dama:
[167]  lt←l-1
[168] dt1:→(lt<1)/dg2
[169]  →(x[lt;c]≠0)/dr1
```

```
[170]  casas←casas+1
[171]  lt←lt-1
[172]  →dt1
[173] dr1:→(x[lt;c]>0)/dg2
[174]  mater←mater+|x[lt;c]
[175]  casas←casas+1
[176] dg2:
[177]  lt←l+1
[178] dt4:→(lt>8)/dg4
[179]  →(x[lt;c]≠0)/dp4
[180]  casas←casas+1
[181]  lt←lt+1
[182]  →dt4
[183] dp4:→(x[lt;c]>0)/dg4
[184]  mater←mater+|x[lt;c]
[185]  casas←casas+1
[186] dg4:
[187]  ct←c-1
[188] dt5:→(ct<1)/dg5
[189]  →(x[l;ct]≠0)/dp5
[190]  casas←casas+1
[191]  ct←ct-1
[192]  →dt5
[193] dp5:→(x[l;ct]>0)/dg5
[194]  mater←mater+|x[l;ct]
[195]  casas←casas+1
[196] dg5:
[197]  ct←c+1
[198] dt9:→(ct>8)/dg6
[199]  →(x[l;ct]≠0)/dp6
[200]  casas←casas+1
[201]  ct←ct+1
[202]  →dt9
[203] dp6:→(x[l;ct]>0)/dg6
[204]  mater←mater+|x[l;ct]
[205]  casas←casas+1
[206] dg6:
[207] dj1:lt←l-1 ⋄ ct←c-1
[208] dj2:→((lt<1)∨(ct<1))/dj4
[209]  →(x[lt;ct]≠0)/dj3
[210]  casas←casas+1
[211]  lt←lt-1 ⋄ ct←ct-1
[212]  →dj2
[213] dj3:
[214]  →(x[lt;ct]>0)/dj4
[215]  mater←mater+|x[lt;ct] ⋄ casas←casas+1
[216] dj4:
[217]  lt←l-1 ⋄ ct←c+1
[218] dj5:→((lt<1)∨(ct>8))/dj7
[219]  →(x[lt;ct]≠0)/dj6
[220]  casas←casas+1
[221]  lt←lt-1 ⋄ ct←ct+1
[222]  →dj5
[223] dj6:
[224]  →(x[lt;ct]>0)/dj7
[225]  mater←mater+|x[lt;ct] ⋄ casas←casas+1
[226] dj7:
[227]  lt←l+1 ⋄ ct←c+1
[228] dj8:→((lt>8)∨(ct>8))/dj10
[229]  →(x[lt;ct]≠0)/dj9
[230]  casas←casas+1
[231]  lt←lt+1 ⋄ ct←ct+1
[232]  →dj8
```

```
[233] dj9:
[234]  →(x[lt;ct]>0)/dj10
[235]  mater←mater+|x[lt;ct] ⋄ casas←casas+1
[236] dj10:
[237]  lt←l+1 ⋄ ct←c-1
[238] dj11:→((lt>8)∨(ct<1))/dj13
[239]  →(x[lt;ct]≠0)/dj12
[240]  casas←casas+1
[241]  lt←lt+1 ⋄ ct←ct-1
[242]  →dj11
[243] dj12:
[244]  →(x[lt;ct]>0)/dj13
[245]  mater←mater+|x[lt;ct] ⋄ casas←casas+1
[246] dj13:
[247]  →final
[248] rei:'erro: mandou olhar o rei'
[249]  →0
[250] final:r←casas,mater
------------------------------------------------------------
[ 0]  r←resq3 x;xa;viz;val;i;j;zz;max
[ 1]  xa←x
[ 2] t1:→(~0∈xa)/acaboum
[ 3]  viz←0
[ 4]  val←0
[ 5]  max←0,0
[ 6]  i←1
[ 7] t2:→(i>1↑⍴x)/fim
[ 8]  j←1
[ 9] t3:→(j>1↓⍴x)/soma
[10]  zz←xa achaq3(i,j)
[11]  →(zz[1]<val)/subs
[12]  →(zz[1]=val)/testav
[13]  val←zz[1]
[14]  max←i,j
[15] ⍝ →subs
[16] testav:
[17]  →(zz[2]≤viz)/subs
[18]  viz←zz[2]
[19]  max←i,j
[20] subs:
[21]  j←j+1
[22]  →t3
[23] soma:
[24]  i←i+1
[25]  →t2
[26] fim:
[27]  xa[max[1];max[2]]←val
[28]  →t1
[29] acaboum:
[30]  r←⌈/,xa
------------------------------------------------------------
[ 0]  r←traduz x
[ 1]  →(x=¯1)/epeao
[ 2]  →(x=¯2)/etorre
[ 3]  →(x=¯3)/ecavalo
[ 4]  →(x=¯4)/ebispo
[ 5]  →(x=¯5)/edama
[ 6]  →(x=¯6)/erei
[ 7]  →(x=1)/ePEAO
[ 8]  →(x=2)/eTORRE
[ 9]  →(x=3)/eCAVALO
[10]  →(x=4)/eBISPO
[11]  →(x=5)/eDAMA
```

```
[12]  →(x=6)/eREI
[13] epeao:r←'p'
[14]  →0
[15] etorre:r←'r'
[16]  →0
[17] ecavalo:r←'n'
[18]  →0
[19] ebispo:r←'b'
[20]  →0
[21] edama:r←'q'
[22]  →0
[23] erei:r←'k'
[24]  →0
[25] ePEAO:r←'P'
[26]  →0
[27] eTORRE:r←'R'
[28]  →0
[29] eCAVALO:r←'N'
[30]  →0
[31] eBISPO:r←'B'
[32]  →0
[33] eDAMA:r←'Q'
[34]  →0
[35] eREI:r←'K'
[36]  →0
------------------------------------------------------------
[ 0]  opesq vivo055a n;CORRECAO;EVENTO;QUIPN;aaa;acuja;dhx;esse;f;lixo1;lixonol;nome;nomes
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  QUIPN←'00'
[ 3]  opesq←10⍴' '
[ 4] qveio:
[ 5]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 6]  EVENTO←'PL055   '
[ 7]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ QUIPN←n[3 4]
[ 9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[10]  ylu←n grupo ylu
[11]  FOLHALA055←ajusta80 FOLHALA055
[12]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA055)⍴' '
[13]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[14]  xk←1 ⋄ resu←0 6⍴0
[15] testa:→(xk>1↑⍴ylu)/fim
[16]  esse←30 80⍴' '
[17]  f←FOLHALA055
[18]  esse[1;]←80↑dhx[1;]
[19]  esse[2;]←80↑dhx[2;]
[20]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[21]  esse[4;]←80↑ylu[xk;⍳6]
[22]  →(36=1↓⍴ylu)/zebra
[23]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[24]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[25]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[26]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[27]  →maiszebra
[28] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[32]  esse[29;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[30;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] inica:
```

```
[35]  nome←'c:⍀apl2⍀F055',QUIPN,('00'⍕xk),'.myd'
[36]  xx←gera055_1   ⍝ o nome do arquivo F55xxxzz.myd (xxx=turma; zz=numero)
[37]  zz←450 50↑⍕⊃xx[1]
[38]  resp←resp,⊃xx[2]
[39]  xx←gera055_2
[40]  esse[7+⍳15;]←15 80↑15 60⍴⊃xx[1]
[41]  zz←zz,[1]50 50↑⊃xx[2]
[42]  resp←resp,⊃xx[3]
[43]  xx←gera055_3
[44]  zz←zz,[1]120 50↑⍕⊃xx[1]
[45]  resp←resp,⊃xx[2]
[46]  xx←gera055_4
[47]  zz←zz,[1]20 50↑5 0↓xx
[48]  esse[22+⍳5;]←5 80↑xx
[49]  resp←resp,+/⍤,xx[5+⍳20;50+⍳4]
[50]  esse[28;]←80↑8↓nome
[51]  lixonol←zz ⎕FM nome
[52]  resu←resu,[1]1 6⍴resp
[53]  acuja←(f[;2]='#')/⍳1↑⍴f
[54]  f[acuja;⍳80]←esse[⍤,f[acuja;3 4],' ';]
[55]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[56]  ⍞←(⍕xk←xk+1),'-'
[57]  →testa
[58] fim:upag←(1 0+⍴f)⍴' '
[59]  →(1=≡n)/elafa
[60]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[61]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[62]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0 8 0 8 0 5 0)⍕resu
[63]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[64]  →terminando
[65] elafa:aaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[66]  lixonol←aaa ⎕FM('c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.gpa')
[67]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[68] terminando:
[69]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[70]  relat[1↑⍴relat;;]←upag
[71]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[72]  lixonol←lixonol ⎕FM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.tex'
[73]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[74]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo056

```
[ 0]  r←gera056;rr;y;z
[ 1]  z←18 80⍴' '
[ 2]  rr←⍳0
[ 3]  z[1 2;]←2 80↑40 quebra2⍕y←gerafigs
[ 4]  rr←rr,resolfigs y
[ 5]  z[3 4;]←2 80↑40 quebra2⍕y←gerafigs
[ 6]  rr←rr,resolfigs y
[ 7]  z[5 6;]←2 80↑40 quebra2⍕y←gerafigs
[ 8]  rr←rr,resolfigs y
[ 9]  z[7 8;]←2 80↑40 quebra2⍕y←geramoeda
[10]  rr←rr,resolmoeda y
[11]  z[9 10;]←2 80↑40 quebra2⍕y←geramoeda
[12]  rr←rr,resolmoeda y
[13]  z[11 12;]←2 80↑40 quebra2⍕y←geramoeda
[14]  rr←rr,resolmoeda y
[15]  z[13 14;]←2 80↑40 quebra2⍕y←gerapeso
[16]  rr←rr,resolvepeso y
[17]  z[15 16;]←2 80↑40 quebra2⍕y←gerapeso
```

```
[18]  rr←rr,resolvepeso y
[19]  z[17 18;]←2 80↑40 quebra2⍪y←gerapeso
[20]  rr←rr,resolvepeso y
[21]  r←2⍴0
[22]  r[1]←⊂z
[23]  r[2]←⊂rr
-------------------------------------------------------------
[0]  r←gerafigs;n;m
[1]  n←(10+?20)
[2]  m←?(10+?20)⍴n
[3]  r←n,(⍴m),m
-------------------------------------------------------------
[0]  r←geramoeda;n;f;z
[1]  n←2+?6
[2]  f←7+?6
[3]  z←?n⍴6
[4]  r←n,f,z
-------------------------------------------------------------
[0]  r←gerapeso;n;z;l
[1]  n←6+?8
[2]  z←5×⍳n
[3]  l←¯2+?n⍴5
[4]  z←z+l
[5]  r←n,z
-------------------------------------------------------------
[ 0]  r←tam quebra2 x;i
[ 1]  r←2 80⍴' '
[ 2]  x←160↑x
[ 3]  i←tam
[ 4] volta:
[ 5]  →(i<10)/zebra
[ 6]  →(x[i]=' ')/ok
[ 7]  i←i-1
[ 8]  →volta
[ 9] ok:r[1;]←80↑i↑x
[10]  r[2;]←80↑i↓x
[11]  →0
[12] zebra:
[13]  'deu xabu, reveja'
-------------------------------------------------------------
[0]  r←resolfigs x;z;i
[1]  z←x[1]⍴0
[2]  i←1
[3] t1:→(i>¯2+⍴x)/fim
[4]  z[x[i+2]]←1
[5]  i←i+1
[6]  →t1
[7] fim:r←+/z=0
-------------------------------------------------------------
[ 0]  r←resolmoeda x;ct;f;i;j;n
[ 1]  n←x[1]
[ 2]  f←x[2]
[ 3]  i←1
[ 4]  ct←0
[ 5] t1:
[ 6]  j←1
[ 7] t2:→(j>n)/oba
[ 8]  →(0≠x[j+2]|i)/soma
[ 9]  ct←ct+1
[10]  →(ct≥f)/fim
[11] soma:j←j+1
[12]  →t2
[13] oba:i←i+1
```

```
[14]  →t1
[15] fim:r←i
------------------------------------------------------------
[ 0]  r←resolvepeso x;z;i
[ 1]  z←1↓x
[ 2]  i←⍴z
[ 3] t1:→(i<2)/acabou
[ 4]  →((z[i]-z[i-1])>8)/xabu
[ 5]  i←i-1
[ 6]  →t1
[ 7] acabou:
[ 8]  →(z[1]≤8)/blz
[ 9]  r←0
[10]  →0
[11] blz:
[12]  r←1 ⍝ deveria ser 'S'
[13]  →0
[14] xabu:
[15]  r←0 ⍝ deveria ser 'N'
[16]  →0
------------------------------------------------------------
[ 0]  opesq vivo056a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL056   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA056←ajusta80 FOLHALA056
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA056)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 10⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←27 80⍴' '
[16]  f←FOLHALA056
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[26;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[27;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera056
[35]  esse[7+⍳18;]←18 80↑⊃xx[1]
[36]  resp←resp,,⊃xx[2]
[37]  resu←resu,[1]1 10⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
```

```
[40]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'⍀clearpage'
[41]  ⍞←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+ρf)ρ' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓ρupag)↑'⍀begin{verbatim}'
[46]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[47]  upag[2+⍳1↑ρresu;⍳+/lixo1]←(lixo1←5 0 10 0 3 0 3 0 8 0 3 0 3 0 8 0 3 0 3 0)⍕resu
[48]  upag[3+1↑ρresu;]←(1↓ρupag)↑'⍀end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],10 0 3 0 3 0 8 0 3 0 3 0 8 0 3 0 3 0⍕0 1↓resu)
[51]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[53] terminando:
[54]  upag[1↑ρupag;]←(1↓ρupag)↑'⍀end{document}'
[55]  relat[1↑ρrelat;;]←upag
[56]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[57]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo057

```
[ 0]  D←S DISPLAY A;⎕IO;R;C;HL;HC;HT;HB;VL;VB;V;W;N;B
[ 1] ⍝ Display a general array in pictorial form
[ 2] ⍝  Normal call is monadic.  Dyadic call used only in
[ 3] ⍝    recursion to specify display rank, shape, and depth.
[ 4]  ⎕IO←0
[ 5]  ⍎(0=⎕NC'S')/'S←ρA'
[ 6]  R←↑ρ,S                    ⍝ Pseudo rank
[ 7]  C←'┐┌└┘'                  ⍝ UR, UL, LL, and LR corners
[ 8]  HL←'─'                    ⍝ Horizontal line
[ 9]  HC←HL,'⍷→',HL,'~+∊'       ⍝ Horizontal borders
[10]  HT←HC[(0<R)×1+0<↑¯1↑,S]
[11] ⍝W←,0≡¨↑0ρ⊂(1⌈ρA)↑A
[12]  HB←HC[3+3⌊('2×~A≡⍕A'⎕EA'1+↑∊0×(1⌈×/ρA)↑,A')+3×1<ρρS]
[13]  VL←'│'                    ⍝ Vertical line
[14]  VB←VL,'⌽↓'                ⍝ Vertical border
[15]  V←VB[(1<R)×1+0<¯1↑¯1↓,S]
[16]  ⍎(0∊ρA)/'A←(1⌈ρA)ρ⊂↑A'   ⍝ Show prototype of empties
[17]  →(1<≡A)/GEN
[18]  →(2<ρρA)/D3
[19]  D←⍕A                      ⍝ Simple arrays
[20]  W←1↑ρD←(¯2↑1 1,ρD)ρD
[21]  N←¯1+1↓ρD
[22]  →(0=ρρA)/SS
[23]  D←(C[1],V,((W-1)ρVL),C[2]),((HT,NρHL),[0]D,[0]HB,NρHL),C[0],(WρVL),C[3]
[24]  →0
[25] SS:HB←((0 ' ')=↑0ρ⊂A)/' -'
[26]  D←' ',(' ',[0]D,[0]HB,Nρ' '),' '
[27]  →0
[28] GEN:D←⍕⍕DISPLAY¨A          ⍝ Enclosed arrays
[29]  N←D∨.≠' '
[30]  D←(N∨~1⌽N)⌿D
[31]  D←(∨⌿~'  '⍷D)/D
[32]  D←((1,ρS)ρS)DISPLAY D
[33]  →(2≥ρ,S)↓D3E,0
[34] D3:D←0 ¯1↓0 1↓⍕⊂A          ⍝ Multi-dimensional arrays
[35]  W←1↑ρD
[36]  N←¯1+1↓ρD
[37]  D←(C[1],V,((W-1)ρVL),C[2]),((HT,NρHL),[0]D,[0]HB,NρHL),C[0],(WρVL),C[3]
```

```
[38] D3E:N←¯2+⍴,S
[39]  V←C[N⍴1],[0]VB[1+0<¯2↓,S],[0](((¯3+↑⍴D),N)⍴VL),[0]C[N⍴2]
[40]  D←V,D
[41] ⍝¶⍝ APL2/6000 FKEY verification tag - DO NOT REMOVE, MUST BE LAST LINE
------------------------------------------------------------
[  0]  r←cpc algo;nome;PILHA;nnn;saida;aspa;vv;coma;SALVA;i;j;loca;aaa
[  1]  PILHA←0 21⍴' ' ⋄ nnn←1 ⋄ saida←0 70⍴' ' ⋄ r←0 70⍴' ' ⋄ aspa←'''' ⋄ loca←''
[  2]  i←1
[  3] t1:→(i>1↑⍴algo)/fim
[  4]  vv←vetoriza algo[i;]
[  5]  →('algoritmo'igual⊃vv[1])/ealg
[  6]  →('fim{algoritmo}'igual⊃vv[1])/ealf
[  7]  →('funcao'igual⊃vv[1])/efun
[  8]  →('fim{funcao}'igual⊃vv[1])/efuf
[  9]  →('leia'igual⊃vv[1])/elei
[ 10]  →('imprima'igual⊃vv[1])/eimp
[ 11]  →('se'igual⊃vv[1])/esex
[ 12]  →('senao'igual⊃vv[1])/esen
[ 13]  →('fim{se}'igual⊃vv[1])/esef
[ 14]  →('enquanto'igual⊃vv[1])/eenq
[ 15]  →('fim{enquanto}'igual⊃vv[1])/eenf
[ 16]  →('repita'igual⊃vv[1])/erep
[ 17]  →('ate'igual⊃vv[1])/eate
[ 18]  →('para'igual⊃vv[1])/epar
[ 19]  →('fim{para}'igual⊃vv[1])/epaf
[ 20]  →('abandone'igual⊃vv[1])/eaba
[ 21]  →('saia'igual⊃vv[1])/esai
[ 22]  →('<-'igual⊃vv[2])/ecad
[ 23]  →('inteiro'igual⊃vv[1])/eint
[ 24]  →('real'igual⊃vv[1])/erea
[ 25]  →('logico'igual⊃vv[1])/elog
[ 26]  →('caracter'igual 8↑⊃vv[1])/ecar
[ 27]  r←r,[1]1 70⍴70↑(3⍕i),' - comando desconhecido'
[ 28] soma:→(i=i←i+1)/t1
[ 29] ⍝--------------algoritmo--------------
[ 30] ealg:saida←saida,[1]1 70⍴70↑⊃vv[2]
[ 31]  →soma
[ 32] ealf:→fim
[ 33] ⍝--------------funcao-----------------
[ 34] efun:
[ 35]  coma←'RRRR←',(⊃vv[2]),' AAAA'
[ 36]  saida←saida,[1]1 70⍴70↑coma
[ 37]  nome←⊃vv[2]
[ 38]  j←1
[ 39] voi1:→(j>¯2+⍴vv)/aca0
[ 40]  saida←saida,[1]1 70⍴70↑(⊃vv[j+2]),'←AAAA[',(3 0⍕j),']'
[ 41]  loca←loca,';',⊃vv[j+2]
[ 42]  →(j=j←j+1)/voi1
[ 43] aca0:→soma
[ 44] efuf:→fim
[ 45] ⍝---------------leia-----------------
[ 46] elei:saida←saida,[1]1 70⍴70↑aspa,'LEITURA DA VARIAVEL ',(⊃vv[2]),aspa
[ 47]  saida←saida,[1]1 70⍴70↑(⊃vv[2]),'←□'
[ 48]  →soma
[ 49] ⍝---------------imprima--------------
[ 50] eimp:→(3=⍴vv)/temmsg
[ 51]  aaa←⊃vv[2]
[ 52]  →(aaa[⍴aaa]=';')/juntaa
[ 53]  saida←saida,[1]1 70⍴70↑aaa
[ 54]  →soma
[ 55] juntaa:saida←saida,[1]1 70⍴70↑'□←⍕',¯1↓aaa
[ 56]  →soma
[ 57] temmsg:aaa←⊃vv[3]
```

```
[ 58]  →(aaa[⍴aaa]=';')/juntab
[ 59]  saida←saida,[1]1 70⍴70↑(⊃vv[2]),' ',aaa
[ 60]  →soma
[ 61] juntab:saida←saida,[1]1 70⍴70↑'□←',(⊃vv[2]),' ,⍕',¯1↓aaa
[ 62]  →soma
[ 63] ⍝---------------atribuicao------------
[ 64] ecad:saida←saida,[1]1 70⍴70↑(⊃vv[1]),'←',⊃vv[3]
[ 65]  aaa←⊃vv[1]
[ 66]  →(∨/aaa⍷loca)/soma
[ 67]  loca←loca,';',⊃vv[1]
[ 68]  →soma
[ 69] ⍝---------------se--------------------
[ 70] esex:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[ 71]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn←nnn+1
[ 72]  PILHA←(1 21⍴21↑'SE',('000'⍕nnn)),[1]PILHA
[ 73]  nnn←nnn+1
[ 74]  →soma
[ 75] ⍝--senao--
[ 76] esen:SALVA←PILHA[1;3 4 5] ⋄ PILHA←1 0↓PILHA
[ 77]  PILHA←(1 21⍴21↑'SE',('000'⍕nnn)),[1]PILHA
[ 78]  saida←saida,[1]1 70⍴70↑'→Δ','000'⍕nnn
[ 79]  nnn←nnn+1
[ 80]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[ 81]  →soma
[ 82] ⍝--fim{se}--
[ 83] esef:saida←saida,[1]1 70⍴70↑'Δ',PILHA[1;3 4 5],':'
[ 84]  PILHA←1 0↓PILHA
[ 85]  →soma
[ 86] ⍝-------------enquanto--------------------
[ 87] eenq:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[ 88]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[ 89]  nnn←nnn+1
[ 90]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[ 91]  nnn←nnn+1
[ 92]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[ 93]  nnn←nnn+1
[ 94]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn-2
[ 95]  →soma
[ 96] ⍝----------fim{enquanto}------------------
[ 97] eenf:SALVA←PILHA[1;3 4 5]
[ 98]  PILHA←1 0↓PILHA
[ 99]  saida←saida,[1]1 70⍴70↑'→Δ',PILHA[1;3 4 5]
[100]  PILHA←1 0↓PILHA
[101]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[102]  →soma
[103] ⍝----------repita-------------------------
[104] erep:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[105]  PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[106]  nnn←nnn+1
[107]  →soma
[108] ⍝-----------ate--------------------------
[109] eate:PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[110]  nnn←nnn+1
[111]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[112]  SALVA←PILHA[1;3 4 5]
[113]  PILHA←1 0↓PILHA
[114]  saida←saida,[1]1 70⍴70↑'→(Δ',('000'⍕nnn),')/Δ',SALVA
[115]  SALVA←PILHA[1;3 4 5]
[116]  PILHA←1 0↓PILHA
[117]  saida←saida,[1]1 70⍴70↑'→Δ',SALVA
[118]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn-1),':'
[119]  →soma
[120] ⍝----------para----------------------
```

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[121] epar:saida←saida,[1]1 70⍴70↑(8↑⊃vv[2]),'←',8↑⊃vv[4]
[122]  PILHA←(1 21⍴21↑'PA','000'⍕nnn),[1]PILHA
[123]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[124]  nnn←nnn+1
[125]  →(8=⍴vv)/tempasso
[126]  PILHA←(1 21⍴21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8↑8⍕1),[1]PILHA
[127]  →juntab
[128] tempasso:PILHA←(1 21⍴21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8 2⍕⊃vv[8]),[1]PILHA
[129] juntab:nnn←nnn+1
[130]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',(⊃vv[2]),'≤',⍕⊃vv[6]
[131]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn),')/Δ','000'⍕nnn-1
[132]  nnn←nnn+1
[133]  →soma
[134] ⍝----------fim{para}------------------
[135] epaf:saida←saida,[1]1 70⍴70↑PILHA[1;5+⍳8],'←',PILHA[1;5+⍳8],'+',PILHA[1;13+⍳8]
[136]  SALVA←PILHA[1;3 4 5]
[137]  PILHA←1 0↓PILHA
[138]  saida←saida,[1]1 70⍴70↑'→Δ',PILHA[1;3 4 5]
[139]  PILHA←1 0↓PILHA
[140]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[141]  →soma
[142] ⍝-----------abandone--------------------
[143] eaba:→soma
[144] esai:→soma
[145] eint:→soma
[146] erea:→soma
[147] elog:→soma
[148] ecar:→soma
[149] fim:
[150]  i←1
[151] tfim:→(i>nnn)/mesmo
[152]  loca←loca,';Δ','000'⍕i
[153]  →(i=i←i+1)/tfim
[154] mesmo:→(50>⍴loca)/blz1
[155]  saida←((1↑⍴saida),20+⍴loca)↑saida
[156]  saida[1;20+⍳⍴loca]←loca
[157]  →pula22
[158] blz1:saida[1;20+⍳50]←50↑loca
[159] pula22:r←'_ 'edit saida
-------------------------------------------------------------
[0]  r←a igual b;maior
[1]  maior←(1↑⍴a)⌈1↑⍴b
[2]  a←maior↑a ⋄ b←maior↑b
[3]  r←maior=+/a=b
-------------------------------------------------------------
[ 0]  RRRR←seq1 AAAA;n;incr;ct;RRRR;y;x;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ008;Δ009
[ 1]  n←AAAA[1]
[ 2]  incr←AAAA[2]
[ 3]  ct←1
[ 4]  RRRR←''
[ 5] Δ001:
[ 6]  Δ003←ct<9
[ 7]  →(~Δ003)/Δ002
[ 8]  y←2
[ 9]  x←2
[10] Δ004:
[11]  Δ006←y<n
[12]  →(~Δ006)/Δ005
[13]  Δ007←0=y|n
[14]  →(~Δ007)/Δ008
[15]  x←x+1
[16] Δ008:
[17]  y←y+1
```

```
[18]  →Δ004
[19] Δ005:
[20]  RRRR←RRRR,x
[21]  n←n+incr
[22]  ct←ct+1
[23]  →Δ001
[24] Δ002:
-------------------------------------------------------------
[ 0]  RRRR←seq2 AAAA;alfa;xn2;xn1;ct;RRRR;ax;Δ001;Δ002;Δ003;Δ004
[ 1]  alfa←AAAA[1]
[ 2]  xn2←AAAA[2]
[ 3]  xn1←AAAA[3]
[ 4]  ct←1
[ 5]  RRRR←''
[ 6] Δ001:
[ 7]  Δ003←ct<9
[ 8]  →(~Δ003)/Δ002
[ 9]  ax←(alfa×xn2)+xn1
[10]  xn2←xn1
[11]  xn1←ax
[12]  RRRR←RRRR,ax
[13]  ct←ct+1
[14]  →Δ001
[15] Δ002:
-------------------------------------------------------------
[ 0]  RRRR←seq3 AAAA;xn2;xn1;ct;RRRR;Δ001;Δ002;Δ003;Δ004
[ 1]  xn2←AAAA[1]
[ 2]  xn1←AAAA[2]
[ 3]  ct←1
[ 4]  RRRR←''
[ 5] Δ001:
[ 6]  Δ003←ct<9
[ 7]  →(~Δ003)/Δ002
[ 8]  x←(⌈xn1*0.5)×xn2
[ 9]  xn2←xn1
[10]  xn1←x
[11]  RRRR←RRRR,x
[12]  ct←ct+1
[13]  →Δ001
[14] Δ002:
-------------------------------------------------------------
[ 0]  RRRR←seq4 AAAA;xn;ct;RRRR;ax;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007
[ 1]  xn←AAAA[1]
[ 2]  ct←1
[ 3]  RRRR←''
[ 4] Δ001:
[ 5]  Δ003←ct<9
[ 6]  →(~Δ003)/Δ002
[ 7]  Δ004←0=2|xn
[ 8]  →(~Δ004)/Δ005
[ 9]  ax←1+3×xn
[10]  →Δ006
[11] Δ005:
[12]  ax←(4×xn)-1
[13] Δ006:
[14]  RRRR←RRRR,ax
[15]  xn←ax
[16]  ct←ct+1
[17]  →Δ001
[18] Δ002:
-------------------------------------------------------------
[ 0]  RRRR←seq5 AAAA;xn1;ct;RRRR;ax;Δ001;Δ002;Δ003;Δ004
[ 1]  xn1←AAAA[1]
```

```
[ 2]  ct←1
[ 3]  RRRR←''
[ 4] Δ001:
[ 5]  Δ003←ct<9
[ 6]  →(~Δ003)/Δ002
[ 7]  ax←xn1+(ct-1)*(3|ct)
[ 8]  RRRR←RRRR,ax
[ 9]  xn1←ax
[10]  ct←ct+1
[11]  →Δ001
[12] Δ002:
------------------------------------------------------------
[ 0]  RRRR←seq6 AAAA;xn2;xn1;ct;RRRR;ax;bx;cx;Δ001;Δ002;Δ003
[ 1]  xn2←AAAA[1]
[ 2]  xn1←AAAA[2]
[ 3]  ct←1
[ 4]  RRRR←''
[ 5] Δ001:
[ 6]  ax←⌊xn1*0.5
[ 7]  bx←3×xn2
[ 8]  cx←ax+bx
[ 9]  RRRR←RRRR,cx
[10]  xn2←xn1
[11]  xn1←cx
[12]  ct←ct+1
[13]  Δ003←ct>8
[14]  →(Δ003)/Δ002
[15]  →Δ001
[16] Δ002:
------------------------------------------------------------
[ 0]  RRRR←seq7 AAAA;x;ct;RRRR;ax;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ008;Δ009
[ 1]  x←AAAA[1]
[ 2]  ct←1
[ 3]  RRRR←''
[ 4] Δ001:
[ 5]  Δ002←ct<3
[ 6]  →(~Δ002)/Δ003
[ 7]  ax←x×4
[ 8]  →Δ004
[ 9] Δ003:
[10]  Δ005←ct<6
[11]  →(~Δ005)/Δ006
[12]  ax←x×3
[13]  →Δ007
[14] Δ006:
[15]  ax←x×2
[16] Δ007:
[17] Δ004:
[18]  RRRR←RRRR,ax
[19]  x←ax
[20]  ct←ct+2
[21]  Δ009←ct>16
[22]  →(Δ009)/Δ008
[23]  →Δ001
[24] Δ008:
------------------------------------------------------------
[ 0]  RRRR←seq8 AAAA;zz;ct;RRRR;x;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007
[ 1]  zz←AAAA[1]
[ 2]  ct←1
[ 3]  RRRR←''
[ 4] Δ001:
[ 5]  Δ003←ct<9
[ 6]  →(~Δ003)/Δ002
```

```
[ 7]  Δ004←0=2|ct
[ 8]  →(~Δ004)/Δ005
[ 9]  x←(3|ct)+(4|ct)+(5|ct)
[10]  →Δ006
[11] Δ005:
[12]  x←(2|ct)+(3|ct)+(4|ct)
[13] Δ006:
[14]  x←x+zz
[15]  RRRR←RRRR,x
[16]  ct←ct+1
[17]  →Δ001
[18] Δ002:
------------------------------------------------------------
[ 0]  r←vetoriza x;i;rr;letra;aspa;nume
[ 1]  aspa←'''' ⋄ nume←'0123456789'
[ 2]  letra←'abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ()',aspa
[ 3] ⍝ tira os brancos
[ 4]  i←1 ⋄ rr←1
[ 5] t2:→(i>¯2+⍴x)/vaiz
[ 6]  →((x[i+1]=' ')∧(x[i]∈letra)∧(x[i+2]∈nume))/mataz
[ 7]  →((x[i+1]=' ')∧(x[i]∈nume)∧(x[i+2]∈letra))/mataz
[ 8]  →((x[i]∈letra)∧(x[i+2]∈letra))/naopode
[ 9]  →(x[i+1]≠' ')/naopode
[10] pode:rr←rr,0
[11]  →(i=i←i+1)/t2
[12] mataz:x[i+1]←'!'
[13] naopode:rr←rr,1
[14]  →(i=i←i+1)/t2
[15] vaiz:rr←rr,1
[16]  x←rr/x
[17] ⍝ separa o sinal <-
[18]  →(2≠+/'<-'∈x)/faca
[19]  i←1 ⋄ rr←⍳0
[20] t1:→(i>¯1+⍴x)/vaix
[21]  →((x[i]='<')∧(x[i+1]='-'))/esim
[22]  rr←rr,1
[23]  →(i=i←i+1)/t1
[24] esim:rr←rr,0 1 1 0
[25]  →(i=i←i+2)/t1
[26] vaix:rr←rr,1
[27]  x←rr⌿x
[28] faca:x←'! 'edit x
[29]  r←(~' '=x)⊂x
------------------------------------------------------------
[ 0]  opesq vivo057a n;CORRECAO;EVENTO;aa;aaa;acuja;bb;cc;dhx;esse;f;lixo1;lixonol;relat;r
      esp;resu;upag;xixo;xk;xx;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←8 ⋄ EVENTO←'PL057   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⌿apl2⌿',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA057←ajusta80 FOLHALA057
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA057)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⌿apl2⌿VIVOBLOI'
[12]  xk←1 ⋄ resu←0 9⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←30 80⍴' '
[15]  f←FOLHALA057
[16]  esse[1;]←80↑dhx[1;]
```

```
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.03
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[29;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[30;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  xx←seq1(aa←2+?8),bb←2+?8
[27]  esse[7+⍳3;]←3 80⍴(80↑9 0⍕aa),(80↑9 0⍕bb),80↑¯1↓'555555550,'⍕xx[⍳4]
[28]  resp←resp,xx[8]
[29]  xx←seq2(aa←2+?6),(bb←2+?6),cc←2+?6
[30]  esse[10+⍳4;]←4 80⍴(80↑9 0⍕aa),(80↑9 0⍕bb),(80↑9 0⍕cc),80↑¯1↓'555555550,'⍕xx[⍳4]
[31]  resp←resp,xx[8]
[32]  xx←seq3(aa←2+?5),bb←2+?5
[33]  esse[14+⍳3;]←3 80⍴(80↑9 0⍕aa),(80↑9 0⍕bb),80↑¯1↓'555555550,'⍕xx[⍳4]
[34]  resp←resp,xx[8]
[35]  xx←seq4,(aa←2+?6)
[36]  esse[17+⍳2;]←2 80⍴(80↑9 0⍕aa),80↑¯1↓'555555550,'⍕xx[⍳4]
[37]  resp←resp,xx[8]
[38]  xx←seq5,(aa←2+?8)
[39]  esse[19+⍳2;]←2 80⍴(80↑9 0⍕aa),80↑¯1↓'555555550,'⍕xx[⍳4]
[40]  resp←resp,xx[8]
[41]  xx←seq6(aa←2+?8),bb←2+?8
[42]  esse[21+⍳3;]←3 80⍴(80↑9 0⍕aa),(80↑9 0⍕bb),80↑¯1↓'555555550,'⍕xx[⍳4]
[43]  resp←resp,xx[8]
[44]  xx←seq7,(aa←2+?5)
[45]  esse[24+⍳2;]←2 80⍴(80↑9 0⍕aa),80↑¯1↓'555555550,'⍕xx[⍳4]
[46]  resp←resp,xx[8]
[47]  xx←seq8,(aa←2+?8)
[48]  esse[26+⍳2;]←2 80⍴(80↑9 0⍕aa),80↑¯1↓'555555550,'⍕xx[⍳4]
[49]  resp←resp,xx[8]
[50]  resu←resu,[1]1 9⍴resp
[51]  acuja←(f[;2]='#')/⍳1↑⍴f
[52]  f[acuja;⍳80]←esse[±,f[acuja;3 4],' ';]
[53]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[54]  ⎕←(⍕xk←xk+1),'-'
[55]  →testa
[56] fim:upag←(1 0+⍴f)⍴' '
[57]  →(1=≡n)/elafa
[58]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[59]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[60]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←4 0 10 0 10 0 10 0 10 0 6 0 6 0 10 0 9 0)⍕resu
[61]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[62]  →terminando
[63] elafa:aaa←(ylu,10 0⍕0 1↓resu)
[64]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[65]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[66] terminando:
[67]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[68]  relat[1↑⍴relat;;]←upag
[69]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[70] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[71]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[72]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[73]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo058

```
[ 0]  r←val achac mat;i;j
```

```
[ 1]  i←1
[ 2]  mat←,mat
[ 3]  r←0ρ0
[ 4] t1:→(i>ρmat)/fim
[ 5]  →(val≠mat[i])/soma
[ 6]  r←r,i
[ 7] soma:
[ 8]  i←i+1
[ 9]  →t1
[10] fim:
```

```
[ 0]  r←val achalc mat;i;j
[ 1]  i←1
[ 2]  r←0 2ρ0
[ 3] t1:→(i>1↑ρmat)/fim
[ 4]  j←1
[ 5] t2:→(j>1↓ρmat)/soma
[ 6]  →(val≠mat[i;j])/s1
[ 7]  r←r,[1]1 2ρi,j
[ 8] s1:j←j+1
[ 9]  →t2
[10] soma:
[11]  i←i+1
[12]  →t1
[13] fim:
```

```
[ 0]  r←brasil x;aa;escanhos;max;qe;qp;qual;vot
[ 1]  vot←2↓x
[ 2]  qe←±10 0∓(+/vot)÷x[1]
[ 3]  qp←vot÷qe
[ 4]  escanhos←⌊qp
[ 5] t1:→(x[1]≤+/escanhos)/acabou
[ 6]  max←⌈/(escanhos≠0)/(aa←vot÷escanhos+1)
[ 7]  qual←aaιmax
[ 8]  escanhos[qual]←escanhos[qual]+1
[ 9]  →t1
[10] acabou:r←escanhos
```

```
[ 0]  crianomes
[ 1]  NOMES←30 15ρ' '
[ 2]  NOMES[1;]←15↑'FAZENDONA'
[ 3]  NOMES[2;]←15↑'ZIQUIZIRA'
[ 4]  NOMES[3;]←15↑'FOZ DO QUIRA'
[ 5]  NOMES[4;]←15↑'GUARANIA'
[ 6]  NOMES[5;]←15↑'QUENTURA'
[ 7]  NOMES[6;]←15↑'FRIURA'
[ 8]  NOMES[7;]←15↑'LARGO DO FIU'
[ 9]  NOMES[8;]←15↑'LONDROSA'
[10]  NOMES[9;]←15↑'FOZALOREAL'
[11]  NOMES[10;]←15↑'TRITICA'
[12]  NOMES[11;]←15↑'ZABEFA DO SUL'
[13]  NOMES[12;]←15↑'TESOURINHA'
[14]  NOMES[13;]←15↑'CANETONA'
[15]  NOMES[14;]←15↑'ZANDRASABAL'
[16]  NOMES[15;]←15↑'CAICAI'
[17]  NOMES[16;]←15↑'DIZQUESIM'
[18]  NOMES[17;]←15↑'DIZQUENAO'
[19]  NOMES[18;]←15↑'ALUGURES'
[20]  NOMES[19;]←15↑'PARACARAI'
[21]  NOMES[20;]←15↑'TITUBOA'
[22]  NOMES[21;]←15↑'ZANCALA'
[23]  NOMES[22;]←15↑'DEUNOPE'
[24]  NOMES[23;]←15↑'ARRIBANA'
```

```
[25]  NOMES[24;]←15↑'DOROTEIA'
[26]  NOMES[25;]←15↑'GIBOIA DO NORTE'
[27]  NOMES[26;]←15↑'PARIQUERA'
[28]  NOMES[27;]←15↑'ARROBALA'
[29]  NOMES[28;]←15↑'ZIQUIZUMBA'
[30]  NOMES[29;]←15↑'PARARAICA'
[31]  NOMES[30;]←15↑'TITURUIM'
-------------------------------------------------------------
[ 0]  r←dhondt x;votos;escanhos;i;max;ca;inl;inc;d
[ 1]  votos←2↓x
[ 2]  votos←(votos>x[2])/votos
[ 3] ⍝ 'v=',⍕votos
[ 4]  votos←votos,15⍴0
[ 5]  escanhos←(⍴votos)⍴0
[ 6]  mat←((⍴votos),⍴votos)⍴votos
[ 7]  mat←mat÷d←⍳(⍴mat)⍴⍳⍴votos
[ 8]  MAT←mat←⌊mat
[ 9]  i←1
[10] t1:→(i>x[1])/fim
[11]  max←⌈/,mat
[12]  ca←max achalc mat
[13]  →(2≤1↑⍴ca)/empate
[14]  inl←(,ca)[1]
[15]  inc←(,ca)[2]
[16]  →junta
[17] empate:
[18]  inl←ca[1;1]
[19]  inc←ca[1;2]
[20] junta:
[21]  escanhos[inc]←escanhos[inc]+1
[22]  mat[inl;inc]←0
[23]  i←i+1
[24]  →t1
[25] fim:r←¯15↓escanhos
-------------------------------------------------------------
[ 0]  r←gcaso58;vot;min;lim
[ 1] in:
[ 2]  r←(10+?8)
[ 3]  vot←?(4+?4)⍴99999
[ 4]  vot←vot[⍒vot]
[ 5]  min←vot[⍴vot]⌈1010
[ 6]  lim←1000+?(min-1000)×2
[ 7]  →(1=?2)/ok
[ 8]  lim←0
[ 9] ok:
[10]  →(4<+/vot>lim)/kiu
[11]  ⎕←'*'
[12]  →in
[13] kiu:
[14]  r←r,lim,vot
[15] ⍝ resposta: escanhos, corte de votacao, votos obtidos pelos partidos
-------------------------------------------------------------
[0]  r←gcasob58;vot;min
[1]  r←(10+?8)
[2]  vot←?(4+?4)⍴100000
[3]  vot←vot[⍒vot]
[4]  min←vot[⍴vot]⌈1010
[5]  r←r,0,vot
[6] ⍝ resposta: escanhos, corte de votacao, votos obtidos pelos partidos
-------------------------------------------------------------
[ 0]  r←slague x;votos;escanhos;mat;i;max;ca;inl;inc;d
[ 1]  votos←2↓x
[ 2]  votos←(votos>x[2])/votos
```

```
[ 3] ⍝ 'v=',⍕votos
[ 4]  escanhos←(⍴votos)⍴0
[ 5]  mat←MAT←((1+x[1]),⍴votos)⍴votos
[ 6]  i←1
[ 7] t1:→(i>x[1])/fim
[ 8]  max←⌈/,mat[i;]
[ 9]  ca←max achac mat[i;]
[10]  →(2≤⍴ca)/empate
[11]  inc←ca
[12]  →junta
[13] empate:
[14]  inc←ca[⍴ca]
[15] junta:
[16]  escanhos[inc]←escanhos[inc]+1
[17]  i←i+1
[18]  mat[i;]←mat[i-1;]
[19]  mat[i;inc]←mat[1;inc]÷1+2×escanhos[inc]
[20]  →t1
[21] fim:
[22]  MAT←mat
[23]  r←escanhos
------------------------------------------------------------
[ 0]  opesq vivo058a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nom;nomes;ql39;q
      linha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL058   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA058←ajusta80 FOLHALA058
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA058)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 4⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←18 80⍴' '
[16]  f←FOLHALA058
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.16
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[17;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[18;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  nom←3?1↑⍴NOMES
[35]  esse[8;]←80↑NOMES[nom[1];]
[36]  esse[11;]←80↑NOMES[nom[2];]
[37]  esse[14;]←80↑NOMES[nom[3];]
[38]  xx←gcaso58
```

```
[39]  esse[9;]←80↑⍕xx
[40]  resp←resp,(dhondt xx)[2]
[41]  xx←gcaso58
[42]  esse[12;]←80↑⍕xx
[43]  resp←resp,(slague xx)[3]
[44]  xx←gcasob58
[45]  esse[15;]←80↑⍕xx
[46]  resp←resp,(brasil xx)[4]
[47]  resu←resu,[1]1 4⍴resp
[48]  acuja←(f[;2]='#')/⍳1↑⍴f
[49]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[50]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[51]  □←(⍕xk←xk+1),'-'
[52]  →testa
[53] fim:upag←(1 0+⍴f)⍴' '
[54]  →(1=≡n)/elafa
[55]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[56]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[57]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 7 0 3 0 3 0)⍕resu
[58]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[59]  →terminando
[60] elafa:aaa←(ylu[;⍳36],5 0⍕0 1↓resu)
[61]  lixonol←aaa ⎕FM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[62]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[63] terminando:
[64]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[65]  relat[1↑⍴relat;;]←upag
[66]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[67]  lixonol←lixonol ⎕FM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[68]  lixonol←□EX 2 10⍴'quantos   matriz    '
[69]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo059

```
[0]  AVISO
[1]  'ha desconfianca quanto a g059_3'
-------------------------------------------------------------
[ 0]  r←divisores x;y;resp
[ 1]  y←⌊x*0.5
[ 2]  resp←0⍴0
[ 3] t1:→(y<2)/fim
[ 4]  →(0=y|x)/sim
[ 5] nao:
[ 6]  y←y-1
[ 7]  →t1
[ 8] sim:resp←resp,y,x÷y
[ 9]  →nao
[10] fim:
[11]  resp←1,(resp[⍋resp]),x
[12]  r←((resp⍳resp)=⍳⍴resp)/resp
-------------------------------------------------------------
[ 0]  r←divisoresp x;y;resp
[ 1]  y←⌊x*0.5
[ 2]  resp←0⍴0
[ 3] t1:→(y<2)/fim
[ 4]  →(0=y|x)/sim
[ 5] nao:
[ 6]  y←y-1
[ 7]  →t1
[ 8] sim:resp←resp,y,x÷y
[ 9]  →nao
```

```
[10] fim:
[11]  resp←resp[⍋resp]
[12]  r←(resp∈PRIMO)/resp
-------------------------------------------------------------
[0]  r←g059_1;pri;p;tri;lim;res
[1]  pri←2,3,5,7,11,13
[2]  p←pri[2?⍴pri]
[3]  p←p[⍋p]
[4]  tri←+/((0=p[1]|⍳29)∨(0=p[2]|⍳29))/⍳29
[5]  lim←1000+500×?5
[6]  res←+/((0=p[1]|⍳lim-1)∨(0=p[2]|⍳lim-1))/⍳lim-1
[7]  r←p,tri,lim,res
-------------------------------------------------------------
[0]  r←g059_2;lim;f;divi;res
[1]  lim←2000000+100000×?20
[2]  f←(FIBO<lim)/FIBO
[3]  divi←1+?8
[4]  res←+/(0=divi|f)/f
[5]  r←lim,divi,res
-------------------------------------------------------------
[ 0]  r←g059_3;exemplo;fatexe;candi;respcan
[ 1] novo:
[ 2]  exemplo←100000+?100000
[ 3]  fatexe←divisoresp exemplo
[ 4]  →(2>⍴fatexe)/novo
[ 5] mais:
[ 6]  candi←10000000+?10000000
[ 7]  respcan←divisoresp candi
[ 8]  →(2>⍴respcan)/mais
[ 9]  r←exemplo,(20↑fatexe),candi,respcan[⍴respcan]
-------------------------------------------------------------
[ 0]  r←g059_4;te;ma;qual;pri;cara;dito;ivo;res
[ 1]  te←'sétimo' 'oitavo' 'nono' 'décimo' 'décimo primeiro' 'décimo segundo' 'décimo terc
      eiro' 'décimo quarto' 'décimo quinto'
[ 2]  ma←⊃[2]te
[ 3]  qual←6+?9
[ 4]  pri←PRIMO[⍳qual]
[ 5]  cara←ma[qual-6;]
[ 6]  dito←pri[⍴pri]
[ 7]  ivo←3000+?1000
[ 8]  res←PRIMO[ivo]
[ 9]  r←5⍴0
[10]  r[1]←⊂qual
[11]  r[2]←⊂cara
[12]  r[3]←⊂dito
[13]  r[4]←⊂ivo
[14]  r[5]←⊂res
-------------------------------------------------------------
[ 0]  r←g059_5;i;max;pro;x;z
[ 1]  x←10 60⍴'0'⍪z←¯1+?600⍴10
[ 2]  i←1
[ 3]  max←-999999999
[ 4] t1:→(i>595)/fim
[ 5]  pro←×/z[i+0,⍳5]
[ 6]  →(pro<max)/so
[ 7]  max←pro
[ 8] so:i←i+1
[ 9]  →t1
[10] fim:r←2⍴0
[11]  r[1]←⊂x
[12]  r[2]←max
-------------------------------------------------------------
[0]  r←g059_6;lim;som;limv;somv
```

```
[1]  lim←20+?10
[2]  som←+/(PRIMO<lim)/PRIMO
[3]  limv←10000+?30000
[4]  somv←+/(PRIMO<limv)/PRIMO
[5]  r←lim,som,limv,somv
------------------------------------------------------------
[ 0]  r←g059_7;cara;fula;i;l
[ 1]  l←10 12 14 16 18 20 24 28 30 32 36 40 45 48 54 56 60 64 72 80 84 90
[ 2]  l←l,96 108 112 120 128 144
[ 3]  l←l-1
[ 4]  cara←l[?ρl]
[ 5]  i←1
[ 6] t1:→(i>ρDIVSTRIA)/deuxabu
[ 7]  →(DIVSTRIA[i]>cara)/achou
[ 8]  i←i+1
[ 9]  →t1
[10] achou:fula←TRIA[i]
[11]  r←cara,fula
[12]  →0
[13] deuxabu:'deu xabu'
------------------------------------------------------------
[ 0]  r←g059_8;i;ini;j;max;qual
[ 1]  ini←1000+?1000
[ 2]  j←ini+100+?900
[ 3]  max←-999999
[ 4]  i←ini
[ 5] t1:
[ 6]  →(i>j)/acabou
[ 7]  →(COLLATZ[i]≤max)/soma
[ 8]  max←COLLATZ[i]
[ 9]  qual←i
[10] soma:
[11]  i←i+1
[12]  →t1
[13] acabou:
[14]  r←ini,j,qual
------------------------------------------------------------
[ 0]  r←g059_9;am;lim;xx
[ 1] outro:
[ 2] ⍝ lim←100000+10000×?110
[ 3]  lim←1000+1000×?110
[ 4]  am←,AMIGOS[;1],AMIGOS[;2]
[ 5]  am←am[⍋am]
[ 6]  am
[ 7]  '---------------'
[ 8]  +⌿am
[ 9]  xx←(am<lim)/⍳ρam
[10]  →(0=ρxx)/outro
[11]  r←lim,(+⌿am)[¯1↑xx]
------------------------------------------------------------
[ 0]  r←g059_a;ba;ci;d1;d2;d3;d4;di;es;i;j;max;qual;rr;rx;x;y
[ 1]  x←15 15ρ?1000ρ99
[ 2]  max←-99999999
[ 3]  y←(0,[1](0,[1](0,(0,x,0),0)),[1]0),[1]0
[ 4]  i←3
[ 5] t1:→(i>17)/fim
[ 6]  j←3
[ 7] t2:→(j>17)/trucha
[ 8]  d1←y[i-2;j-2]+y[i-1;j-1]+y[i;j]
[ 9]  ci←y[i-2;j]+y[i-1;j]+y[i;j]
[10]  d2←y[i-2;j+2]+y[i-1;j+1]+y[i;j]
[11]  di←y[i;j+2]+y[i;j+1]+y[i;j]
[12]  d3←y[i+2;j+2]+y[i+1;j+1]+y[i;j]
```

```
[13]  ba←y[i+2;j]+y[i+1;j]+y[i;j]
[14]  d4←y[i+2;j-2]+y[i+1;j-1]+y[i;j]
[15]  es←y[i;j-2]+y[i;j-1]+y[i;j]
[16]  rr←d1,ci,d2,di,d3,ba,d4,es
[17]  rx←⌈/rr
[18]  →(max≥rx)/soma
[19]  max←rx
[20]  qual←i,j,rr⍳rx
[21] soma:
[22]  j←j+1
[23]  →t2
[24] trucha:
[25]  i←i+1
[26]  →t1
[27] fim:r←3⍴0
[28]  r[1]←⊂x
[29]  r[2]←⊂max
[30]  r[3]←⊂qual-2
------------------------------------------------------------
[ 0]  r←gcol x;re
[ 1]  re←x
[ 2] vorta:
[ 3]  →(1=x)/acabou
[ 4]  →(0=2|x)/par
[ 5]  x←1+3×x
[ 6]  re←re,x
[ 7]  →junta
[ 8] par:x←x÷2
[ 9]  re←re,x
[10] junta:
[11]  →vorta
[12] acabou:r←⍴,re
------------------------------------------------------------
[0]  geracollatz;i
[1]  COLLATZ←3000⍴0
[2]  i←1
[3] t1:→(i>3000)/fim
[4]  COLLATZ[i]←gcol i
[5]  i←i+1
[6]  →t1
[7] fim:
------------------------------------------------------------
[0]  geradivtria;i
[1]  DIVSTRIA←1000⍴0
[2]  i←1
[3] t1:→(i>1000)/fim
[4]  DIVSTRIA[i]←⍴divisores TRIA[i]
[5]  i←i+1
[6]  →t1
[7] fim:
------------------------------------------------------------
[0]  gerafibo
[1]  FIBO←1 2
[2]  →(FIBO[⍴FIBO]>4000000)/0
[3]  FIBO←FIBO,FIBO[⍴FIBO]+FIBO[¯1+⍴FIBO]
[4]  →2
------------------------------------------------------------
[0]  geratria;i
[1]  TRIA←1 3 6 10 15 21 28,993⍴0
[2]  i←8
[3] t1:→(i>1000)/fim
[4]  TRIA[i]←TRIA[i-1]+i
[5]  i←i+1
```

```
[6]  →t1
[7] fim:
------------------------------------------------------------
[0]  preencheamigos;i
[1]  i←1
[2] t1:→(i>32)/fim
[3]  AMIGOS[i;2]←+/¯1↓divisores AMIGOS[i;1]
[4]  i←i+1
[5]  →t1
[6] fim:
------------------------------------------------------------
[ 0]  opesq vivo059a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;z
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL059   '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA059←ajusta80 FOLHALA059
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALA059)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 11ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←53 80ρ' '
[16]  f←FOLHALA059
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑ρf),4)ρ'⍀#05')/⍳1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[52;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[53;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←g059_1
[35]  esse[8;]←1 80ρ80↑(⍎xx[1]),' e ',⍎xx[2]
[36]  esse[9;]←1 80ρ80↑⍎xx[3]
[37]  esse[10;]←1 80ρ80↑⍎xx[4]
[38]  resp←resp,,xx[5]
[39]  xx←g059_2
[40]  esse[11;]←1 80ρ80↑⍎xx[1]
[41]  esse[12;]←1 80ρ80↑⍎xx[2]
[42]  resp←resp,,xx[3]
[43]  xx←g059_3
[44]  esse[13;]←1 80ρ80↑⍎xx[1]
[45]  esse[14;]←1 80ρ80↑⍎(z≠0)/z←xx[1+⍳20]
[46]  esse[15;]←1 80ρ80↑⍎xx[22]
[47]  resp←resp,,xx[23]
[48]  xx←g059_4
[49]  esse[16;]←1 80ρ80↑⍎⊃xx[1]
```

```
[50]  esse[17;]←1 80ρ80↑⊃xx[2]
[51]  esse[18;]←1 80ρ80↑⍕⊃xx[3]
[52]  esse[19;]←1 80ρ80↑⍕⊃xx[4]
[53]  resp←resp,,⊃xx[5]
[54]  xx←g059_5
[55]  esse[19+⍳10;⍳60]←⊃xx[1]
[56]  resp←resp,,⊃xx[2]
[57]  xx←g059_6
[58]  esse[30;]←1 80ρ80↑⍕xx[1]
[59]  esse[31;]←1 80ρ80↑⍕xx[2]
[60]  esse[32;]←1 80ρ80↑⍕xx[3]
[61]  resp←resp,,xx[4]
[62]  xx←g059_7
[63]  esse[33;]←1 80ρ80↑⍕xx[1]
[64]  resp←resp,,xx[2]
[65]  xx←g059_8
[66]  esse[34;]←1 80ρ80↑⍕xx[1]
[67]  esse[35;]←1 80ρ80↑⍕xx[2]
[68]  resp←resp,,xx[3]
[69]  xx←g059_9
[70]  esse[36;]←1 80ρ80↑⍕xx[1]
[71]  resp←resp,,xx[2]
[72]  xx←g059_a
[73]  esse[36+⍳15;⍳60]←4 0⍕⊃xx[1]
[74]  resp←resp,,⊃xx[2]
[75]  resu←resu,[1]1 11ρresp
[76]  acuja←(f[;2]='#')/⍳1↑ρf
[77]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[78]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\clearpage'
[79]  ⍞←(⍕xk←xk+1),'-'
[80]  →testa
[81] fim:upag←(1 0+ρf)ρ' '
[82]  →(1=≡n)/elafa
[83]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[84]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[85]  upag[2+⍳1↑ρresu;⍳+/lixo1]←(lixo1←5 0 8 0 9 0 9 0 6 0 7 0 9 0 7 0 5 0 8 0 4 0)⍕resu
[86]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[87]  →terminando
[88] elafa:aaa←(ylu[;⍳36],8 0 9 0 9 0 6 0 7 0 9 0 7 0 5 0 8 0 4 0⍕0 1↓resu)
[89]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[90]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[91] terminando:
[92]  upag[1↑ρupag;]←(1↓ρupag)↑'\end{document}'
[93]  relat[1↑ρrelat;;]←upag
[94]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[95]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[96]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[97]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo062

```
[ 0]  RRRR←A1 AAAA;A;B;C;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007
[ 1]  A←AAAA[1]
[ 2]  B←AAAA[2]
[ 3]  C←AAAA[3]
[ 4]  RRRR←0 3ρ0
[ 5] Δ001:
[ 6]  Δ003←(A+B)>4
[ 7]  →(~Δ003)/Δ002
[ 8]  Δ004←A>C
[ 9]  →(~Δ004)/Δ005
```

```
[10]  A←A-1
[11]  →Δ006
[12] Δ005:
[13]  A←A+1
[14] Δ006:
[15]  B←B-2
[16]  RRRR←RRRR,[1]1 3ρA,B,C
[17]  →Δ001
[18] Δ002:
------------------------------------------------------------
[ 0]  RRRR←A2 AAAA;A;B;C;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ008;Δ009;Δ010
[ 1]  A←AAAA[1]
[ 2]  B←AAAA[2]
[ 3]  C←AAAA[3]
[ 4]  RRRR←0 3ρ0
[ 5] Δ001:
[ 6]  Δ003←(C≠0)∧(C≠1)
[ 7]  →(~Δ003)/Δ002
[ 8]  Δ004←(5|B)≠0
[ 9]  →(~Δ004)/Δ005
[10]  B←B-1
[11] Δ005:
[12]  Δ006←(3|A)=0
[13]  →(~Δ006)/Δ007
[14]  A←A+1
[15] Δ007:
[16]  Δ008←A>B
[17]  →(~Δ008)/Δ009
[18]  A←A+2
[19] Δ009:
[20]  C←C-1
[21]  RRRR←RRRR,[1]1 3ρA,B,C
[22]  →Δ001
[23] Δ002:
------------------------------------------------------------
[ 0]  RRRR←A3 AAAA;A;B;C;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ008
[ 1]  A←AAAA[1]
[ 2]  B←AAAA[2]
[ 3]  C←AAAA[3]
[ 4]  RRRR←0 3ρ0
[ 5] Δ001:
[ 6]  A←A+1
[ 7]  B←B+1
[ 8]  C←C+1
[ 9] Δ002:
[10]  Δ004←(C>10)
[11]  →(~Δ004)/Δ003
[12]  C←C-2
[13]  →Δ002
[14] Δ003:
[15]  Δ005←(C≠3)∨(B≠2)
[16]  →(~Δ005)/Δ006
[17]  A←A+2
[18] Δ006:
[19]  RRRR←RRRR,[1]1 3ρA,B,C
[20]  Δ008←(A+B+C)>30
[21]  →(Δ008)/Δ007
[22]  →Δ001
[23] Δ007:
------------------------------------------------------------
[ 0]  RRRR←A4 AAAA;A;B;C;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ008;Δ009;Δ010
[ 1]  A←AAAA[1]
[ 2]  B←AAAA[2]
```

```
[ 3]  C←AAAA[3]
[ 4]  RRRR←0 3⍴0
[ 5] Δ001:
[ 6]  Δ003←(A>10)∨(B>10)∨(C>10)
[ 7]  →(~Δ003)/Δ002
[ 8]  Δ004←A>B
[ 9]  →(~Δ004)/Δ005
[10]  C←C-1
[11] Δ005:
[12]  Δ006←1=(3|B)
[13]  →(~Δ006)/Δ007
[14]  A←A-1
[15] Δ007:
[16]  Δ008←C>B
[17]  →(~Δ008)/Δ009
[18]  B←B-3
[19] Δ009:
[20]  RRRR←RRRR,[1]1 3⍴A,B,C
[21]  A←A-1
[22]  B←B-1
[23]  C←C-2
[24]  →Δ001
[25] Δ002:
-------------------------------------------------------------
[ 0]  RRRR←EXEMPLO AAAA;A;B;C;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ008;Δ009;Δ010
[ 1]  A←AAAA[1]
[ 2]  B←AAAA[2]
[ 3]  C←AAAA[3]
[ 4] Δ001:
[ 5]  Δ003←A<10
[ 6]  →(~Δ003)/Δ002
[ 7]  Δ004←0=(3|B)
[ 8]  →(~Δ004)/Δ005
[ 9]  A←A+1
[10]  →Δ006
[11] Δ005:
[12]  A←A+2
[13] Δ006:
[14]  Δ007←0=(4|C)
[15]  →(~Δ007)/Δ008
[16]  B←B+2
[17]  →Δ009
[18] Δ008:
[19]  A←A+1
[20] Δ009:
[21]  A,B,C
[22]  →Δ001
[23] Δ002:
-------------------------------------------------------------
[  0]  r←cpc algo;nome;PILHA;nnn;saida;aspa;vv;coma;SALVA;i;j;loca;aaa
[  1]  PILHA←0 21⍴' ' ◇ nnn←1 ◇ saida←0 70⍴' ' ◇ r←0 70⍴' ' ◇ aspa←'''' ◇ loca←''
[  2]  i←1
[  3] t1:→(i>1↑⍴algo)/fim
[  4]  vv←vetoriza algo[i;]
[  5]  →('algoritmo'igual⊃vv[1])/ealg
[  6]  →('fim{algoritmo}'igual⊃vv[1])/ealf
[  7]  →('funcao'igual⊃vv[1])/efun
[  8]  →('fim{funcao}'igual⊃vv[1])/efuf
[  9]  →('leia'igual⊃vv[1])/elei
[ 10]  →('imprima'igual⊃vv[1])/eimp
[ 11]  →('se'igual⊃vv[1])/esex
[ 12]  →('senao'igual⊃vv[1])/esen
[ 13]  →('fim{se}'igual⊃vv[1])/esef
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[ 14]  →('enquanto'igual⊃vv[1])/eenq
[ 15]  →('fim{enquanto}'igual⊃vv[1])/eenf
[ 16]  →('repita'igual⊃vv[1])/erep
[ 17]  →('ate'igual⊃vv[1])/eate
[ 18]  →('para'igual⊃vv[1])/epar
[ 19]  →('fim{para}'igual⊃vv[1])/epaf
[ 20]  →('abandone'igual⊃vv[1])/eaba
[ 21]  →('saia'igual⊃vv[1])/esai
[ 22]  →('<-'igual⊃vv[2])/ecad
[ 23]  →('inteiro'igual⊃vv[1])/eint
[ 24]  →('real'igual⊃vv[1])/erea
[ 25]  →('logico'igual⊃vv[1])/elog
[ 26]  →('caracter'igual 8↑⊃vv[1])/ecar
[ 27]  r←r,[1]1 70ρ70↑(3⍕i),' - comando desconhecido'
[ 28] soma:→(i=i←i+1)/t1
[ 29] ⍝--------------algoritmo--------------
[ 30] ealg:saida←saida,[1]1 70ρ70↑⊃vv[2]
[ 31]  →soma
[ 32] ealf:→fim
[ 33] ⍝--------------funcao-----------------
[ 34] efun:
[ 35]  coma←'RRRR←',(⊃vv[2]),' AAAA'
[ 36]  saida←saida,[1]1 70ρ70↑coma
[ 37]  nome←⊃vv[2]
[ 38]  j←1
[ 39] voi1:→(j>¯2+ρvv)/aca0
[ 40]  saida←saida,[1]1 70ρ70↑(⊃vv[j+2]),'←AAAA[',(3 0⍕j),']'
[ 41]  loca←loca,';',⊃vv[j+2]
[ 42]  →(j=j←j+1)/voi1
[ 43] aca0:→soma
[ 44] efuf:→fim
[ 45] ⍝---------------leia-----------------
[ 46] elei:saida←saida,[1]1 70ρ70↑aspa,'LEITURA DA VARIAVEL ',(⊃vv[2]),aspa
[ 47]  saida←saida,[1]1 70ρ70↑(⊃vv[2]),'←□'
[ 48]  →soma
[ 49] ⍝---------------imprima---------------
[ 50] eimp:→(3=ρvv)/temmsg
[ 51]  aaa←⊃vv[2]
[ 52]  →(aaa[ρaaa]=';')/juntaa
[ 53]  saida←saida,[1]1 70ρ70↑aaa
[ 54]  →soma
[ 55] juntaa:saida←saida,[1]1 70ρ70↑'□←⍕',¯1↓aaa
[ 56]  →soma
[ 57] temmsg:aaa←⊃vv[3]
[ 58]  →(aaa[ρaaa]=';')/juntab
[ 59]  saida←saida,[1]1 70ρ70↑(⊃vv[2]),' ',aaa
[ 60]  →soma
[ 61] juntab:saida←saida,[1]1 70ρ70↑'□←',(⊃vv[2]),' ,⍕',¯1↓aaa
[ 62]  →soma
[ 63] ⍝---------------atribuicao------------
[ 64] ecad:saida←saida,[1]1 70ρ70↑(⊃vv[1]),'←',⊃vv[3]
[ 65]  aaa←⊃vv[1]
[ 66]  →(∨/aaa≤loca)/soma
[ 67]  loca←loca,';',⊃vv[1]
[ 68]  →soma
[ 69] ⍝---------------se--------------------
[ 70] esex:saida←saida,[1]1 70ρ70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[ 71]  saida←saida,[1]1 70ρ70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn←nnn+1
[ 72]  PILHA←(1 21ρ21↑'SE',('000'⍕nnn)),[1]PILHA
[ 73]  nnn←nnn+1
[ 74]  →soma
[ 75] ⍝--senao--
[ 76] esen:SALVA←PILHA[1;3 4 5] ⋄ PILHA←1 0↓PILHA
```

```
[ 77]  PILHA←(1 21⍴21↑'SE',('000'⍕nnn)),[1]PILHA
[ 78]  saida←saida,[1]1 70⍴70↑'→Δ','000'⍕nnn
[ 79]  nnn←nnn+1
[ 80]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[ 81]  →soma
[ 82] ⍝--fim{se}--
[ 83] esef:saida←saida,[1]1 70⍴70↑'Δ',PILHA[1;3 4 5],':'
[ 84]  PILHA←1 0↓PILHA
[ 85]  →soma
[ 86] ⍝------------enquanto--------------------
[ 87] eenq:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[ 88]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[ 89]  nnn←nnn+1
[ 90]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[ 91]  nnn←nnn+1
[ 92]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⍕vv[2]
[ 93]  nnn←nnn+1
[ 94]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn-2
[ 95]  →soma
[ 96] ⍝----------fim{enquanto}-----------------
[ 97] eenf:SALVA←PILHA[1;3 4 5]
[ 98]  PILHA←1 0↓PILHA
[ 99]  saida←saida,[1]1 70⍴70↑'→Δ',PILHA[1;3 4 5]
[100]  PILHA←1 0↓PILHA
[101]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[102]  →soma
[103] ⍝----------repita-------------------------
[104] erep:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[105]  PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[106]  nnn←nnn+1
[107]  →soma
[108] ⍝----------ate--------------------------
[109] eate:PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[110]  nnn←nnn+1
[111]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⍕vv[2]
[112]  SALVA←PILHA[1;3 4 5]
[113]  PILHA←1 0↓PILHA
[114]  saida←saida,[1]1 70⍴70↑'→(Δ',('000'⍕nnn),')/Δ',SALVA
[115]  SALVA←PILHA[1;3 4 5]
[116]  PILHA←1 0↓PILHA
[117]  saida←saida,[1]1 70⍴70↑'→Δ',SALVA
[118]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn-1),':'
[119]  →soma
[120] ⍝----------para-----------------------
[121] epar:saida←saida,[1]1 70⍴70↑(8↑⍕vv[2]),'←',8↑⍕vv[4]
[122]  PILHA←(1 21⍴21↑'PA','000'⍕nnn),[1]PILHA
[123]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[124]  nnn←nnn+1
[125]  →(8=⍴vv)/tempasso
[126]  PILHA←(1 21⍴21↑'PA',('000'⍕nnn),(8↑⍕vv[2]),8↑8⍕1),[1]PILHA
[127]  →juntab
[128] tempasso:PILHA←(1 21⍴21↑'PA',('000'⍕nnn),(8↑⍕vv[2]),8 2⍕⍕vv[8]),[1]PILHA
[129] juntab:nnn←nnn+1
[130]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',(⍕vv[2]),'≤',⍕⍕vv[6]
[131]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn),')/Δ','000'⍕nnn-1
[132]  nnn←nnn+1
[133]  →soma
[134] ⍝----------fim{para}-----------------
[135] epaf:saida←saida,[1]1 70⍴70↑PILHA[1;5+⍳8],'←',PILHA[1;5+⍳8],'+',PILHA[1;13+⍳8]
[136]  SALVA←PILHA[1;3 4 5]
[137]  PILHA←1 0↓PILHA
[138]  saida←saida,[1]1 70⍴70↑'→Δ',PILHA[1;3 4 5]
[139]  PILHA←1 0↓PILHA
```

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[140]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[141]  →soma
[142] ⍝----------abandone--------------------
[143] eaba:→soma
[144] esai:→soma
[145] eint:→soma
[146] erea:→soma
[147] elog:→soma
[148] ecar:→soma
[149] fim:
[150]  i←1
[151] tfim:→(i>nnn)/mesmo
[152]  loca←loca,';Δ','000'⍕i
[153]  →(i=i←i+1)/tfim
[154] mesmo:→(50>⍴loca)/blz1
[155]  saida←((1↑⍴saida),20+⍴loca)↑saida
[156]  saida[1;20+⍳⍴loca]←loca
[157]  →pula22
[158] blz1:saida[1;20+⍳50]←50↑loca
[159] pula22:r←'_ 'edit saida
------------------------------------------------------------
[0]  gabarito
[1]  'para analisar um gabarito chame:'
[2]  ' A1 resposta do aluno, B e C: dados no problema'
[3]  ' veja se as saidas coincidem. Se sim, ele acertou'
[4]  ''
[5]  'use A1, A2, A3 ou A4 conforme a questao'
------------------------------------------------------------
[ 0]  r←gera1;a;b;c;x;z1;z2;z3;z4;z5;z6;z7;z8
[ 1] vivo:
[ 2]  a←4+?4
[ 3]  b←5+?5
[ 4]  c←6+?8
[ 5]  x←⍞'A1 ',⍕a,b,c
[ 6]  z1←⍞'A1 ',⍕(a-1),b,c
[ 7]  z2←⍞'A1 ',⍕(a+1),b,c
[ 8]  z3←⍞'A1 ',⍕(a-2),b,c
[ 9]  z4←⍞'A1 ',⍕(a+2),b,c
[10]  z5←⍞'A1 ',⍕(a-3),b,c
[11]  z6←⍞'A1 ',⍕(a+3),b,c
[12]  z7←⍞'A1 ',⍕(a-4),b,c
[13]  z8←⍞'A1 ',⍕(a+4),b,c
[14]  →(2≤1↑⍴x)/blz1
[15]  □←'m'
[16]  →vivo
[17] blz1:→(8≥1↑⍴x)/blz2
[18]  □←'M'
[19]  →vivo
[20] blz2:
[21]  →(x≡z1)/erro8
[22]  →(x≡z2)/erro8
[23]  →(x≡z3)/erro8
[24]  →(x≡z4)/erro8
[25]  →(x≡z5)/erro8
[26]  →(x≡z6)/erro8
[27]  →(x≡z7)/erro8
[28]  →(x≡z8)/erro8
[29]  →blz3
[30] erro8:□←'x'
[31]  →vivo
[32] blz3:
[33]  r←(1 3⍴a,b,c),[1]8 3↑x
------------------------------------------------------------
```

```
[ 0]  r←gera2;a;b;c;x;y;z;c1;c2;y1;y2;y3;y4;y5;y6;y7;y8;y9;ya
[ 1] vivo:
[ 2]  a←8+?7
[ 3]  b←8+?7
[ 4]  c←8+?4
[ 5]  x←⍞'A2 ',⍕a,b,c
[ 6]  y←⍞'A2 ',⍕(a-1),b,c
[ 7]  z←⍞'A2 ',⍕(a+1),b,c
[ 8]  c1←⍞'A2 ',⍕(a-2),b,c
[ 9]  c2←⍞'A2 ',⍕(a+2),b,c
[10]  y1←⍞'A2 ',⍕(a-3),b,c
[11]  y2←⍞'A2 ',⍕(a+3),b,c
[12]  y3←⍞'A2 ',⍕(a-4),b,c
[13]  y4←⍞'A2 ',⍕(a+4),b,c
[14]  y5←⍞'A2 ',⍕(a-5),b,c
[15]  y6←⍞'A2 ',⍕(a+5),b,c
[16]  y7←⍞'A2 ',⍕(a-6),b,c
[17]  y8←⍞'A2 ',⍕(a+6),b,c
[18]  y9←⍞'A2 ',⍕(a-7),b,c
[19]  ya←⍞'A2 ',⍕(a+7),b,c
[20]  →(2≤1↑⍴x)/blz1
[21]  □←'m'
[22]  →vivo
[23] blz1:→(10≥1↑⍴x)/blz2
[24]  □←'M'
[25]  →vivo
[26] blz2:
[27]  →(x≡y)/erro8
[28]  →(x≡z)/erro8
[29]  →(x≡c1)/erro8
[30]  →(x≡c2)/erro8
[31]  →(x≡y1)/erro8
[32]  →(x≡y2)/erro8
[33]  →(x≡y3)/erro8
[34]  →(x≡y4)/erro8
[35]  →(x≡y5)/erro8
[36]  →(x≡y6)/erro8
[37]  →(x≡y7)/erro8
[38]  →(x≡y8)/erro8
[39]  →(x≡y9)/erro8
[40]  →(x≡ya)/erro8
[41]  →blz4
[42] erro8:□←'x'
[43]  →vivo
[44] blz4:
[45]  r←(1 3⍴a,b,c),[1]10 3↑x
-------------------------------------------------------------
[ 0]  r←gera3;a;b;c;x;z1;z2;z3;z4;z5;z6;z7;z8;z9;za
[ 1] vivo:
[ 2]  a←?5
[ 3]  b←?5
[ 4]  c←?5
[ 5]  x←⍞'A3 ',⍕a,b,c
[ 6]  z1←⍞'A3 ',⍕(a-1),b,c
[ 7]  z2←⍞'A3 ',⍕(a+1),b,c
[ 8]  z3←⍞'A3 ',⍕(a-2),b,c
[ 9]  z4←⍞'A3 ',⍕(a+2),b,c
[10]  z5←⍞'A3 ',⍕(a-3),b,c
[11]  z6←⍞'A3 ',⍕(a+3),b,c
[12]  z7←⍞'A3 ',⍕(a-4),b,c
[13]  z8←⍞'A3 ',⍕(a+4),b,c
[14]  z9←⍞'A3 ',⍕(a-5),b,c
[15]  za←⍞'A3 ',⍕(a+5),b,c
```

```
[16]  →(2≤1↑⍴x)/blz1
[17]  □←'m'
[18]  →vivo
[19] blz1:→(6≥1↑⍴x)/blz2
[20]  □←'M'
[21]  →vivo
[22] blz2:
[23]  →(x≡z1)/erro8
[24]  →(x≡z2)/erro8
[25]  →(x≡z3)/erro8
[26]  →(x≡z4)/erro8
[27]  →(x≡z5)/erro8
[28]  →(x≡z6)/erro8
[29]  →(x≡z7)/erro8
[30]  →(x≡z8)/erro8
[31]  →(x≡z9)/erro8
[32]  →(x≡za)/erro8
[33]  →blz3
[34] erro8:□←'x'
[35]  →vivo
[36] blz3:
[37]  r←(1 3⍴a,b,c),[1]6 3↑x
------------------------------------------------------------
[ 0]  r←gera4;a;b;c;x;z1;z2;z3;z4;z5;z6;z7;z8;z9;za
[ 1] vivo:
[ 2]  a←10+?5
[ 3]  b←10+?5
[ 4]  c←10+?5
[ 5]  x←⍕'A4 ',⍕a,b,c
[ 6]  z1←⍕'A4 ',⍕(a-1),b,c
[ 7]  z2←⍕'A4 ',⍕(a+1),b,c
[ 8]  z3←⍕'A4 ',⍕(a-2),b,c
[ 9]  z4←⍕'A4 ',⍕(a+2),b,c
[10]  z5←⍕'A4 ',⍕(a-3),b,c
[11]  z6←⍕'A4 ',⍕(a+3),b,c
[12]  z7←⍕'A4 ',⍕(a-4),b,c
[13]  z8←⍕'A4 ',⍕(a+4),b,c
[14]  z9←⍕'A4 ',⍕(a-5),b,c
[15]  za←⍕'A4 ',⍕(a+5),b,c
[16]  →(2≤1↑⍴x)/blz1
[17]  □←'m'
[18]  →vivo
[19] blz1:→(6≥1↑⍴x)/blz2
[20]  □←'M'
[21]  →vivo
[22] blz2:
[23]  →(x≡z1)/erro8
[24]  →(x≡z2)/erro8
[25]  →(x≡z3)/erro8
[26]  →(x≡z4)/erro8
[27]  →(x≡z5)/erro8
[28]  →(x≡z6)/erro8
[29]  →(x≡z7)/erro8
[30]  →(x≡z8)/erro8
[31]  →(x≡z9)/erro8
[32]  →(x≡za)/erro8
[33]  →blz3
[34] erro8:□←'x'
[35]  →vivo
[36] blz3:
[37]  r←(1 3⍴a,b,c),[1]6 3↑x
------------------------------------------------------------
[0]  r←a igual b;maior
```

```
[1]  maior←(1↑⍴a)⌈1↑⍴b
[2]  a←maior↑a ⋄ b←maior↑b
[3]  r←maior=+/a=b
-------------------------------------------------------------
[0]  r←mostra
[1]  A1 1 2 4
[2]  A1 1 2 5
[3]  A1 1 2 6
[4]  A1 1 2 7
[5]  A1 1 2 8
-------------------------------------------------------------
[ 0]  r←vetoriza x;i;rr;letra;aspa;nume
[ 1]  aspa←'''' ⋄ nume←'0123456789'
[ 2]  letra←'abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ()',aspa
[ 3] ⍝ tira os brancos
[ 4]  i←1 ⋄ rr←1
[ 5] t2:→(i>¯2+⍴x)/vaiz
[ 6]  →((x[i+1]=' ')∧(x[i]∈letra)∧(x[i+2]∈nume))/mataz
[ 7]  →((x[i+1]=' ')∧(x[i]∈nume)∧(x[i+2]∈letra))/mataz
[ 8]  →((x[i]∈letra)∧(x[i+2]∈letra))/naopode
[ 9]  →(x[i+1]≠' ')/naopode
[10] pode:rr←rr,0
[11]  →(i=i←i+1)/t2
[12] mataz:x[i+1]←'!'
[13] naopode:rr←rr,1
[14]  →(i=i←i+1)/t2
[15] vaiz:rr←rr,1
[16]  x←rr/x
[17] ⍝ separa o sinal <-
[18]  →(2≠+/'<-'∈x)/faca
[19]  i←1 ⋄ rr←⍳0
[20] t1:→(i>¯1+⍴x)/vaix
[21]  →((x[i]='<')∧(x[i+1]='-'))/esim
[22]  rr←rr,1
[23]  →(i=i←i+1)/t1
[24] esim:rr←rr,0 1 1 0
[25]  →(i=i←i+2)/t1
[26] vaix:rr←rr,1
[27]  x←rr⌿x
[28] faca:x←'! 'edit x
[29]  r←(~' '=x)⊂x
-------------------------------------------------------------
[ 0]  opesq vivo062a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;xx;aa;bb;cc
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←4 ⋄ EVENTO←'PL062   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⌿apl2⌿',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA062←ajusta80 FOLHALA062
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA062)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⌿apl2⌿VIVOBLO1'
[12]  xk←1 ⋄ resu←0 5⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←45 80⍴' '
[15]  f←FOLHALA062
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←3.04
```

```
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23] inica:
[24]  xx←gera1
[25]  aa←+/3≠+/[2]1 0↓xx=0
[26]  esse[8 9;]←2 80⍴80 0⍕xx[1;2 3]
[27]  esse[9+⍳aa;]←(aa,80)↑(('¯'-'edit 4 0⍕1 0↓xx),'⍀'),'⍀'
[28]  resp←resp,xx[1;1]
[29]  xx←gera2
[30]  aa←+/3≠+/[2]1 0↓xx=0
[31]  esse[18 19;]←2 80⍴80 0⍕xx[1;2 3]
[32]  esse[19+⍳aa;]←(aa,80)↑(('¯'-'edit 4 0⍕1 0↓xx),'⍀'),'⍀'
[33]  resp←resp,xx[1;1]
[34]  xx←gera3
[35]  aa←+/3≠+/[2]1 0↓xx=0
[36]  esse[30 31;]←2 80⍴80 0⍕xx[1;2 3]
[37]  esse[31+⍳aa;]←(aa,80)↑(('¯'-'edit 4 0⍕1 0↓xx),'⍀'),'⍀'
[38]  resp←resp,xx[1;1]
[39]  xx←gera4
[40]  aa←+/3≠+/[2]1 0↓xx=0
[41]  esse[38 39;]←2 80⍴80 0⍕xx[1;2 3]
[42]  esse[39+⍳aa;]←(aa,80)↑(('¯'-'edit 4 0⍕1 0↓xx),'⍀'),'⍀'
[43]  resp←resp,xx[1;1]
[44]  resu←resu,[1]1 5⍴resp
[45]  acuja←(f[;2]='#')/⍳1↑⍴f
[46]  f[acuja;⍳80]←esse[⍬,f[acuja;3 4],' ';]
[47]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[48]  ⎕←(⍕xk←xk+1),'-'
[49]  →testa
[50] fim:upag←(1 0+⍴f)⍴' '
[51]  →(1=≡n)/elafa
[52]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[53]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[54]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯'-'edit(lixo1←4 0 10 0 4 0 4 0 4 0)⍕resu
[55]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[56]  →terminando
[57] elafa:aaa←(ylu,'¯'-'edit 4 0⍕0 1↓resu)
[58]  lixonol←aaa ⍙FM('c:⍀apl2⍀',((~⍬∧⍀⍬EVENTO=' ')/EVENTO),'.gpa')
[59]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴paaa),' linhas e ',(⍕1↓⍴paaa),' colunas'
[60] terminando:
[61]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[62]  relat[1↑⍴relat;;]←upag
[63]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[64] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[65]  lixonol←lixonol ⍙FM'c:⍀apl2⍀',((~⍬∧⍀⍬EVENTO=' ')/EVENTO),'.tex'
[66]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[67]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo064

```
[0]  r←ajeitals x
[1]  r←x
[2]  r[14;]←60↑r[14;32+⍳28]
[3]  r[24;]←60↑r[24;32+⍳28]
[4]  r[26;]←60↑r[26;32+⍳28]
[5]  r←1 0 1 1 1 1 1 1 1 1 1 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1/[1]r
[6]  r[2;]←60↑' A, B, C, D: inteiro'
------------------------------------------------------------
[  0]  r←cpc algo;nome;PILHA;nnn;saida;aspa;vv;coma;SALVA;i;j;loca;aaa;pn;pna
```

```
[  1] ⍝ versao 1.08
[  2]  PILHA←0 21⍴' ' ⋄ nnn←1 ⋄ saida←0 70⍴' ' ⋄ r←0 70⍴' ' ⋄ aspa←'''' ⋄ loca←'' ⋄ pna←'≤'
[  3]  i←1
[  4] t1:→(i>1↑⍴algo)/fim
[  5]  →(algo[i;1]≠'α')/oraviva
[  6]  saida←saida,[1]1 70⍴70↑1↓algo[i;]
[  7]  →(i=i←i+1)/t1
[  8] oraviva:vv←vetoriza algo[i;]
[  9]  →('algoritmo'igual⊃vv[1])/ealg
[ 10]  →('fim{algoritmo}'igual⊃vv[1])/ealf
[ 11]  →('fimalgoritmo'igual⊃vv[1])/ealf
[ 12]  →('funcao'igual⊃vv[1])/efun
[ 13]  →('fim{funcao}'igual⊃vv[1])/efuf
[ 14]  →('fimfuncao'igual⊃vv[1])/efuf
[ 15]  →('leia'igual⊃vv[1])/elei
[ 16]  →('imprima'igual⊃vv[1])/eimp
[ 17]  →('escreva'igual⊃vv[1])/eimp ⍝ para compatibilizar com o VG = 19/06/08
[ 18]  →('devolva'igual⊃vv[1])/eimp  ⍝ em teste: sera que devolva = imprima neste contexto
       ???
[ 19]  →('se'igual⊃vv[1])/esex
[ 20]  →('senao'igual⊃vv[1])/esen
[ 21]  →('fim{se}'igual⊃vv[1])/esef
[ 22]  →('fimse'igual⊃vv[1])/esef
[ 23]  →('enquanto'igual⊃vv[1])/eenq
[ 24]  →('fim{enquanto}'igual⊃vv[1])/eenf
[ 25]  →('fimenquanto'igual⊃vv[1])/eenf
[ 26]  →('repita'igual⊃vv[1])/erep
[ 27]  →('ate'igual⊃vv[1])/eate
[ 28]  →('para'igual⊃vv[1])/epar
[ 29]  →('fim{para}'igual⊃vv[1])/epaf
[ 30]  →('fimpara'igual⊃vv[1])/epaf
[ 31]  →('abandone'igual⊃vv[1])/eaba
[ 32]  →('saia'igual⊃vv[1])/esai
[ 33]  →('<-'igual⊃vv[2])/ecad
[ 34]  →('inteiro'igual⊃vv[1])/eint
[ 35]  →('real'igual⊃vv[1])/erea
[ 36]  →('logico'igual⊃vv[1])/elog
[ 37]  →('caracter'igual 8↑⊃vv[1])/ecar
[ 38]  →('vetor'igual⊃vv[1])/evet
[ 39]  →('vetora'igual⊃vv[1])/evaa
[ 40]  r←r,[1]1 70⍴70↑(3∓i),' - comando desconhecido'
[ 41] soma:→(i=i←i+1)/t1
[ 42] ⍝--------------algoritmo--------------
[ 43] ealg:saida←saida,[1]1 70⍴70↑⊃vv[2]
[ 44]  →soma
[ 45] ealf:→fim
[ 46] ⍝--------------funcao-----------------
[ 47] efun:
[ 48]  →(2≥⍴vv)/naotem
[ 49]  coma←'RRRR←',(⊃vv[2]),' AAAA'
[ 50]  →vmesmo
[ 51] naotem:coma←'RRRR←',(⊃vv[2])
[ 52]  saida←saida,[1]1 70⍴70↑coma
[ 53]  nome←⊃vv[2]
[ 54]  →aca0
[ 55] vmesmo:
[ 56]  saida←saida,[1]1 70⍴70↑coma
[ 57]  nome←⊃vv[2]
[ 58]  j←1
[ 59] voi1:→(j>¯2+⍴vv)/aca0
[ 60]  saida←saida,[1]1 70⍴70↑(⊃vv[j+2]),'←AAAA[',(3 0∓j),']'
[ 61]  loca←loca,';',⊃vv[j+2]
[ 62]  →(j=j←j+1)/voi1
```

```
[ 63] aca0:→soma
[ 64] efuf:→fim
[ 65] ⍝---------------leia-----------------
[ 66] elei:saida←saida,[1]1 70⍴70↑aspa,'LEITURA DA VARIAVEL ',(⊃vv[2]),aspa
[ 67]  saida←saida,[1]1 70⍴70↑(⊃vv[2]),'←□'
[ 68]  →soma
[ 69] ⍝---------------imprima--------------
[ 70] eimp:→(3=⍴vv)/temmsg
[ 71]  aaa←⊃vv[2]
[ 72]  →(aaa[⍴aaa]=';')/juntaa
[ 73]  saida←saida,[1]1 70⍴70↑aaa
[ 74]  →soma
[ 75] juntaa:saida←saida,[1]1 70⍴70↑'□←⍕',¯1↓aaa
[ 76]  →soma
[ 77] temmsg:aaa←⊃vv[3]
[ 78]  →(aaa[⍴aaa]=';')/juntab
[ 79]  saida←saida,[1]1 70⍴70↑(⊃vv[2]),' ',aaa
[ 80]  →soma
[ 81] juntab:saida←saida,[1]1 70⍴70↑'□←',(⊃vv[2]),' ,⍕',¯1↓aaa
[ 82]  →soma
[ 83] ⍝---------------atribuicao------------
[ 84] ecad:saida←saida,[1]1 70⍴70↑(⊃vv[1]),'←',,⊃2↓vv
[ 85]  aaa←⊃vv[1]
[ 86]  →('['∈aaa)/soma
[ 87]  →(∨/aaa≤loca)/soma
[ 88]  loca←loca,';',⊃vv[1]
[ 89]  →soma
[ 90] ⍝---------------se--------------------
[ 91] esex:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[ 92]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn←nnn+1
[ 93]  PILHA←(1 21⍴21↑'SE',('000'⍕nnn)),[1]PILHA
[ 94]  nnn←nnn+1
[ 95]  →soma
[ 96] ⍝--senao--
[ 97] esen:SALVA←PILHA[1;3 4 5] ⋄ PILHA←1 0↓PILHA
[ 98]  PILHA←(1 21⍴21↑'SE',('000'⍕nnn)),[1]PILHA
[ 99]  saida←saida,[1]1 70⍴70↑'→Δ','000'⍕nnn
[100]  nnn←nnn+1
[101]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[102]  →soma
[103] ⍝--fim{se}--
[104] esef:saida←saida,[1]1 70⍴70↑'Δ',PILHA[1;3 4 5],':'
[105]  PILHA←1 0↓PILHA
[106]  →soma
[107] ⍝-------------enquanto--------------------
[108] eenq:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[109]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[110]  nnn←nnn+1
[111]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[112]  nnn←nnn+1
[113]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[114]  nnn←nnn+1
[115]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn-2
[116]  →soma
[117] ⍝----------fim{enquanto}-----------------
[118] eenf:SALVA←PILHA[1;3 4 5]
[119]  PILHA←1 0↓PILHA
[120]  saida←saida,[1]1 70⍴70↑'→Δ',PILHA[1;3 4 5]
[121]  PILHA←1 0↓PILHA
[122]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[123]  →soma
[124] ⍝----------repita-------------------------
[125] erep:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
```

```
[126]  PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[127]  nnn←nnn+1
[128]  →soma
[129] ⍝----------ate-------------------------
[130] eate:PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[131]  nnn←nnn+1
[132]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[133]  SALVA←PILHA[1;3 4 5]
[134]  PILHA←1 0↓PILHA
[135]  saida←saida,[1]1 70⍴70↑'→(Δ',('000'⍕nnn),')/Δ',SALVA
[136]  SALVA←PILHA[1;3 4 5]
[137]  PILHA←1 0↓PILHA
[138]  saida←saida,[1]1 70⍴70↑'→Δ',SALVA
[139]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn-1),':'
[140]  nnn←nnn+1 ⍝ inclusao desta linha em 19/04/06. Ainda nao suficientemente testada
[141]  →soma
[142] ⍝----------para------------------------
[143] epar:saida←saida,[1]1 70⍴70↑(8↑⊃vv[2]),'←',8↑⊃vv[4]
[144]  PILHA←(1 21⍴21↑'PA','000'⍕nnn),[1]PILHA
[145]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[146]  nnn←nnn+1
[147]  →(8=⍴vv)/tempasso
[148]  PILHA←(1 21⍴21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8↑8⍕1),[1]PILHA
[149]  →juntab
[150] tempasso:PILHA←(1 21⍴21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8 2⍕pn←⍎⊃vv[8]),[1]PILHA
[151] ⍝ 'pn=',⍕pn
[152]  pna←'≤≥'[1+pn<0] ⍝ alteracao a 22/06/06, para acertar passo negativo
[153] juntab:nnn←nnn+1
[154]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',(⊃vv[2]),pna,⍕⊃vv[6]
[155]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn),')/Δ','000'⍕nnn-1
[156]  nnn←nnn+1
[157]  →soma
[158] ⍝----------fim{para}------------------
[159] epaf:saida←saida,[1]1 70⍴70↑PILHA[1;5+⍳8],'←',PILHA[1;5+⍳8],'+',PILHA[1;13+⍳8]
[160]  SALVA←PILHA[1;3 4 5]
[161]  PILHA←1 0↓PILHA
[162]  saida←saida,[1]1 70⍴70↑'→Δ',PILHA[1;3 4 5]
[163]  PILHA←1 0↓PILHA
[164]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[165]  →soma
[166] ⍝-----------abandone--------------------
[167] eaba:→soma
[168] ⍝-----------saia--------------------------
[169] esai:→soma
[170] ⍝-------- definicao de variaveis---------------
[171] eint:
[172]  saida←saida,[1]1 70⍴70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[173]  →soma
[174] erea:
[175]  saida←saida,[1]1 70⍴70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[176]  →soma
[177] elog:
[178]  saida←saida,[1]1 70⍴70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[179]  →soma
[180] ecar:
[181]  saida←saida,[1]1 70⍴70↑'⍝ ',(⊃vv[1]),' ',⊃vv[2]
[182]  →soma
[183] ⍝----------definicao de vetores------------------
[184] evet:
[185]  saida←saida,[1]1 70⍴70↑(1 parte(⊃vv[2])),'←',(2 parte(⊃vv[2])),'⍴0'
[186]  →soma
[187] evaa:
[188]  saida←saida,[1]1 70⍴70↑(1 parte(⊃vv[2])),'←',(2 parte(⊃vv[2])),'⍴',aspa,' ',aspa
```

```
[189]  →soma
[190] fim:
[191]  i←1
[192] tfim:→(i>nnn)/mesmo
[193]  loca←loca,';Δ','000'⍕i
[194]  →(i=i←i+1)/tfim
[195] mesmo:→(50>⍴loca)/blz1
[196]  saida←((1↑⍴saida),20+⍴loca)↑saida
[197]  saida[1;20+⍳⍴loca]←loca
[198]  →pula22
[199] blz1:saida[1;20+⍳50]←50↑loca
[200] pula22:r←'_ 'edit saida
-------------------------------------------------------------
[  0]  r←criaque a;vars;i;er11;er12;p11;p12
[  1] ⍝ devolve questao criada: 1=enquanto, repita; 2=repita, enquanto; 3=enquanto, enquant
      o
[  2] ⍝ 4=repita, para; 5=para, enquanto; 6=repita repita; 7=para, para
[  3]  r←28 60⍴' '
[  4]  vars←'ABCD'[4?4]
[  5]  er11←geraconer vars[1]
[  6]  er12←geraconer vars[2]
[  7]  p11←geraconp vars[1]
[  8]  p12←geraconp vars[2]
[  9]  r[1;]←60↑'funcao ex',⍕a
[ 10]  r[2;]←60↑'XT <- 0'
[ 11]  r[3;]←60↑'XT <- 0'
[ 12]  r[4;]←60↑vars[1],' <- ',⍕?6
[ 13]  r[5;]←60↑vars[2],' <- ',⍕?6
[ 14]  r[6;]←60↑vars[3],' <- ',⍕?6
[ 15]  r[7;]←60↑vars[4],' <- ',⍕?6
[ 16] viva1:
[ 17]  r[10;]←60↑vars[3],' <- ',vars[1],'+',⍕?2
[ 18]  r[13;]←60↑'XT <- XT + 1'
[ 19]  r[14;⍳30]←30↑'se 0=2|',vars[1],'+',vars[3]
[ 20]  r[14;30+⍳30]←30↑'⍝ se (@@',vars[1],'+',vars[3],'! mod 2! = 0) '
[ 21]  r[15;]←60↑'   ',vars[4],' <- ',vars[4],' - 1'
[ 22]  r[16;]←60↑'senao'
[ 23]  r[17;]←60↑'   ',vars[4],' <- ',vars[4],' + 2'
[ 24]  r[18;]←60↑'fim{se}'
[ 25]  r[23;]←60↑'se (',(⍕10+?5),' > ',vars[1],'+',vars[4],') '
[ 26]  r[24;⍳30]←30↑'RRRR <- (',vars[1],'+',vars[3],') , XT'
[ 27]  r[24;30+⍳30]←30↑'⍝   devolva ',vars[1],'+',vars[3]
[ 28]  r[25;]←60↑'senao'
[ 29]  r[26;⍳30]←30↑'RRRR <- (',vars[2],'-',vars[4],') , XT'
[ 30]  r[26;30+⍳30]←30↑'⍝   devolva ',vars[2],'-',vars[4]
[ 31]  r[27;]←60↑'fim{se}'
[ 32]  r[28;]←60↑'fim funcao'
[ 33]  →(a=1)/um
[ 34]  →(a=2)/dois
[ 35]  →(a=3)/tres
[ 36]  →(a=4)/quatro
[ 37]  →(a=5)/cinco
[ 38]  →(a=6)/seis
[ 39]  →(a=7)/sete
[ 40]  →0
[ 41] um: ⍝ enquanto + repita
[ 42]  r[8;]←60↑er11[1;]
[ 43]  r[9;]←60↑'enquanto (',(trim er11[4;]),') '
[ 44]  r[11;]←60↑er12[1;]
[ 45]  r[12;]←60↑'repita'
[ 46]  r[19;]←60↑er12[2;]
[ 47]  r[20;]←60↑'ate (',(trim er12[3;]),')'
[ 48]  r[21;]←60↑er11[2;]
```

```
[ 49]  r[22;]←60↑'fim{enquanto}'
[ 50]  →fim
[ 51] dois: ⍝ repita + enquanto
[ 52]  r[8;]←60↑vars[4],' <- ',vars[1],'+',⍕?2 ⍝ enchetripa
[ 53]  r[9;]←60↑'repita'
[ 54]  r[11;]←60↑er12[1;]
[ 55]  r[12;]←60↑'enquanto (',(trim er12[4;]),') '
[ 56]  r[19;]←60↑er12[2;]
[ 57]  r[20;]←60↑'fim{enquanto}'
[ 58]  r[21;]←60↑er11[2;]
[ 59]  r[22;]←60↑'ate (',(trim er11[3;]),')'
[ 60]  →fim
[ 61] tres: ⍝ enquanto + enquanto
[ 62]  r[8;]←60↑er11[1;]
[ 63]  r[9;]←60↑'enquanto (',(trim er11[4;]),') '
[ 64]  r[11;]←60↑er12[1;]
[ 65]  r[12;]←60↑'enquanto (',(trim er12[4;]),') '
[ 66]  r[19;]←60↑er12[2;]
[ 67]  r[20;]←60↑'fim{enquanto}'
[ 68]  r[21;]←60↑er11[2;]
[ 69]  r[22;]←60↑'fim{enquanto}'
[ 70]  →fim
[ 71] quatro:  ⍝ repita + para
[ 72]  r[8;]←60↑er11[1;]
[ 73]  r[9;]←60↑'repita'
[ 74]  r[11;]←60↑vars[4],' <- ',vars[1],'+',⍕?2 ⍝ enchetripa
[ 75]  r[12;]←60↑p12[1;]
[ 76]  r[19;]←60↑vars[3],' <- ',vars[2],'+',⍕?2 ⍝ enchetripa
[ 77]  r[20;]←60↑'fim{para}'
[ 78]  r[21;]←60↑er11[2;]
[ 79]  r[22;]←60↑'ate (',(trim er11[3;]),')'
[ 80]  →fim
[ 81] cinco:  ⍝ para + enquanto
[ 82]  r[8;]←60↑vars[4],' <- ',vars[2],'+',⍕?2 ⍝ enchetripa
[ 83]  r[9;]←60↑p11[1;]
[ 84]  r[11;]←60↑er12[1;]
[ 85]  r[12;]←60↑'enquanto (',(trim er12[4;]),')'
[ 86]  r[19;]←60↑er12[2;]
[ 87]  r[20;]←60↑'fim{enquanto}'
[ 88]  r[21;]←60↑vars[3],' <- ',vars[2],'+',⍕?2 ⍝ enchetripa
[ 89]  r[22;]←60↑'fim{para}'
[ 90]  →fim
[ 91] seis:   ⍝ repita + repita
[ 92]  r[8;]←60↑er11[1;]
[ 93]  r[9;]←60↑'repita'
[ 94]  r[11;]←60↑er12[1;]
[ 95]  r[12;]←60↑'repita'
[ 96]  r[19;]←60↑er12[2;]
[ 97]  r[20;]←60↑'ate (',(trim er12[3;]),')'
[ 98]  r[21;]←60↑er11[2;]
[ 99]  r[22;]←60↑'ate (',(trim er11[3;]),')'
[100]  →fim
[101] sete:   ⍝ para + para
[102]  r[8;]←60↑vars[3],' <- ',vars[1],'+',⍕?2 ⍝ enchetripa
[103]  r[9;]←60↑p11[1;]
[104]  r[11;]←60↑vars[4],' <- ',vars[1],'+',⍕?2 ⍝ enchetripa
[105]  r[12;]←60↑p12[1;]
[106]  r[19;]←60↑vars[4],' <- ',vars[2],'+',⍕?2 ⍝ enchetripa
[107]  r[20;]←60↑'fim{para}'
[108]  r[21;]←60↑vars[3],' <- ',vars[2],'+',⍕?2 ⍝ enchetripa
[109]  r[22;]←60↑'fim{para}'
[110]  →fim
[111] fim:
```

```
------------------------------------------------------------
[ 0]  funcao ex4
[ 1]  XT<-0
[ 2]  C<-4
[ 3]  B<-5
[ 4]  D<-4
[ 5]  A<-3
[ 6]  A<-C+2
[ 7]  repita
[ 8]  D<-C+2
[ 9]  C<-1
[10]  para B de 1 ate 14 passo 2
[11]  XT<-XT+1
[12]  se 0=2|C+D entao              ⍝ se (((C+D) mod 2) = 0) entao
[13]  A<-A-1
[14]  senao
[15]  A<-A+2
[16]  fimse
[17]  A<-C+2
[18]  fimpara
[19]  C<-C+2
[20]  imprima C
[21]  ate(C≥10)
[22]  se((C+A)>11)entao
[23]  RRRR<-(C+D),XT            ⍝   devolva C+D
[24]  senao
[25]  RRRR<-(B-A),XT            ⍝   devolva B-A
[26]  fimse
[27]  fimfuncao
------------------------------------------------------------
[ 0]  r←gera4;a;b;c;x;z1;z2;z3;z4;z5;z6;z7;z8;z9;za
[ 1] vivo:
[ 2]  a←10+?5
[ 3]  b←10+?5
[ 4]  c←10+?5
[ 5]  x←⍎'A4 ',⍕a,b,c
[ 6]  z1←⍎'A4 ',⍕(a-1),b,c
[ 7]  z2←⍎'A4 ',⍕(a+1),b,c
[ 8]  z3←⍎'A4 ',⍕(a-2),b,c
[ 9]  z4←⍎'A4 ',⍕(a+2),b,c
[10]  z5←⍎'A4 ',⍕(a-3),b,c
[11]  z6←⍎'A4 ',⍕(a+3),b,c
[12]  z7←⍎'A4 ',⍕(a-4),b,c
[13]  z8←⍎'A4 ',⍕(a+4),b,c
[14]  z9←⍎'A4 ',⍕(a-5),b,c
[15]  za←⍎'A4 ',⍕(a+5),b,c
[16]  →(2≤1↑⍴x)/blz1
[17]  □←'m'
[18]  →vivo
[19] blz1:→(6≥1↑⍴x)/blz2
[20]  □←'M'
[21]  →vivo
[22] blz2:
[23]  →(x≡z1)/erro8
[24]  →(x≡z2)/erro8
[25]  →(x≡z3)/erro8
[26]  →(x≡z4)/erro8
[27]  →(x≡z5)/erro8
[28]  →(x≡z6)/erro8
[29]  →(x≡z7)/erro8
[30]  →(x≡z8)/erro8
[31]  →(x≡z9)/erro8
[32]  →(x≡za)/erro8
```

```
[33]  →blz3
[34] erro8:⍞←'x'
[35]  →vivo
[36] blz3:
[37]  r←(1 3⍴a,b,c),[1]6 3↑x
-------------------------------------------------------------
[ 0]  r←geraconer var;a
[ 1]  r←4 10⍴' '
[ 2]  →(0=2|?2)/desce
[ 3] sobe:
[ 4]  r[1;]←10↑var,' <- ',⍕?4
[ 5]  r[2;]←10↑var,' <- ',var,'+',⍕2+?2
[ 6]  →(0=2|?2)/edois
[ 7] eum:
[ 8]  r[3;]←10↑var,'>',⍕a←9+?4
[ 9]  r[4;]←10↑var,'≤',⍕a
[10]  →0
[11] edois:
[12]  r[3;]←10↑var,'≥',⍕a←9+?4
[13]  r[4;]←10↑var,'<',⍕a
[14]  →0
[15] desce:
[16]  r[1;]←10↑var,' <- ',⍕9+?4
[17]  r[2;]←10↑var,' <- ',var,'-',⍕2+?2
[18]  →(0=2|?2)/edoisd
[19] eumd:
[20]  r[3;]←10↑var,'<',⍕a←?3
[21]  r[4;]←10↑var,'≥',⍕a
[22]  →0
[23] edoisd:
[24]  r[3;]←10↑var,'≤',⍕a←?3
[25]  r[4;]←10↑var,'>',⍕a
-------------------------------------------------------------
[ 0]  r←geraconp var;a
[ 1]  r←2 60⍴' '
[ 2]  →(0=2|?2)/desce
[ 3] sobe:
[ 4]  r[1;]←60↑'para ',var,' de ',(⍕?3),' a ',(⍕9+?5),' passo ',⍕1+?2
[ 5]  r[2;]←60↑'fimpara'
[ 6]  →0
[ 7] desce:
[ 8]  r[1;]←60↑'para ',var,' de ',(⍕9+?5),' a ',(⍕?3),' passo -',⍕1+?2
[ 9]  r[2;]←60↑'fimpara'
-------------------------------------------------------------
[0]  r←a igual b;maior
[1]  maior←(1↑⍴a)⌈1↑⍴b
[2]  a←maior↑a ⋄ b←maior↑b
[3]  r←maior=+/a=b
-------------------------------------------------------------
[ 0]  r←quem replace depara;de;i;j;k;onde;para
[ 1] ⍝ forma de usar: texto replace 'strin-de' 'string para'
[ 2] ⍝ obviamente eles nao precisam ter o mesmo tamanho
[ 3]  de←,⊃depara[1] ⋄ para←,⊃depara[2]
[ 4]  i←1 ⋄ r←((1↑⍴quem),200)⍴' '
[ 5] t1:→(i>1↑⍴quem)/fim
[ 6]  →(0=∨/onde←de⍷quem[i;])/naotem
[ 7]  j←1 ⋄ k←1
[ 8] t2:→(k>⍴quem[i;])/acabou
[ 9]  →(onde[k]=0)/soma
[10]  r[i;(j-1)+⍳⍴para]←para
[11]  j←j+⍴para
[12]  k←k+⍴de
[13]  →t2
```

```
[14] soma:r[i;j]←quem[i;k]
[15]  k←k+1
[16]  →(j=j←j+1)/t2
[17] naotem:r[i;]←200↑quem[i;]
[18] acabou:→(i=i←i+1)/t1
[19] fim:r←trim⍤1 r
-------------------------------------------------------------
[ 0]  r←tradcoma x;i;j
[ 1]  i←j←1 ⋄ r←100⍴' '
[ 2] t1:→(i>⍴x)/fim
[ 3]  →(i=⍴x)/pula
[ 4]  →((x[i]='<')∧(x[i+1]='-'))/recebe
[ 5] pula:→(x[i]='∨')/ou
[ 6]  →(x[i]='∧')/e
[ 7]  →(x[i]='~')/nao
[ 8]  →(x[i]='≠')/diferente
[ 9]  →(x[i]='≤')/menig
[10]  →(x[i]='≥')/maiig
[11]  →(x[i]='×')/vezes
[12]  →(x[i]='>')/maior
[13]  →(x[i]='<')/menor
[14] nada:r[j]←x[i]
[15]  i←i+1
[16]  j←j+1
[17]  →t1
[18] recebe:r[j+¯1+⍳7]←'$⍀gets$'
[19]  j←j+7
[20]  i←i+2
[21]  →t1
[22] ou:r[j+¯1+⍳6]←'$⍀lor$'
[23]  j←j+6
[24]  i←i+1
[25]  →t1
[26] nao:r[j+¯1+⍳6]←'$⍀sim$'
[27]  j←j+6
[28]  i←i+1
[29]  →t1
[30] e:r[j+¯1+⍳7]←'$⍀land$'
[31]  j←j+7
[32]  i←i+1
[33]  →t1
[34] diferente:r[j+¯1+⍳6]←'$⍀neq$'
[35]  j←j+6
[36]  i←i+1
[37]  →t1
[38] menig:r[j+¯1+⍳5]←'$⍀le$'
[39]  j←j+5
[40]  i←i+1
[41]  →t1
[42] maiig:r[j+¯1+⍳5]←'$⍀ge$'
[43]  j←j+5
[44]  i←i+1
[45]  →t1
[46] vezes:r[j+¯1+⍳8]←'$⍀times$'
[47]  j←j+8
[48]  i←i+1
[49]  →t1
[50] maior:r[j+¯1+⍳3]←'$>$'
[51]  j←j+3
[52]  i←i+1
[53]  →t1
[54] menor:r[j+¯1+⍳3]←'$<$'
[55]  j←j+3
```

```
[56]  i←i+1
[57]  →t1
[58] fim:r←trim r
-------------------------------------------------------------
[ 0]  r←tradfunca fun;y;aaa;i
[ 1]  fun←'({'edit')}'edit fun
[ 2]  y←fun replace'se ' '⍀IF {'
[ 3]  y←y replace'enquanto ' '⍀WHILE {'
[ 4]  y←y replace'repita' '⍀REPEAT'
[ 5]  y←y replace'senao' '⍀ELSE'
[ 6]  y←y replace'fim{se}' '⍀ENDIF'
[ 7]  y←y replace'fim{enquanto}' '⍀ENDWHILE'
[ 8]  y←y replace'ate' '⍀UNTIL {'
[ 9]  y←y replace'fim{para}' '⍀ENDFOR'
[10]  y←y replace'para' '⍀FOR {'
[11]  y←y replace'fim{funcao}' 'fim⍀{funcao⍀}'
[12]  y←y replace'RRRR<-' 'imprima '
[13]  y←((1↑⍴y),60)↑y
[14]  y←((1,1↓⍴y)⍴100↑'⍀begin{algorithmic}[1]'),[1]y
[15]  y←y,[1](1,1↓⍴y)⍴100↑'⍀end{algorithmic}'
[16]  i←1
[17]  r←((1↑⍴y),100)⍴' '
[18] t1:→(i>1↑⍴r)/fim
[19]  aaa←100↑tradcoma y[i;]
[20]  →(aaa[1]='⍀')/blz
[21]  aaa←100↑'⍀STATE ',aaa
[22] blz:r[i;]←aaa
[23]  →(i=i←i+1)/t1
[24] fim:i←1
[25] test34:→(i>1↑⍴r)/acabou
[26]  →(5=+/r[i;⍳5]='⍀IF {')/poe
[27]  →(5=+/r[i;⍳5]='⍀WHIL')/poe
[28]  →(5=+/r[i;⍳5]='⍀UNTI')/poe
[29]  →(5=+/r[i;⍳5]='⍀FOR ')/poe
[30]  →(i=i←i+1)/test34
[31] poe:
[32]  r[i;]←100↑(trim r[i;]),'}'
[33]  →(i=i←i+1)/test34
[34] acabou:r←trim4 r
-------------------------------------------------------------
[0]  r←trim4 x;z
[1] ⍝f corta as colunas direitas que sao brancos
[2]  →(2≠⍴⍴x)/erro
[3]  z←+/[1]x=' '
[4]  r←(z≠1↑⍴x)/[2]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
-------------------------------------------------------------
[ 0]  r←vetoriza x;i;rr;letra;aspa;nume
[ 1] ⍝ versao 1.07
[ 2]  aspa←''''' ⋄ nume←'0123456789'
[ 3]  letra←'abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ()',aspa
[ 4] ⍝ tira os brancos
[ 5]  i←1 ⋄ rr←1
[ 6] t2:→(i>¯2+⍴x)/vaiz
[ 7]  →((x[i+1]=' ')∧(x[i]∈letra)∧(x[i+2]∈nume))/mataz
[ 8]  →((x[i+1]=' ')∧(x[i]∈nume)∧(x[i+2]∈letra))/mataz
[ 9]  →((x[i]∈letra)∧(x[i+2]∈letra))/naopode
[10]  →((x[i]∈letra)∧(x[i+2]='-'))/naopode  ⍝ comando incluido para o passo negativo
[11]  →(x[i+1]≠' ')/naopode
[12] pode:rr←rr,0
[13]  →(i=i←i+1)/t2
[14] mataz:x[i+1]←'!'
```

```
[15] naopode:rr←rr,1
[16]  →(i=i←i+1)/t2
[17] vaiz:rr←rr,1
[18]  x←rr/x
[19] ⍝ separa o sinal <-
[20]  →(2≠+/'<-'∊x)/faca
[21]  i←1 ⋄ rr←⍳0
[22] t1:→(i>¯1+⍴x)/vaix
[23]  →((x[i]='<')∧(x[i+1]='-'))/esim
[24]  rr←rr,1
[25]  →(i=i←i+1)/t1
[26] esim:rr←rr,0 1 1 0
[27]  →(i=i←i+2)/t1
[28] vaix:rr←rr,1
[29]  x←rr⌿x
[30] faca:x←'! 'edit x
[31]  r←(~' '=x)⊂x
-------------------------------------------------------------
[  0]  opesq vivo064a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;limite;lixo1;lixonol;num;r
       elat;resp;resu;upag;xixo;xk;ylu
[  1]  'demora...'
[  2]  limite←24
[  3]  →(0≠⎕NC'opesq')/qveio
[  4]  opesq←10⍴' '
[  5] qveio:
[  6]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[  7]  CORRECAO←4 ⋄ EVENTO←'PL064   '
[  8]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
       4 5],⎕TS[6]+⎕TS[7]÷1000
[  9]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⌿apl2⌿',(5↑n),'.ALU' ⋄ EVENTO←n
[ 10]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 11]  FOLHALA064←ajusta80 FOLHALA064
[ 12]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA064)⍴' '
[ 13]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⌿apl2⌿VIVOBLO1'
[ 14]  xk←1 ⋄ resu←0 8⍴0
[ 15] testa:→(xk>1↑⍴ylu)/fim
[ 16]  esse←205 80⍴' '
[ 17]  f←FOLHALA064
[ 18]  esse[1;]←80↑dhx[1;]
[ 19]  esse[2;]←80↑dhx[2;]
[ 20]  esse[3;]←80↑4 2⍎VERSAOa←1.02
[ 21]  esse[4;]←80↑ylu[xk;⍳6]
[ 22]  esse[5;]←80↑ylu[xk;6+⍳30]
[ 23]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[ 24]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[ 25]  esse[204;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[ 26]  esse[205;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[ 27] ini1:
[ 28]  lixonol←⎕FX b←cpc a←criaque 1
[ 29]  num←⍕'ex1'
[ 30]  →(num[2]<limite)/blz1
[ 31]  ⍞←'*'
[ 32]  →ini1
[ 33] blz1:resp←resp,num[1]
[ 34]  esse[7+⍳28;]←28 80↑'@('edit'!)'edit tradfunca ajeitals a
[ 35] ini2:
[ 36]  lixonol←⎕FX b←cpc a←criaque 2
[ 37]  num←⍕'ex2'
[ 38]  →(num[2]<limite)/blz2
[ 39]  ⍞←'o'
[ 40]  →ini2
[ 41] blz2:resp←resp,num[1]
[ 42]  esse[35+⍳28;]←28 80↑'@('edit'!)'edit tradfunca ajeitals a
```

```
[ 43] ini3:
[ 44]  lixonol←⎕FX b←cpc a←criaque 3
[ 45]  num←⍞'ex3'
[ 46]  →(num[2]<limite)/blz3
[ 47]  ⎕←'□'
[ 48]  →ini3
[ 49] blz3:resp←resp,num[1]
[ 50]  esse[63+⍳28;]←28 80↑'@('edit'!)'edit tradfunca ajeitals a
[ 51] ini4:
[ 52]  lixonol←⎕FX b←cpc a←criaque 4
[ 53]  num←⍞'ex4'
[ 54]  →(num[2]<limite)/blz4
[ 55]  ⎕←'α'
[ 56]  →ini4
[ 57] blz4:
[ 58]  resp←resp,num[1]
[ 59]  esse[91+⍳28;]←28 80↑'@('edit'!)'edit tradfunca ajeitals a
[ 60] ini5:
[ 61]  lixonol←⎕FX b←cpc a←criaque 5
[ 62]  num←⍞'ex5'
[ 63]  →(num[2]<limite)/blz5
[ 64]  ⎕←'⌊'
[ 65]  →ini5
[ 66] blz5:
[ 67]  resp←resp,num[1]
[ 68]  esse[119+⍳28;]←28 80↑'@('edit'!)'edit tradfunca ajeitals a
[ 69] ini6:
[ 70]  lixonol←⎕FX b←cpc a←criaque 6
[ 71]  num←⍞'ex6'
[ 72]  →(num[2]<limite)/blz6
[ 73]  ⎕←'⌈'
[ 74]  →ini6
[ 75] blz6:
[ 76]  resp←resp,num[1]
[ 77]  esse[147+⍳28;]←28 80↑'@('edit'!)'edit tradfunca ajeitals a
[ 78] ini7:
[ 79]  lixonol←⎕FX b←cpc a←criaque 7
[ 80]  num←⍞'ex7'
[ 81]  →(num[2]<limite)/blz7
[ 82]  ⎕←'´'
[ 83]  →ini7
[ 84] blz7:
[ 85]  resp←resp,num[1]
[ 86]  esse[175+⍳28;]←28 80↑'@('edit'!)'edit tradfunca ajeitals a
[ 87]  resu←resu,[1]1 8⍴resp
[ 88]  acuja←(f[;2]='#')/⍳1↑⍴f
[ 89]  f[acuja;]←esse[⍞,f[acuja;3 4 5],' ';]
[ 90]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[ 91]  ⎕←(⍕xk←xk+1),'-'
[ 92]  →testa
[ 93] fim:upag←(1 0+⍴f)⍴' '
[ 94]  →(1=≡n)/elafa
[ 95]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[ 96]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[ 97]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←6 0 10 0 6 0 6 0 6 0 6 0 6 0 6 0)⍕resu
[ 98]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[ 99]  →terminando
[100] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),'¯-'edit 6 0⍕0 1↓resu)
[101]  aaa[1;35 36]←2 0⍴CORRECAO
[102]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[103]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[104] terminando:
[105]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
```

```
[106]  relat[1↑⍴relat;;]←upag
[107]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[108] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[109]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[110]  lixonol←⎕EX 7 3⍴'ex1ex2ex3ex4ex5ex6ex7'
[111]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo065

```
[ 0]  r←ajuntavars x;i;j
[ 1]  i←4 ⋄ j←3 ⋄ r←(⍴x)⍴' '
[ 2]  r[1;]←x[1;]
[ 3]  r[2;⍳29]←x[2;⍳29]
[ 4]  r[3;]←70↑'inteiro ',30↓x[2;]
[ 5] t1:→(i>1↑⍴x)/fim
[ 6]  →((j+5)>1↑⍴x)/sussi
[ 7]  →((66=+/x[j;4+⍳66]=' ')∧(66=+/x[j+1;4+⍳66]=' ')∧(66=+/x[j+2;4+⍳66]=' ')∧(66=+/x[j+3;
      4+⍳66]=' ')∧(66=+/x[j+4;4+⍳66]=' '))/podepu
[ 8] sussi:→(j>1↑⍴x)/fim
[ 9]  r[i;]←x[j;]
[10]  j←j+1
[11]  →(i=i←i+1)/t1
[12] podepu:r[i;]←70↑x[j;⍳4],'; ',x[j+1;⍳4],'; ',x[j+2;⍳4],'; ',x[j+3;⍳4],'; ',x[j+4;⍳4]
[13]  j←j+5
[14]  →(i=i←i+1)/t1
[15] fim:r←trim2 r
[16]  r[1↑⍴r;]←(1↓⍴r)↑'\STATE fim\{funçto\}'
[17]  r[¯1+1↑⍴r;]←(1↓⍴r)↑'\STATE imprima ',,r[¯1+1↑⍴r;8+⍳7]
-------------------------------------------------------------
[ 0]  cavaleiro065a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;limite;lixo1;lixonol;num;re
      lat;resp;resu;upag;x;xixo;xk;ylu
[ 1]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 2]  limite←100
[ 3]  FOLHALA065←ajusta80 FOLHALA065
[ 4]  relat←ΔFM'c:\apl2\VIVOBLO1'
[ 5]  xk←1
[ 6] testa:→(xk>n)/fim
[ 7]  esse←344 80⍴' '
[ 8]  f←FOLHALA065
[ 9]  esse[1;⍳⍴x]←x←'  -- Cavaleiros da Tavola Redonda'
[10]  esse[3;]←80↑'4 2⍕VERSAOa←1.02
[11]  esse[343;⍳8]←'@000000@'
[12] ini1:
[13]  lixonol←⎕FX b←cpc a←gerapgm 1
[14]  num←⍎'programa11'
[15]  →(num<limite)/blz1
[16]  ⎕←'*'
[17]  →ini1
[18] blz1:resp←num
[19]  esse[7+⍳40;]←40 80↑tradfunca ajuntavars a
[20] ini2:
[21]  lixonol←⎕FX b←cpc a←gerapgm 2
[22]  num←⍎'programa12'
[23]  →(num<limite)/blz2
[24]  ⎕←'o'
[25]  →ini2
[26] blz2:resp←resp,num
[27]  esse[47+⍳50;]←50 80↑tradfunca ajuntavars a
[28] ini3:
[29]  lixonol←⎕FX b←cpc a←gerapgm 3
[30]  num←⍎'programa13'
```

```
[31]  →(num<limite)/blz3
[32]  □←'□'
[33]  →ini3
[34] blz3:resp←resp,num
[35]  esse[97+⍳50;]←50 80↑tradfunca ajuntavars a
[36] ini4:
[37]  lixonol←⎕FX b←cpc a←gerapgm 4
[38]  num←⍕'programa14'
[39]  →(num<limite)/blz4
[40]  □←'α'
[41]  →ini4
[42] blz4:
[43]  resp←resp,num
[44]  esse[147+⍳55;]←55 80↑tradfunca ajuntavars a
[45] ini5:
[46]  lixonol←⎕FX b←cpc a←gerapgm 1
[47]  num←⍕'programa11'
[48]  →(num<limite)/blz5
[49]  □←'*'
[50]  →ini5
[51] blz5:resp←resp,num
[52]  esse[202+⍳40;]←40 80↑tradfunca ajuntavars a
[53] ini6:
[54]  lixonol←⎕FX b←cpc a←gerapgm 2
[55]  num←⍕'programa12'
[56]  →(num<limite)/blz6
[57]  □←'o'
[58]  →ini6
[59] blz6:resp←resp,num
[60]  esse[242+⍳50;]←50 80↑tradfunca ajuntavars a
[61] ini7:
[62]  lixonol←⎕FX b←cpc a←gerapgm 3
[63]  num←⍕'programa13'
[64]  →(num<limite)/blz7
[65]  □←'□'
[66]  →ini7
[67] blz7:resp←resp,num
[68]  esse[292+⍳50;]←50 80↑tradfunca ajuntavars a
[69]  resp←'¯-'edit⍠resp
[70]  acuja←(f[;2]='#')/⍳1↑⍴f
[71]  f[acuja;]←esse[⍕,f[acuja;3 4 5],' ';]
[72]  □←(⍠xk←xk+1),'-'
[73]  f←(((1↑⍴relat),1↓⍴f)↑relat),[1]f
[74]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'\end{document}'
[75]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'%',resp
[76]  lixo1←f ΔFM'c:\apl2\CA065a',('00'⍠xk-1),'.tex'
[77]  →testa
[78] fim:
------------------------------------------------------------
[  0]  r←cpc algo;nome;PILHA;nnn;saida;aspa;vv;coma;SALVA;i;j;loca;aaa
[  1]  PILHA←0 21⍴' ' ⋄ nnn←1 ⋄ saida←0 70⍴' ' ⋄ r←0 70⍴' ' ⋄ aspa←'''' ⋄ loca←''
[  2]  i←1
[  3] t1:→(i>1↑⍴algo)/fim
[  4]  vv←vetoriza algo[i;]
[  5]  →('algoritmo'igual⊃vv[1])/ealg
[  6]  →('fim{algoritmo}'igual⊃vv[1])/ealf
[  7]  →('funcao'igual⊃vv[1])/efun
[  8]  →('fim{funcao}'igual⊃vv[1])/efuf
[  9]  →('leia'igual⊃vv[1])/elei
[ 10]  →('imprima'igual⊃vv[1])/eimp
[ 11]  →('devolva'igual⊃vv[1])/eimp  ⍝ em teste: sera que devolva = imprima neste contexto
       ???
[ 12]  →('se'igual⊃vv[1])/esex
```

```
[ 13]  →('senao'igual⊃vv[1])/esen
[ 14]  →('fim{se}'igual⊃vv[1])/esef
[ 15]  →('enquanto'igual⊃vv[1])/eenq
[ 16]  →('fim{enquanto}'igual⊃vv[1])/eenf
[ 17]  →('repita'igual⊃vv[1])/erep
[ 18]  →('ate'igual⊃vv[1])/eate
[ 19]  →('para'igual⊃vv[1])/epar
[ 20]  →('fim{para}'igual⊃vv[1])/epaf
[ 21]  →('abandone'igual⊃vv[1])/eaba
[ 22]  →('saia'igual⊃vv[1])/esai
[ 23]  →('<-'igual⊃vv[2])/ecad
[ 24]  →('inteiro'igual⊃vv[1])/eint
[ 25]  →('real'igual⊃vv[1])/erea
[ 26]  →('logico'igual⊃vv[1])/elog
[ 27]  →('caracter'igual 8↑⊃vv[1])/ecar
[ 28]  →('vetor'igual⊃vv[1])/evet
[ 29]  r←r,[1]1 70ρ70↑(3⍕i),' - comando desconhecido'
[ 30] soma:→(i=i←i+1)/t1
[ 31] ⍝--------------algoritmo--------------
[ 32] ealg:saida←saida,[1]1 70ρ70↑⊃vv[2]
[ 33]  →soma
[ 34] ealf:→fim
[ 35] ⍝--------------funcao-----------------
[ 36] efun:
[ 37]  →(2≥ρvv)/naotem
[ 38]  coma←'RRRR←',(⊃vv[2]),' AAAA'
[ 39]  →vmesmo
[ 40] naotem:coma←'RRRR←',(⊃vv[2])
[ 41]  saida←saida,[1]1 70ρ70↑coma
[ 42]  nome←⊃vv[2]
[ 43]  →aca0
[ 44] vmesmo:
[ 45]  saida←saida,[1]1 70ρ70↑coma
[ 46]  nome←⊃vv[2]
[ 47]  j←1
[ 48] voi1:→(j>¯2+ρvv)/aca0
[ 49]  saida←saida,[1]1 70ρ70↑(⊃vv[j+2]),'←AAAA[',(3 0⍕j),']'
[ 50]  loca←loca,';',⊃vv[j+2]
[ 51]  →(j=j←j+1)/voi1
[ 52] aca0:→soma
[ 53] efuf:→fim
[ 54] ⍝---------------leia-----------------
[ 55] elei:saida←saida,[1]1 70ρ70↑aspa,'LEITURA DA VARIAVEL ',(⊃vv[2]),aspa
[ 56]  saida←saida,[1]1 70ρ70↑(⊃vv[2]),'←□'
[ 57]  →soma
[ 58] ⍝---------------imprima--------------
[ 59] eimp:→(3=ρvv)/temmsg
[ 60]  aaa←⊃vv[2]
[ 61]  →(aaa[ρaaa]=';')/juntaa
[ 62]  saida←saida,[1]1 70ρ70↑aaa
[ 63]  →soma
[ 64] juntaa:saida←saida,[1]1 70ρ70↑'□←⍕',¯1↓aaa
[ 65]  →soma
[ 66] temmsg:aaa←⊃vv[3]
[ 67]  →(aaa[ρaaa]=';')/juntab
[ 68]  saida←saida,[1]1 70ρ70↑(⊃vv[2]),' ',aaa
[ 69]  →soma
[ 70] juntab:saida←saida,[1]1 70ρ70↑'□←',(⊃vv[2]),' ,⍕',¯1↓aaa
[ 71]  →soma
[ 72] ⍝---------------atribuicao------------
[ 73] ecad:saida←saida,[1]1 70ρ70↑(⊃vv[1]),'←',⊃vv[3]
[ 74]  aaa←⊃vv[1]
[ 75]  →('['∈aaa)/soma
```

```
[ 76]  →(∨/aaa≤loca)/soma
[ 77]  loca←loca,';',⊃vv[1]
[ 78]  →soma
[ 79] ⍝---------------se--------------------
[ 80] esex:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[ 81]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn←nnn+1
[ 82]  PILHA←(1 21⍴21↑'SE',('000'⍕nnn)),[1]PILHA
[ 83]  nnn←nnn+1
[ 84]  →soma
[ 85] ⍝--senao--
[ 86] esen:SALVA←PILHA[1;3 4 5] ⋄ PILHA←1 0↓PILHA
[ 87]  PILHA←(1 21⍴21↑'SE',('000'⍕nnn)),[1]PILHA
[ 88]  saida←saida,[1]1 70⍴70↑'→Δ','000'⍕nnn
[ 89]  nnn←nnn+1
[ 90]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[ 91]  →soma
[ 92] ⍝--fim{se}--
[ 93] esef:saida←saida,[1]1 70⍴70↑'Δ',PILHA[1;3 4 5],':'
[ 94]  PILHA←1 0↓PILHA
[ 95]  →soma
[ 96] ⍝-------------enquanto--------------------
[ 97] eenq:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[ 98]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[ 99]  nnn←nnn+1
[100]  PILHA←(1 21⍴21↑'EN','000'⍕nnn),[1]PILHA
[101]  nnn←nnn+1
[102]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[103]  nnn←nnn+1
[104]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn-1),')/Δ','000'⍕nnn-2
[105]  →soma
[106] ⍝----------fim{enquanto}-----------------
[107] eenf:SALVA←PILHA[1;3 4 5]
[108]  PILHA←1 0↓PILHA
[109]  saida←saida,[1]1 70⍴70↑'→Δ',PILHA[1;3 4 5]
[110]  PILHA←1 0↓PILHA
[111]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[112]  →soma
[113] ⍝----------repita-------------------------
[114] erep:saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[115]  PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[116]  nnn←nnn+1
[117]  →soma
[118] ⍝-----------ate--------------------------
[119] eate:PILHA←(1 21⍴21↑'RE','000'⍕nnn),[1]PILHA
[120]  nnn←nnn+1
[121]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',⊃vv[2]
[122]  SALVA←PILHA[1;3 4 5]
[123]  PILHA←1 0↓PILHA
[124]  saida←saida,[1]1 70⍴70↑'→(Δ',('000'⍕nnn),')/Δ',SALVA
[125]  SALVA←PILHA[1;3 4 5]
[126]  PILHA←1 0↓PILHA
[127]  saida←saida,[1]1 70⍴70↑'→Δ',SALVA
[128]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn-1),':'
[129]  nnn←nnn+1 ⍝ inclusao desta linha em 19/04/06. Ainda nao suficientemente testada
[130]  →soma
[131] ⍝----------para-----------------------
[132] epar:saida←saida,[1]1 70⍴70↑(8↑⊃vv[2]),'←',8↑⊃vv[4]
[133]  PILHA←(1 21⍴21↑'PA','000'⍕nnn),[1]PILHA
[134]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),':'
[135]  nnn←nnn+1
[136]  →(8=⍴vv)/tempasso
[137]  PILHA←(1 21⍴21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8↑8⍕1),[1]PILHA
[138]  →juntab
```

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[139] tempasso:PILHA←(1 21⍴21↑'PA',('000'⍕nnn),(8↑⊃vv[2]),8 2⍕⊃vv[8]),[1]PILHA
[140] juntab:nnn←nnn+1
[141]  saida←saida,[1]1 70⍴70↑'Δ',('000'⍕nnn),'←',(⊃vv[2]),'≤',⍕⊃vv[6]
[142]  saida←saida,[1]1 70⍴70↑'→(~Δ',('000'⍕nnn),')/Δ','000'⍕nnn-1
[143]  nnn←nnn+1
[144]  →soma
[145] ⍝----------fim{para}------------------
[146] epaf:saida←saida,[1]1 70⍴70↑PILHA[1;5+⍳8],'←',PILHA[1;5+⍳8],'+',PILHA[1;13+⍳8]
[147]  SALVA←PILHA[1;3 4 5]
[148]  PILHA←1 0↓PILHA
[149]  saida←saida,[1]1 70⍴70↑'→Δ',PILHA[1;3 4 5]
[150]  PILHA←1 0↓PILHA
[151]  saida←saida,[1]1 70⍴70↑'Δ',SALVA,':'
[152]  →soma
[153] ⍝----------abandone--------------------
[154] eaba:→soma
[155] esai:→soma
[156] eint:→soma
[157] erea:→soma
[158] elog:→soma
[159] ecar:→soma
[160] evet:
[161]  saida←saida,[1]1 70⍴70↑(1 parte(⊃vv[2])),'←',(2 parte(⊃vv[2])),'⍴0'
[162]  →soma
[163] fim:
[164]  i←1
[165] tfim:→(i>nnn)/mesmo
[166]  loca←loca,';Δ','000'⍕i
[167]  →(i=i←i+1)/tfim
[168] mesmo:→(50>⍴loca)/blz1
[169]  saida←((1↑⍴saida),20+⍴loca)↑saida
[170]  saida[1;20+⍳⍴loca]←loca
[171]  →pula22
[172] blz1:saida[1;20+⍳50]←50↑loca
[173] pula22:r←'_ 'edit saida
-------------------------------------------------------------
[ 0]  SAI←seq geracomando SAI
[ 1] ⍝ seq contem A+B-F+, por exemplo
[ 2]  →(5>⍴seq)/cin
[ 3]  →(2=?2)/h1
[ 4]  SAI←(1 70⍴70↑seq[5],'<-',seq[5 6],('ABCD'[?4]),seq[6],1 0⍕?3),[1]SAI
[ 5]  →cin
[ 6] h1:
[ 7]  SAI←(1 70⍴70↑seq[5],'<-',seq[5 6],1 0⍕?3),[1]SAI
[ 8] cin:
[ 9]  →(3>⍴seq)/tre
[10]  →(2=?2)/h2
[11]  SAI←(1 70⍴70↑seq[3],'<-',seq[3 4],('ABCD'[?4]),seq[4],1 0⍕?3),[1]SAI
[12]  →tre
[13] h2:
[14]  SAI←(1 70⍴70↑seq[3],'<-',seq[3 4],1 0⍕?3),[1]SAI
[15] tre:
[16]  →(2=?2)/h3
[17]  SAI←(1 70⍴70↑seq[1],'<-',seq[1 2],('ABCD'[?4]),seq[2],1 0⍕?3),[1]SAI
[18]  →fim
[19] h3:SAI←(1 70⍴70↑seq[1],'<-',seq[1 2],1 0⍕?3),[1]SAI
[20] fim:
-------------------------------------------------------------
[ 0]  r←seq geraenquanto SAI;i
[ 1]  i←⍎'135'[?0.5×⍴seq]
[ 2]  →(seq[i+1]='+')/mais
[ 3] menos:SAI←(1 70⍴70↑'enquanto (',seq[i],('>≥'[?2]),(1 0⍕?9),')'),[1]SAI
[ 4]  SAI←(1 70⍴70↑seq[i],'<-',1 0⍕5+?4),[1]SAI
```

```
[ 5]  SAI←SAI,[1]1 70ρ70↑seq[i],'<-',seq[i],'-',1 0⍕?2
[ 6]  SAI←SAI,[1]1 70ρ70↑'fim{enquanto}'
[ 7]  →fim
[ 8] mais:
[ 9]  SAI←(1 70ρ70↑'enquanto (',seq[i],('<≤'[?2]),(1 0⍕?9),')'),[1]SAI
[10]  SAI←(1 70ρ70↑seq[i],'<-',1 0⍕?3),[1]SAI
[11]  SAI←SAI,[1]1 70ρ70↑seq[i],'<-',seq[i],'+',1 0⍕?2
[12]  SAI←SAI,[1]1 70ρ70↑'fim{enquanto}'
[13]  →fim
[14] fim:r←SAI
------------------------------------------------------------
[ 0]  r←gerapgm onde;alfa;s1;s2;s3;s4;s5;s6;s7;s8;a;b;x0;x1;x2;x3;zz;bloco;i;xxs
[ 1]  r←1 70ρ70↑'funcao programa11'
[ 2]  alfa←'EFGHIJKLMNOPQRSTUVWXYZ'
[ 3]  i←1
[ 4] volta:→(i>8)/res
[ 5]  ⍎'s',(1 0⍕i),'←xxs←alfa[2?ρalfa]'
[ 6]  alfa←(~alfa∈xxs)/alfa
[ 7]  i←i+1
[ 8]  ⍎'s',(1 0⍕i),'←xxs←alfa[3?ρalfa]'
[ 9]  alfa←(~alfa∈xxs)/alfa
[10]  i←i+1
[11]  →volta
[12] res:
[13]  s1←,(2 1ρs1),2 1ρ'+'
[14]  s2←,(3 1ρs2),3 1ρ'+'
[15]  s3←,(2 1ρs3),2 1ρ'+'
[16]  s4←,(3 1ρs4),3 1ρ'+'
[17]  s5←,(2 1ρs5),2 1ρ'+'
[18]  s6←,(3 1ρs6),3 1ρ'+'
[19]  s7←,(2 1ρs7),2 1ρ'+'
[20]  s8←,(3 1ρs8),3 1ρ'+'
[21]  alfa←'ABCDEFGHIJKLMNOPQRSTUVWXYZ'
[22]  r[1;17]←1 0⍕onde
[23]  →(onde=1)/eum
[24]  →(onde=2)/edois
[25]  →(onde=3)/etres
[26]  →equatro
[27] eum:
[28]  x0←s1 geraenquanto s2 geracomando 0 70ρ' '
[29]  x1←s3 gerarepita s4 geracomando 0 70ρ' '
[30]  x2←x0 gerase x1
[31]  x3←s5 gerarepita s6 geraenquanto x2
[32]  r←r,[1]x3
[33]  →fim
[34] edois:
[35]  x0←(s1 geracomando 0 70ρ' ')gerase s2 geracomando s3 geracomando 0 70ρ' '
[36]  x1←s4 gerarepita s5 geraenquanto x0
[37]  x2←s6 geraenquanto s7 geraenquanto s8 geracomando 0 70ρ' '
[38]  x3←x1 gerase x2
[39]  r←r,[1]x3
[40]  →fim
[41] etres:
[42]  x0←s1 geraenquanto s2 geraenquanto s3 geraenquanto s4 geracomando 0 70ρ' '
[43]  x1←s5 gerarepita s6 gerarepita s7 gerarepita s8 gerarepita 0 70ρ' '
[44]  x3←x0 gerase x1
[45]  r←r,[1]x3
[46]  →fim
[47] equatro:
[48]  x0←(s1 geracomando s2 geracomando 0 70ρ' ')gerase(s3 geracomando s4 geracomando 0 70
      ρ' ')
[49]  x1←gerase s5 gerarepita s6 geraenquanto x0
[50]  x2←gerase s7 gerarepita s8 gerarepita 0 70ρ' '
```

```
[51]  x3←x1 gerase x2
[52]  r←r,[1]x3
[53] fim: ⍝ localiza variaveis
[54]  zz←,r
[55]  zz←(27≠alfa⍳zz)/zz
[56]  zz←alfa[alfa⍳zz]
[57]  zz←'ABCD',zz
[58]  zz←((zz⍳zz)=⍳⍴zz)/zz
[59]  bloco←1 70⍴70↑70↑'inteiro ',¯1↓,,(((⍴zz),1)⍴zz),','
[60]  bloco←bloco,[1]((⍴zz),70)⍴' '
[61]  i←1
[62] t1:→(i>1↑⍴zz)/acabou
[63]  bloco[i+1;]←70↑(,(((⍴zz),1)⍴zz)[i;]),'<','-',1 0⍕?3
[64]  →(i=i←i+1)/t1
[65] acabou:
[66]  r←r[1;],[1]bloco,[1]1 0↓r
[67]  r←r,[1]1 70⍴70↑'RRRR <- ',¯1↓,(4 1⍴zz[4?⍴zz]),'+'
[68]  r←r,[1]1 70⍴70↑'fim{funcao}'
-------------------------------------------------------------
[ 0]  r←seq gerarepita SAI;i
[ 1]  i←⍪'135'[?0.5×⍴seq]
[ 2]  →(seq[i+1]='+')/mais
[ 3] menos:
[ 4]  SAI←(1 70⍴70↑'repita'),[1]SAI
[ 5]  SAI←(1 70⍴70↑seq[i],'<-',1 0⍕5+?4),[1]SAI
[ 6]  SAI←SAI,[1]1 70⍴70↑seq[i],'<-',seq[i],'-',1 0⍕?2
[ 7]  SAI←SAI,[1](1 70⍴70↑'ate (',seq[i],('<≤'[?2]),(1 0⍕?9),')')
[ 8]  →fim
[ 9] mais:
[10]  SAI←(1 70⍴70↑'repita '),[1]SAI
[11]  SAI←(1 70⍴70↑seq[i],'<-',1 0⍕?3),[1]SAI
[12]  SAI←SAI,[1]1 70⍴70↑seq[i],'<-',seq[i],'+',1 0⍕?2
[13]  SAI←SAI,[1]1 70⍴70↑('ate (',seq[i],('>≥'[?2]),(1 0⍕?9),')')
[14]  →fim
[15] fim:r←SAI
-------------------------------------------------------------
[ 0]  r←SAI1 gerase SAI;i;var
[ 1]  var←'ABCD'[?4]
[ 2]  →(0≠⎕NC'SAI1')/veio
[ 3] naoveio:
[ 4]  SAI←(1 70⍴70↑('se (',var,'≥≤≠=><'[?6]),(1 0⍕?9),')'),[1]SAI
[ 5]  SAI←(1 70⍴70↑var,'<-',1 0⍕?8),[1]SAI
[ 6]  SAI←SAI,[1]1 70⍴70↑'fim{se}'
[ 7]  r←SAI
[ 8]  →fim
[ 9] veio:
[10]  SAI1←(1 70⍴70↑('se (',var,'≥≤≠=><'[?6]),(1 0⍕?9),')'),[1]SAI1
[11]  SAI1←(1 70⍴70↑var,'<-',1 0⍕?8),[1]SAI1
[12]  SAI1←SAI1,[1]1 70⍴70↑'senao'
[13]  SAI1←SAI1,[1]SAI,[1]1 70⍴70↑'fim{se}'
[14]  r←SAI1
[15] fim:
-------------------------------------------------------------
[0]  r←a igual b;maior
[1]  maior←(1↑⍴a)⌈1↑⍴b
[2]  a←maior↑a ⋄ b←maior↑b
[3]  r←maior=+/a=b
-------------------------------------------------------------
[0]  r←alfa menos al
-------------------------------------------------------------
[ 0]  RRRR←programa11;A;B;C;D;Q;R;W;V;P;J;O;E;X;F;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;
      Δ008;Δ009;Δ010;Δ011;Δ012;Δ013;Δ014;Δ015;Δ016
[ 1]  A←1
```

```
[ 2]  B←3
[ 3]  C←1
[ 4]  D←2
[ 5]  Q←2
[ 6]  R←1
[ 7]  W←3
[ 8]  V←1
[ 9]  P←1
[10]  J←2
[11]  O←3
[12]  E←2
[13]  X←1
[14]  F←1
[15]  Q←1
[16] Δ001:
[17]  R←1
[18] Δ002:
[19]  Δ004←(R≤4)
[20]  →(~Δ004)/Δ003
[21]  A←5
[22]  Δ005←(A≥3)
[23]  →(~Δ005)/Δ006
[24]  W←3
[25] Δ007:
[26]  Δ009←(W≤8)
[27]  →(~Δ009)/Δ008
[28]  V←V+2
[29]  P←P+3
[30]  J←J+1
[31]  W←W+1
[32]  →Δ007
[33] Δ008:
[34]  →Δ010
[35] Δ006:
[36]  O←2
[37] Δ011:
[38]  E←E+3
[39]  X←X+1
[40]  F←F+3
[41]  O←O+2
[42]  Δ013←(O≥5)
[43]  →(Δ013)/Δ012
[44]  →Δ011
[45] Δ012:
[46] Δ010:
[47]  R←R+1
[48]  →Δ002
[49] Δ003:
[50]  Q←Q+2
[51]  Δ015←(Q>2)
[52]  →(Δ015)/Δ014
[53]  →Δ001
[54] Δ014:
[55]  RRRR←W+X+C+Q
-------------------------------------------------------------
[ 0]  RRRR←programa12;A;B;C;D;F;Z;Y;P;I;M;S;O;T;U;X;G;Q;E;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ0
      06;Δ007;Δ008;Δ009;Δ010;Δ011;Δ012;Δ013;Δ014;Δ015;Δ016;Δ017;Δ018;Δ019
[ 1]  A←2
[ 2]  B←1
[ 3]  C←3
[ 4]  D←3
[ 5]  F←1
[ 6]  Z←2
```

```
[ 7]  Y←1
[ 8]  P←3
[ 9]  I←3
[10]  M←3
[11]  S←2
[12]  O←2
[13]  T←2
[14]  U←2
[15]  X←3
[16]  G←2
[17]  Q←1
[18]  E←2
[19]  D←4
[20]  Δ001←(D≤1)
[21]  →(~Δ001)/Δ002
[22]  F←2
[23] Δ003:
[24]  Z←1
[25] Δ004:
[26]  Δ006←(Z≤7)
[27]  →(~Δ006)/Δ005
[28]  A←6
[29]  Δ007←(A=2)
[30]  →(~Δ007)/Δ008
[31]  Y←Y+1
[32]  P←P+2
[33]  →Δ009
[34] Δ008:
[35]  I←I+B+2
[36]  M←M+3
[37]  S←S+1
[38]  O←O+3
[39]  T←T+3
[40] Δ009:
[41]  Z←Z+1
[42]  →Δ004
[43] Δ005:
[44]  F←F+2
[45]  Δ011←(F>9)
[46]  →(Δ011)/Δ010
[47]  →Δ003
[48] Δ010:
[49]  →Δ012
[50] Δ002:
[51]  U←1
[52] Δ013:
[53]  Δ015←(U≤6)
[54]  →(~Δ015)/Δ014
[55]  X←3
[56] Δ016:
[57]  Δ018←(X<7)
[58]  →(~Δ018)/Δ017
[59]  G←G+C+2
[60]  Q←Q+3
[61]  E←E+C+1
[62]  X←X+1
[63]  →Δ016
[64] Δ017:
[65]  U←U+1
[66]  →Δ013
[67] Δ014:
[68] Δ012:
[69]  RRRR←F+Y+X+B
```

```
------------------------------------------------------------
[ 0]  RRRR←programa13;A;B;C;D;W;R;F;T;P;U;J;H;M;Y;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;
      Δ008;Δ009;Δ010;Δ011;Δ012;Δ013;Δ014;Δ015;Δ016;Δ017;Δ018;Δ019;Δ020;Δ021;Δ022;Δ023;Δ024;
      Δ025
[ 1]  A←3
[ 2]  B←2
[ 3]  C←1
[ 4]  D←2
[ 5]  W←2
[ 6]  R←1
[ 7]  F←1
[ 8]  T←1
[ 9]  P←3
[10]  U←2
[11]  J←2
[12]  H←2
[13]  M←3
[14]  Y←1
[15]  A←8
[16]  Δ001←(A≤5)
[17]  →(~Δ001)/Δ002
[18]  W←3
[19] Δ003:
[20]  Δ005←(W≤2)
[21]  →(~Δ005)/Δ004
[22]  R←1
[23] Δ006:
[24]  Δ008←(R≤3)
[25]  →(~Δ008)/Δ007
[26]  F←3
[27] Δ009:
[28]  Δ011←(F≤6)
[29]  →(~Δ011)/Δ010
[30]  T←T+C+1
[31]  P←P+3
[32]  U←U+C+1
[33]  F←F+1
[34]  →Δ009
[35] Δ010:
[36]  R←R+2
[37]  →Δ006
[38] Δ007:
[39]  W←W+2
[40]  →Δ003
[41] Δ004:
[42]  →Δ012
[43] Δ002:
[44]  J←1
[45] Δ013:
[46]  H←3
[47] Δ014:
[48]  M←3
[49] Δ015:
[50]  Y←2
[51] Δ016:
[52]  Y←Y+1
[53]  Δ018←(Y>9)
[54]  →(Δ018)/Δ017
[55]  →Δ016
[56] Δ017:
[57]  M←M+2
[58]  Δ020←(M>4)
[59]  →(Δ020)/Δ019
```

```
[60]  →Δ015
[61] Δ019:
[62]  H←H+2
[63]  Δ022←(H≥2)
[64]  →(Δ022)/Δ021
[65]  →Δ014
[66] Δ021:
[67]  J←J+2
[68]  Δ024←(J>7)
[69]  →(Δ024)/Δ023
[70]  →Δ013
[71] Δ023:
[72] Δ012:
[73]  RRRR←Y+U+M+C
------------------------------------------------------------
[ 0]  RRRR←programa14;A;B;C;D;V;G;L;S;H;Z;O;Y;F;I;M;E;U;P;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ0
      06;Δ007;Δ008;Δ009;Δ010;Δ011;Δ012;Δ013;Δ014;Δ015;Δ016;Δ017;Δ018;Δ019;Δ020;Δ021;Δ022;Δ0
      23
[ 1]  A←3
[ 2]  B←3
[ 3]  C←3
[ 4]  D←2
[ 5]  V←3
[ 6]  G←2
[ 7]  L←1
[ 8]  S←1
[ 9]  H←2
[10]  Z←1
[11]  O←3
[12]  Y←1
[13]  F←2
[14]  I←1
[15]  M←3
[16]  E←2
[17]  U←1
[18]  P←2
[19]  C←4
[20]  Δ001←(C>6)
[21]  →(~Δ001)/Δ002
[22]  B←8
[23]  Δ003←(B<8)
[24]  →(~Δ003)/Δ004
[25]  V←1
[26] Δ005:
[27]  G←3
[28] Δ006:
[29]  Δ008←(G≤1)
[30]  →(~Δ008)/Δ007
[31]  D←8
[32]  Δ009←(D>8)
[33]  →(~Δ009)/Δ010
[34]  L←L+3
[35]  S←S+3
[36]  H←H+1
[37]  Z←Z+3
[38]  O←O+2
[39]  →Δ011
[40] Δ010:
[41]  Y←Y+B+3
[42]  F←F+3
[43]  I←I+A+1
[44]  M←M+A+2
[45]  E←E+D+3
```

```
[46] Δ011:
[47]  G←G+1
[48]  →Δ006
[49] Δ007:
[50]  V←V+1
[51]  Δ013←(V>3)
[52]  →(Δ013)/Δ012
[53]  →Δ005
[54] Δ012:
[55] Δ004:
[56]  →Δ014
[57] Δ002:
[58]  C←5
[59]  Δ015←(C>8)
[60]  →(~Δ015)/Δ016
[61]  U←1
[62] Δ017:
[63]  P←2
[64] Δ018:
[65]  P←P+2
[66]  Δ020←(P≥1)
[67]  →(Δ020)/Δ019
[68]  →Δ018
[69] Δ019:
[70]  U←U+1
[71]  Δ022←(U>9)
[72]  →(Δ022)/Δ021
[73]  →Δ017
[74] Δ021:
[75] Δ016:
[76] Δ014:
[77]  RRRR←G+I+F+C
-------------------------------------------------------------
[ 0]  r←quem replace depara;de;i;j;k;onde;para
[ 1] ⍝ forma de usar: texto replace 'strin-de' 'string para'
[ 2] ⍝ obviamente eles nao precisam ter o mesmo tamanho
[ 3]  de←,⊃depara[1] ⋄ para←,⊃depara[2]
[ 4]  i←1 ⋄ r←((1↑⍴quem),200)⍴' '
[ 5] t1:→(i>1↑⍴quem)/fim
[ 6]  →(0=∨/onde←de⍷quem[i;])/naotem
[ 7]  j←1 ⋄ k←1
[ 8] t2:→(k>⍴quem[i;])/acabou
[ 9]  →(onde[k]=0)/soma
[10]  r[i;(j-1)+⍳⍴para]←para
[11]  j←j+⍴para
[12]  k←k+⍴de
[13]  →t2
[14] soma:r[i;j]←quem[i;k]
[15]  k←k+1
[16]  →(j=j←j+1)/t2
[17] naotem:r[i;]←200↑quem[i;]
[18] acabou:→(i=i←i+1)/t1
[19] fim:r←trim4 r
-------------------------------------------------------------
[ 0]  teste;i;lixo
[ 1]  i←1
[ 2] t1:→(i>300)/fim
[ 3]  lixo←⎕FX b←cpc a←gerapgm 1+4|i
[ 4]  lixo←⍎⎕←'programa1',1 0⍕1+4|i
[ 5]  ⍴lixo←tradfunca ajuntavars a
[ 6]  lixo←⎕EX'programa1',1 0⍕1+4|i
[ 7]  i←i+1
[ 8] ⍝i
```

```
[ 9]  →t1
[10] fim:
------------------------------------------------------------
[ 0]  r←tradcoma x;i;j
[ 1]  i←j←1 ⋄ r←100⍴' '
[ 2] t1:→(i>⍴x)/fim
[ 3]  →(i=⍴x)/pula
[ 4]  →((x[i]='<')∧(x[i+1]='-'))/recebe
[ 5] pula:→(x[i]='∨')/ou
[ 6]  →(x[i]='∧')/e
[ 7]  →(x[i]='~')/nao
[ 8]  →(x[i]='≠')/diferente
[ 9]  →(x[i]='≤')/menig
[10]  →(x[i]='≥')/maiig
[11]  →(x[i]='×')/vezes
[12]  →(x[i]='>')/maior
[13]  →(x[i]='<')/menor
[14] nada:r[j]←x[i]
[15]  i←i+1
[16]  j←j+1
[17]  →t1
[18] recebe:r[j+¯1+⍳7]←'$⍀gets$'
[19]  j←j+7
[20]  i←i+2
[21]  →t1
[22] ou:r[j+¯1+⍳6]←'$⍀lor$'
[23]  j←j+6
[24]  i←i+1
[25]  →t1
[26] nao:r[j+¯1+⍳6]←'$⍀sim$'
[27]  j←j+6
[28]  i←i+1
[29]  →t1
[30] e:r[j+¯1+⍳7]←'$⍀land$'
[31]  j←j+7
[32]  i←i+1
[33]  →t1
[34] diferente:r[j+¯1+⍳6]←'$⍀neq$'
[35]  j←j+6
[36]  i←i+1
[37]  →t1
[38] menig:r[j+¯1+⍳5]←'$⍀le$'
[39]  j←j+5
[40]  i←i+1
[41]  →t1
[42] maiig:r[j+¯1+⍳5]←'$⍀ge$'
[43]  j←j+5
[44]  i←i+1
[45]  →t1
[46] vezes:r[j+¯1+⍳8]←'$⍀times$'
[47]  j←j+8
[48]  i←i+1
[49]  →t1
[50] maior:r[j+¯1+⍳3]←'$>$'
[51]  j←j+3
[52]  i←i+1
[53]  →t1
[54] menor:r[j+¯1+⍳3]←'$<$'
[55]  j←j+3
[56]  i←i+1
[57]  →t1
[58] fim:r←trim r
------------------------------------------------------------
```

```
[ 0]  r←tradfunca fun;y;aaa;i
[ 1]  fun←'({'edit')}'edit fun
[ 2]  y←fun replace'se ' '⍀IF '
[ 3]  y←y replace'enquanto ' '⍀WHILE '
[ 4]  y←y replace'repita' '⍀REPEAT'
[ 5]  y←y replace'senao' '⍀ELSE'
[ 6]  y←y replace'fim{se}' '⍀ENDIF'
[ 7]  y←y replace'fim{enquanto}' '⍀ENDWHILE'
[ 8]  y←y replace'ate' '⍀UNTIL'
[ 9]  y←((1,1↓⍴y)⍴100↑'⍀begin{algorithmic}[1]'),[1]y
[10]  y←y,[1](1,1↓⍴y)⍴100↑'⍀end{algorithmic}'
[11]  i←1
[12]  r←((1↑⍴y),100)⍴' '
[13] t1:→(i>1↑⍴r)/fim
[14]  aaa←100↑tradcoma y[i;]
[15]  →(aaa[1]='⍀')/blz
[16]  aaa←100↑'⍀STATE ',aaa
[17] blz:r[i;]←aaa
[18]  →(i=i←i+1)/t1
[19] fim:r←trim4 r
-------------------------------------------------------------
[0]  r←trim2 x;z
[1] ⍝f corta as linhas inferiores que sao brancas
[2]  →(2≠⍴⍴x)/erro
[3]  z←+/[2]x=' '
[4]  r←(z≠1↓⍴x)/[1]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
-------------------------------------------------------------
[0]  r←trim4 x;z
[1] ⍝f corta as colunas direitas que sao brancos
[2]  →(2≠⍴⍴x)/erro
[3]  z←+/[1]x=' '
[4]  r←(z≠1↑⍴x)/[2]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
-------------------------------------------------------------
[ 0]  r←vetoriza x;i;rr;letra;aspa;nume
[ 1]  aspa←'''' ⋄ nume←'0123456789'
[ 2]  letra←'abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ()',aspa
[ 3] ⍝ tira os brancos
[ 4]  i←1 ⋄ rr←1
[ 5] t2:→(i>¯2+⍴x)/vaiz
[ 6]  →((x[i+1]=' ')∧(x[i]∈letra)∧(x[i+2]∈nume))/mataz
[ 7]  →((x[i+1]=' ')∧(x[i]∈nume)∧(x[i+2]∈letra))/mataz
[ 8]  →((x[i]∈letra)∧(x[i+2]∈letra))/naopode
[ 9]  →(x[i+1]≠' ')/naopode
[10] pode:rr←rr,0
[11]  →(i=i←i+1)/t2
[12] mataz:x[i+1]←'!'
[13] naopode:rr←rr,1
[14]  →(i=i←i+1)/t2
[15] vaiz:rr←rr,1
[16]  x←rr/x
[17] ⍝ separa o sinal <-
[18]  →(2≠+/'<-'∈x)/faca
[19]  i←1 ⋄ rr←⍳0
[20] t1:→(i>¯1+⍴x)/vaix
[21]  →((x[i]='<')∧(x[i+1]='-'))/esim
[22]  rr←rr,1
[23]  →(i=i←i+1)/t1
[24] esim:rr←rr,0 1 1 0
[25]  →(i=i←i+2)/t1
```

```
[26] vaix:rr←rr,1
[27]  x←rr⍀x
[28] faca:x←'! 'edit x
[29]  r←(~' '=x)⊂x
-------------------------------------------------------------
[  0]  opesq vivo065a n;EVENTO;a;aaa;acuja;b;dhx;esse;f;limite;lixo1;lixonol;num;relat;resp
       ;resu;upag;xixo;xk;ylu
[  1]  →(0≠⎕NC'opesq')/qveio
[  2]  opesq←10⍴' '
[  3] qveio:
[  4]  limite←100
[  5]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[  6]  EVENTO←'PL065   '
[  7]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
       4 5],⎕TS[6]+⎕TS[7]÷1000
[  8]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[  9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 10]  FOLHALA065←ajusta80 FOLHALA065
[ 11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA065)⍴' '
[ 12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[ 13]  xk←1 ⋄ resu←0 8⍴0
[ 14] testa:→(xk>1↑⍴ylu)/fim
[ 15]  esse←344 80⍴' '
[ 16]  f←FOLHALA065
[ 17]  esse[1;]←80↑dhx[1;]
[ 18]  esse[2;]←80↑dhx[2;]
[ 19]  esse[3;]←80↑4 2⍎VERSAOa←3.04
[ 20]  esse[4;]←80↑ylu[xk;⍳6]
[ 21]  esse[5;]←80↑ylu[xk;6+⍳30]
[ 22]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[ 23]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[ 24]  esse[343;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[ 25]  esse[344;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[ 26] ini1:
[ 27]  lixonol←⎕FX b←cpc a←gerapgm 1
[ 28]  num←⍎'programa11'
[ 29]  →(num<limite)/blz1
[ 30]  ⍞←'*'
[ 31]  →ini1
[ 32] blz1:resp←resp,num
[ 33]  esse[7+⍳40;]←40 80↑tradfunca ajuntavars a
[ 34] ini2:
[ 35]  lixonol←⎕FX b←cpc a←gerapgm 2
[ 36]  num←⍎'programa12'
[ 37]  →(num<limite)/blz2
[ 38]  ⍞←'o'
[ 39]  →ini2
[ 40] blz2:resp←resp,num
[ 41]  esse[47+⍳50;]←50 80↑tradfunca ajuntavars a
[ 42] ini3:
[ 43]  lixonol←⎕FX b←cpc a←gerapgm 3
[ 44]  num←⍎'programa13'
[ 45]  →(num<limite)/blz3
[ 46]  ⍞←'□'
[ 47]  →ini3
[ 48] blz3:resp←resp,num
[ 49]  esse[97+⍳50;]←50 80↑tradfunca ajuntavars a
[ 50] ini4:
[ 51]  lixonol←⎕FX b←cpc a←gerapgm 4
[ 52]  num←⍎'programa14'
[ 53]  →(num<limite)/blz4
[ 54]  ⍞←'α'
[ 55]  →ini4
```

```
[ 56] blz4:
[ 57]  resp←resp,num
[ 58]  esse[147+⍳55;]←55 80↑tradfunca ajuntavars a
[ 59] ini5:
[ 60]  lixonol←⎕FX b←cpc a←gerapgm 1
[ 61]  num←⍕'programa11'
[ 62]  →(num<limite)/blz5
[ 63]  ⎕←'*'
[ 64]  →ini5
[ 65] blz5:resp←resp,num
[ 66]  esse[202+⍳40;]←40 80↑tradfunca ajuntavars a
[ 67] ini6:
[ 68]  lixonol←⎕FX b←cpc a←gerapgm 2
[ 69]  num←⍕'programa12'
[ 70]  →(num<limite)/blz6
[ 71]  ⎕←'o'
[ 72]  →ini6
[ 73] blz6:resp←resp,num
[ 74]  esse[242+⍳50;]←50 80↑tradfunca ajuntavars a
[ 75] ini7:
[ 76]  lixonol←⎕FX b←cpc a←gerapgm 3
[ 77]  num←⍕'programa13'
[ 78]  →(num<limite)/blz7
[ 79]  ⎕←'⎕'
[ 80]  →ini7
[ 81] blz7:resp←resp,num
[ 82]  esse[292+⍳50;]←50 80↑tradfunca ajuntavars a
[ 83]  resu←resu,[1]1 8⍴resp
[ 84]  acuja←(f[;2]='#')/⍳1↑⍴f
[ 85]  f[acuja;]←esse[⍕,f[acuja;3 4 5],' ';]
[ 86]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[ 87]  ⎕←(⍕xk←xk+1),'-'
[ 88]  →testa
[ 89] fim:upag←(1 0+⍴f)⍴' '
[ 90]  →(1=≡n)/elafa
[ 91]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[ 92]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[ 93]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯'-'edit(lixo1←6 0 10 0 6 0 6 0 6 0 6 0 6 0 6 0)⍕resu
[ 94]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[ 95]  →terminando
[ 96] elafa:aaa←(ylu,'¯'-'edit 14 0⍕0 1↓resu)
[ 97]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[ 98]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[ 99] terminando:
[100]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[101]  relat[1↑⍴relat;;]←upag
[102]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[103] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[104]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[105]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[106]  lixonol←⎕EX 6 1⍴'ABCDEF'
[107]  lixonol←⎕EX 6 3⍴'EX1EX2EX3EX4EX5EX6'
[108]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo069

```
[ 0]  R←FUAA01 V;A;B;C;D;E;ESFCOMP
[ 1] ⍝ note que FUNAzz so recebe 10 valores
[ 2]  ESFCOMP←0
[ 3]  A←V[1] ⋄ B←V[2] ⋄ C←V[3] ⋄ D←V[4] ⋄ E←V[5]
[ 4] aica:→(D≤0)/z0
```

```
[ 5]  →(A≥V[6])/c1
[ 6]  B←B+1
[ 7] c1:→(A≤V[7]-6)/c2
[ 8]  ESFCOMP←ESFCOMP+1
[ 9]  B←A+B+2
[10]  A←A-2
[11]  E←E+V[8]
[12]  →(D≤E-V[9])/c3
[13]  C←C+V[10]
[14] c3:
[15]  →c1
[16] c2:
[17]  D←D-4
[18]  →aica
[19] z0:
[20]  R←A,B,C,D,E,ESFCOMP
------------------------------------------------------------
[ 0]  R←FUAA02 V;F;G;H;I;J;ESFCOMP
[ 1] ⍝ note que FUNAzz so recebe 10 valores
[ 2]  ESFCOMP←0
[ 3]  F←V[1] ⋄ G←V[2] ⋄ H←V[3] ⋄ I←V[4] ⋄ J←V[5]
[ 4] ik0:→((H+J)>3×J)/bru
[ 5]  →(F≥V[6])/c1
[ 6]  G←G+1
[ 7] c1:→((F≤V[7])∧(G>V[8]))/c2
[ 8]  ESFCOMP←ESFCOMP+1
[ 9]  G←G+2
[10]  F←F-2
[11]  →(I≤V[9])/c3
[12]  J←J+3-F
[13] c3:
[14]  →c1
[15] c2:H←H+3
[16]  →ik0
[17] bru:
[18]  R←F,G,H,I,J,ESFCOMP
------------------------------------------------------------
[ 0]  R←FUAA03 V;K;L;M;N;P;ESFCOMP
[ 1]  ESFCOMP←0
[ 2]  K←V[1] ⋄ L←V[2] ⋄ M←V[3] ⋄ N←V[4] ⋄ P←V[5]
[ 3] c1:→(K<V[6])/c2
[ 4]  L←L+1
[ 5] c3:→(N>V[7])/c4
[ 6] c5:→(M>V[8])/c6
[ 7]  M←M+6
[ 8]  ESFCOMP←ESFCOMP+1
[ 9]  →c5
[10] c6:M←M+1
[11] c4:K←K-3
[12]  N←N+1
[13]  P←P+2-K
[14] entra:→(0=3|N)/caifora
[15]  N←N+1
[16]  ESFCOMP←ESFCOMP+1
[17]  →entra
[18] caifora:
[19]  →c1
[20] c2:R←(K,L,M,N,P,ESFCOMP)
------------------------------------------------------------
[ 0]  R←FUAA04 V;Q;R;S;T;U;ESFCOMP
[ 1] ⍝ V tem 9 valores: os 5 primeiros sao as da linha 3..7 do algoritmo
[ 2] ⍝ V[6]=linha 9, V[7]=l12, V[8]=l15 e V[9]=l17
[ 3]  ESFCOMP←0
```

```
[ 4]  Q←V[1] ⋄ R←V[2] ⋄ S←V[3] ⋄ T←V[4] ⋄ U←V[5]
[ 5] c1:→(Q≥V[6])/c2
[ 6]  R←R+1
[ 7] c2:→(T≤V[7])/c3
[ 8]  S←S+2
[ 9] c3:→(U>V[8])/c4
[10]  U←U+4 ⋄ ESFCOMP←ESFCOMP+1
[11]  →(S≤V[9])/c5
[12]  T←T+1
[13] c5:→c3
[14] c4:Q←Q+2
[15]  →((Q≤0)∧(R=0))/c1
[16]  R←Q,R,S,T,U,ESFCOMP
------------------------------------------------------------
[  0]  opesq vivo069a n;CORRECAO;EVENTO;aaa;acuja;alto;baixo;dhx;esse;f;i1;i2;i3;i4;lixo1;l
      ixonol;nomes;ql39;qlinha;r1;r2;r3;r4;relat;resp;resu;upag;xixo;xk;ylu
[  1]  →(0≠⎕NC'opesq')/qveio
[  2]  opesq←10ρ' '
[  3] qveio:
[  4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473 ⋄ ⋄ baixo←7 ⋄ alto←12
[  5]  CORRECAO←4 ⋄ EVENTO←'PL069   '
[  6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[  7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[  8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[  9]  ylu←n grupo ylu
[ 10]  FOLHALA069←ajusta80 FOLHALA069
[ 11]  relat←((2+1↑ρylu),1 0+ρFOLHALA069)ρ' '
[ 12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLOI'
[ 13]  xk←1 ⋄ resu←0 5ρ0
[ 14] testa:→(xk>1↑ρylu)/fim
[ 15]  esse←45 80ρ' '
[ 16]  f←FOLHALA069
[ 17]  esse[1;]←80↑dhx[1;]
[ 18]  esse[2;]←80↑dhx[2;]
[ 19]  esse[3;]←80↑4 2⍎VERSAOa←3.29
[ 20]  esse[4;]←80↑ylu[xk;⍳6]
[ 21]  esse[5;]←80↑ylu[xk;6+⍳30]
[ 22]  →(36=1↓ρylu)/zebra
[ 23]  qlinha←(1=∧/[2]f[;⍳4]=((1↑ρf),4)ρ'\#05')/⍳1↑ρf
[ 24]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[ 25]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[ 26]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[ 27]  →maiszebra
[ 28] AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
[ 29] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[ 30] A ↓↓↓↓ e ↑↑↑↑↑ idem
[ 31] maiszebra:
[ 32]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[ 33]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[ 34]  esse[44;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[ 35]  esse[45;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[ 36] inica:
[ 37] com1:i1←¯10+10?30
[ 38]  r1←FUAA01 i1
[ 39]  →((r1[6]<baixo)∨(r1[6]>alto))/bos1
[ 40]  →((99<⌈/r1)∨(¯99>⌊/r1))/mer1
[ 41]  →com2
[ 42] bos1:⎕←'*'
[ 43]  →com1
[ 44] mer1:⎕←'  ⎕'
[ 45]  →com1
[ 46] com2:i2←¯10+10?30
```

```
[ 47]  r2←FUAA02 i2
[ 48]  →((r2[6]<baixo)∨(r2[6]>alto))/bos2
[ 49]  →((99<⌈/r2)∨(¯99>⌊/r2))/mer2
[ 50]  →com3
[ 51] bos2:□←'*'
[ 52]  →com2
[ 53] mer2:□←'  □'
[ 54]  →com2
[ 55] com3:i3←¯10+10?30
[ 56]  r3←FUAA03 i3
[ 57]  →((r3[6]<baixo)∨(r3[6]>alto))/bos3
[ 58]  →((99<⌈/r3)∨(¯99>⌊/r3))/mer3
[ 59]  →com4
[ 60] bos3:□←'*'
[ 61]  →com3
[ 62] mer3:□←'  □'
[ 63]  →com3
[ 64] com4:i4←¯10+10?30
[ 65]  r4←FUAA04 i4
[ 66]  →((r4[6]<baixo)∨(r4[6]>alto))/bos4
[ 67]  →((99<⌈/r4)∨(¯99>⌊/r4))/mer4
[ 68]  →com5
[ 69] bos4:□←'*'
[ 70]  →com4
[ 71] mer4:□←'  □'
[ 72]  →com4
[ 73] com5:
[ 74]  esse[7+ι10;ι30]←'¯-'edit 10 30↑10 2⍴2 0⍕i1
[ 75]  esse[17+ι9;ι30]←'¯-'edit 9 30↑9 2⍴2 0⍕i2   ⍝ exer2 so usa 9
[ 76]  esse[26+ι8;ι30]←'¯-'edit 8 30↑8 2⍴2 0⍕i3   ⍝ exer3 so usa 8
[ 77]  esse[34+ι9;ι30]←'¯-'edit 9 30↑9 2⍴2 0⍕i4   ⍝ exer4 so usa 9
[ 78] ⍝ que fiasco. aqui estava i1              --
[ 79]  resu←resu,[1]1 5⍴resp,(+/r1[ι5]),(+/r2[ι5]),(+/r3[ι5]),+/r4[ι5]
[ 80]  acuja←(f[;2]='#')/ι1↑⍴f
[ 81]  f[acuja;ι80]←esse[⍋,f[acuja;3 4],' ';]
[ 82]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[ 83]  □←(⍕xk←xk+1),'-'
[ 84]  →testa
[ 85] fim:upag←(1 0+⍴f)⍴' '
[ 86]  →(1=≡n)/elafa
[ 87]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[ 88]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[ 89]  upag[2+ι1↑⍴resu;ι+/lixo1]←'¯-'edit(lixo1←5 0 10 0 5 0 5 0 5 0)⍕resu
[ 90]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[ 91]  →terminando
[ 92] elafa:aaa←(ylu,'¯-'edit 5 0⍕0 1↓resu)
[ 93]  aaa[1;35 36]←2 0⍕CORRECAO
[ 94]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.gpa')
[ 95]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[ 96] terminando:
[ 97]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[ 98]  relat[1↑⍴relat;;]←upag
[ 99]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[100] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[101]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.tex'
[102]  lixonol←□EX 2 10⍴'quantos   matriz    '
[103]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo070

```
[0]  AVISO
```

```
[1]  'chamar com vivo070a (qtd aula)'
[2]  ' Para listar tudo, chame vivotod'
-------------------------------------------------------------
[ 0]  D←S DISPLAY A;⎕IO;R;C;HL;HC;HT;HB;VL;VB;V;W;N;B
[ 1] ⍝ Display a general array in pictorial form
[ 2] ⍝  Normal call is monadic.  Dyadic call used only in
[ 3] ⍝    recursion to specify display rank, shape, and depth.
[ 4]  ⎕IO←0
[ 5]  ⍞(0=⎕NC'S')/'S←⍴A'
[ 6]  R←↑⍴,S                      ⍝ Pseudo rank
[ 7]  C←'┐┌└┘'                    ⍝ UR, UL, LL, and LR corners
[ 8]  HL←'─'                      ⍝ Horizontal line
[ 9]  HC←HL,'⊖→',HL,'~+∊'         ⍝ Horizontal borders
[10]  HT←HC[(0<R)×1+0<↑¯1↑,S]
[11] ⍝W←,0≡¨↑0⍴⊂(1⌈⍴A)↑A
[12]  HB←HC[3+3⌊('2×~A≡⍕A'⎕EA'1+↑∊0×(1⌈×/⍴A)↑,A')+3×1<⍴⍴S]
[13]  VL←'│'                      ⍝ Vertical line
[14]  VB←VL,'⌽↓'                  ⍝ Vertical border
[15]  V←VB[(1<R)×1+0<¯1↑¯1↓,S]
[16]  ⍞(0∊⍴A)/'A←(1⌈⍴A)⍴⊂↑A'     ⍝ Show prototype of empties
[17]  →(1<≡A)/GEN
[18]  →(2<⍴⍴A)/D3
[19]  D←⍕A                        ⍝ Simple arrays
[20]  W←1↑⍴D←(¯2↑1 1,⍴D)⍴D
[21]  N←¯1+1↓⍴D
[22]  →(0=⍴⍴A)/SS
[23]  D←(C[1],V,((W-1)⍴VL),C[2]),((HT,N⍴HL),[0]D,[0]HB,N⍴HL),C[0],(W⍴VL),C[3]
[24]  →0
[25] SS:HB←((0 ' ')=↑0⍴⊂A)/' -'
[26]  D←' ',(' ',[0]D,[0]HB,N⍴' '),' '
[27]  →0
[28] GEN:D←⍕DISPLAY¨A             ⍝ Enclosed arrays
[29]  N←D∨.≠' '
[30]  D←(N∨~1⌽N)⌿D
[31]  D←(∨⌿~'  '∈D)/D
[32]  D←((1,⍴S)⍴S)DISPLAY D
[33]  →(2≥⍴,S)↓D3E,0
[34] D3:D←0 ¯1↓0 1↓⍕⊂A            ⍝ Multi-dimensional arrays
[35]  W←1↑⍴D
[36]  N←¯1+1↓⍴D
[37]  D←(C[1],V,((W-1)⍴VL),C[2]),((HT,N⍴HL),[0]D,[0]HB,N⍴HL),C[0],(W⍴VL),C[3]
[38] D3E:N←¯2+⍴,S
[39]  V←C[N⍴1],[0]VB[1+0<¯2↓,S],[0](((¯3+↑⍴D),N)⍴VL),[0]C[N⍴2]
[40]  D←V,D
[41] ⍝¶⍝ APL2/6000 FKEY verification tag - DO NOT REMOVE, MUST BE LAST LINE
-------------------------------------------------------------
[0]  r←confere;i
[1]  i←1
[2] te:→(i>1↑⍴ENUNCIA)/0
[3]  →('%'≠ENUNCIA[i;1])/soma
[4]  ENUNCIA[i;]
[5] soma:→(i=i←i+1)/te
-------------------------------------------------------------
[ 0]  r←geradir7 x;lin;i;tam
[ 1]  r←(((+/(,x[;1])='%')÷2),4)⍴0
[ 2]  tam←0
[ 3]  lin←1
[ 4]  i←1
[ 5] t1:→(i>1↑⍴x)/fim
[ 6]  →((x[i;1]='%')∧(x[i;2]='i'))/comeca
[ 7]  →((x[i;1]='%')∧(x[i;2]='f'))/termina
[ 8]  tam←tam+1
[ 9]  i←i+1
```

```
[10]  →t1
[11] comeca:r[lin;1]←⍤x[i;3 4]
[12]  r[lin;2]←⍤x[i;5 6 7]
[13]  r[lin;3]←i
[14]  tam←0
[15]  i←i+1
[16]  →t1
[17] termina:r[lin;4]←tam
[18]  lin←lin+1
[19]  i←i+1
[20]  →t1
[21] fim:
------------------------------------------------------------
[0]  r←resume x;y
[1]  y←geradir7 x
[2]  ∇
------------------------------------------------------------
[0]  r←retirabrancos x
[1]  r←((1↓⍴x)≠+/[2]x=' ')/[1]x
------------------------------------------------------------
[ 0]  opesq vivo070a nnn;CORRECAO;EVENTO;acuja;aula;bf;cab;dhx;eles;esse;f;fol;iii;j;k;lix
      onol;n;qtod;quais;quaism;ques;relat;resp;xk;ylu
[ 1]  →(2≠⍴nnn)/errora
[ 2]  n←⊃nnn[1] ⋄ aula←⊃nnn[2]
[ 3]  →(0≠⎕NC'opesq')/qveio
[ 4]  opesq←''
[ 5] qveio:
[ 6]  ENUNCIA←ajusta80 ENUNCIA
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  CORRECAO←0 ⋄ EVENTO←'PL070   '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←⍙FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12]  relat←0 80⍴' '
[13]  relat←relat,[1]ajusta80 ⍙FM'c:\apl2\VIVOBLOI'
[14]  xk←1 ⋄ esse←7 80⍴' '
[15]  ⍤'FOLHALA',('000'⍕aula),'← ajusta80 FOLHALA','000'⍕aula
[16] testa:→(xk>1↑⍴ylu)/fim
[17]  f←⍤'FOLHALA','000'⍕aula
[18]  esse[1;]←80↑dhx[1;]
[19]  esse[2;]←80↑dhx[2;]
[20]  esse[3;]←80↑4 2⍕VERSAOa←3.02
[21]  esse[4;]←80↑ylu[xk;⍳6]
[22]  esse[5;]←80↑ylu[xk;6+⍳30]
[23]  cab←80↑'{\large{',EVENTO[5+⍳3],'}}-',EVENTO[⍳2],'{\large{',EVENTO[2+⍳3],'}}'
[24]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←cab
[25]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[26]  qtod←EXERCSAULA[((,EXERCSAULA[;1])⍳aula);2]
[27]  quais←geradir7 ENUNCIA
[28]  quaism←(quais[;1]=aula)/[1]quais
[29]  →((1↑⍴quaism)<qtod)/erro3
[30]  iii←1
[31]  eles←qtod?1↑⍴quaism
[32]  j←1 ⋄ fol←200 80⍴' ' ⋄ k←1
[33] ttt1:→(iii>qtod)/acabou
[34]  →(4=+/'%%%%'=f[j;⍳4])/achouk
[35]  fol[k;]←f[j;]
[36]  k←k+1
[37]  →(j=j←j+1)/ttt1
[38] achouk:ques←ENUNCIA[(quaism[eles[iii];3])+⍳quaism[eles[iii];4];]
[39]  fol[k+⍳quaism[eles[iii];4];]←ques
[40]  k←k+quaism[eles[iii];4]+1
```

```
[41]  j←j+1 ⋄ iii←iii+1
[42]  →ttt1
[43] acabou:bf←((-(1↑⍴f)-j),80)↑f
[44]  fol[((1↑⍴fol)-1↑⍴bf)+⍳1↑⍴bf;]←bf
[45]  acuja←(fol[;2]='#')/⍳1↑⍴fol
[46]  fol[acuja;⍳80]←esse[⍋,fol[acuja;3 4],' ';]
[47]  fol←fol,[1]1 80⍴80↑'\clearpage'
[48]  relat←relat,[1]retirabrancos fol
[49]  ⍞←(⍕xk←xk+1),'-'
[50]  →testa
[51] fim:relat←relat,[1]1 80⍴80↑'\end{document}'
[52]  lixonol←relat ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[53]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[54]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex)'
[55]  →0
[56] errora:'O rank do operador e ≠ 2'
[57]  →0
[58] erro3:'faltam exercicios para o pedido'
[59]  →0
-------------------------------------------------------------
[ 0]  opesq vivo070k nnn;CORRECAO;dhx;n;relat;xk;f;esse;resp;qtod;quais;quaism;iii;eles;j;
      k;fol;bf;acuja;aula;ylu;lixonol;ques;chave;qtodxx
[ 1]  →(2≠⍴nnn)/errora
[ 2]  n←⊃nnn[1] ⋄ aula←⊃nnn[2]
[ 3]  →(0≠⎕NC'opesq')/qveio
[ 4]  opesq←''
[ 5] qveio:
[ 6]  ENUNCIA←ajusta80 ENUNCIA
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 9]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[10]  'evento=',⍕EVENTO
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12]  relat←0 80⍴' '
[13]  relat←relat,[1]ajusta80 ΔFM'c:\apl2\VIVOBLOI'
[14]  xk←1 ⋄ esse←7 80⍴' '
[15]  ⍋'FOLHALA',('000'⍕aula),'← ajusta80 FOLHALA','000'⍕aula
[16] testa:→(xk>1↑⍴ylu)/fim
[17]  f←⍋'FOLHALA','000'⍕aula
[18]  esse[1;]←80↑dhx[1;]
[19]  esse[2;]←80↑dhx[2;]
[20]  esse[3;]←80↑4 2⍕VERSAOa←1.02
[21]  esse[4;]←80↑ylu[xk;⍳6]
[22]  esse[5;]←80↑ylu[xk;6+⍳30]
[23]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO[⍳4],'{\large{',EVENTO[4+⍳4],'}}'
[24]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[25]  quais←geradir7 ENUNCIA
[26]  quaism←(quais[;1]=aula)/[1]quais
[27]  qtodxx←EXERCSAULA[((,EXERCSAULA[;1])⍳aula);2]
[28]  qtod←1↑⍴quaism
[29]  'sao ',(⍕qtod),' no BD, e ',(⍕qtodxx),' na aula'
[30]  iii←1
[31]  eles←⍳qtod
[32]  j←1 ⋄ fol←500 80⍴' ' ⋄ k←1 ⋄ chave←'nao'
[33] ttt1:→(iii>qtod)/acabou
[34]  →(3=+/'sim'=chave)/achouk
[35]  →(4=+/'%%%%'=f[j;⍳4])/achouk
[36]  fol[k;]←f[j;]
[37]  k←k+1
[38]  →(j=j←j+1)/ttt1
[39] achouk:chave←'sim'
[40]  ques←ENUNCIA[(quaism[eles[iii];3])+⍳quaism[eles[iii];4];]
```

```
[41]  fol[k+ιquaism[eles[iii];4];]←ques
[42]  k←k+quaism[eles[iii];4]+1
[43]  j←j+1 ⋄ iii←iii+1
[44]  →ttt1
[45] acabou:bf←((-(1↑ρf)-j),80)↑f
[46]  fol[((1↑ρfol)-1↑ρbf)+ι1↑ρbf;]←bf
[47]  acuja←(fol[;2]='#')/ι1↑ρfol
[48]  fol[acuja;ι80]←esse[⍟,fol[acuja;3 4],' ';]
[49]  fol←fol,[1]1 80ρ80↑'\clearpage'
[50]  relat←relat,[1]retirabrancos fol
[51]  ⍞←(⍕xk←xk+1),'-'
[52]  →testa
[53] fim:relat←relat,[1]1 80ρ80↑'\end{document}'
[54]  lixonol←relat ΔFM'c:\apl2\',((~⍬∧\⍬EVENTO=' ')/EVENTO),'.tex'
[55]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[56]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex)'
[57]  →0
[58] errora:'O rank do operador e ≠ 2'
[59]  →0
[60] erro3:'faltam exercicios para o pedido'
[61]  →0
------------------------------------------------------------
[ 0]  vivotod;tera
[ 1]  EVENTO←'PL0701'
[ 2]  vivo070k 1 2
[ 3]  EVENTO←'PL0702'
[ 4]  vivo070k 1 4
[ 5]  EVENTO←'PL0703'
[ 6]  vivo070k 1 7
[ 7]  EVENTO←'PL0704'
[ 8]  vivo070k 1 8
[ 9]  EVENTO←'PL0705'
[10]  vivo070k 1 9
[11]  EVENTO←'PL0706'
[12]  vivo070k 1 10
[13]  EVENTO←'PL0707'
[14]  vivo070k 1 11
[15]  EVENTO←'PL0708'
[16]  vivo070k 1 13
[17]  EVENTO←'PL0709'
[18]  vivo070k 1 14
[19]  EVENTO←'PL0710'
[20]  vivo070k 1 16
[21]  EVENTO←'PL0711'
[22]  vivo070k 1 18
[23]  tera←0 80ρ' '
[24]  tera←tera,[1]1 80ρ80↑'latex -quiet pl0701'
[25]  tera←tera,[1]1 80ρ80↑'latex -quiet pl0702'
[26]  tera←tera,[1]1 80ρ80↑'latex -quiet pl0703'
[27]  tera←tera,[1]1 80ρ80↑'latex -quiet pl0704'
[28]  tera←tera,[1]1 80ρ80↑'latex -quiet pl0705'
[29]  tera←tera,[1]1 80ρ80↑'latex -quiet pl0706'
[30]  tera←tera,[1]1 80ρ80↑'latex -quiet pl0707'
[31]  tera←tera,[1]1 80ρ80↑'latex -quiet pl0708'
[32]  tera←tera,[1]1 80ρ80↑'latex -quiet pl0709'
[33]  tera←tera,[1]1 80ρ80↑'latex -quiet pl0710'
[34]  tera←tera,[1]1 80ρ80↑'latex -quiet pl0711'
[35]  tera←tera,[1]1 80ρ80↑'dvipdfm pl0701'
[36]  tera←tera,[1]1 80ρ80↑'dvipdfm pl0702'
[37]  tera←tera,[1]1 80ρ80↑'dvipdfm pl0703'
[38]  tera←tera,[1]1 80ρ80↑'dvipdfm pl0704'
[39]  tera←tera,[1]1 80ρ80↑'dvipdfm pl0705'
[40]  tera←tera,[1]1 80ρ80↑'dvipdfm pl0706'
```

```
[41]  tera←tera,[1]1 80ρ80↑'dvipdfm pl0707'
[42]  tera←tera,[1]1 80ρ80↑'dvipdfm pl0708'
[43]  tera←tera,[1]1 80ρ80↑'dvipdfm pl0709'
[44]  tera←tera,[1]1 80ρ80↑'dvipdfm pl0710'
[45]  tera←tera,[1]1 80ρ80↑'dvipdfm pl0711'
[46]  tera←tera,[1]1 80ρ80↑'pdftk pl0701.pdf pl0702.pdf pl0703.pdf pl0704.pdf pl0705.pdf o
      utput p71.pdf'
[47]  tera←tera,[1]1 80ρ80↑'pdftk pl0706.pdf pl0707.pdf pl0708.pdf pl0709.pdf pl0710.pdf o
      utput p72.pdf'
[48]  tera←tera,[1]1 80ρ80↑'pdftk p71.pdf p72.pdf pl0711.pdf output pl070.pdf dont_ask'
[49]  tera ΔFM'c:\apl2\tera70.bat'
-------------------------------------------------------------
```

vivo071

```
[0]  AVISO
[1]  'Para listar todos os problemas execute todos071'
-------------------------------------------------------------
[ 0]  r←gera071 n;x;quais;i;y
[ 1]  DEFI←ajusta80 DEFI
[ 2]  x←geradir3 DEFI
[ 3]  y←((1↑ρx),3)ρ⍴,x,' '
[ 4]  quais←n?1↑ρy
[ 5]  r←0 80ρ' '
[ 6]  i←1
[ 7] t1:→(i>n)/fim
[ 8]  r←r,[1]DEFI[y[quais[i];2]+⍳y[quais[i];3];]
[ 9]  i←i+1
[10]  →t1
[11] fim:
[12] ⍝'Tamanho ',⍕1↑ρr
-------------------------------------------------------------
[ 0]  r←geradir3 x;lin;i;tam
[ 1]  r←(((+/(,x[;1])='%')÷2),15)ρ' '
[ 2]  tam←0
[ 3]  lin←1
[ 4]  i←1
[ 5] t1:→(i>1↑ρx)/fim
[ 6]  →((x[i;1]='%')∧(x[i;2]='i'))/comeca
[ 7]  →((x[i;1]='%')∧(x[i;2]='f'))/termina
[ 8]  tam←tam+1
[ 9]  i←i+1
[10]  →t1
[11] comeca:r[lin;⍳3]←x[i;3 4 5]
[12]  r[lin;5+⍳5]←5 0⍕i
[13]  tam←0
[14]  i←i+1
[15]  →t1
[16] termina:r[lin;10+⍳5]←5 0⍕tam
[17]  lin←lin+1
[18]  i←i+1
[19]  →t1
[20] fim:
-------------------------------------------------------------
[ 0]  geraquestoes071;dica;grupo;i;numeroinicial;r;topico;x;y;z
[ 1] ⍝ este programa gera um arquivo sequencial para o giz com todas as questoes
[ 2]  r←0 80ρ' '
[ 3]  DEFI←ajusta80 DEFI
[ 4]  x←geradir3 DEFI
[ 5]  y←((1↑ρx),3)ρ⍴,x,' '
[ 6]  numeroinicial←1718
[ 7]  topico←'065     '
```

```
[ 8]  grupo←' 1'
[ 9]  dica←'c com parametros (vivo071)'
[10]  i←1
[11] t1:→(i>1↑⍴y)/fim
[12]  r←r,[1]1 80⍴80↑'$QE',(5 0⍕numeroinicial),topico,grupo,dica
[13]  z←DEFI[y[i;2]+⍳y[i;3];]
[14]  z[1;⍳5]←' '
[15]  z←' ',z
[16]  z←ajusta80 z
[17]  r←r,[1]z
[18]  r←r,[1]1 80⍴80↑'$QR',(5 0⍕numeroinicial),topico
[19]  i←i+1
[20]  numeroinicial←numeroinicial+1
[21]  →t1
[22] fim:
[23]  r ΔFM'c:\apl2\carg071'
-------------------------------------------------------------
[ 0]  todos071;r
[ 1] ⍝ esta funcao imprime todos os exercicios do banco de dados
[ 2]  DEFI←ajusta80 DEFI
[ 3]  r←ajusta80 ΔFM'c:\apl2\VIVOBLO1'
[ 4]  r←r,[1]1 80⍴80↑'\begin{enumerate}'
[ 5]  r←r,[1]DEFI
[ 6]  r←r,[1]1 80⍴80↑'\end{enumerate}'
[ 7]  r←r,[1]1 80⍴80↑'\end{document}'
[ 8]  r ΔFM'c:\apl2\todos071.tex'
[ 9]  'Salvo em c:\apl2\ com o nome de todos071.tex'
-------------------------------------------------------------
[ 0]  opesq vivo071a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo071 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PL071   '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[33] ⍝⍝⍝
```

```
[ 8]  y←1+?8
[ 9] ⍝ conserto em 06/12/09, faltava um parentes ai embaixo ↓↓↓↓
[10]  rr←((((⍳10)*2)+x)×y)
[11]  zz←'55555&'⍕rr
[12]  xx[13;]←80↑(¯1↓zz),'\\ \hline'
[13]  xx[17;]←80↑'x= 5555 y= 5555'⍕x,y
[14]  q←q+1
[15]  →(i≠9)/conta
[16]  a←a+1
[17] conta:
[18]  i←i+1
[19]  r←r,[1]xx
[20]  →loop
-----------------------------------------------------------
[0]  r←formatar cg
[1]  r←'55 &55555 &55555 &55555 &55555 &55555 &55555 &55555&\\ \hline'⍕(20 1⍴⍳20),cg[;5+⍳
      7]
-----------------------------------------------------------
[0]  r←geracaso;n
[1]  n←1 ⋄ r←20 15⍴0
[2] lo:→(n>20)/0
[3]  r[n;]←geralinha n+6
[4]  n←n+1
[5]  →lo
-----------------------------------------------------------
[ 0]  r←geralinha n;aa;x;y;z;lim
[ 1]  lim←6
[ 2] inic:aa←⍎TABSEQ[n;1]
[ 3]  →(0=aa)/zero
[ 4]  →(1=aa)/um
[ 5]  →(2=aa)/dois
[ 6]  →(3=aa)/tres
[ 7] zero:r←aa,0 0 0,n,⍎1↓TABSEQ[n;]
[ 8]  →fim
[ 9] um:x←1+?lim
[10]  r←aa,x,0,0,n,⍎1↓('x',1 0⍕x)edit TABSEQ[n;]
[11]  →fim
[12] dois:x←1+?lim ⋄ y←1+?lim
[13]  r←aa,x,y,0,n,⍎1↓('x',1 0⍕x)edit('y',1 0⍕y)edit TABSEQ[n;]
[14]  →fim
[15] tres:x←1+?lim ⋄ y←1+?lim ⋄ z←1+?lim
[16]  r←aa,x,y,z,n,⍎1↓('x',1 0⍕x)edit('y',1 0⍕y)edit('z',1 0⍕z)edit TABSEQ[n;]
[17] fim:→(r[15]<100000)/ok
[18] ⍝ ⎕←'*'
[19]  →inic
[20] ok:
-----------------------------------------------------------
[0]  r←testa;n
[1]  n←1 ⋄ r←0 15⍴0
[2] lo:→(n>1↑⍴TABSEQ)/0
[3]  r←r,[1]geralinha n
[4]  n←n+1
[5]  →lo
-----------------------------------------------------------
[ 0]  opesq vivo073a n;CORRECAO;EVENTO;acuja;dhx;esse;f;lixo1;lixonol;relat;resp;resu;upag
      ;xixo;xxx;ylu;xk
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←20 ⋄ EVENTO←'PL073   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
```

```
[ 7]  →(isnum n)/1+⎕LC ◇ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ◇ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ◇ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA073←ajusta80 FOLHALA073
[10]  relat←((2+1↑⍴ylu),1 46+⍴FOLHALA073)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[12]  xk←1 ◇ resu←0 21⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←29 80⍴' '
[15]  f←FOLHALA073
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.03
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ◇ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[28;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[29;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  xxx←geracaso
[27]  ULTIMOCASO←xxx
[28]  esse[7+⍳20;]←20 80↑formatar xxx
[29]  resp←resp,achares xxx
[30]  resu←resu,[1]1 21⍴resp
[31]  acuja←(f[;2]='#')/⍳1↑⍴f
[32]  f[acuja;⍳80]←esse[⌸,f[acuja;3 4],' ';]
[33]  relat[1+xk;;⍳80]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[34]  ⎕←(⍕xk←xk+1),'-'
[35]  →testa
[36] fim:upag←(1 46+⍴f)⍴' '
[37]  →(1=≡n)/elafa
[38]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[39]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[40]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←4 0 8 0,38⍴6 0)⍕resu
[41]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[42]  →terminando
[43] elafa:aaa←(ylu,6 0⍕0 1↓resu)
[44]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[45]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[46] terminando:
[47]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[48]  relat[1↑⍴relat;;]←upag
[49]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[50] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[51]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[52]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[53]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo076

```
[0]  AVISO
[1]  'Limite de 99 folhas'
[2]  'Supostamente em caso de geracao de n folhas, o nome gerado é xxx'
[3]  ' e no caso de geracao para turmas, o xxx é trocado por EAN ou EAM...'
------------------------------------------------------------
[ 0]  r←nom geracaso076 num;cam;i;lix;m1;m2;m3;m4;m5;m6;m7;m8;m9;ma;x;y;z
[ 1]  x←500+1000?5000
[ 2]  m1←⌸10 2⍕(+/x)÷1000
[ 3]  m2←⌈/x
[ 4]  m3←+/x>1.2×m1
[ 5]  y←500 2⍴100000 200
```

```
[ 6]  y[;1]←?y[;1]
[ 7]  y[;1]←y[;1]÷100
[ 8]  y[;2]←?y[;2]
[ 9]  m4←+/y[;1]
[10]  m5←+/(y[;1]≥200)/y[;1]
[11]  m6←+/(y[;2]≤89)/y[;1]
[12]  z←365 5⍴180 40 900 0 0
[13]  z[;1]←(z[;1]+?365⍴130)÷10
[14]  z[;2]←(z[;2]+?365⍴140)÷10
[15]  z[;3]←(?z[;3])÷10
[16]  i←1
[17] t1:→(i>365)/f2
[18]  z[i;4]←(0 0 0 0 0 0 0 2 2 2 3 5 6 8 10 15 20 25)[?18]
[19]  z[i;5]←(0 0 0 0 0 1 1 1 2 2 2 3 3 3 4 4 4 5 5 5 5 6 6 6 7 8 8 9 10 11)[?30]
[20]  i←i+1
[21]  →t1
[22] f2:m7←⌽10 1⍕(+/(z[;1]+z[;2])÷2)÷365
[23]  m8←+/z[;5]>3
[24]  m9←1+(+/z[⍳182;4])<+/z[182+⍳182;4]
[25]  ma←+/z[;3]<30
[26]  nom←3↑(trim nom),'XXX'
[27]  cam←'c:\apl2\'
[28]  lix←(10 0⍕1000 1⍴x)⎕FM(cam,nom,'F',('00'⍕num),'E1')
[29]  lix←(10 2 4 0⍕y)⎕FM(cam,nom,'F',('00'⍕num),'E2')
[30]  lix←(6 1 6 1 6 1 5 0 5 0⍕z)⎕FM(cam,nom,'F',('00'⍕num),'E3')
[31]  r←m1,m2,m3,m4,m5,m6,m7,m8,m9,ma
[32]  X←x
[33]  Y←y
[34]  Z←z
[35] ⍝ o semestre mais chuvoso ┤e a soma da precipitacao dos 182 primeiros
[36] ⍝ dias comparado com a soma da precipitacao dos 183 ultimos dias.
[37] ⍝...
------------------------------------------------------------
[ 0]  opesq vivo076b n;CORRECAO;EVENTO;IDX;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;q
      linha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL076b  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ IDX←3↑2↓n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n ⋄ IDX←'XXX'
[ 9]  ylu←n grupo ylu
[10]  FOLHALA076b←ajusta80 FOLHALA076b
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA076b)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 11⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALA076b
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
```

```
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←IDX geracaso076 xk
[35]  esse[8;⍳8]←IDX,'F',('00'⍕xk),'E1'
[36]  esse[9;⍳8]←IDX,'F',('00'⍕xk),'E2'
[37]  esse[10;⍳8]←IDX,'F',('00'⍕xk),'E3'
[38]  resp←resp,,xx
[39]  resu←resu,[1]1 11⍴resp
[40]  acuja←(f[;2]='#')/⍳1↑⍴f
[41]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[42]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[43]  ⎕←(⍕xk←xk+1),'-'
[44]  →testa
[45] fim:upag←(1 0+⍴f)⍴' '
[46]  lixo1←3 0 10 2 5 0 4 0 14 2 10 2 10 2 8 1 4 0 4 0 4 0
[47]  →(1=≡n)/elafa
[48]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[49]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[50]  upag[2+⍳1↑⍴resu;⍳76]←lixo1⍕resu
[51]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[52]  →terminando
[53] elafa:aaa←(ylu[;⍳36],(2↓lixo1)⍕0 1↓resu)
[54]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[55]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[56] terminando:
[57]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[58]  relat[1↑⍴relat;;]←upag
[59]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[60]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[61]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[62]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
[63]  'Nao esqueca de mover os arquivos gerados'
-------------------------------------------------------------
[ 0]  opesq vivo076c n;CORRECAO;EVENTO;IDX;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;q
      linha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL076c  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ IDX←3↑2↓n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n ⋄ IDX←'XXX'
[ 9]  ylu←n grupo ylu
[10]  FOLHALA076c←ajusta80 FOLHALA076c
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA076c)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 11⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALA076c
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.06
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
```

```
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←IDX geracaso076 xk
[35]  esse[8;⍳8]←IDX,'F',('00'⍕xk),'E1'
[36]  esse[9;⍳8]←IDX,'F',('00'⍕xk),'E2'
[37]  esse[10;⍳8]←IDX,'F',('00'⍕xk),'E3'
[38]  resp←resp,,xx
[39]  resu←resu,[1]1 11⍴resp
[40]  acuja←(f[;2]='#')/⍳1↑⍴f
[41]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[42]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[43]  ⎕←(⍕xk←xk+1),'-'
[44]  →testa
[45] fim:upag←(1 0+⍴f)⍴' '
[46]  lixo1←3 0 10 2 5 0 4 0 14 2 10 2 10 2 8 1 5 0 4 0 4 0
[47]  →(1=≡n)/elafa
[48]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[49]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[50]  upag[2+⍳1↑⍴resu;⍳77]←lixo1⍕resu
[51]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[52]  →terminando
[53] elafa:aaa←(ylu[;⍳36],(2↓lixo1)⍕0 1↓resu)
[54]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[55]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[56] terminando:
[57]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[58]  relat[1↑⍴relat;;]←upag
[59]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[60]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[61]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[62]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
[63]  'Nao esqueca de mover os arquivos gerados'
------------------------------------------------------------
```

vivo077

```
[ 0]  r←quantia DOIS VET;I;SOMA;MED
[ 1] ⍝ a variavel "quantia" e o literal (entre  ¯10 e 10) que aparece na
[ 2] ⍝ linha 15 do algoritmo na folha (VET[I] > MED +  quantia)
[ 3]  →(6=⍴VET)/ok
[ 4]  'erro: o vetor tem que ter 6 numeros'
[ 5]  →0
[ 6] ok:r←0⍴0
[ 7]  I←1 ⋄ SOMA←0
[ 8] testa:
[ 9]  →(I≥7)/fundao
[10]  SOMA←SOMA+VET[I]
[11]  I←I+1
[12]  →testa
[13] fundao:
[14]  MED←SOMA÷6 ⋄ I←1
[15] tes22:
[16]  →(I≥7)/fundaca
[17]  →(VET[I]≤(MED+quantia))/menorigual
```

```
[18]  r←r,VET[I]
[19] ⍝ aqui imprime
[20] menorigual:
[21]  I←I+1
[22]  →tes22
[23] fundaca:
------------------------------------------------------------
[0]  r←QUATRO x;MAT
[1] ⍝ os quatro parametros sao: 1-valor inicial (ver no exercicio),
[2] ⍝ 2-incremento (linha 10 do algoritmo na folha) e 3e4-linha e coluna
[3] ⍝ ver no exercicio.
[4]  MAT←4 5⍴x[1]+x[2]×¯1+⍳20
[5]  r←MAT[x[3];x[4]]
------------------------------------------------------------
[ 0]  r←cibaqual TRES VET;I;J;LIM;ciba;qual
[ 1] ⍝ cibaual[1] 1  ↑, 2  ↓, / [2]=qual o elemento a retornar
[ 2] ok:
[ 3]  ciba←cibaqual[1]
[ 4]  qual←cibaqual[2]
[ 5]  ⎕IO←1 ⋄ VET←0,VET
[ 6]  r←0⍴0
[ 7]  I←3
[ 8] testa:
[ 9]  →(I>⍴VET)/fundao
[10]  VET[1]←VET[I] ⋄ J←I-1
[11] testa23:
[12]  →(ciba=1)/asce
[13] desce:→(VET[J]≥VET[1])/crinca
[14]  VET[J+1]←VET[J] ⋄ J←J-1
[15]  →testa23
[16] crinca:
[17]  VET[J+1]←VET[1]
[18]  I←I+1
[19]  →testa
[20] fundao:r←VET[qual]
[21]  →0
[22] asce:
[23]  →(VET[J]≤VET[1])/crinca2
[24]  VET[J+1]←VET[J] ⋄ J←J-1
[25]  →testa23
[26] crinca2:
[27]  VET[J+1]←VET[1]
[28]  I←I+1
[29]  →testa
------------------------------------------------------------
[ 0]  r←parametro UM c;i;j;qt;letra1;letra2;onde
[ 1] ⍝ chamar 'AB3' UM frase. Vai devolver o que ha apos o terceiro A ate o
[ 2] ⍝ proximo B. Linha8, linha 7, linha 2 do algoritmo na folha
[ 3]  letra1←parametro[1]
[ 4]  letra2←parametro[2]
[ 5]  onde←≢2↓parametro
[ 6] ok:r←''
[ 7]  i←1 ⋄ j←1
[ 8] testa1:
[ 9]  →(j≤⍴c)/blz1
[10]  r←'XXXX'   ⍝ erro
[11]  →0
[12] blz1:→(i>onde)/cinco
[13]  →(c[j]≠letra1)/diferente
[14]  i←i+1
[15] diferente:
[16]  j←j+1
[17]  →testa1
```

```
[18] cinco:
[19]  →(j≤ρc)/blz2
[20]  r←'XXXX'   ⍝ erro2
[21]  →0
[22] blz2:
[23]  →(c[j]=letra2)/esim
[24]  r←r,c[j]
[25]  j←j+1
[26]  →cinco
[27] esim:
-------------------------------------------------------------
[ 0]  r←texto geracaso n;le;a1;a2;a3;le
[ 1]  →(n≠1)/dois
[ 2]  le←'SAEO-'
[ 3] novo1:a1←le[2?ρle]
[ 4]  a1←a1,1 0⍕1+?2
[ 5]  a2←,texto[?1↑ρtexto;]
[ 6] oba:a3←a1 UM a2
[ 7]  →(4=+/'    '=4↑a3)/novo1
[ 8]  →(4=+/'XXXX'=4↑a3)/novo1
[ 9]  →(2=+/'SA'=2↑a3)/novo1   ⍝ este caso e o do exemplo. nao eh bom!!!
[10]  r←a1,a2
[11]  →fim
[12] dois:→(n≠2)/tres
[13] novo2:a1←(10-?18),100+6?100
[14]  →(0=1↑a1)/novo2
[15]  a3←(1↑a1)DOIS 1↓a1
[16]  →(0=ρa3)/novo2
[17]  r←a1
[18]  →fim
[19] tres:→(n≠3)/quatro
[20]  r←(?2),(2+?2),33+5?50   ⍝ 1  ↑,   2  ↓
[21]  →fim
[22] quatro:r←(?50),(?9),(?4),?5
[23] fim:
-------------------------------------------------------------
[ 0]  r←qtos geraquestoes1 y;i;caso
[ 1] ⍝ gera qtos questoes a partir da q (no GIZ) y
[ 2]  r←0 75ρ' '
[ 3]  i←1
[ 4] t1:→(i>qtos)/fim
[ 5]  r←r,[1]1 75ρ75↑'$QE',(5 0⍕y),'402      1rac:chines (vivo077)'
[ 6]  caso←ijucaalt geracaso 1
[ 7]  r←r,[1]1 75ρ75↑'Suponha o algoritmo abaixo'
[ 8]  r←r,[1]1 75ρ75↑'\begin{algorithmic}[1]'
[ 9]  r←r,[1]1 75ρ75↑'\STATE Algoritmo $UM$'
[10]  r←r,[1]1 75ρ75↑'\STATE string $C[80]$'
[11]  r←r,[1]1 75ρ75↑'\STATE inteiro $I,J$'
[12]  r←r,[1]1 75ρ75↑'\STATE leia($C$)'
[13]  r←r,[1]1 75ρ75↑'\STATE $I \gets 0$'
[14]  r←r,[1]1 75ρ75↑'\STATE $J \gets 1$'
[15]  r←r,[1]1 75ρ75↑'\WHILE {$I < ',caso[3],'$}'
[16]  r←r,[1]1 75ρ75↑'\IF {$C[J] = "',caso[1],'"$}'
[17]  r←r,[1]1 75ρ75↑'\STATE $I++$'
[18]  r←r,[1]1 75ρ75↑'\ENDIF'
[19]  r←r,[1]1 75ρ75↑'\STATE $J++$'
[20]  r←r,[1]1 75ρ75↑'\ENDWHILE'
[21]  r←r,[1]1 75ρ75↑'\WHILE{$C[J] \ne "',caso[2],'"$}'
[22]  r←r,[1]1 75ρ75↑'\STATE imprima $C[J]$'
[23]  r←r,[1]1 75ρ75↑'\STATE $J++$'
[24]  r←r,[1]1 75ρ75↑'\ENDWHILE'
[25]  r←r,[1]1 75ρ75↑'\end{algorithmic}'
[26]  r←r,[1]1 75ρ75↑'Para os dados'
```

```
[27]  r←r,[1]1 75⍴75↑'\begin{verbatim}'
[28]  r←r,[1]1 75⍴75↑75↑3↓caso
[29]  r←r,[1]1 75⍴75↑'\end{verbatim}'
[30]  r←r,[1]1 75⍴75↑'O algoritmo UM deve imprimir \uuline{\hspace{3cm}}\\'
[31]  r←r,[1]1 75⍴75↑'$QR',(5 0⍕y),'402'
[32]  r←r,[1]1 75⍴75↑(3↑caso)UM 3↓caso
[33]  y←y+1
[34]  i←i+1
[35]  →t1
[36] fim:
------------------------------------------------------------
[ 0]  r←qtos geraquestoes2 y;i;caso
[ 1] ⍝ gera qtos questoes a partir da q (no GIZ) y
[ 2]  r←0 75⍴' '
[ 3]  i←1
[ 4] t1:→(i>qtos)/fim
[ 5]  r←r,[1]1 75⍴75↑'$QE',(5 0⍕y),'402      2rac:chines (vivo077)'
[ 6]  r←r,[1]1 75⍴75↑'Suponha o algoritmo abaixo'
[ 7]  r←r,[1]1 75⍴75↑'\begin{algorithmic}[1]'
[ 8]  r←r,[1]1 75⍴75↑'\STATE Algoritmo $DOIS$'
[ 9]  r←r,[1]1 75⍴75↑'\STATE inteiro $VET[6]$'
[10]  r←r,[1]1 75⍴75↑'\STATE inteiro $SOMA,I$'
[11]  r←r,[1]1 75⍴75↑'\STATE real $MED$'
[12]  r←r,[1]1 75⍴75↑'\STATE leia($VET$)'
[13]  r←r,[1]1 75⍴75↑'\STATE $SOMA \gets 0$'
[14]  r←r,[1]1 75⍴75↑'\STATE $I \gets 1$'
[15]  r←r,[1]1 75⍴75↑'\WHILE {$I < 7$}'
[16]  r←r,[1]1 75⍴75↑'\STATE $SOMA \gets SOMA + VET[I]$'
[17]  r←r,[1]1 75⍴75↑'\STATE $I \gets I + 1$'
[18]  r←r,[1]1 75⍴75↑'\ENDWHILE'
[19]  r←r,[1]1 75⍴75↑'\STATE $MED \gets SOMA \div 6$'
[20]  r←r,[1]1 75⍴75↑'\STATE $I \gets 1$'
[21]  r←r,[1]1 75⍴75↑'\WHILE {$I < 7$}'
[22]  r←r,[1]1 75⍴75↑'\IF {$VET[I]>MED$}'
[23]  r←r,[1]1 75⍴75↑'\STATE imprima $I$'
[24]  r←r,[1]1 75⍴75↑'\ENDIF'
[25]  r←r,[1]1 75⍴75↑'\STATE $I \gets I + 1$'
[26]  r←r,[1]1 75⍴75↑'\ENDWHILE'
[27]  r←r,[1]1 75⍴75↑'\end{algorithmic}'
[28]  r←r,[1]1 75⍴75↑'Para os dados'
[29]  r←r,[1]1 75⍴75↑'\begin{verbatim}'
[30]  r←r,[1]1 75⍴75↑75↑4 0⍕caso←6?600
[31]  r←r,[1]1 75⍴75↑'\end{verbatim}'
[32]  r←r,[1]1 75⍴75↑'O algoritmo DOIS deve imprimir \uuline{\hspace{3cm}}\\'
[33]  r←r,[1]1 75⍴75↑'$QR',(5 0⍕y),'402'
[34]  r←r,[1]1 75⍴75↑3 0⍕(caso>((+/caso)÷6))/⍳6
[35]  y←y+1
[36]  i←i+1
[37]  →t1
[38] fim:
------------------------------------------------------------
[ 0]  opesq vivo077a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;caso
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL077   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA077←ajusta80 FOLHALA077
```

```
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA077)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑⍙FM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 76⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←21 80⍴' '
[15]  f←FOLHALA077
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.25
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[20;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[21;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  caso←ijucaalt geracaso 1
[27]  esse[8;]←80↑caso[3]
[28]  esse[9;]←80↑caso[1]
[29]  esse[10;]←80↑caso[2]
[30]  esse[11;]←80↑3↓caso
[31]  resp←(3 0⍕resp),40↑(3↑caso)UM 3↓caso
[32]  caso←geracaso 2
[33]  esse[12;]←80↑'-+'[1+caso[1]>0]
[34]  esse[13;]←80↑1 0⍕|caso[1]
[35]  esse[14;]←80↑4 0⍕1↓caso
[36]  resp←resp,'/',20↑4 0⍕(caso[1])DOIS 1↓caso
[37]  caso←geracaso 3
[38]  caso
[39]  esse[15;]←80↑'><'[caso[1]]
[40]  esse[16;]←80↑1 0⍕caso[2]
[41]  esse[17;]←80↑4 0⍕2↓caso
[42]  resp←resp,'/',5 0⍕(2↑caso)TRES 2↓caso
[43]  caso←geracaso 4
[44]  esse[18;]←80↑1 0⍕caso[2]
[45]  esse[19;]←80↑4 0⍕caso[1 3 4]
[46]  resp←resp,'/',5 0⍕QUATRO caso
[47]  resu←resu,[1]1 76⍴resp
[48]  acuja←(f[;2]='#')/⍳1↑⍴f
[49]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[50]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[51]  ⎕←(⍕xk←xk+1),'-'
[52]  →testa
[53] fim:upag←(1 0+⍴f)⍴' '
[54]  →(1=≡n)/elafa
[55]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[56]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[57]  upag[2+⍳1↑⍴resu;]←'¯-'edit((1↑⍴resu),80)↑resu
[58]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[59]  →terminando
[60] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),'¯-'edit 0 3↓resu)
[61]  aaa[1;35 36]←2 0⍕CORRECAO
[62]  lixonol←aaa ⍙FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[63]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[64] terminando:
[65]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[66]  relat[1↑⍴relat;;]←upag
[67]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[68] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[69]  lixonol←lixonol ⍙FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[70]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[71]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo082

```
[ 0]  r←geracaso;a;b;x;y
[ 1]  a←3+(2+?2)↑4?6
[ 2]  b←4+(2+?2)↑4?5
[ 3]  a←a[⍋a]
[ 4]  b←b[⍋b]
[ 5]  x←a intercala b
[ 6]  y←((⍴x)-12)+3?10
[ 7]  y←y[⍋y]
[ 8]  r←5⍴0
[ 9]  r[1]←⊂a
[10]  r[2]←⊂b
[11]  r[3]←⊂y
[12]  r[4]←⊂x[y]
[13]  r[5]←⊂x
------------------------------------------------------------
[ 0]  r←a intercala b;ka;kb;i;j
[ 1]  r←4,5,9,10
[ 2]  i←2
[ 3]  j←2
[ 4]  ka←1↑a
[ 5]  kb←1↑b
[ 6] t0:→((ka=99999)∧(kb=99999))/fim
[ 7]  r←r,14,15
[ 8] t1:→(ka≥kb)/t22
[ 9]  r←r,16,17
[10]  →(i>⍴a)/acaa
[11]  r←r,18
[12]  ka←a[i]
[13]  i←i+1
[14]  →t0
[15] acaa:ka←99999
[16]  r←r,20
[17]  →t0
[18] t22:r←r,23
[19]  →(kb≥ka)/t30
[20]  r←r,24,25
[21]  →(j>⍴b)/acab
[22]  r←r,26
[23]  kb←b[j]
[24]  j←j+1
[25]  →t0
[26] acab:kb←99999
[27]  r←r,28
[28]  →t0
[29] t30:r←r,31,32,33
[30]  →(i>⍴a)/acaa2
[31]  r←r,34
[32]  ka←a[i]
[33]  i←i+1
[34]  →junta1
[35] acaa2:r←r,36
[36]  ka←99999
[37] junta1:r←r,38
[38]  →(j>⍴b)/acab2
[39]  r←r,39
[40]  kb←b[j]
[41]  j←j+1
[42]  →t0
[43] acab2:r←r,41
[44]  kb←99999
[45]  →t0
```

```
[46] fim:r←r,14
------------------------------------------------------------
[ 0]  opesq vivo082a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;num;relat
      ;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←8 ⋄ EVENTO←'PL082   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA082←ajusta80 FOLHALA082
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA082)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 4⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←14 80⍴' '
[15]  f←FOLHALA082
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←1.03
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[23]  esse[13;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[14;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] ini1:
[26]  x←geracaso
[27]  esse[8;]←80↑4 0⍎⊃x[1]
[28]  esse[9;]←80↑4 0⍎⊃x[2]
[29]  esse[10;]←80↑4 0⍎(⊃x[3])[1]
[30]  esse[11;]←80↑4 0⍎(⊃x[3])[2]
[31]  esse[12;]←80↑4 0⍎(⊃x[3])[3]
[32]  resp←resp,⊃x[4]
[33]  resu←resu,[1]1 4⍴resp
[34]  acuja←(f[;2]='#')/⍳1↑⍴f
[35]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[36]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[37]  ⍞←(⍎xk←xk+1),'-'
[38]  →testa
[39] fim:upag←(1 0+⍴f)⍴' '
[40]  →(1=≡n)/elafa
[41]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[42]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[43]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←4 0 8 0 4 0 4 0)⍎resu
[44]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[45]  →terminando
[46] elafa:aaa←(ylu,4 0⍎0 1↓resu)
[47]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[48]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[49] terminando:
[50]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[51]  relat[1↑⍴relat;;]←upag
[52]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[53] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[54]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[55]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo084

```
[ 0]  GERA n;div;ida;i;inds;xux;lixo
[ 1]  MOVIMENTO←(n,26)⍴' '
[ 2]  MOVIMENTO[;1]←(n,1)⍴1 0⍒?n⍴3
[ 3]  MOVIMENTO[;1+⍳3]←(n,3)⍴3 0⍒n?n×2
[ 4]  MOVIMENTO[;4+⍳12]←(n,12)↑GNOME n
[ 5]  ida←14+?60⍴15
[ 6]  MOVIMENTO[;17 18]←(n,2)⍴2 0⍒ida[?n⍴⍴ida]
[ 7]  div←100+?60⍴1000
[ 8]  MOVIMENTO[;18+⍳8]←(n,8)⍴8 2⍒div[?n⍴⍴div]
[ 9]  xux←MOVIMENTO[;1]='3'
[10]  MOVIMENTO[(xux/⍳n);4+⍳12]←' '
[11]  MOVIMENTO[(xux/⍳n);17 18]←((+/xux),2)⍴2 0⍒0
[12]  MOVIMENTO[(xux/⍳n);18+⍳8]←((+/xux),8)⍴8 2⍒0
[13]  MOVIMENTO←MOVIMENTO[⍋±,MOVIMENTO[;2 3 4 1],' ';]
[14]  i←1
[15] testa:→(i>1↑⍴MOVIMENTO)/fim
[16]  →(MOVIMENTO[i;1]='3')/pula
[17]  →(MOVIMENTO[i;1]='1')/pula
[18] urca:inds←gerainds
[19]  MOVIMENTO[i;4+⍳12]←,(2 12⍴((12⍴' '),MOVIMENTO[i;4+⍳12]))[inds[1];]
[20]  MOVIMENTO[i;16+⍳2]←MOVIMENTO[i;16+⍳2]
[21]  MOVIMENTO[i;18+⍳8]←,(2 8⍴('     .00',MOVIMENTO[i;18+⍳8]))[inds[3];]
[22]  →((12=+/MOVIMENTO[i;4+⍳12]=' ')∧(0=±MOVIMENTO[i;16+⍳2])∧(0=±MOVIMENTO[i;18+⍳8]))/urc
      a
[23] pula:→(i=i←i+1)/testa
[24] fim:
[25]  CADASTRO←(n,25)⍴' '
[26]  CADASTRO[;⍳3]←(n,3)⍴3 0⍒n?n×2
[27]  CADASTRO[;3+⍳12]←(n,12)↑geranomes n
[28]  ida←14+?60⍴15
[29]  CADASTRO[;16 17]←(n,2)⍴2 0⍒ida[?n⍴⍴ida]
[30]  div←100+?60⍴1000
[31]  CADASTRO[;17+⍳8]←(n,8)⍴8 2⍒div[?n⍴⍴div]
[32]  CADASTRO←CADASTRO[⍋(±,CADASTRO[;⍳3],' ');]
[33]  CADSAIDA←((2×n),25)⍴' '
[34]  LINSAI←1
[35]  lixo←⎕EX 2 6⍴'LINMOVLINCAD'
[36]  ERRO←((2×n),25)⍴' '
[37]  LINERR←1
-------------------------------------------------------------
[0]  r←GNOME n;nomes
[1]  nomes←'pedro  ↑paulo  ↑joao  ↑luis  ↑ana  ↑paula  ↑felipe  ↑jane  ↑elaine  ↑jorge  ↑
      sara'
[2]  nomes←nomes,'  ↑kica  ↑jose  ↑hugo  ↑antonio  ↑helio  ↑zuza  ↑carmem  ↑biba'
[3]  nomes←montamat nomes
[4]  r←(n,12)↑nomes[?n⍴1↑⍴nomes;]
-------------------------------------------------------------
[0]  LATES
-------------------------------------------------------------
[0]  r←LECAD
[1]  →(2=⎕NC'LINCAD')/ok
[2]  LINCAD←0
[3] ok:
[4]  LINCAD←LINCAD+1
[5]  →(LINCAD>1↑⍴CADASTRO)/acabou
[6]  r←±CADASTRO[LINCAD;⍳3]
[7]  →0
[8] acabou:r←999999
-------------------------------------------------------------
[0]  r←LEMOV
[1]  →(2=⎕NC'LINMOV')/ok
```

```
[2]  LINMOV←0
[3] ok:
[4]  LINMOV←LINMOV+1
[5]  →(LINMOV>1↑⍴MOVIMENTO)/acabou
[6]  r←⍪MOVIMENTO[LINMOV;1+⍳3]
[7]  →0
[8] acabou:r←999999
-------------------------------------------------------------
[0]  r←acertaC cad
[1]  r←cad[;1 2 3 4 5 6 7 8 9 10 11 16 17 18 19 20 21 22 23 24 25]
-------------------------------------------------------------
[0]  r←acertaM cad
[1]  r←cad[;1+0 1 2 3 4 5 6 7 8 9 10 11 16 17 18 19 20 21 22 23 24 25]
-------------------------------------------------------------
[ 0]  baline;CM;CC
[ 1]  CC←LECAD
[ 2]  CM←LEMOV
[ 3] testa1:→((CC=999999)∧(CM=999999))/fim
[ 4]  →(CC≥CM)/vuh1
[ 5]  CADSAIDA[LINSAI;]←CADASTRO[LINCAD;]
[ 6]  LINSAI←LINSAI+1
[ 7]  CC←LECAD
[ 8]  →testa1
[ 9] vuh1:→(CM=CC)/iguais
[10]  →(MOVIMENTO[LINMOV;1]='1')/ehum
[11]  →(MOVIMENTO[LINMOV;1]='3')/etres
[12] edois:ERRO[LINERR;]←25↑MOVIMENTO[LINMOV;1+⍳3],'Alteracao inex'
[13]  LINERR←LINERR+1
[14]  →leia
[15] etres:ERRO[LINERR;]←25↑MOVIMENTO[LINMOV;1+⍳3],'Exclusao inex'
[16]  LINERR←LINERR+1
[17]  →leia
[18] ehum:CADSAIDA[LINSAI;]←1↓MOVIMENTO[LINMOV;]
[19]  LINSAI←LINSAI+1
[20] leia:CM←LEMOV
[21]  →testa1
[22] iguais:
[23]  →(MOVIMENTO[LINMOV;1]≠'1')/certo
[24]  ERRO[LINERR;]←25↑MOVIMENTO[LINMOV;1+⍳3],'Inclusao duplo'
[25]  LINERR←LINERR+1
[26]  CADSAIDA[LINSAI;]←CADASTRO[LINCAD;]
[27]  LINSAI←LINSAI+1
[28]  →leia2
[29] certo:
[30]  →(MOVIMENTO[LINMOV;1]='3')/exclui
[31]  CADSAIDA[LINSAI;]←CADASTRO[LINCAD;]
[32]  →(12=+/MOVIMENTO[LINMOV;4+⍳12]=' ')/pulan
[33]  CADSAIDA[LINSAI;3+⍳12]←MOVIMENTO[LINMOV;4+⍳12]
[34] pulan:→(0=⍪MOVIMENTO[LINMOV;17 18],' ')/pulai
[35]  CADSAIDA[LINSAI;16 17]←MOVIMENTO[LINMOV;17 18]
[36] pulai:→(0=⍪MOVIMENTO[LINMOV;18+⍳8],' ')/pulad
[37]  CADSAIDA[LINSAI;17+⍳8]←MOVIMENTO[LINMOV;18+⍳8]
[38] pulad:LINSAI←LINSAI+1
[39] exclui:
[40] leia2:
[41]  CC←LECAD
[42]  CM←LEMOV
[43]  →testa1
[44] fim:CADSAIDA←(25≠+/CADSAIDA=' ')/[1]CADSAIDA
[45]  ERRO←(25≠+/ERRO=' ')/[1]ERRO
-------------------------------------------------------------
[ 0]  balinedemo;CM;CC
[ 1]  CC←LECAD
```

```
[ 2]  CM←LEMOV
[ 3] testa1:→((CC=999999)∧(CM=999999))/fim
[ 4]  →(CC≥CM)/vuh1
[ 5]  CADSAIDA[LINSAI;]←CADASTRO[LINCAD;]
[ 6]  LINSAI←LINSAI+1
[ 7]  CC←LECAD
[ 8]  →testa1
[ 9] vuh1:→(CM=CC)/iguais
[10]  →(MOVIMENTO[LINMOV;1]='1')/ehum
[11]  →(MOVIMENTO[LINMOV;1]='3')/etres
[12] edois:ERRO[LINERR;]←25↑'Alteracao',MOVIMENTO[LINMOV;1+⍳3],' inex'
[13]  LINERR←LINERR+1
[14]  →leia
[15] etres:ERRO[LINERR;]←25↑'Exclusao ',MOVIMENTO[LINMOV;1+⍳3],' inex'
[16]  LINERR←LINERR+1
[17]  →leia
[18] ehum:CADSAIDA[LINSAI;]←1↓MOVIMENTO[LINMOV;]
[19]  LINSAI←LINSAI+1
[20] leia:CM←LEMOV
[21]  →testa1
[22] iguais:
[23]  →(MOVIMENTO[LINMOV;1]≠'1')/certo
[24]  ERRO[LINERR;]←25↑'Inclusao',MOVIMENTO[LINMOV;1+⍳3],' duplo'
[25]  LINERR←LINERR+1
[26]  CADSAIDA[LINSAI;]←CADASTRO[LINCAD;]
[27]  LINSAI←LINSAI+1
[28]  →leia2
[29] certo:
[30]  →(MOVIMENTO[LINMOV;1]='3')/exclui
[31]  CADSAIDA[LINSAI;]←CADASTRO[LINCAD;]
[32]  →(12=+/MOVIMENTO[LINMOV;4+⍳12]=' ')/pulan
[33]  CADSAIDA[LINSAI;3+⍳12]←MOVIMENTO[LINMOV;4+⍳12]
[34] pulan:→(0=≢MOVIMENTO[LINMOV;17 18],' ')/pulai
[35]  CADSAIDA[LINSAI;16 17]←MOVIMENTO[LINMOV;17 18]
[36] pulai:→(0=≢MOVIMENTO[LINMOV;18+⍳8],' ')/pulad
[37]  CADSAIDA[LINSAI;17+⍳8]←MOVIMENTO[LINMOV;18+⍳8]
[38] pulad:LINSAI←LINSAI+1
[39] exclui:
[40] leia2:
[41]  CC←LECAD
[42]  CM←LEMOV
[43]  →testa1
[44] fim:CADSAIDA←(25≠+/CADSAIDA=' ')/[1]CADSAIDA
[45]  ERRO←(25≠+/ERRO=' ')/[1]ERRO
-------------------------------------------------------------
[0]  r←gerainds
[1] in:r←?3⍴2
[2]  →(3=+/r)/in
[3]  →(6=+/r)/in
-------------------------------------------------------------
[0]  r←geranomes n;nomes
[1]  nomes←'pedro   paulo   joao    luis    ana     paula   felipe  jane    elaine  '
[2]  nomes←nomes,'jorge   sara    '
[3]  nomes←nomes,'kica    jose    hugo    antonio helio   zuza    carmem  biba    '
[4]  nomes←19 8⍴nomes
[5]  r←(n,12)↑nomes[?n⍴1↑⍴nomes;]
-------------------------------------------------------------
[0]  r←limpa
[1]  r←⎕EX'CADASTRO'
[2]  r←r,⎕EX'CADSAIDA'
[3]  r←r,⎕EX'ERRO'
[4]  r←r,⎕EX'LINCAD'
[5]  r←r,⎕EX'LINERR'
```

```
[6]  r←r,⎕EX'LINSAI'
[7]  r←r,⎕EX'MOVIMENTO'
[8]  r←r,⎕EX'LINMOV'
------------------------------------------------------------
[ 0]  r←montamat x;c;ix;r;max;lin;fu;y
[ 1]  c←1 ⋄ ix←1 ⋄ lin←80⍴' ' ⋄ r←0 0⍴0
[ 2] comeca:→(ix>⍴x)/muda
[ 3]  →(x[ix]='↑')/muda
[ 4]  lin[c]←x[ix]
[ 5]  c←c+1 ⋄ ix←ix+1
[ 6]  →comeca
[ 7] muda:lin←trim lin ⋄ c←1 ⋄ ix←ix+1
[ 8]  max←(⍴lin)⌈1↓⍴r
[ 9]  r←((1↑⍴r),max)↑r
[10]  r←r,[1]max↑lin
[11]  →(ix>⍴x)/fim
[12]  lin←76⍴' '
[13]  →comeca
[14] fim:
------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i>1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10] te3:→(candi[j]=' ')/ufa
[11]  j←j-1
[12]  →te3
[13] ufa:r←r,[1]1 80⍴80↑j↑candi
[14]  candi←j↓candi
[15]  →((⍴candi)=+/candi=' ')/som
[16]  →te2
[17] eca:r←r,[1]1 80⍴80↑candi
[18] som:i←i+1
[19]  →te
[20] fim:'acabou'
------------------------------------------------------------
[ 0]  r←veja084;zz;i;a;b
[ 1]  GERA 17
[ 2]  baline
[ 3]  zz←CADASTRO,' ','|',' ',MOVIMENTO
[ 4]  i←1
[ 5] t1:→(i>17)/fim
[ 6]  zz[i;29]←'IAE'[±zz[i;29]]
[ 7]  i←i+1
[ 8]  →t1
[ 9] fim:
[10]  a←1 54⍴(28↑'   CADASTRO ANTERIOR'),26↑'       MOVIMENTO'
[11]  b←1 54⍴(26⍴'='),(2⍴' '),20⍴'='
[12]  r←a,[1]b,[1]zz
------------------------------------------------------------
[ 0]  opesq vivo084a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;flm;ika;ind1;ind2;lixo1;lixono
      l;relat;resp;resu;upag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL084   '
```

```
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA084←ajusta80 FOLHALA084
[10]  relat←((2+1↑⍴ylu),1 38+⍴FOLHALA084)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 6⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←39 80⍴' '
[15]  f←FOLHALA084
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←4.01
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[23]  esse[38;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[39;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[5+⍳5]
[25] inica:
[26]  GERA 25
[27]  esse[7+⍳25;⍳21]←acertaC CADASTRO
[28]  esse[7+⍳25;27+⍳21]←0 1↓acertaM MOVIMENTO
[29]  esse[7+⍳25;27]←'IAE'[⍯,(25 1↑MOVIMENTO),' ']
[30]  baline
[31]  ind1←(2?¯1+1↑⍴CADSAIDA),1↑⍴CADSAIDA
[32]  ind2←(1?¯1+1↑⍴ERRO),1↑⍴ERRO
[33]  ind1←ind1[⍋ind1]
[34]  ind2←ind2[⍋ind2]
[35]  esse[32+⍳3;⍳70]←3 70⍴70 0⍎3 1⍴ind1
[36]  esse[35+⍳2;⍳70]←2 70⍴70 0⍎2 1⍴ind2
[37]  ika←⍯,CADSAIDA[ind1;⍳3],' '
[38]  ika←ika,⍯,(ERRO[ind2;⍳3]),' '
[39]  resu←resu,[1]1 6⍴resp,ika
[40]  acuja←(f[;2]='#')/⍳1↑⍴f
[41]  f[acuja;⍳80]←esse[⍯,f[acuja;3 4],' ';]
[42]  relat[1+xk;;⍳80]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[43]  ⍞←(⍎xk←xk+1),'-'
[44]  →testa
[45] fim:upag←(1 38+⍴f)⍴' '
[46]  →(1=≡n)/elafa
[47]  upag[1;]←(1↓⍴upag)↑'\scriptsize \begin{verbatim}'
[48]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[49]  upag[2+⍳1↑⍴resu;⍳25]←((1↑⍴resu),25)↑4 0 6 0 3 0 3 0 8 0 3 0⍎resu
[50]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[51]  →terminando
[52] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),6 0 3 0 3 0 14 0 3 0⍎0 1↓resu)
[53]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[54]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[55] terminando:
[56]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[57]  relat[1↑⍴relat;;]←upag
[58]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[59] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[60]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[61]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[62]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo086

```
[0]  AVISO
[1]  'a variavel ULT contem a ultima resposta gerada'
------------------------------------------------------------
[0]  r←geracaso x
[1]  r←(x,4)⍴0
[2]  r[;1]←?x⍴3
[3]  r[;2]←30+?x⍴3
[4]  r[;3]←200+?x⍴3
[5]  r[;4]←10×x?x+10
------------------------------------------------------------
[0]  r←q1 x
[1]  x←(∧/(x≠0))/[1]x
[2]  r←'9 99 999'⍕x[x[;4]⍳⌈/x[;4];1 2 3]
------------------------------------------------------------
[0]  r←q2 x
[1]  x←(1=+/x[;⍳3]=0)/[1]x
[2]  r←'9 99'⍕x[(x[;5]⍳⌈/x[;5]);1 2]
------------------------------------------------------------
[ 0]  r←quebra x;ta;tb;tc;td;aant;bant;cant;tt;i;qa;qb;qc;qt
[ 1]  x←x[⍋x[;1 2 3];]
[ 2]  ta←tb←tc←tt←qa←qb←qc←qt←0
[ 3]  r←0 5⍴0
[ 4]  aant←x[1;1]
[ 5]  bant←x[1;2]
[ 6]  cant←x[1;3]
[ 7]  i←1
[ 8] t1:→(i>1↑⍴x)/fim
[ 9]  tt←tt+x[i;4]
[10]  qt←qt+1
[11]  →((x[i;1]≠aant)∨(x[i;2]≠bant)∨(x[i;3]≠cant))/t2
[12]  ta←ta+x[i;4]
[13]  tb←tb+x[i;4]
[14]  tc←tc+x[i;4]
[15]  qa←qa+1 ⋄ qb←qb+1 ⋄ qc←qc+1
[16]  →soma
[17] t2:→((x[i;1]≠aant)∨(x[i;2]≠bant))/t3
[18]  ta←ta+x[i;4]
[19]  tb←tb+x[i;4]
[20]  qa←qa+1 ⋄ qb←qb+1
[21]  r←r,[1]1 5⍴aant,bant,cant,tc,qc
[22]  cant←x[i;3]
[23]  tc←x[i;4]
[24]  qc←1
[25]  →soma
[26] t3:
[27]  →(x[i;1]≠aant)/t4
[28]  ta←ta+x[i;4]
[29]  qa←qa+1
[30]  r←r,[1]1 5⍴aant,bant,cant,tc,qc
[31]  r←r,[1]1 5⍴aant,bant,0,tb,qb
[32]  cant←x[i;3]
[33]  bant←x[i;2]
[34]  tc←tb←x[i;4]
[35]  qc←qb←1
[36]  →soma
[37] t4:
[38]  r←r,[1]1 5⍴aant,bant,cant,tc,qc
[39]  r←r,[1]1 5⍴aant,bant,0,tb,qb
[40]  r←r,[1]1 5⍴aant,0,0,ta,qa
[41]  cant←x[i;3]
[42]  bant←x[i;2]
```

```
[43]  aant←x[i;1]
[44]  ta←tc←tb←x[i;4]
[45]  qa←qb←qc←1
[46] soma:i←i+1
[47]  →t1
[48] fim:
[49]  r←r,[1]1 5ρaant,bant,cant,tc,qc
[50]  r←r,[1]1 5ρaant,bant,0,tb,qb
[51]  r←r,[1]1 5ρaant,0,0,ta,qa
[52]  r←r,[1]1 5ρ0,0,0,tt,qt
[53]  ULT←r
------------------------------------------------------------
[ 0]  opesq vivo086a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;num;relat
      ;resp;resu;upag;xixo;xk;ylu;yy;zz;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←8 ⋄ EVENTO←'PL086   '
[ 6]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕⍳n
[ 9]  FOLHALA086←ajusta80 FOLHALA086
[10]  relat←((2+1↑ρylu),1 0+ρFOLHALA086)ρ' '
[11]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 30ρ' '
[13] testa:→(xk>1↑ρylu)/fim
[14]  esse←34 80ρ' '
[15]  f←FOLHALA086
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←1.02
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[33;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[34;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] ini1:
[26]  zz←geracaso 25
[27]  yy←quebra zz
[28]  esse[7+⍳25;]←25 80↑'9   99   999       999'⍕zz
[29]  resp←(8 0⍕resp),(5ρ' '),(q1 yy),(5ρ' '),(q2 yy)
[30]  resu←resu,[1]1 30ρresp
[31]  acuja←(f[;2]='#')/⍳1↑ρf
[32]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[33]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\newpage'
[34]  ⍞←(⍕xk←xk+1),'-'
[35]  →testa
[36] fim:upag←(1 0+ρf)ρ' '
[37]  →(1=≡n)/elafa
[38]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[39]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[40]  upag[2+⍳1↑ρresu;⍳30]←resu
[41]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[42]  →terminando
[43] elafa:aaa←(ylu,0 8↓resu)
[44]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[45]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[46] terminando:
[47]  upag[1↑ρupag;]←(1↓ρupag)↑'\end{document}'
[48]  relat[1↑ρrelat;;]←upag
```

```
[49]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[50] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[51]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∘⍳'EVENTO=' ')/EVENTO),'.tex'
[52]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo090

```
[ 0]  RRRR←AAA;H;B;J;L;K;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ008
[ 1]  H←5
[ 2]  B←8
[ 3]  J←3
[ 4]  L←6
[ 5]  Δ001←(H<6)
[ 6]  →(~Δ001)/Δ002
[ 7]  Δ003←(B<5)
[ 8]  →(~Δ003)/Δ004
[ 9]  Δ005←(J≤5)
[10]  →(~Δ005)/Δ006
[11]  K←1
[12]  →Δ007
[13] Δ006:
[14]  K←4
[15] Δ007:
[16]  L←K+4
[17] Δ004:
[18]  L←L+1
[19] Δ002:
[20]  RRRR←(J+L-H)
------------------------------------------------------------
[0]  r←a B b
[1]  r←a=b
------------------------------------------------------------
[0]  r←a C b
[1]  r←(a=b)∨((a=0)∧(b=1))
------------------------------------------------------------
[0]  r←a E b
[1]  r←a∧b
------------------------------------------------------------
[0]  r←N a
[1]  r←~a
------------------------------------------------------------
[0]  r←a O b
[1]  r←a∨b
------------------------------------------------------------
[ 0]  r←ajeita8 x;z;koisa;meia
[ 1]  x←x replace('aa'(2 0⍴⍨?8))
[ 2]  x←x replace('bb'(2 0⍴⍨?8))
[ 3]  x←x replace('cc'(2 0⍴⍨?8))
[ 4]  x←x replace('dd'(2 0⍴⍨?8))
[ 5]  x←x replace('ee'(2 0⍴⍨?6))
[ 6]  x←x replace('ff'(2 0⍴⍨?8))
[ 7]  x←x replace('gg'(2 0⍴⍨?8))
[ 8]  x←x replace('hh'(2 0⍴⍨?8))
[ 9]  z←x replace('ii'(2 0⍴⍨?8))
[10]  z←((1↑⍴z),60)↑z
[11]  koisa←(1 60⍴60↑'funcao AAA'),[1]z,[1]1 60⍴60↑'fimfuncao'
[12]  meia←retra8 koisa
[13]  koisa←koisa replace'entao' ' '
[14]  r←(meia('| 'edit koisa))
------------------------------------------------------------
[ 0]  r←gera90a;i;qu;ra;rr;t
```

```
[ 1] ⍝ gera exercicios proposicionais com bastante -> ...
[ 2]  r←11 80⍴' '
[ 3]  i←1
[ 4]  rr←''
[ 5]  ra←''
[ 6] t1:→(i>6)/fim     ⍝ era 10
[ 7]  qu←2 geratv 1+?2
[ 8]  →(81>⍴⊃qu[3])/ok
[ 9]  □←'*'
[10]  →t1
[11] ok:
[12]  r[i;]←1 80⍴80↑⊃qu[3]
[13]  ra←ra,1↑⊃qu[2]
[14]  rr←rr,(4↑⊃qu[2]),'-'
[15]  i←i+1
[16]  →t1
[17] fim:r[11;]←80↑¯1↓rr
[18] ⍝ r[11;]←80↑,ra
[19] ⍝ ra=so corrige o primeiro simbolo da TV
[20] ⍝ rr corrige os 4 simbolos da TV
------------------------------------------------------------
[ 0]  r←gera90b;z;xx;bb
[ 1]  r←77 80⍴' '
[ 2]  z←0⍴0
[ 3]  xx←ajeita8 cor1
[ 4]  r[⍳19;]←19 80↑⊃xx[1]
[ 5]  bb←⎕FX cpc⊃xx[2]
[ 6]  z←z,⍪'AAA'
[ 7]  xx←ajeita8 cor2
[ 8]  r[19+⍳19;]←19 80↑⊃xx[1]
[ 9]  bb←⎕FX cpc⊃xx[2]
[10]  z←z,⍪'AAA'
[11]  xx←ajeita8 cor3
[12]  r[38+⍳19;]←19 80↑⊃xx[1]
[13]  bb←⎕FX cpc⊃xx[2]
[14]  z←z,⍪'AAA'
[15]  xx←ajeita8 cor4
[16]  r[57+⍳19;]←19 80↑⊃xx[1]
[17]  bb←⎕FX cpc⊃xx[2]
[18]  z←z,⍪'AAA'
[19]  r[77;]←80↑'¯-'edit 4 0⍕z
------------------------------------------------------------
[ 0]  rx←qtdv geratv qtdops;coma;i;vv;p1;p2;r1;p;q;r;s;j;vvaux;aux;p3;p4;ziza;qtcon
[ 1] ⍝ gera uma tabela verdade contendo uma expressao envolvendo qtdv variaveis e qtdops o
       peracoes logica
[ 2] denovo:coma←''
[ 3]  i←1
[ 4]  vv←qtdv↑'pqrs'
[ 5] t1:→(i≥qtdops)/vai
[ 6]  →(1≠?5)/naopoe
[ 7]  p1←'(N ',(aux←vv[?⍴vv]),')'
[ 8]  →pula
[ 9] naopoe:p1←' ',aux←vv[?⍴vv]
[10] pula:vvaux←vv menos aux
[11]  →(1≠?4)/np2
[12]  p2←'(N ',vvaux[?⍴vvaux],')'
[13]  →pula2
[14] np2:p2←' ',vvaux[?⍴vvaux]
[15] pula2:
[16]  →(1≠?5)/np3
[17]  p3←'(N ',(aux←vv[?⍴vv]),')'
[18]  →pu4
[19] np3:p3←' ',aux←vv[?⍴vv]
```

```
[20] pu4:vvaux←vv,vv menos aux
[21]  →(1≠?3)/np4
[22]  p4←'(N ',vvaux[?⍴vvaux],')'
[23]  →pu5
[24] np4:p4←' ',vvaux[?⍴vvaux]
[25] pu5:
[26]  →(i≠1)/ufaa
[27]  coma←'(',p1,' ','EOCEO'[?5],' ',p2,')'
[28] ufaa:
[29]  coma←'(',coma,'EOCEO'[?5],' (',p3,' ','EOCE'[?4],' ',p4,'))'
[30]  i←i+1
[31]  →t1
[32] vai:
[33]  →(qtdv≠2)/tenta3
[34]  p←1 1 0 0 ⋄ q←1 0 1 0
[35]  →juntara
[36] tenta3:
[37]  →(qtdv≠3)/tenta4
[38]  p←1 1 1 1 0 0 0 0 ⋄ q←1 1 0 0 1 1 0 0 ⋄ r←1 0 1 0 1 0 1 0
[39]  →juntara
[40] tenta4:
[41]  →(qtdv≠4)/tenta5
[42]  p←(8⍴1),8⍴0 ⋄ q←16⍴(4⍴1),4⍴0 ⋄ r←16⍴(2⍴1),2⍴0 ⋄ s←16⍴1 0
[43]  →juntara
[44] tenta5:'qtdv invalido... saindo'
[45]  →0
[46] juntara:rx←3⍴0
[47] ⍝ r1
[48]  →(qtdv=qtcon←('p'∈coma)+('q'∈coma)+('r'∈coma)+('s'∈coma))/fiuz
[49]  □←'#'
[50]  →denovo
[51] fiuz:
[52]  rx[1]←⊂coma
[53]  rx[2]←⊂'FV'[1+≠coma]
[54]  ziza←tradlog90 coma
[55]  →(150>⍴ziza)/deucerto
[56]  □←'o'
[57]  →denovo
[58] deucerto:
[59]  rx[3]←⊂ziza
------------------------------------------------------------
[0]  r←a igual b;maior
[1]  maior←(1↑⍴a)⌈1↑⍴b
[2]  a←maior↑a ⋄ b←maior↑b
[3]  r←maior=+/a=b
------------------------------------------------------------
[0]  r←a menos b
[1]  r←(a≠b)/a
------------------------------------------------------------
[ 0]  r←quem replace depara;de;i;j;k;onde;para
[ 1] ⍝ forma de usar: texto replace 'strin-de' 'string para'
[ 2] ⍝ obviamente eles nao precisam ter o mesmo tamanho
[ 3]  de←,⊃depara[1] ⋄ para←,⊃depara[2]
[ 4]  i←1 ⋄ r←((1↑⍴quem),200)⍴' '
[ 5] t1:→(i>1↑⍴quem)/fim
[ 6]  →(0=∨/onde←de⍷quem[i;])/naotem
[ 7]  j←1 ⋄ k←1
[ 8] t2:→(k>⍴quem[i;])/acabou
[ 9]  →(onde[k]=0)/soma
[10]  r[i;(j-1)+⍳⍴para]←para
[11]  j←j+⍴para
[12]  k←k+⍴de
[13]  →t2
```

```
[14] soma:r[i;j]←quem[i;k]
[15]  k←k+1
[16]  →(j=j←j+1)/t2
[17] naotem:r[i;]←200↑quem[i;]
[18] acabou:→(i=i←i+1)/t1
[19] fim:r←trim4 r
-------------------------------------------------------------
[ 0]  r←retra8 x
[ 1]  x←x replace'fimse ' '\ENDIF '
[ 2]  x←x replace'|' '\STATE '
[ 3]  x←x replace'se ' '\IF{'
[ 4]  x←x replace'entao' '}'
[ 5]  x←x replace'RRRR <- ' '\STATE escreva '
[ 6]  x←x replace'<-' '$\gets$'
[ 7]  x←x replace'<' '$<$'
[ 8]  x←x replace'∨' '$\lor$'
[ 9]  x←x replace'∧' '$\land$'
[10]  x←x replace'>' '$>$'
[11]  x←x replace'≥' '$\ge$'
[12]  x←x replace'≤' '$\le$'
[13]  x←x replace'≠' '$\neq$'
[14]  x←x replace'~' '$\til$'
[15]  x←x replace'⌈' '$\lceil$'
[16]  x←x replace'÷' '$\div$'
[17]  x←x replace'fimse' '\ENDIF'
[18]  x←x replace'senao' '\ELSE'
[19]  x←x replace'×' '$\times$'
[20]  x←((1↑⍴x),60)↑x
[21]  x[1;]←60↑'\begin{algorithmic}[1]'
[22]  x[1↑⍴x;]←60↑'\end{algorithmic}'
[23]  r←x
-------------------------------------------------------------
[ 0]  r←tradlog90 x;i;y
[ 1]  i←1
[ 2]  y←''
[ 3] t1:→(i>⍴x)/fim
[ 4]  →(x[i]='E')/ehe
[ 5]  →(x[i]='O')/eho
[ 6]  →(x[i]='B')/ehb
[ 7]  →(x[i]='C')/ehc
[ 8]  →(x[i]='N')/ehn
[ 9]  y←y,x[i]
[10]  →soma
[11] ehe:y←y,'\land '
[12]  →soma
[13] eho:y←y,'\lor '
[14]  →soma
[15] ehc:y←y,'\to '
[16]  →soma
[17] ehb:
[18]  'apareceu B nao pode...'
[19]  →0
[20]  y←y,'\leftrightarrow '
[21]  →soma
[22] ehn:y←y,'\sim '
[23]  →soma
[24] soma:i←i+1
[25]  →t1
[26] fim:r←'$',y,'$'
-------------------------------------------------------------
[0]  r←trim4 x;z
[1] ⍝f corta as colunas direitas que sao brancos
[2]  →(2≠⍴⍴x)/erro
```

```
[3]  z←+/[1]x=' '
[4]  r←(z≠1↑⍴x)/[2]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
-------------------------------------------------------------
[ 0]  r←vetoriza x;i;rr;letra;aspa;nume
[ 1] ⍝ versao 1.07
[ 2]  aspa←'''' ⋄ nume←'0123456789'
[ 3]  letra←'abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ()',aspa
[ 4] ⍝ tira os brancos
[ 5]  i←1 ⋄ rr←1
[ 6] t2:→(i>¯2+⍴x)/vaiz
[ 7]  →((x[i+1]=' ')∧(x[i]∈letra)∧(x[i+2]∈nume))/mataz
[ 8]  →((x[i+1]=' ')∧(x[i]∈nume)∧(x[i+2]∈letra))/mataz
[ 9]  →((x[i]∈letra)∧(x[i+2]∈letra))/naopode
[10]  →(((x[1]='p')∨(x[1]='P'))∧(x[2]='a')∧(x[i]∈letra)∧((x[i+2]='-')∨(x[i+2]='¯')))/naopo
      de  ⍝ comando incluido para o passo negativo
[11] ⍝ →((x[i]∈letra)∧((x[i+2]='-')∨(x[i+2]='¯')))/naopode  ⍝ comando incluido para o pass
      o negativo
[12] ⍝ os 3 testes iniciais (pPa) foram incluidos porque o comando acima estava
[13] ⍝ fazendo besteira: vetoriza 'A <- A -1' estava gerando 4 tokens e nao 3.
[14] ⍝ correcao em 13/03/12 - P.kantek
[15]  →(x[i+1]≠' ')/naopode
[16] pode:rr←rr,0
[17]  →(i=i←i+1)/t2
[18] mataz:x[i+1]←'!'
[19] naopode:rr←rr,1
[20]  →(i=i←i+1)/t2
[21] vaiz:rr←rr,1
[22]  x←rr/x
[23] ⍝ separa o sinal <-
[24]  →(2≠+/'<-'∈x)/faca
[25]  i←1 ⋄ rr←⍳0
[26] t1:→(i>¯1+⍴x)/vaix
[27]  →((x[i]='<')∧(x[i+1]='-'))/esim
[28]  rr←rr,1
[29]  →(i=i←i+1)/t1
[30] esim:rr←rr,0 1 1 0
[31]  →(i=i←i+2)/t1
[32] vaix:rr←rr,1
[33]  x←rr⌿x
[34] faca:x←'! 'edit x
[35]  r←(~' '=x)⊂x
-------------------------------------------------------------
[ 0]  opesq vivo090a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL090   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⌿apl2⌿',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA090←ajusta80 FOLHALA090
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA090)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⌿apl2⌿VIVOBLO1'
[13]  xk←1 ⋄ resu←0 50⍴' '
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←95 80⍴' '
[16]  f←FOLHALA090
```

```
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.07
[20]  esse[4;]←80↑ylu[xk;ι6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;ι4]=((1↑⍴f),4)⍴'↖#05')/ι1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+ι30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[94;ι10]←'@',esse[6;5+ι3],esse[4;1+ι5],'@'
[32]  esse[95;]←80↑esse[6;5+ι3],'-',esse[4;1+ι5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera90a
[35]  esse[7+ι10;]←xx[ι10;]
[36]  resp←(3 0⍕resp),':',30↑xx[11;]
[37]  xx←gera90b
[38]  esse[17+ι4×19;]←xx[ι76;]
[39]  resp←resp,16↑,xx[77;]
[40]  resu←resu,[1]1 50⍴resp
[41]  acuja←(f[;2]='#')/ι1↑⍴f
[42]  f[acuja;ι80]←esse[±,f[acuja;3 4],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'↖clearpage'
[44]  ⎕←(⍕xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+⍴f)⍴' '
[47]  →(1=≡n)/elafa
[48]  upag[1;]←(1↓⍴upag)↑'↖begin{verbatim}'
[49]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[50]  upag[2+ι1↑⍴resu;ι50]←resu
[51]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'↖end{verbatim}'
[52]  →terminando
[53] elafa:aaa←(ylu[;ι36],0 4↓resu)
[54]  lixonol←aaa ⎕FM('c:↖apl2↖',((~⍬∧↖⍬EVENTO=' ')/EVENTO),'.gpa')
[55]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[56] terminando:
[57]  upag[1↑⍴upag;]←(1↓⍴upag)↑'↖end{document}'
[58]  relat[1↑⍴relat;;]←upag
[59]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[60]  lixonol←lixonol ⎕FM'c:↖apl2↖',((~⍬∧↖⍬EVENTO=' ')/EVENTO),'.tex'
[61]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[62]  'Arquivo(s) criado(s) com o nome de c:↖apl2↖',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo093

```
[ 0]  x←geracaso093;e01;e02;e03;e04;e05;e06;e07;e08;e09;e10;e11;e12;e13;e14;e15;e16;e17;e1
      8;e19;e20
[ 1]  r←64 80⍴' '
[ 2]  x←64 80⍴' '
[ 3]  x[ι4;]←4 80↑q01[e01←4?1↑⍴q01;]
[ 4]  r[ι4;]←4 80↑r01[e01;]
[ 5]  x[4+ι3;]←3 80↑q02[e02←3?1↑⍴q02;]
[ 6]  r[4+ι3;]←3 80↑r02[e02;]
[ 7]  x[7+ι3;]←3 80↑q03[e03←3?1↑⍴q03;]
[ 8]  r[7+ι3;]←3 80↑r03[e03;]
[ 9]  x[10+ι3;]←3 80↑q04[e04←3?1↑⍴q04;]
[10]  r[10+ι3;]←3 80↑r04[e04;]
```

```
[11]  x[13+⍳3;]←3 80↑q05[e05←3?1↑⍴q05;]
[12]  r[13+⍳3;]←3 80↑r05[e05;]
[13]  x[16+⍳2;]←2 80↑q06[e06←2?1↑⍴q06;]
[14]  r[16+⍳2;]←2 80↑r06[e06;]
[15]  x[18+⍳2;]←2 80↑q07[e07←2?1↑⍴q07;]
[16]  r[18+⍳2;]←2 80↑r07[e07;]
[17]  x[20+⍳2;]←2 80↑q08[e08←2?1↑⍴q08;]
[18]  r[20+⍳2;]←2 80↑r08[e08;]
[19]  x[22+⍳2;]←2 80↑q09[e09←2?1↑⍴q09;]
[20]  r[22+⍳2;]←2 80↑r09[e09;]
[21]  x[24+⍳4;]←4 80↑q10[e10←4?1↑⍴q10;]
[22]  r[24+⍳4;]←4 80↑r10[e10;]
[23]  x[28+⍳2;]←2 80↑q11[e11←2?1↑⍴q11;]
[24]  r[28+⍳2;]←2 80↑r11[e11;]
[25]  x[30+⍳4;]←4 80↑q12[e12←4?1↑⍴q12;]
[26]  r[30+⍳4;]←4 80↑r12[e12;]
[27]  x[34+⍳5;]←5 80↑q13[e13←5?1↑⍴q13;]
[28]  r[34+⍳5;]←5 80↑r13[e13;]
[29]  x[39+⍳4;]←4 80↑q14[e14←4?1↑⍴q14;]
[30]  r[39+⍳4;]←4 80↑r14[e14;]
[31]  x[43+⍳5;]←5 80↑q15[e15←5?1↑⍴q15;]
[32]  r[43+⍳5;]←5 80↑r15[e15;]
[33]  x[48+⍳4;]←4 80↑q16[e16←4?1↑⍴q16;]
[34]  r[48+⍳4;]←4 80↑r16[e16;]
[35]  x[52+⍳4;]←4 80↑q17[e17←4?1↑⍴q17;]
[36]  r[52+⍳4;]←4 80↑r17[e17;]
[37]  x[56+⍳3;]←3 80↑q18[e18←3?1↑⍴q18;]
[38]  r[56+⍳3;]←3 80↑r18[e18;]
[39]  x[59+⍳3;]←3 80↑q19[e19←3?1↑⍴q19;]
[40]  r[59+⍳3;]←3 80↑r19[e19;]
[41]  x[62+⍳2;]←2 80↑q20[e20←2?1↑⍴q20;]
[42]  r[62+⍳2;]←2 80↑r20[e20;]
------------------------------------------------------------
[ 0]  opesq vivo093a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo093 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  RESPOSTA←0 80⍴' '
[ 8]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 9]  EVENTO←'PL093   '
[10]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[11]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[12]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[13] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[14]  ylu←n grupo ylu
[15] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[28]  →(36=1↓⍴ylu)/zebra
[29]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[30]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[31]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[32]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[33]  →maiszebra
[34] ⍝⍝⍝
```

```
[12]  r[13+⍳3;]←3 80↑r05[e05;]
[13]  x[16+⍳2;]←2 80↑q06[e06←2?1↑⍴q06;]
[14]  r[16+⍳2;]←2 80↑r06[e06;]
[15]  x[18+⍳2;]←2 80↑q07[e07←2?1↑⍴q07;]
[16]  r[18+⍳2;]←2 80↑r07[e07;]
[17]  x[20+⍳2;]←2 80↑q08[e08←2?1↑⍴q08;]
[18]  r[20+⍳2;]←2 80↑r08[e08;]
[19]  x[22+⍳6;]←6 80↑q09[e09←6?1↑⍴q09;]
[20]  r[22+⍳6;]←6 80↑r09[e09;]
[21]  x[28+⍳3;]←3 80↑q10[e10←3?1↑⍴q10;]
[22]  r[28+⍳3;]←3 80↑r10[e10;]
[23]  x[31+⍳4;]←4 80↑q11[e11←4?1↑⍴q11;]
[24]  r[31+⍳4;]←4 80↑r11[e11;]
[25]  x[35+⍳2;]←2 80↑q12[e12←2?1↑⍴q12;]
[26]  r[35+⍳2;]←2 80↑r12[e12;]
[27]  x[38;]←1 80↑q13[e13←1?1↑⍴q13;]
[28]  r[38;]←1 80↑r13[e13;]
[29]  x[38+⍳2;]←2 80↑q14[e14←2?1↑⍴q14;]
[30]  r[38+⍳2;]←2 80↑r14[e14;]
------------------------------------------------------------
[ 0]  opesq vivo094a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo094 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  RESPOSTA←0 80⍴' '
[ 8]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 9]  EVENTO←'PL094   '
[10]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[11]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[12]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[13] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[14]  ylu←n grupo ylu
[15] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[41]  esse[49;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[42] inica:
[43]  xx←geracaso094
[44]  RESPOSTA←RESPOSTA,[1](1 80⍴80↑'Folha ',⍕resp),[1]r,[1]1 80⍴80↑10⍴'-'
[45]  esse[7+⍳40;]←40 80↑xx
[46]  resu←resu,[1]1 1⍴resp
[47]  acuja←(f[;2]='#')/⍳1↑⍴f
[48]  f[acuja;⍳80]←esse[⌷,f[acuja;3 4],' ';]
[49]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[50]  ⍞←(⍕xk←xk+1),'-'
[51]  →testa
[52] fim:upag←(1 0+⍴f)⍴' '
[53]  →(1=≡n)/elafa
[54]  →terminando
[55]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[56]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[57]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍕resu
[58]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[59]  →terminando
[60] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[61] elafa:aaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[62] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[63]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[64]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[65] terminando:
[66]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[67]  relat[1↑⍴relat;;]←upag
[68]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[69] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[70]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[71]  lixonol←⍞EX 2 10⍴'quantos   matriz    '
[72]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
[73]  'se quiser, preserva a variavel RESPOSTA neste ws'
------------------------------------------------------------
```

vivo095

```
[0]  AVISO
[1]  'Limitado a 70 folhas '
[2]  ' '
[3]  ' alterei as f. 095e, 095b e 095f para limitar a correcao as '
[4]  ' 4 primeiras respostas  -  em abr/17. '
------------------------------------------------------------
[0]  r←a B b
[1]  r←a=b
------------------------------------------------------------
[0]  r←a C b
[1]  r←(a=b)∨((a=0)∧(b=1))
------------------------------------------------------------
[0]  r←a E b
[1]  r←a∧b
------------------------------------------------------------
[0]  r←a L b
[1]  r←a B b
------------------------------------------------------------
[0]  r←N a
[1]  r←~a
------------------------------------------------------------
[0]  r←a O b
[1]  r←a∨b
------------------------------------------------------------
[0]  r←a T b
```

```
[1]  r←a C b
-------------------------------------------------------------
[0]  r←avalianum x
[1]  x[(x='F')/ιρx]←'0'
[2]  x[(x='V')/ιρx]←'1'
[3]  r←+/(⍋((2×ρx)ρ1 0)⍀x)×(2*⍳¯1+ιρx)
-------------------------------------------------------------
[ 0]  r←corta75 x;ind
[ 1]  r←0 75ρ' '
[ 2]  →((ρx)<75)/ultimo
[ 3] testa:ind←75
[ 4] vorta:→(x[ind]=' ')/ok1
[ 5]  ind←ind-1
[ 6]  →vorta
[ 7] ok1:r←r,[1]1 75ρ75↑ind↑x
[ 8]  x←ind↓x
[ 9]  →((ρx)<75)/ultimo
[10]  →testa
[11] ultimo:r←r,[1]1 75ρ75↑x
[12]  r←' ',[2]r
-------------------------------------------------------------
[0]  cria2
[1]  p←1 1 0 0 ◇ q←1 0 1 0
-------------------------------------------------------------
[0]  g2
[1]  p←1 1 0 0
[2]  q←1 0 1 0
-------------------------------------------------------------
[0]  g3
[1]  p←1 1 1 1 0 0 0 0
[2]  q←1 1 0 0 1 1 0 0
[3]  r←1 0 1 0 1 0 1 0
-------------------------------------------------------------
[ 0]  r←geracaso;x;vf
[ 1]  r←11 150ρ' '
[ 2]  x←2 geratv 3
[ 3]  r[1;]←150↑⊃x[3]
[ 4]  r[11;ι4]←⊃x[2]
[ 5]  x←2 geratv 2
[ 6]  r[2;]←150↑⊃x[3]
[ 7]  r[11;5+ι4]←⊃x[2]
[ 8]  x←2 geratv 3
[ 9]  r[3;]←150↑⊃x[3]
[10]  r[11;10+ι4]←⊃x[2]
[11]  x←2 geratv 4
[12]  r[4;]←150↑⊃x[3]
[13]  r[11;15+ι4]←⊃x[2]
[14]  r[11;20]←'-'
[15]  x←3 geratv 3
[16]  r[5;]←150↑⊃x[3]
[17]  r[11;20+ι8]←⊃x[2]
[18]  x←3 geratv 3
[19]  r[6;]←150↑⊃x[3]
[20]  r[11;29+ι8]←⊃x[2]
[21]  x←3 geratv 4
[22]  r[7;]←150↑⊃x[3]
[23]  r[11;38+ι8]←⊃x[2]
[24]  r[11;47]←'-'
[25]  x←4 geratv 4
[26]  r[8;]←150↑⊃x[3]
[27]  r[11;47+ι16]←⊃x[2]
[28]  x←4 geratv 4
[29]  r[9;]←150↑⊃x[3]
```

```
[30]  r[11;64+⍳16]←⊃x[2]
[31]  x←4 geratv 5
[32]  r[10;]←150↑⊃x[3]
[33]  r[11;81+⍳16]←⊃x[2]
------------------------------------------------------------
[ 0]  r←geracaso095b;x;vf
[ 1]  r←11 150⍴' '
[ 2]  x←2 geratvb 2
[ 3]  r[1;]←150↑⊃x[3]
[ 4]  r[11;⍳4]←⊃x[2]
[ 5]  x←2 geratvb 2
[ 6]  r[2;]←150↑⊃x[3]
[ 7]  r[11;5+⍳4]←⊃x[2]
[ 8]  x←2 geratvb 2
[ 9]  r[3;]←150↑⊃x[3]
[10]  r[11;10+⍳4]←⊃x[2]
[11]  x←2 geratvb 2
[12]  r[4;]←150↑⊃x[3]
[13]  r[11;15+⍳4]←⊃x[2]
[14]  r[11;20]←'-'
[15]  x←3 geratvb 2
[16]  r[5;]←150↑⊃x[3]
[17] ⍝ r[11;20+⍳8]←⊃x[2]
[18]  r[11;20+⍳4]←4↑⊃x[2]
[19]  x←3 geratvb 2
[20]  r[6;]←150↑⊃x[3]
[21] ⍝ r[11;29+⍳8]←⊃x[2]
[22]  r[11;29+⍳4]←4↑⊃x[2]
[23]  x←3 geratvb 2
[24]  r[7;]←150↑⊃x[3]
[25] ⍝ r[11;38+⍳8]←⊃x[2]
[26]  r[11;38+⍳4]←4↑⊃x[2]
[27]  r[11;47]←'-'
[28]  x←3 geratvb 2
[29]  r[8;]←150↑⊃x[3]
[30] ⍝ r[11;47+⍳8]←⊃x[2]
[31]  r[11;47+⍳4]←4↑⊃x[2]
------------------------------------------------------------
[ 0]  r←geracaso095ef;x;vf
[ 1]  r←11 150⍴' '
[ 2]  x←2 geratv 3
[ 3]  r[1;]←150↑⊃x[3]
[ 4]  r[11;⍳4]←⊃x[2]
[ 5]  x←2 geratv 2
[ 6]  r[2;]←150↑⊃x[3]
[ 7]  r[11;5+⍳4]←⊃x[2]
[ 8]  x←2 geratv 3
[ 9]  r[3;]←150↑⊃x[3]
[10]  r[11;10+⍳4]←⊃x[2]
[11]  x←2 geratv 4
[12]  r[4;]←150↑⊃x[3]
[13]  r[11;15+⍳4]←⊃x[2]
[14]  r[11;20]←'-'
[15]  x←3 geratv 3
[16]  r[5;]←150↑⊃x[3]
[17] ⍝ r[11;20+⍳8]←⊃x[2]
[18]  r[11;20+⍳4]←4↑⊃x[2]
[19]  x←3 geratv 3
[20]  r[6;]←150↑⊃x[3]
[21] ⍝ r[11;29+⍳8]←⊃x[2]
[22]  r[11;29+⍳4]←4↑⊃x[2]
[23]  x←3 geratv 4
[24]  r[7;]←150↑⊃x[3]
```

```
[25] ⍝ r[11;38+⍳8]←⊃x[2]
[26]  r[11;38+⍳4]←4↑⊃x[2]
[27]  r[11;47]←'-'
[28]  x←4 geratv 4
[29]  r[8;]←150↑⊃x[3]
[30] ⍝ r[11;47+⍳16]←⊃x[2]
[31]  r[11;47+⍳4]←4↑⊃x[2]
[32]  x←4 geratv 4
[33]  r[9;]←150↑⊃x[3]
[34] ⍝ r[11;64+⍳16]←⊃x[2]
[35]  r[11;64+⍳4]←4↑⊃x[2]
[36]  x←4 geratv 5
[37]  r[10;]←150↑⊃x[3]
[38] ⍝ r[11;81+⍳16]←⊃x[2]
[39]  r[11;81+⍳4]←4↑⊃x[2]
-------------------------------------------------------------
[ 0]  r←geracaso095h;z;i;ca
[ 1]  z←20 158⍴' '
[ 2]  i←1
[ 3] t1:→(i>20)/fim
[ 4]  ca←(1+?2)geratv(1+?2)
[ 5]  z[i;⍳150]←150↑⊃ca[3]
[ 6]  z[i;150+⍳8]←8 0⍕avalianum⊃ca[2]
[ 7]  i←i+1
[ 8]  →t1
[ 9] fim:r←z
-------------------------------------------------------------
[ 0]  r←g geraqp n;a;b;xx
[ 1] ⍝ esta funcao gera uma questao de prova com o numero n
[ 2]  r←0 76⍴' '
[ 3]  r←r,[1]1 76⍴76↑'$QE',(5 0⍕n),'lm1     ',(2 0⍕g),'tabela verdade - WS=095'
[ 4]  r←r,[1]1 76⍴76↑' Construa a tabela verdade para a proposiçto $A$ abaixo.'
[ 5]  r←r,[1]1 76⍴76↑' Use as proposiçAes parciais $p,q,r,s,...$ nessa ordem'
[ 6]  r←r,[1]1 76⍴76↑' { \normalsize  $A=$'
[ 7]  a←3
[ 8]  b←3
[ 9]  xx←a geratv b
[10]  r←r,[1]corta75⊃xx[3]
[11]  r←r,[1]1 76⍴76↑' } '
[12]  r←r,[1]1 76⍴76↑'$QR',(5 0⍕n),'lm1     '
[13]  r←r,[1]1 76⍴76↑'A tabela verdade e: ',⊃xx[2]
-------------------------------------------------------------
[ 0]  rx←qtdv geratv qtdops;coma;i;vv;p1;p2;r1;p;q;r;s;j;vvaux;aux;p3;p4;ziza;qtcon
[ 1] ⍝ gera uma tabela verdade contendo uma expressao envolvendo qtdv variaveis e qtdops o
       peracoes logica
[ 2] denovo:coma←''
[ 3]  i←1
[ 4]  vv←qtdv↑'pqrs'
[ 5] t1:→(i≥qtdops)/vai
[ 6]  →(1≠?5)/naopoe
[ 7]  p1←'(N ',(aux←vv[?⍴vv]),')'
[ 8]  →pula
[ 9] naopoe:p1←' ',aux←vv[?⍴vv]
[10] pula:vvaux←vv menos aux
[11]  →(1≠?4)/np2
[12]  p2←'(N ',vvaux[?⍴vvaux],')'
[13]  →pula2
[14] np2:p2←' ',vvaux[?⍴vvaux]
[15] pula2:
[16]  →(1≠?5)/np3
[17]  p3←'(N ',(aux←vv[?⍴vv]),')'
[18]  →pu4
[19] np3:p3←' ',aux←vv[?⍴vv]
```

```
[20] pu4:vvaux←vv,vv menos aux
[21]  →(1≠?3)/np4
[22]  p4←'(N ',vvaux[?ρvvaux],')'
[23]  →pu5
[24] np4:p4←' ',vvaux[?ρvvaux]
[25] pu5:
[26]  →(i≠1)/ufaa
[27]  coma←'(',p1,' ','EOCBEO'[?6],' ',p2,')'
[28] ufaa:
[29]  coma←'(',coma,'EOCBEO'[?6],' (',p3,' ','EOCBE'[?5],' ',p4,'))'
[30]  i←i+1
[31]  →t1
[32] vai:
[33]  →(qtdv≠2)/tenta3
[34]  p←1 1 0 0 ⋄ q←1 0 1 0
[35]  →juntara
[36] tenta3:
[37]  →(qtdv≠3)/tenta4
[38]  p←1 1 1 1 0 0 0 0 ⋄ q←1 1 0 0 1 1 0 0 ⋄ r←1 0 1 0 1 0 1 0
[39]  →juntara
[40] tenta4:
[41]  →(qtdv≠4)/tenta5
[42]  p←(8ρ1),8ρ0 ⋄ q←16ρ(4ρ1),4ρ0 ⋄ r←16ρ(2ρ1),2ρ0 ⋄ s←16ρ1 0
[43]  →juntara
[44] tenta5:'qtdv invalido... saindo'
[45]  →0
[46] juntara:rx←3ρ0
[47] ⍝ r1
[48]  →(qtdv=qtcon←('p'∈coma)+('q'∈coma)+('r'∈coma)+('s'∈coma))/fiuz
[49]  ⎕←'#'
[50]  →denovo
[51] fiuz:
[52]  rx[1]←⊂coma
[53]  rx[2]←⊂'FV'[1+≢coma]
[54]  ziza←tradlog coma
[55]  →(150>ρziza)/deucerto
[56]  ⎕←'o'
[57]  →denovo
[58] deucerto:
[59]  rx[3]←⊂ziza
------------------------------------------------------------
[ 0]  rx←qtdv geratvb qtdops;coma;i;vv;p1;p2;r1;p;q;r;s;j;vvaux;aux;p3;p4;ziza;qtcon
[ 1] ⍝ gera uma tabela verdade contendo uma expressao envolvendo qtdv variaveis e qtdops o
       peracoes logica
[ 2] denovo:coma←''
[ 3]  i←1
[ 4]  vv←qtdv↑'pqrs'
[ 5] t1:→(i≥qtdops)/vai
[ 6]  →(1≠?5)/naopoe
[ 7]  p1←'(N ',(aux←vv[?ρvv]),')'
[ 8]  →pula
[ 9] naopoe:p1←' ',aux←vv[?ρvv]
[10] pula:vvaux←vv menos aux
[11]  →(1≠?4)/np2
[12]  p2←'(N ',vvaux[?ρvvaux],')'
[13]  →pula2
[14] np2:p2←' ',vvaux[?ρvvaux]
[15] pula2:
[16]  →(1≠?5)/np3
[17]  p3←'(N ',(aux←vv[?ρvv]),')'
[18]  →pu4
[19] np3:p3←' ',aux←vv[?ρvv]
[20] pu4:vvaux←vv,vv menos aux
```

```
[21]  →(1≠?3)/np4
[22]  p4←'(N ',vvaux[?ρvvaux],')'
[23]  →pu5
[24] np4:p4←' ',vvaux[?ρvvaux]
[25] pu5:
[26]  →(i≠1)/ufaa
[27]  coma←'(',p1,' ','EOCBEO'[?6],' ',p2,')'
[28] ufaa:
[29]  coma←coma,'EOCBEO'[?6],' (',p3,' ','EOCBE'[?5],' ',p4,')'
[30]  i←i+1
[31]  →t1
[32] vai:
[33]  →(qtdv≠2)/tenta3
[34]  p←1 1 0 0 ⋄ q←1 0 1 0
[35]  →juntara
[36] tenta3:
[37]  →(qtdv≠3)/tenta4
[38]  p←1 1 1 1 0 0 0 0 ⋄ q←1 1 0 0 1 1 0 0 ⋄ r←1 0 1 0 1 0 1 0
[39]  →juntara
[40] tenta4:
[41]  →(qtdv≠4)/tenta5
[42]  p←(8ρ1),8ρ0 ⋄ q←16ρ(4ρ1),4ρ0 ⋄ r←16ρ(2ρ1),2ρ0 ⋄ s←16ρ1 0
[43]  →juntara
[44] tenta5:'qtdv invalido... saindo'
[45]  →0
[46] juntara:rx←3ρ0
[47] ⍝ r1
[48]  →(qtdv=qtcon←('p'∈coma)+('q'∈coma)+('r'∈coma)+('s'∈coma))/fiuz
[49]  ⎕←'#'
[50]  →denovo
[51] fiuz:
[52]  rx[1]←⊂coma
[53]  rx[2]←⊂'FV'[1+≤coma]
[54]  ziza←tradlog coma
[55]  →(150>ρziza)/deucerto
[56]  ⎕←'o'
[57]  →denovo
[58] deucerto:
[59]  rx[3]←⊂ziza
------------------------------------------------------------
[0]  r←a menos b
[1]  r←(a≠b)/a
------------------------------------------------------------
[ 0]  r←tradlog x;i;y
[ 1]  i←1
[ 2]  y←''
[ 3] t1:→(i>ρx)/fim
[ 4]  →(x[i]='E')/ehe
[ 5]  →(x[i]='O')/eho
[ 6]  →(x[i]='B')/ehb
[ 7]  →(x[i]='C')/ehc
[ 8]  →(x[i]='N')/ehn
[ 9]  y←y,x[i]
[10]  →soma
[11] ehe:y←y,'∧land '
[12]  →soma
[13] eho:y←y,'∧lor '
[14]  →soma
[15] ehc:y←y,'∧to '
[16]  →soma
[17] ehb:y←y,'∧leftrightarrow '
[18]  →soma
[19] ehn:y←y,'∧sim '
```

```
[20]  →soma
[21] soma:i←i+1
[22]  →t1
[23] fim:r←'$',y,'$'
-------------------------------------------------------------
[ 0]  opesq vivo095b n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL095b  '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA095b←150 ajusta FOLHALA095b
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA095b)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 101⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←19 150⍴' '
[16]  f←FOLHALA095b
[17]  esse[1;]←150↑dhx[1;]
[18]  esse[2;]←150↑dhx[2;]
[19]  esse[3;]←150↑4 2⍎VERSAOa←1.09
[20]  esse[4;]←150↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,150)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),150)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←150↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←150↑EVENTO
[30]  esse[7;]←150↑(resp←3 0⍎xk),' ',opesq
[31]  esse[18;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[19;]←150↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracaso095b
[35]  esse[7+⍳10;]←10 150↑xx[⍳10;]
[36]  resp←resp,'=',xx[11;⍳97]
[37]  resu←resu,[1]1 101⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;]←esse[⍤,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⍞←(⍎xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳101]←resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[51] elafa:aaa←(ylu[;⍳36],0 3↓resu)
[52] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[53]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[54]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[55] terminando:
```

```
[56]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[57]  relat[1↑⍴relat;;]←upag
[58]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[59] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[60]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[61]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[62]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo095e n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL095e  '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA095e←150 ajusta FOLHALA095e
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA095e)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 101⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←19 150⍴' '
[16]  f←FOLHALA095e
[17]  esse[1;]←150↑dhx[1;]
[18]  esse[2;]←150↑dhx[2;]
[19]  esse[3;]←150↑4 2⍎VERSAOa←1.06
[20]  esse[4;]←150↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,150)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),150)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←150↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←150↑EVENTO
[30]  esse[7;]←150↑(resp←3 0⍎xk),' ',opesq
[31]  esse[18;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[19;]←150↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracaso095ef
[35]  esse[7+⍳10;]←10 150↑xx[⍳10;]
[36]  resp←resp,'=',xx[11;⍳97]
[37]  resu←resu,[1]1 101⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⍞←(⍎xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳101]←resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[51] elafa:aaa←(ylu[;⍳36],0 3↓resu)
[52] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
```

```
[53]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[54]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[55] terminando:
[56]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[57]  relat[1↑⍴relat;;]←upag
[58]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[59] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[60]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[61]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[62]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo095f n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL095f  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA095f←150 ajusta FOLHALA095f
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA095f)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 101⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←19 150⍴' '
[16]  f←FOLHALA095f
[17]  esse[1;]←150↑dhx[1;]
[18]  esse[2;]←150↑dhx[2;]
[19]  esse[3;]←150↑4 2⍕VERSAOa←1.9
[20]  esse[4;]←150↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,150)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),150)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←150↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←150↑EVENTO
[30]  esse[7;]←150↑(resp←3 0⍕xk),' ',opesq
[31]  esse[18;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[19;]←150↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracaso095ef
[35]  esse[7+⍳10;]←10 150↑xx[⍳10;]
[36]  resp←resp,'=',xx[11;⍳97]
[37]  resu←resu,[1]1 101⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⍞←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳101]←resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
```

```
[50] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[51] elafa:aaa←(ylu[;⍳36],0 3↓resu)
[52] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[53]  lixonol←aaa ∆FM('c:⍀apl2⍀',((~⍷∧⍷⍷EVENTO=' ')/EVENTO),'.gpa')
[54]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[55] terminando:
[56]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[57]  relat[1↑⍴relat;;]←upag
[58]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[59] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[60]  lixonol←lixonol ∆FM'c:⍀apl2⍀',((~⍷∧⍀⍷⍷EVENTO=' ')/EVENTO),'.tex'
[61]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[62]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo095h n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL095h  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←∆FM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA095h←150 ajusta FOLHALA095h
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA095h)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑∆FM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 21⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←29 150⍴' '
[16]  f←FOLHALA095h
[17]  esse[1;]←150↑dhx[1;]
[18]  esse[2;]←150↑dhx[2;]
[19]  esse[3;]←150↑4 2⍕VERSAOa←1.1
[20]  esse[4;]←150↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,150)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),150)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←150↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←150↑EVENTO
[30]  esse[7;]←150↑(⍕resp←xk),' ',opesq
[31]  esse[28;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[29;]←150↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracaso095h
[35]  esse[7+⍳20;⍳149]←20 149↑xx[;⍳149]
[36]  esse[7+⍳20;150]←20 1⍴'&'
[37]  resp←resp,⍪,xx[;150+⍳8]
[38]  resu←resu,[1]1 21⍴resp
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;]←esse[⍪,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[42]  ⍞←(⍕xk←xk+1),'-'
[43]  →testa
[44] fim:
[45]  x←resu
[46]  upag←(1 0+⍴f)⍴' '
```

```
[47]  →(1=≡n)/elafa
[48]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[49]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[50]  upag[2+⍳1↑⍴resu;⍳92]←(4 0 8 0,(18⍴4 0),8 0,18⍴4 0)⍪resu
[51]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[52]  →terminando
[53] elafa:aaa←(ylu[;⍳36],4 0⍪0 1↓resu)
[54]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[55]  '!!!!!  Arquivo GPA com ',(⍪1↑⍴aaa),' linhas e ',(⍪1↓⍴aaa),' colunas'
[56] terminando:
[57]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[58]  relat[1↑⍴relat;;]←upag
[59]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[60]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[61]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[62]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo096

```
[ 0]  AVISO
[ 1]  'Limitado a 70 folhas '
[ 2]  ' '
[ 3]  ' Foram criadas as seguintes funcoes aqui:'
[ 4]  'alisa text = transforma text (uma tripa) em 3x79 caracteres'
[ 5]  'criamp ⍳3 = gera um exemplo correto de modus ponens. 1=simples, 2=misto 3=composto'
[ 6]  'criamt ⍳3 = gera um exemplo correto de modus tolens. 1=simples, 2=misto 3=composto'
[ 7]  'crianada ⍳3 = gera um exemplo correto de nada. 1=simples, 2=misto 3=composto'
[ 8]  ' '
[ 9]  ' variaveis gerataut complexidade = gera tautologia de variaveis e complexidade. ex:
       2 gerataut 2'
[10]  ' variaveis geracontr complexidade = gera contradicao de variaveis e complexidade. e
      x: 2 geracontr 2'
[11]  ' variaveis geraconting complexidade = gera contingencia de variaveis e complexidade
      . ex: 2 geraconting 2'
[12]  ' '
[13]  'limites maximos 4 geraxxxx 7 (e 7 demora...)'
[14]  ' para ver em linguagem logica faca: mos96 2 gerataut 2...'
------------------------------------------------------------
[0]  r←a B b
[1]  r←a=b
------------------------------------------------------------
[0]  r←a C b
[1]  r←(a=b)∨((a=0)∧(b=1))
------------------------------------------------------------
[0]  r←a E b
[1]  r←a∧b
------------------------------------------------------------
[0]  r←N a
[1]  r←~a
------------------------------------------------------------
[0]  r←a O b
[1]  r←a∨b
------------------------------------------------------------
[ 0]  r←corta75 x;ind
[ 1]  r←0 75⍴' '
[ 2]  →((⍴x)<75)/ultimo
[ 3] testa:ind←75
[ 4] vorta:→(x[ind]=' ')/ok1
[ 5]  ind←ind-1
[ 6]  →vorta
[ 7] ok1:r←r,[1]1 75⍴75↑ind↑x
```

```
[ 8]  x←ind↓x
[ 9]  →((⍴x)<75)/ultimo
[10]  →testa
[11] ultimo:r←r,[1]1 75⍴75↑x
[12]  r←' ',[2]r
-------------------------------------------------------------
[ 0]  r←criamp sc;ic;is;cara
[ 1]  →(sc=3)/composta
[ 2]  →(sc=2)/meioameio
[ 3] ⍝simples
[ 4]  is←2?(⍴CS)[2]
[ 5]  r←'(se ',(trim CS[1;is[1];]),' entto ',(trim CS[1;is[2];]),') e ',(trim CS[1;is[1];]
      ),'. Logo ',(trim CS[1;is[2];])
[ 6]  →0
[ 7] meioameio:
[ 8]  cara←?2
[ 9]  →(cara=2)/coroa
[10]  is←?(⍴CS)[2]
[11]  ic←?(⍴CC)[2]
[12]  r←'(se ',(trim CS[1;is;]),' entto ',(trim CC[1;ic;]),') e ',(trim CS[1;is;]),'. Logo
       ',(trim CC[1;ic;])
[13]  →0
[14] coroa:
[15]  is←?(⍴CS)[2]
[16]  ic←?(⍴CC)[2]
[17]  r←'(se ',(trim CC[1;ic;]),' entto ',(trim CS[1;is;]),') e ',(trim CC[1;ic;]),'. Logo
       ',(trim CS[1;is;])
[18]  →0
[19] composta:
[20]  ic←2?(⍴CC)[2]
[21]  r←'(se ',(trim CC[1;ic[1];]),' entto ',(trim CC[1;ic[2];]),') e ',(trim CC[1;ic[1];]
      ),'. Logo ',(trim CC[1;ic[2];])
-------------------------------------------------------------
[ 0]  r←criamt sc;ic;is;cara
[ 1]  →(sc=3)/composta
[ 2]  →(sc=2)/meioameio
[ 3] ⍝simples
[ 4]  is←2?(⍴CS)[2]
[ 5]  r←'(se ',(trim CS[1;is[1];]),' entto ',(trim CS[1;is[2];]),') e ',(trim CS[2;is[2];]
      ),'. Logo ',(trim CS[2;is[1];])
[ 6]  →0
[ 7] meioameio:
[ 8]  cara←?2
[ 9]  →(cara=2)/coroa
[10]  is←?(⍴CS)[2]
[11]  ic←?(⍴CC)[2]
[12]  r←'(se ',(trim CC[1;ic;]),' entto ',(trim CS[1;is;]),') e ',(trim CS[2;is;]),'. Logo
       ',(trim CC[2;ic;])
[13]  →0
[14] coroa:
[15]  is←?(⍴CS)[2]
[16]  ic←?(⍴CC)[2]
[17]  r←'(se ',(trim CS[1;is;]),' entto ',(trim CC[1;ic;]),') e ',(trim CC[2;ic;]),'. Logo
       ',(trim CS[2;is;])
[18]  →0
[19] composta:
[20]  ic←2?(⍴CC)[2]
[21]  r←'(se ',(trim CC[1;ic[1];]),' entto ',(trim CC[1;ic[2];]),') e ',(trim CC[2;ic[2];]
      ),'. Logo ',(trim CC[2;ic[1];])
-------------------------------------------------------------
[ 0]  r←crianada sc;ic;is;cara;comportada
[ 1]  comportada←?2
[ 2]  →(comportada=2)/malcomportada
```

```
[ 3]  →(sc=3)/composta
[ 4]  →(sc=2)/meioameio
[ 5] ⍝simples
[ 6]  is←2?(⍴CS)[2]
[ 7]  r←'(se ',(trim CS[1;is[1];]),' entto ',(trim CS[1;is[2];]),') e ',(trim CS[2;is[1];]
      ),'. Logo ',(trim CS[2;is[2];])
[ 8]  →0
[ 9] meioameio:
[10]  cara←?2
[11]  →(cara=2)/coroa
[12]  is←?(⍴CS)[2]
[13]  ic←?(⍴CC)[2]
[14]  r←'(se ',(trim CC[1;ic;]),' entto ',(trim CS[1;is;]),') e ',(trim CC[2;ic;]),'. Logo
       ',(trim CS[2;is;])
[15]  →0
[16] coroa:
[17]  is←?(⍴CS)[2]
[18]  ic←?(⍴CC)[2]
[19]  r←'(se ',(trim CS[1;is;]),' entto ',(trim CC[1;ic;]),') e ',(trim CS[2;is;]),'. Logo
       ',(trim CC[2;ic;])
[20]  →0
[21] composta:
[22]  ic←2?(⍴CC)[2]
[23]  r←'(se ',(trim CC[1;ic[1];]),' entto ',(trim CC[1;ic[2];]),') e ',(trim CC[2;ic[1];]
      ),'. Logo ',(trim CC[2;ic[2];])
[24]  →0
[25] malcomportada:
[26]  →(sc=3)/malcomposta
[27]  →(sc=2)/malmeioameio
[28]  is←2?(⍴CS)[2]
[29]  r←'(se ',(trim CS[1;is[1];]),' entto ',(trim CS[1;is[2];]),') e ',(trim CS[2;is[1];]
      ),'. Logo ',(trim CS[2;is[2];])
[30]  →0
[31] malmeioameio:
[32]  cara←?2
[33]  →(cara=2)/malcoroa
[34]  is←?(⍴CS)[2]
[35]  ic←?(⍴CC)[2]
[36]  r←'(se ',(trim CC[1;ic;]),' entto ',(trim CS[1;is;]),') e ',(trim CC[2;ic;]),'. Logo
       ',(trim CS[2;is;])
[37]  →0
[38] malcoroa:
[39]  is←?(⍴CS)[2]
[40]  ic←?(⍴CC)[2]
[41]  r←'(se ',(trim CS[1;is;]),' entto ',(trim CC[1;ic;]),') e ',(trim CS[1;is;]),'. Logo
       ',(trim CC[2;ic;])
[42]  →0
[43] malcomposta:
[44]  ic←2?(⍴CC)[2]
[45]  r←'(se ',(trim CC[1;ic[1];]),' entto ',(trim CC[1;ic[2];]),') e ',(trim CC[3;ic[1];]
      ),'. Logo ',(trim CC[4;ic[2];])
[46]  →0
-------------------------------------------------------------
[ 0]  r←geracaso096;x;y;ris;xis;yps;i;c;serah
[ 1]  y←x←30 80⍴' ' ⋄ ris←'' ⋄ xis←2 ⋄ yps←2
[ 2]  i←1
[ 3] t1:→(i>10)/ufa44
[ 4]  xis←(2 2 2 2 3 3 3 2 3)[?9]
[ 5]  yps←(2 2 2 2 3 3 3 4 4)[?9]
[ 6]  c←?3
[ 7]  →(c=1)/etaut
[ 8]  →(c=2)/econtr
[ 9]  x[(¯3+i×3)+⍳3;]←3 80⍴serah←corta75 xis geraconting yps
```

```
[10]  →(3≥1↑⍴serah)/oba33
[11]  □←'@'
[12]  →t1
[13] oba33:
[14]  ris←ris,'X'
[15]  →somax
[16] etaut:
[17]  x[(¯3+i×3)+⍳3;]←3 80↑serah←corta75 xis geratаut yps
[18]  →(3≥1↑⍴serah)/oba34
[19]  □←'&'
[20]  →t1
[21] oba34:
[22]  ris←ris,'T'
[23]  →somax
[24] econtr:
[25]  x[(¯3+i×3)+⍳3;]←3 80↑serah←corta75 xis geracontr yps
[26]  →(3≥1↑⍴serah)/oba35
[27]  □←'%'
[28]  →t1
[29] oba35:
[30]  ris←ris,'C'
[31] somax:i←i+1
[32]  →t1
[33] ufa44:
[34]  ris←ris,' '
[35]  i←1
[36] ufa:
[37]  →(i>10)/acab
[38]  c←?3
[39]  →(c=1)/mp
[40]  →(c=2)/mt
[41]  y[(¯3+i×3)+⍳3;]←3 80↑serah←corta75 crianada?3
[42]  →(3≥1↑⍴serah)/oba41
[43]  □←'@'
[44]  →ufa
[45] oba41:
[46]  ris←ris,'X'
[47]  →somay
[48] mp:
[49]  y[(¯3+i×3)+⍳3;]←3 80↑serah←corta75 criamp?3
[50]  →(3≥1↑⍴serah)/oba42
[51]  □←'*'
[52]  →ufa
[53] oba42:
[54]  ris←ris,'P'
[55]  →somay
[56] mt:
[57]  y[(¯3+i×3)+⍳3;]←3 80↑serah←corta75 criamt?3
[58]  →(3≥1↑⍴serah)/oba43
[59]  □←'@'
[60]  →ufa
[61] oba43:
[62]  ris←ris,'T'
[63] somay:i←i+1
[64]  →ufa
[65] acab:r←x,[1]y,[1]1 80⍴80↑ris
-------------------------------------------------------------
[0]  r←a geraconting n;z;cc
[1] volta:z←a geratv n
[2]  →((2*a)=+/'V'=cc←⊃z[2])/volta
[3]  →((2*a)=+/'F'=cc)/volta
[4] ok:r←⊃z[3]
-------------------------------------------------------------
```

```
[0]  r←a geracontr n;z
[1] volta:z←a geratv n
[2]  →((2*a)=+/'F'=⊃z[2])/ok
[3]  →volta
[4] ok:r←⊃z[3]
[5] ⍝ 'mostrando = ',⊃z[1]
------------------------------------------------------------
[0]  r←a gerataut n;z
[1] volta:z←a geratv n
[2]  →((2*a)=+/'V'=⊃z[2])/ok
[3]  →volta
[4] ok:r←⊃z[3]
------------------------------------------------------------
[ 0]  rx←qtdv geratv qtdops;coma;i;vv;p1;p2;r1;p;q;r;s;j;vvaux;aux;p3;p4;ziza;qtcon
[ 1] ⍝ gera uma tabela verdade contendo uma expressao envolvendo qtdv variaveis e qtdops o
      peracoes logica
[ 2] denovo:coma←''
[ 3]  i←1
[ 4]  vv←qtdv↑'pqrs'
[ 5] t1:→(i≥qtdops)/vai
[ 6]  →(1≠?5)/naopoe
[ 7]  p1←'(N ',(aux←vv[?⍴vv]),')'
[ 8]  →pula
[ 9] naopoe:p1←' ',aux←vv[?⍴vv]
[10] pula:vvaux←vv menos aux
[11]  →(1≠?4)/np2
[12]  p2←'(N ',vvaux[?⍴vvaux],')'
[13]  →pula2
[14] np2:p2←' ',vvaux[?⍴vvaux]
[15] pula2:
[16]  →(1≠?5)/np3
[17]  p3←'(N ',(aux←vv[?⍴vv]),')'
[18]  →pu4
[19] np3:p3←' ',aux←vv[?⍴vv]
[20] pu4:vvaux←vv,vv menos aux
[21]  →(1≠?3)/np4
[22]  p4←'(N ',vvaux[?⍴vvaux],')'
[23]  →pu5
[24] np4:p4←' ',vvaux[?⍴vvaux]
[25] pu5:
[26]  →(i≠1)/ufaa
[27]  coma←'(',p1,' ','EOCBEO'[?6],' ',p2,')'
[28] ufaa:
[29]  coma←'(',coma,'EOCBEO'[?6],' (',p3,' ','EOCBE'[?5],' ',p4,'))'
[30]  i←i+1
[31]  →t1
[32] vai:
[33]  →(qtdv≠2)/tenta3
[34]  p←1 1 0 0 ⋄ q←1 0 1 0
[35]  →juntara
[36] tenta3:
[37]  →(qtdv≠3)/tenta4
[38]  p←1 1 1 1 0 0 0 0 ⋄ q←1 1 0 0 1 1 0 0 ⋄ r←1 0 1 0 1 0 1 0
[39]  →juntara
[40] tenta4:
[41]  →(qtdv≠4)/tenta5
[42]  p←(8⍴1),8⍴0 ⋄ q←16⍴(4⍴1),4⍴0 ⋄ r←16⍴(2⍴1),2⍴0 ⋄ s←16⍴1 0
[43]  →juntara
[44] tenta5:'qtdv invalido... saindo'
[45]  →0
[46] juntara:rx←3⍴0
[47] ⍝ r1
[48]  →(qtdv=qtcon←('p'∈coma)+('q'∈coma)+('r'∈coma)+('s'∈coma))/fiuz
```

```
[49]  ⎕←'#'
[50]  →denovo
[51] fiuz:
[52]  rx[1]←⊂coma
[53]  rx[2]←⊂'FV'[1+≤coma]
[54]  ziza←tradlog coma
[55]  →(150>⍴ziza)/deucerto
[56]  ⎕←'o'
[57]  →denovo
[58] deucerto:
[59]  rx[3]←⊂ziza
------------------------------------------------------------
[0]  r←a menos b
[1]  r←(a≠b)/a
------------------------------------------------------------
[0]  r←mos96 x
[1]  x←(1,⍴x)⍴x
[2]  r←'$ 'edit x
[3]  r←r replace'⍀sim' '~'
[4]  r←r replace'⍀land' '∧'
[5]  r←r replace'⍀lor' '∨'
[6]  r←r replace'⍀leftrightarrow' '↔'
[7]  r←r replace'⍀to' '→'
------------------------------------------------------------
[ 0]  r←quem replace depara;de;i;j;k;onde;para
[ 1] ⍝ forma de usar: texto replace 'strin-de' 'string para'
[ 2] ⍝ obviamente eles nao precisam ter o mesmo tamanho
[ 3]  de←,⊃depara[1] ⋄ para←,⊃depara[2]
[ 4]  i←1 ⋄ r←((1↑⍴quem),200)⍴' '
[ 5] t1:→(i>1↑⍴quem)/fim
[ 6]  →(0=∨/onde←de⍷quem[i;])/naotem
[ 7]  j←1 ⋄ k←1
[ 8] t2:→(k>⍴quem[i;])/acabou
[ 9]  →(onde[k]=0)/soma
[10]  r[i;(j-1)+⍳⍴para]←para
[11]  j←j+⍴para
[12]  k←k+⍴de
[13]  →t2
[14] soma:r[i;j]←quem[i;k]
[15]  k←k+1
[16]  →(j=j←j+1)/t2
[17] naotem:r[i;]←200↑quem[i;]
[18] acabou:→(i=i←i+1)/t1
[19] fim:r←trim4 r
------------------------------------------------------------
[ 0]  r←tradlog x;i;y
[ 1]  i←1
[ 2]  y←''
[ 3] t1:→(i>⍴x)/fim
[ 4]  →(x[i]='E')/ehe
[ 5]  →(x[i]='O')/eho
[ 6]  →(x[i]='B')/ehb
[ 7]  →(x[i]='C')/ehc
[ 8]  →(x[i]='N')/ehn
[ 9]  y←y,x[i]
[10]  →soma
[11] ehe:y←y,'⍀land '
[12]  →soma
[13] eho:y←y,'⍀lor '
[14]  →soma
[15] ehc:y←y,'⍀to '
[16]  →soma
[17] ehb:y←y,'⍀leftrightarrow '
```

```
[18]  →soma
[19] ehn:y←y,'⍀sim '
[20]  →soma
[21] soma:i←i+1
[22]  →t1
[23] fim:r←'$',y,'$'
-------------------------------------------------------------
[0]  r←trim4 x;z
[1] ⍝f corta as colunas direitas que sao brancos
[2]  →(2≠ρρx)/erro
[3]  z←+/[1]x=' '
[4]  r←(z≠1↑ρx)/[2]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
-------------------------------------------------------------
[ 0]  opesq vivo096a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL096   '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA096←80 ajusta FOLHALA096
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALA096)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 29ρ' '
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←69 80ρ' '
[16]  f←FOLHALA096
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.07
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑ρf),4)ρ'⍀#05')/⍳1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(resp←3 0⍎xk),' ',opesq
[31]  esse[68;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[69;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracaso096
[35]  esse[7+⍳60;]←60 80↑xx[⍳60;]
[36] ⍝ resp←resp,'-',xx[61;⍳21]
[37]  resp←resp,'-',xx[61;⍳5],' ',xx[61;5+⍳5],' - ',xx[61;11+⍳5],' ',xx[61;16+⍳5]
[38]  resu←resu,[1]1 29ρresp
[39]  acuja←(f[;2]='#')/⍳1↑ρf
[40]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'⍀clearpage'
[42]  ⍞←(⍎xk←xk+1),'-',⎕TC[2 3]
[43]  →testa
[44] fim:upag←(1 0+ρf)ρ' '
[45]  →(1=≡n)/elafa
```

```
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳29]←resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[52]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[59]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[60]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[61]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo097

```
[0]  AVISO
[1]  'Limitado a 70 folhas '
[2]  ' -------------- DEMORA MUITO -----------------'
-------------------------------------------------------------
[0]  r←a B b
[1]  r←a=b
-------------------------------------------------------------
[0]  r←a C b
[1]  r←(a=b)∨((a=0)∧(b=1))
-------------------------------------------------------------
[ 0]  D←S DISPLAY A;⎕IO;R;C;HL;HC;HT;HB;VL;VB;V;W;N;B
[ 1] ⍝ Display a general array in pictorial form
[ 2] ⍝  Normal call is monadic.  Dyadic call used only in
[ 3] ⍝    recursion to specify display rank, shape, and depth.
[ 4]  ⎕IO←0
[ 5]  ≢(0=⎕NC'S')/'S←⍴A'
[ 6]  R←↑⍴,S                    ⍝ Pseudo rank
[ 7]  C←'┐┌└┘'                  ⍝ UR, UL, LL, and LR corners
[ 8]  HL←'─'                    ⍝ Horizontal line
[ 9]  HC←HL,'⍵→',HL,'~+∊'       ⍝ Horizontal borders
[10]  HT←HC[(0<R)×1+0<↑¯1↑,S]
[11] ⍝W←,0≡¨↑0⍴⊂(1⌈⍴A)↑A
[12]  HB←HC[3+3⌊('2×~A≡⍕A'⎕EA'1+↑∊0×(1⌈×/⍴A)↑,A')+3×1<⍴⍴S]
[13]  VL←'│'                    ⍝ Vertical line
[14]  VB←VL,'⌽↓'                ⍝ Vertical border
[15]  V←VB[(1<R)×1+0<¯1↑¯1↓,S]
[16]  ≢(0∊⍴A)/'A←(1⌈⍴A)⍴⊂↑A'   ⍝ Show prototype of empties
[17]  →(1<≡A)/GEN
[18]  →(2<⍴⍴A)/D3
[19]  D←⍕A                      ⍝ Simple arrays
[20]  W←1↑⍴D←(¯2↑1 1,⍴D)⍴D
[21]  N←¯1+1↓⍴D
[22]  →(0=⍴⍴A)/SS
[23]  D←(C[1],V,((W-1)⍴VL),C[2]),((HT,N⍴HL),[0]D,[0]HB,N⍴HL),C[0],(W⍴VL),C[3]
[24]  →0
[25] SS:HB←((0 ' ')=↑0⍴⊂A)/' -'
[26]  D←' ',(' ',[0]D,[0]HB,N⍴' '),' '
[27]  →0
[28] GEN:D←⍕DISPLAY¨A           ⍝ Enclosed arrays
[29]  N←D∨.≠' '
[30]  D←(N∨~1⌽N)⌿D
[31]  D←(∨⌿~'  '⍷D)/D
```

```
[32]  D←((1,ρS)ρS)DISPLAY D
[33]  →(2≥ρ,S)↓D3E,0
[34] D3:D←0 ¯1↓0 1↓⍉⊂A          ⍝ Multi-dimensional arrays
[35]  W←1↑ρD
[36]  N←¯1+1↓ρD
[37]  D←(C[1],V,((W-1)ρVL),C[2]),((HT,NρHL),[0]D,[0]HB,NρHL),C[0],(WρVL),C[3]
[38] D3E:N←¯2+ρ,S
[39]  V←C[Nρ1],[0]VB[1+0<¯2↓,S],[0](((¯3+↑ρD),N)ρVL),[0]C[Nρ2]
[40]  D←V,D
[41] ⍝¶⍝ APL2/6000 FKEY verification tag - DO NOT REMOVE, MUST BE LAST LINE
------------------------------------------------------------
[0]  r←a E b
[1]  r←a∧b
------------------------------------------------------------
[0]  r←a L b
[1]  r←a B b
------------------------------------------------------------
[0]  r←N a
[1]  r←~a
------------------------------------------------------------
[0]  r←a O b
[1]  r←a∨b
------------------------------------------------------------
[0]  r←a T b
[1]  r←a C b
------------------------------------------------------------
[ 0]  r←corta75 x;ind
[ 1]  r←0 75ρ' '
[ 2]  →((ρx)<75)/ultimo
[ 3] testa:ind←75
[ 4] vorta:→(x[ind]=' ')/ok1
[ 5]  ind←ind-1
[ 6]  →vorta
[ 7] ok1:r←r,[1]1 75ρ75↑ind↑x
[ 8]  x←ind↓x
[ 9]  →((ρx)<75)/ultimo
[10]  →testa
[11] ultimo:r←r,[1]1 75ρ75↑x
[12]  r←' ',[2]r
------------------------------------------------------------
[ 0]  r←geracaso097;x;y;ris;xis;yps;i;c;z;alfa;serah
[ 1]  x←18 80ρ' ' ⋄ y←36 80ρ' ' ⋄ z←32 80ρ' ' ⋄ ris←'' ⋄ xis←2 ⋄ yps←2
[ 2]  i←1
[ 3] t1:→(i>6)/ufa44
[ 4]  xis←(2 2 2 2 2 2 3 2 3)[?9]
[ 5]  yps←(2 2 2 2 3 3 3 3 3)[?9]
[ 6]  c←?2
[ 7]  →(c=1)/geranao
[ 8] ⍝gerasim
[ 9]  alfa←xis geraequiv yps
[10]  x[(¯3+i×3)+⍳3;]←3 80↑corta75(⊃alfa[1]),' E ',⊃alfa[2]
[11]  ris←ris,'S'
[12]  →somax
[13] geranao:
[14]  alfa←xis geranaoequiv yps
[15]  x[(¯3+i×3)+⍳3;]←3 80↑corta75(⊃alfa[1]),' E ',⊃alfa[2]
[16]  ris←ris,'N'
[17]  →somax
[18] somax:
[19]  i←i+1
[20]  →t1
[21] ufa44:
[22]  ris←ris,' '
```

```
[23]  i←1
[24] ufa:
[25]  →(i>6)/ufb
[26]  xis←(2 2 2 2 2 3 3 2 2)[?9]
[27]  yps←(2 2 2 2 2 2 3 3 3)[?9]
[28]  c←?2
[29]  →(c=2)/abno
[30]  alfa←xis redabsurdyes yps
[31]  y[(¯6+i×6)+⍳3;]←3 80↑corta75⊃alfa[1]
[32]  y[(¯3+i×6)+⍳3;]←3 80↑corta75⊃alfa[2]
[33]  →(1∈('V'=⊃P[2])E(N'V'=⊃Q[2]))/paratudo ⍝ verificacao de seguranca
[34]  ris←ris,'S'
[35]  →somay
[36] abno:
[37]  alfa←xis redabsurdno yps
[38]  y[(¯6+i×6)+⍳3;]←3 80↑corta75⊃alfa[1]
[39]  y[(¯3+i×6)+⍳3;]←3 80↑corta75⊃alfa[2]
[40]  ris←ris,'N'
[41]  →somay
[42] somay:i←i+1
[43]  →ufa
[44] ufb:
[45]  ris←ris,' '
[46]  i←1
[47] ufc:
[48]  →(i>8)/acab
[49]  xis←(2 2 2 2 3 3 3 2 2)[?9]
[50]  yps←(2 2 2 2 3 3 3 3 2)[?9]
[51]  c←?2
[52]  →(c=2)/giga
[53]  alfa←xis geranegsim yps
[54]  →(((⊃alfa[1])[1])='u')/upsim
[55]  z[(¯4+i×4)+1;]←80↑'$\downarrow$'
[56]  →junta5
[57] upsim:
[58]  z[(¯4+i×4)+1;]←80↑'$\uparrow$'
[59] junta5:
[60]  z[(¯4+i×4)+2 3 4;]←3 80↑serah←corta75(trim⊃alfa[2]),' e b=',(trim⊃alfa[3]),' deu res
      ultado = ',trim⊃alfa[4]
[61]  →(3≥1↑⍴serah)/lula0
[62]  □←'%'
[63]  →ufc
[64] lula0:
[65]  ris←ris,'S'
[66]  →somaz
[67] giga:
[68]  alfa←xis geranegnao yps
[69]  →(((⊃alfa[1])[1])='u')/upsim3
[70]  z[(¯4+i×4)+1;]←80↑'$\downarrow$'
[71]  →junta6
[72] upsim3:
[73]  z[(¯4+i×4)+1;]←80↑'$\uparrow$'
[74] junta6:
[75]  z[(¯4+i×4)+2 3 4;]←3 80↑serah←corta75(trim⊃alfa[2]),' e b=',(trim⊃alfa[3]),' deu res
      ultado = ',trim⊃alfa[4]
[76]  →(3≥1↑⍴serah)/lula1
[77]  □←'*'
[78]  →ufc
[79] lula1:
[80]  ris←ris,'N'
[81] somaz:
[82]  i←i+1
[83]  →ufc
```

```
[84] acab:
[85]  r←x,[1]y,[1]z,[1]80↑ris
[86]  →0
[87] paratudo:'deu merda'
-------------------------------------------------------------
[ 0]  r←a geraequiv n;z;w;lixo
[ 1]  r←2⍴0
[ 2] volta:z←a geratv n
[ 3] idem:w←a geratv n
[ 4]  →((2*a)≠+/(⊃w[2])=⊃z[2])/naodeu
[ 5]  →ok
[ 6] naodeu:
[ 7] ⍝ ⊃w[2]
[ 8] ⍝ ⊃z[2]
[ 9] ⍝ lixo←⍞
[10] ⍝ ⍞←'o'
[11]  →idem
[12] ok:r[1]←z[3]
[13]  r[2]←w[3]
-------------------------------------------------------------
[ 0]  r←a geranaoequiv n;z;w;lixo
[ 1]  r←2⍴0
[ 2] volta:z←a geratv n
[ 3] idem:w←a geratv n
[ 4]  →((2*a)=+/(⊃w[2])=⊃z[2])/naodeu
[ 5]  →ok
[ 6] naodeu:
[ 7] ⍝ ⊃w[2]
[ 8] ⍝ ⊃z[2]
[ 9] ⍝ lixo←⍞
[10] ⍝ ⍞←'o'
[11]  →idem
[12] ok:r[1]←z[3]
[13]  r[2]←w[3]
-------------------------------------------------------------
[ 0]  r←a geranegnao b;c;s;f1
[ 1]  r←4⍴0
[ 2]  s←?2
[ 3]  →(s=2)/geradis2
[ 4] ⍝geracon2
[ 5]  f1←a negcon b
[ 6]  r[1]←⊂'down' ⋄ r[2]←f1[1] ⋄ r[3]←f1[2] ⋄ r[4]←⊂mistura⊃f1[3]
[ 7]  →0
[ 8] geradis2:
[ 9]  f1←a negdis b
[10]  r[1]←⊂'up' ⋄ r[2]←f1[1] ⋄ r[3]←f1[2] ⋄ r[4]←⊂mistura⊃f1[3]
[11]  →0
-------------------------------------------------------------
[ 0]  r←a geranegsim b;c;s;f1
[ 1]  r←4⍴0
[ 2] ⍝gerasim
[ 3]  s←?2
[ 4]  →(s=2)/geradis1
[ 5] ⍝geracon
[ 6]  f1←a negcon b
[ 7]  r[1]←⊂'down' ⋄ r[2]←f1[1] ⋄ r[3]←f1[2] ⋄ r[4]←f1[3]
[ 8]  →0
[ 9] geradis1:
[10]  f1←a negdis b
[11]  r[1]←⊂'up' ⋄ r[2]←f1[1] ⋄ r[3]←f1[2] ⋄ r[4]←f1[3]
[12]  →0
-------------------------------------------------------------
[ 0]  r←g geraqp1 n;a;b;xx;simnao
```

```
[ 1] ⍝ esta funcao gera uma questao de prova de reducao ao absurdo com o numero n
[ 2]  r←0 76⍴' '
[ 3]  r←r,[1]1 76⍴76↑'$QE',(5 0⍕n),'lm1     ',(2 0⍕g),'red ao absurdo - WS=097'
[ 4]  r←r,[1]1 76⍴76↑' Abaixo sto dadas 2 proposiçAes denominadas $a$ e $b$.'
[ 5]  r←r,[1]1 76⍴76↑' A pergunta é se é possível concluir que $a ⊦to b$ por'
[ 6]  r←r,[1]1 76⍴76↑' reduçto ao absurdo. Responda S se for possível concluir'
[ 7]  r←r,[1]1 76⍴76↑' isso e N se nto for possível.'
[ 8]  r←r,[1]1 76⍴76↑' Lembre que a reduçto ao absurdo, parte do que se quer '
[ 9]  r←r,[1]1 76⍴76↑' provar e também da negaçto da segunda proposiçto.'
[10]  r←r,[1]1 76⍴76↑' Em símbolos: para provar $a ⊦to b$, começa-se estudando'
[11]  r←r,[1]1 76⍴76↑' $a ⊦land ⊦sim b$. Se esta expressto levar a uma contradiçto'
[12]  r←r,[1]1 76⍴76↑' entto pode-se concluir que $a ⊦to b$.'
[13]  r←r,[1]1 76⍴76↑' use as proposiçAes parciais $p,q,r,s,...$ nessa ordem'
[14]  r←r,[1]1 76⍴76↑' { ⊦normalsize  $a=$'
[15]  a←1+?2
[16]  b←1+?2
[17]  simnao←?2
[18]  →(simnao=2)/nao
[19]  xx←a redabsurdyes b
[20]  r←r,[1]corta75⊃xx[1]
[21]  r←r,[1]1 76⍴76↑' ⊦⊦* $b=$'
[22]  r←r,[1]corta75⊃xx[2]
[23]  r←r,[1]1 76⍴76↑' } '
[24]  r←r,[1]1 76⍴76↑'$QR',(5 0⍕n),'lm1     '
[25]  r←r,[1]1 76⍴76↑'A resposta e SIM (S)'
[26]  →0
[27] nao:
[28]  xx←a redabsurdno b
[29]  r←r,[1]corta75⊃xx[1]
[30]  r←r,[1]1 76⍴76↑' ⊦⊦* $b=$'
[31]  r←r,[1]corta75⊃xx[2]
[32]  r←r,[1]1 76⍴76↑' } '
[33]  r←r,[1]1 76⍴76↑'$QR',(5 0⍕n),'lm1     '
[34]  r←r,[1]1 76⍴76↑'A resposta e NAO (N)'
------------------------------------------------------------
[ 0]  r←g geraqp2 n;a;b;xx;simnao
[ 1] ⍝ esta funcao gera uma questao de prova de scheffer com o numero n
[ 2]  r←0 76⍴' '
[ 3]  r←r,[1]1 76⍴76↑'$QE',(5 0⍕n),'lm1     ',(2 0⍕g),'scheffer - WS=097 - p3'
[ 4]  r←r,[1]1 76⍴76↑' Na lógica definem-se dois conectivos -- conhecidos como conectivos
      '
[ 5]  r←r,[1]1 76⍴76↑' de Scheffer, que nada mais sto do que a abreviaçto de uma '
[ 6]  r←r,[1]1 76⍴76↑' expressto mais longa. Eles sto importantes no âmbito da construçto
      '
[ 7]  r←r,[1]1 76⍴76↑' de circuítos eletrônicos lógicos.'
[ 8]  r←r,[1]1 76⍴76↑' Assim, escreve-se $a ⊦downarrow b$ para a expressto $ ⊦sim a ⊦land'
[ 9]  r←r,[1]1 76⍴76↑' ⊦ ⊦sim b$. Igualmente, escreve-se $a ⊦uparrow b$ para simbolizar'
[10]  r←r,[1]1 76⍴76↑' $⊦sim a ⊦lor ⊦ ⊦sim b$.⊦⊦*'
[11]  r←r,[1]1 76⍴76↑' Dadas as expressAes de Scheffer, de $a$ e de $b$, pede-se achar'
[12]  r←r,[1]1 76⍴76↑' a tabela verdade da expressto de Scheffer pedida.'
[13]  r←r,[1]1 76⍴76↑' Use as proposiçAes parciais $p,q,r,s,...$ nessa ordem.'
[14]  r←r,[1]1 76⍴76↑' { ⊦normalsize Calcule: $a ⊦uparrow b$, dados: ⊦⊦* $a=$'
[15]  a←1+?2
[16]  b←1+?2
[17]  xx←a negdis b
[18]  r←r,[1]corta75⊃xx[1]
[19]  r←r,[1]1 76⍴76↑' ⊦⊦* $b=$'
[20]  r←r,[1]corta75⊃xx[2]
[21]  r←r,[1]1 76⍴76↑' } '
[22]  r←r,[1]1 76⍴76↑'$QR',(5 0⍕n),'lm1     '
[23]  r←r,[1]1 76⍴76↑'A resposta e ',,⊃xx[3]
------------------------------------------------------------
[ 0]  r←g geraqp3 n;a;b;xx;simnao
```

```
[ 1] ⍝ esta funcao gera uma questao de prova de scheffer com o numero n
[ 2]  r←0 76⍴' '
[ 3]  r←r,[1]1 76⍴76↑'$QE',(5 0⍕n),'lm1     ',(2 0⍕g),'scheffer - WS=097 - p3'
[ 4]  r←r,[1]1 76⍴76↑' Na lógica definem-se dois conectivos -- conhecidos como conectivos
      '
[ 5]  r←r,[1]1 76⍴76↑' de Scheffer, que nada mais sto do que a abreviaçto de uma '
[ 6]  r←r,[1]1 76⍴76↑' expressto mais longa. Eles sto importantes no âmbito da construçto
      '
[ 7]  r←r,[1]1 76⍴76↑' de circuítos eletrônicos lógicos.'
[ 8]  r←r,[1]1 76⍴76↑' Assim, escreve-se $a ↓downarrow b$ para a expressto $ ↓sim a ↓land'
[ 9]  r←r,[1]1 76⍴76↑' ↓ ↓sim b$. Igualmente, escreve-se $a ↓uparrow b$ para simbolizar'
[10]  r←r,[1]1 76⍴76↑' $↓sim a ↓lor ↓ ↓sim b$.↓↓*'
[11]  r←r,[1]1 76⍴76↑' Dadas as expressªes de Scheffer, de $a$ e de $b$, pede-se achar'
[12]  r←r,[1]1 76⍴76↑' a tabela verdade da expressto de Scheffer pedida.'
[13]  r←r,[1]1 76⍴76↑' Use as proposiçªes parciais $p,q,r,s,...$ nessa ordem.'
[14]  r←r,[1]1 76⍴76↑' { ↓normalsize Calcule: $a ↓downarrow b$, dados: ↓↓* $a=$'
[15]  a←1+?2
[16]  b←1+?2
[17]  xx←a negcon b
[18]  r←r,[1]corta75⊃xx[1]
[19]  r←r,[1]1 76⍴76↑' ↓↓* $b=$'
[20]  r←r,[1]corta75⊃xx[2]
[21]  r←r,[1]1 76⍴76↑' } '
[22]  r←r,[1]1 76⍴76↑'$QR',(5 0⍕n),'lm1     '
[23]  r←r,[1]1 76⍴76↑'A resposta e ',,⊃xx[3]
------------------------------------------------------------
[ 0]  rx←qtdv geratv qtdops;coma;i;vv;p1;p2;r1;p;q;r;s;j;vvaux;aux;p3;p4;ziza;qtcon
[ 1] ⍝ gera uma tabela verdade contendo uma expressao envolvendo qtdv variaveis e qtdops o
      peracoes logica
[ 2] denovo:coma←''
[ 3]  i←1
[ 4]  vv←qtdv↑'pqrs'
[ 5] t1:→(i≥qtdops)/vai
[ 6]  →(1≠?5)/naopoe
[ 7]  p1←'(N ',(aux←vv[?⍴vv]),')'
[ 8]  →pula
[ 9] naopoe:p1←' ',aux←vv[?⍴vv]
[10] pula:vvaux←vv menos aux
[11]  →(1≠?4)/np2
[12]  p2←'(N ',vvaux[?⍴vvaux],')'
[13]  →pula2
[14] np2:p2←' ',vvaux[?⍴vvaux]
[15] pula2:
[16]  →(1≠?5)/np3
[17]  p3←'(N ',(aux←vv[?⍴vv]),')'
[18]  →pu4
[19] np3:p3←' ',aux←vv[?⍴vv]
[20] pu4:vvaux←vv,vv menos aux
[21]  →(1≠?3)/np4
[22]  p4←'(N ',vvaux[?⍴vvaux],')'
[23]  →pu5
[24] np4:p4←' ',vvaux[?⍴vvaux]
[25] pu5:
[26]  →(i≠1)/ufaa
[27]  coma←'(',p1,' ','EOCBEO'[?6],' ',p2,')'
[28] ufaa:
[29]  coma←'(',coma,'EOCBEO'[?6],' (',p3,' ','EOCBE'[?5],' ',p4,'))'
[30]  i←i+1
[31]  →t1
[32] vai:
[33]  →(qtdv≠2)/tenta3
[34]  p←1 1 0 0 ◇ q←1 0 1 0
[35]  →juntara
```

```
[36] tenta3:
[37]  →(qtdv≠3)/tenta4
[38]  p←1 1 1 1 0 0 0 0 ⋄ q←1 1 0 0 1 1 0 0 ⋄ r←1 0 1 0 1 0 1 0
[39]  →juntara
[40] tenta4:
[41]  →(qtdv≠4)/tenta5
[42]  p←(8ρ1),8ρ0 ⋄ q←16ρ(4ρ1),4ρ0 ⋄ r←16ρ(2ρ1),2ρ0 ⋄ s←16ρ1 0
[43]  →juntara
[44] tenta5:'qtdv invalido... saindo'
[45]  →0
[46] juntara:rx←3ρ0
[47] ⍝ r1
[48]  →(qtdv=qtcon←('p'∈coma)+('q'∈coma)+('r'∈coma)+('s'∈coma))/fiuz
[49]  □←'#'
[50]  →denovo
[51] fiuz:
[52]  rx[1]←⊂coma
[53]  rx[2]←⊂'FV'[1+⍷coma]
[54]  ziza←tradlog coma
[55]  →(150>ρziza)/deucerto
[56]  □←'o'
[57]  →denovo
[58] deucerto:
[59]  rx[3]←⊂ziza
------------------------------------------------------------
[0]  r←a menos b
[1]  r←(a≠b)/a
------------------------------------------------------------
[0]  r←mistura aa;bb
[1]  bb←aa[(ρaa)?ρaa]
[2]  →(bb[1]≠aa[1])/ok1
[3]  bb[1]←'VF'[1+aa[1]='V']
[4] ok1:r←bb
------------------------------------------------------------
[0]  r←a negcon b;p;q;res
[1]  r←3ρ0
[2]  p←a geratv b
[3]  q←a geratv b
[4]  res←(N'V'=⊃p[2])E(N'V'=⊃q[2])
[5]  r[1]←p[3]
[6]  r[2]←q[3]
[7]  r[3]←⊂'FV'[1+res]
------------------------------------------------------------
[0]  r←a negdis b;p;q;res
[1]  r←3ρ0
[2]  p←a geratv b
[3]  q←a geratv b
[4]  res←(N'V'=⊃p[2])O(N'V'=⊃q[2])
[5]  r[1]←p[3]
[6]  r[2]←q[3]
[7]  r[3]←⊂'FV'[1+res]
------------------------------------------------------------
[ 0]  r←a redabsurdno b;p;q;qto
[ 1]  r←2ρ0
[ 2] inic:qto←0
[ 3]  P←p←a geratv b
[ 4] vorta:Q←q←a geratv b
[ 5]  →(1∈('V'=⊃p[2])E(N'V'=⊃q[2]))/ok
[ 6] ⍝ □←'*'
[ 7]  qto←qto+1
[ 8]  →(qto<1000)/vorta
[ 9] ⍝ ' '
[10]  →inic
```

```
[11] ok:r[1]←p[3]
[12]  r[2]←q[3]
-------------------------------------------------------------
[ 0]  r←a redabsurdyes b;p;q;qto
[ 1]  r←2ρ0
[ 2] inic:qto←0
[ 3]  P←p←a geratv b
[ 4] vorta:Q←q←a geratv b
[ 5]  →((2*a)=+/0=('V'=⊃p[2])E(N'V'=⊃q[2]))/ok
[ 6] ⍝ ⍞←'*'
[ 7]  qto←qto+1
[ 8]  →(qto<1000)/vorta
[ 9] ⍝ ' '
[10]  →inic
[11] ok:r[1]←p[3]
[12]  r[2]←q[3]
-------------------------------------------------------------
[ 0]  r←tradlog x;i;y
[ 1]  i←1
[ 2]  y←''
[ 3] t1:→(i>ρx)/fim
[ 4]  →(x[i]='E')/ehe
[ 5]  →(x[i]='O')/eho
[ 6]  →(x[i]='B')/ehb
[ 7]  →(x[i]='C')/ehc
[ 8]  →(x[i]='N')/ehn
[ 9]  y←y,x[i]
[10]  →soma
[11] ehe:y←y,'∧land '
[12]  →soma
[13] eho:y←y,'∧lor '
[14]  →soma
[15] ehc:y←y,'∧to '
[16]  →soma
[17] ehb:y←y,'∧leftrightarrow '
[18]  →soma
[19] ehn:y←y,'∧sim '
[20]  →soma
[21] soma:i←i+1
[22]  →t1
[23] fim:r←'$',y,'$'
-------------------------------------------------------------
[ 0]  opesq vivo097a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo097 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10ρ' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PL097   '
[ 9]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:∧apl2∧',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[19] testa:→(xk>1↑⍴ylu)/fim
[20]  esse←95 80⍴' '
[21]  f←FOLHALA097
[22]  esse[1;]←80↑dhx[1;]
[23]  esse[2;]←80↑dhx[2;]
[24]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[25]  esse[4;]←80↑ylu[xk;⍳6]
[26] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[27]  →(36=1↓⍴ylu)/zebra
[28]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[29]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[30]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[31]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[32]  →maiszebra
[33] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[ 8]  x←ind↓x
[ 9]  →((⍴x)<75)/ultimo
[10]  →testa
[11] ultimo:r←r,[1]1 75⍴75↑x
[12]  r←' ',[2]r
-------------------------------------------------------------
[0]  r←geracaso098b
[1]  r←CASOS098b[2?1↑⍴CASOS098b;]
-------------------------------------------------------------
[0]  r←geracaso098f
[1]  r←CASOS098f[2?1↑⍴CASOS098f;]
-------------------------------------------------------------
[ 0]  opesq vivo098b n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo098 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PL098b  '
[ 9]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍕n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[49] fim:upag←(1 0+⍴f)⍴' '
[50] terminando:
[51]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[52]  relat[1↑⍴relat;;]←upag
[53]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[54]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[55]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'    .tex (nao ha gpa)'
-------------------------------------------------------------
[ 0]  opesq vivo098f n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo098 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PL098f  '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[53]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[54]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍬∧⍀⍬EVENTO=' ')/EVENTO),'.tex'
[55]  'Arquivo criado com o nome de c:⍀apl2⍀',EVENTO,'    .tex (nao ha gpa)'
-------------------------------------------------------------
```

vivo099

```
[0]  AVISO
[1]  NUMEROS
-------------------------------------------------------------
[ 0]  r←ajeitaseq;depara;i;j;novos
[ 1]  r←0 60ρ''
[ 2]  i←1
[ 3]  j←1
[ 4]  depara←0 2ρ0
[ 5] t1:→(i>1↑ρDEP)/fim0
[ 6]  →(DEP[i;11]=' ')/somai
[ 7]  r←r,[1]1 60ρ60↑(2 0⍕j),') ',DEP[i;⍳10]
[ 8]  depara←depara,[1]1 2ρj,i
[ 9]  j←j+1
[10] somai:i←i+1
[11]  →t1
[12] fim0:r←r,[1]1 60ρ60↑'--------------'
[13]  i←1↑ρSEQN
[14] t2:→(i<1)/fim1
[15]  novos←depara[(depara[;2]⍳((,SEQN[i;2 3 4]≠¯1)/,SEQN[i;2 3 4]));1]
[16]  r←r,[1]1 60ρ60↑(2 0⍕j),') ',(trim,DEP[SEQN[i;5];⍳10]),' por ',(regra SEQN[i;1]),', d
      e ',⍕novos
[17]  depara←depara,[1]1 2ρj,SEQN[i;5]
[18]  i←i-1
[19]  j←j+1
[20]  →t2
[21] fim1:
-------------------------------------------------------------
[ 0]  r←corta75 x;ind
[ 1]  r←0 75ρ' '
[ 2]  →((ρx)<75)/ultimo
[ 3] testa:ind←75
[ 4] vorta:→(x[ind]=' ')/ok1
[ 5]  ind←ind-1
[ 6]  →vorta
[ 7] ok1:r←r,[1]1 75ρ75↑ind↑x
[ 8]  x←ind↓x
[ 9]  →((ρx)<75)/ultimo
[10]  →testa
[11] ultimo:r←r,[1]1 75ρ75↑x
[12]  r←' ',[2]r
-------------------------------------------------------------
[0]  r←t cortahifen x
[1]  r←((¯1+(x[;1]='-')/⍳1↑ρx),80)↑x
[2]  →(t<1↑ρr)/deu
[3]  r←(t,80)↑r
[4]  →0
[5] deu:'deu merda'
-------------------------------------------------------------
[ 0]  r←a eleg0 d;i
[ 1]  r←''
[ 2]  i←1
[ 3] f2:→(i>10)/f3
[ 4]  →((DEP[i;11]='*')∧('v'=DEP[i;2])∧(~DEP[i;1]∈GLOBAL)∧(~DEP[i;3]∈GLOBAL)∧(3=ρtrim DEP[
      i;⍳10]))/sim2
[ 5]  i←i+1
```

```
[ 6]  →f2
[ 7] f3:
[ 8]  r←(((⍴r)÷4),4)⍴r
[ 9]  →0
[10] sim2:r←r,'0D',2 0⍕i
[11]  i←i+1
[12]  →f2
-------------------------------------------------------------
[ 0]  r←a eleg1 d;i
[ 1]  r←''
[ 2] f1:i←1
[ 3] f2:→(i>10)/f3
[ 4]  →((DEP[i;11]='*')∧(1=⍴trim DEP[i;⍳10]))/sim2
[ 5]  i←i+1
[ 6]  →f2
[ 7] f3:
[ 8]  r←(((⍴r)÷4),4)⍴r
[ 9]  →0
[10] sim2:r←r,'1D',2 0⍕i
[11]  i←i+1
[12]  →f2
-------------------------------------------------------------
[ 0]  r←a eleg2 d;i
[ 1]  r←''
[ 2] f1:i←1
[ 3] f2:→(i>10)/f3
[ 4]  →((DEP[i;11]='*')∧('∧'=DEP[i;2])∧(~DEP[i;1]∈GLOBAL)∧(~DEP[i;3]∈GLOBAL))/sim2
[ 5]  i←i+1
[ 6]  →f2
[ 7] f3:
[ 8]  r←(((⍴r)÷4),4)⍴r
[ 9]  →0
[10] sim2:r←r,'2D',2 0⍕i
[11]  i←i+1
[12]  →f2
-------------------------------------------------------------
[ 0]  r←a eleg3 d;i
[ 1]  r←''
[ 2] f1:i←1
[ 3] f2:→(i>10)/f3
[ 4]  →((DEP[i;11]='*')∧(DEP[i;2]='→')∧(DEP[i;4]='∧'))/sim2
[ 5]  i←i+1
[ 6]  →f2
[ 7] f3:
[ 8]  r←(((⍴r)÷4),4)⍴r
[ 9]  →0
[10] sim2:r←r,'3D',2 0⍕i
[11]  i←i+1
[12]  →f2
-------------------------------------------------------------
[ 0]  r←a eleg4 d;i
[ 1]  r←''
[ 2] f1:i←1
[ 3] f2:→(i>10)/f3
[ 4]  →((DEP[i;11]='*')∧(1=⍴trim DEP[i;⍳10]))/sim2
[ 5]  i←i+1
[ 6]  →f2
[ 7] f3:
[ 8]  r←(((⍴r)÷4),4)⍴r
[ 9]  →0
[10] sim2:r←r,'4D',2 0⍕i
[11]  i←i+1
[12]  →f2
```

```
------------------------------------------------------------
[ 0]  r←a eleg5 d;i
[ 1]  r←''
[ 2] f1:i←1
[ 3] f2:→(i>10)/f3
[ 4]  →((DEP[i;11]='*')∧(DEP[i;1]='~')∧(2=ρtrim DEP[i;⍳10]))/sim2
[ 5]  i←i+1
[ 6]  →f2
[ 7] f3:
[ 8]  r←(((ρr)÷4),4)ρr
[ 9]  →0
[10] sim2:r←r,'5D',2 0⍕i
[11]  i←i+1
[12]  →f2
------------------------------------------------------------
[ 0]  r←a eleg6 d;i
[ 1]  r←''
[ 2] f1:i←1
[ 3] f2:→(i>10)/f3
[ 4]  →((DEP[i;11]='*')∧(1=ρtrim DEP[i;⍳10]))/sim2
[ 5]  i←i+1
[ 6]  →f2
[ 7] f3:
[ 8]  r←(((ρr)÷4),4)ρr
[ 9]  →0
[10] sim2:r←r,'6D',2 0⍕i
[11]  i←i+1
[12]  →f2
------------------------------------------------------------
[ 0]  r←a eleg7 d;i
[ 1]  r←''
[ 2] f1:i←1
[ 3] f2:→(i>10)/f3
[ 4]  →((DEP[i;11]='*')∧(DEP[i;2]='→')∧(3=ρtrim DEP[i;⍳10]))/sim2
[ 5]  i←i+1
[ 6]  →f2
[ 7] f3:
[ 8]  r←(((ρr)÷4),4)ρr
[ 9]  →0
[10] sim2:r←r,'7D',2 0⍕i
[11]  i←i+1
[12]  →f2
------------------------------------------------------------
[ 0]  r←a eleg8 d;i
[ 1]  r←''
[ 2] f1:i←1
[ 3] f2:→(i>10)/f3
[ 4]  →((DEP[i;11]='*')∧(DEP[i;2]='∨')∧(3=ρtrim DEP[i;⍳10]))/sim2
[ 5]  i←i+1
[ 6]  →f2
[ 7] f3:
[ 8]  r←(((ρr)÷4),4)ρr
[ 9]  →0
[10] sim2:r←r,'8D',2 0⍕i
[11]  i←i+1
[12]  →f2
------------------------------------------------------------
[ 0]  r←a eleg9 d;i
[ 1]  r←''
[ 2] f1:i←1
[ 3] f2:→(i>10)/f3
[ 4]  →((DEP[i;11]='*')∧(DEP[i;3]='∨')∧(DEP[i;1]='~')∧(DEP[i;4]='~')∧(5=ρtrim DEP[i;⍳10]))
      /sim2
```

```
[ 5]  i←i+1
[ 6]  →f2
[ 7] f3:
[ 8]  r←(((ρr)÷4),4)ρr
[ 9]  →0
[10] sim2:r←r,'9D',2 0⍕i
[11]  i←i+1
[12]  →f2
-------------------------------------------------------------
[ 0]  r←elegiveis;DEPx;ANTx;ELE
[ 1]  ELE←0 4ρ''
[ 2]  ELE←ELE,[1]ANT eleg0 DEP
[ 3]  ELE←ELE,[1]ANT eleg1 DEP
[ 4]  ELE←ELE,[1]ANT eleg2 DEP
[ 5]  ELE←ELE,[1]ANT eleg3 DEP
[ 6]  ELE←ELE,[1]ANT eleg4 DEP
[ 7]  ELE←ELE,[1]ANT eleg5 DEP
[ 8]  ELE←ELE,[1]ANT eleg6 DEP
[ 9]  ELE←ELE,[1]ANT eleg7 DEP
[10]  ELE←ELE,[1]ANT eleg8 DEP
[11]  ELE←ELE,[1]ANT eleg9 DEP
[12]  r←ELE
[13] cont:
-------------------------------------------------------------
[0]  r←geracaso099b
[1]  r←CASOS099b[2?1↑ρCASOS099b;]
-------------------------------------------------------------
[ 0]  r←geracaso099h
[ 1]  r←81 80ρ' '
[ 2]  r[1;]←traduz 1 80ρ80↑2 mandaverh'p'
[ 3]  r[1+⍳4;]←traduz 4 cortahifen ajeitaseq
[ 4]  r[6;]←traduz 1 80ρ80↑2 mandaverh'q'
[ 5]  r[6+⍳4;]←traduz 4 cortahifen ajeitaseq
[ 6]  r[11;]←traduz 1 80ρ80↑2 mandaverh'r'
[ 7]  r[11+⍳4;]←traduz 4 cortahifen ajeitaseq
[ 8]  r[16;]←traduz 1 80ρ80↑3 mandaverh's'
[ 9]  r[16+⍳7;]←traduz 7 cortahifen ajeitaseq
[10]  r[24;]←traduz 1 80ρ80↑3 mandaverh't'
[11]  r[24+⍳7;]←traduz 7 cortahifen ajeitaseq
[12]  r[32;]←traduz 1 80ρ80↑3 mandaverh'u'
[13]  r[32+⍳10;]←traduz 10 cortahifen ajeitaseq
[14]  r[43;]←traduz 1 80ρ80↑3 mandaverh'v'
[15]  r[43+⍳10;]←traduz 10 cortahifen ajeitaseq
[16]  r[54;]←traduz 1 80ρ80↑3 mandaverh'w'
[17]  r[54+⍳13;]←traduz 13 cortahifen ajeitaseq
[18]  r[68;]←traduz 1 80ρ80↑3 mandaverh'x'
[19]  r[68+⍳13;]←traduz 13 cortahifen ajeitaseq
-------------------------------------------------------------
[ 0]  r←geracaso099j;a;i;zz
[ 1]  r←90 80ρ' '
[ 2]  r[1;]←traduz 1 80ρ80↑2 mandaverh'p'
[ 3]  r[1+⍳4;]←traduz 4 cortahifen ajeitaseq
[ 4]  r[6;]←traduz 1 80ρ80↑2 mandaverh'q'
[ 5]  r[6+⍳4;]←traduz 4 cortahifen ajeitaseq
[ 6]  r[11;]←traduz 1 80ρ80↑2 mandaverh'r'
[ 7]  r[11+⍳4;]←traduz 4 cortahifen ajeitaseq
[ 8]  r[16;]←traduz 1 80ρ80↑3 mandaverh's'
[ 9]  r[16+⍳7;]←traduz 7 cortahifen ajeitaseq
[10] t0:
[11]  i←1
[12]  zz←0 79ρ' '
[13] t1:→(i>6)/fim
[14]  a←traduzmanda(2+?3)mandaverh('pqrst'[?5])
```

```
[15]  zz←zz,[1](1 79ρ79↑'⍀⍀*',(⍕4+i),'.⍀⍀*'),[1]a
[16]  i←i+1
[17]  →t1
[18] fim:→(60>1↑ρzz)/meca
[19]  ⎕←'⊗'
[20]  →t0
[21] meca:
[22]  r[30+ι60;]←60 80↑zz
------------------------------------------------------------
[0]  r←m;a;x
[1]  x←DEP
[2]  a←(x[;1]≠' ')/[1]x
[3]  r←1 numera a
------------------------------------------------------------
[  0]  r←n mandaverh exp;i;x;ocara;corpo;tt;aa;bb;cc
[  1] denovo:
[  2]  DEP←20 11ρ' '
[  3]  UDEP←1+UANT←0
[  4]  DEP[1;]←(10↑exp),'*'
[  5]  GLOBAL←exp
[  6]  SEQ←0 79ρ''
[  7]  SEQN←0 5ρ0
[  8]  i←1
[  9] t1:→(i>n)/fim
[ 10]  x←elegiveis
[ 11]  →(0≠1↑ρx)/blz
[ 12]  ⎕←'o'
[ 13]  →denovo
[ 14] blz:
[ 15]  SEQ←SEQ,[1]1 79ρ79↑'elegiveis =',,(x,';'),' '
[ 16]  ocara←,x[?1↑ρx;]
[ 17]  →(ocara[2]='A')/A0
[ 18] D0:DEP[±ocara[3 4];11]←' '
[ 19]  corpo←DEP[±ocara[3 4];ι10]
[ 20]  →junta0
[ 21] A0:
[ 22]  corpo←ANT[±ocara[3 4];]
[ 23] junta0:
[ 24]  UDEP←UDEP+1
[ 25]  →(ocara[1]='0')/ezero
[ 26]  →(ocara[1]='1')/eum
[ 27]  →(ocara[1]='2')/edois
[ 28]  →(ocara[1]='3')/etres
[ 29]  →(ocara[1]='4')/equatro
[ 30]  →(ocara[1]='5')/ecinco
[ 31]  →(ocara[1]='6')/eseis
[ 32]  →(ocara[1]='7')/esete
[ 33]  →(ocara[1]='8')/eoito
[ 34]  →(ocara[1]='9')/enove
[ 35]  'deu xabu'
[ 36]  →0
[ 37] ezero:
[ 38]  tt←1↑(corpo='v')/ιρcorpo
[ 39]  →(1=?2)/p20
[ 40]  DEP[UDEP;ι10]←10↑(tt-1)↓corpo
[ 41]  →pu0
[ 42] p20:
[ 43]  DEP[UDEP;ι10]←10↑tt↓corpo
[ 44] pu0:
[ 45]  DEP[UDEP;11]←'*'
[ 46]  SEQ←SEQ,[1]1 79ρ79↑'aplicando 0 (adicao) a ',ocara[3 4],' deu =',(⍕UDEP),'=',DEP[UDE
       P;]
[ 47]  SEQN←SEQN,[1]1 5ρ0,UDEP,¯1,¯1,±ocara[3 4]
```

```
[ 48] ⍝ SEQ←SEQ,[1]mostradep
[ 49] eum:
[ 50]  →(1=?2)/p21
[ 51]  DEP[UDEP;⍳10]←10↑(trim corpo),'^',medeuma corpo
[ 52]  →pu1
[ 53] p21:
[ 54]  DEP[UDEP;⍳10]←10↑(medeuma corpo),'^',trim corpo
[ 55] pu1:
[ 56]  DEP[UDEP;11]←'*'
[ 57]  SEQ←SEQ,[1]1 79⍴79↑'aplicando 1 (simplificacao) a ',ocara[3 4],' deu =',(⍕UDEP),'=',
      DEP[UDEP;]
[ 58]  SEQN←SEQN,[1]1 5⍴1,UDEP,¯1,¯1,⍬ocara[3 4]
[ 59] ⍝ SEQ←SEQ,[1]mostradep
[ 60]  →somai
[ 61] edois:
[ 62]  tt←1↑(corpo='^')/⍳⍴corpo
[ 63]  DEP[UDEP;⍳10]←10↑(tt-1)↑corpo
[ 64]  DEP[UDEP;11]←'*'
[ 65]  UDEP←UDEP+1
[ 66]  DEP[UDEP;⍳10]←10↑tt↓corpo
[ 67]  DEP[UDEP;11]←'*'
[ 68]  SEQ←SEQ,[1]1 79⍴79↑'aplicando 2 (conjuncao) a ',ocara[3 4],' deu =',(⍕(UDEP-1),UDEP)
      ,'=',,DEP[UDEP+¯1 0;]
[ 69]  SEQN←SEQN,[1]1 5⍴2,(UDEP-1),UDEP,¯1,⍬ocara[3 4]
[ 70] ⍝ SEQ←SEQ,[1]mostradep
[ 71]  →somai
[ 72] etres:
[ 73]  DEP[UDEP;⍳3]←corpo[1 2 5]
[ 74]  DEP[UDEP;11]←'*'
[ 75]  SEQ←SEQ,[1]1 79⍴79↑'aplicando 3 (absorcao) a ',ocara[3 4],' deu =',(⍕UDEP),'=',DEP[U
      DEP;]
[ 76]  SEQN←SEQN,[1]1 5⍴3,UDEP,¯1,¯1,⍬ocara[3 4]
[ 77] ⍝ SEQ←SEQ,[1]mostradep
[ 78]  →somai
[ 79] equatro:
[ 80]  DEP[UDEP;⍳10]←10↑(aa←medeuma corpo),'→',corpo[1]
[ 81]  DEP[UDEP;11]←'*'
[ 82]  UDEP←UDEP+1
[ 83]  DEP[UDEP;⍳10]←10↑aa
[ 84]  DEP[UDEP;11]←'*'
[ 85]  SEQ←SEQ,[1]1 79⍴79↑'aplicando 4 (MP) a ',ocara[3 4],' deu =',(⍕(UDEP-1),UDEP),'=',,D
      EP[UDEP+¯1 0;]
[ 86]  SEQN←SEQN,[1]1 5⍴4,(UDEP-1),UDEP,¯1,⍬ocara[3 4]
[ 87] ⍝ SEQ←SEQ,[1]mostradep
[ 88]  →somai
[ 89] ecinco:
[ 90]  DEP[UDEP;⍳10]←10↑corpo[2],'→',aa←medeuma corpo
[ 91]  DEP[UDEP;11]←'*'
[ 92]  UDEP←UDEP+1
[ 93]  DEP[UDEP;⍳10]←10↑'~',aa
[ 94]  DEP[UDEP;11]←'*'
[ 95]  SEQ←SEQ,[1]1 79⍴79↑'aplicando 5 (MT) a ',ocara[3 4],' deu =',(⍕(UDEP-1),UDEP),'=',,D
      EP[UDEP+¯1 0;]
[ 96]  SEQN←SEQN,[1]1 5⍴5,(UDEP-1),UDEP,¯1,⍬ocara[3 4]
[ 97] ⍝ SEQ←SEQ,[1]mostradep
[ 98]  →somai
[ 99] eseis:
[100]  DEP[UDEP;⍳10]←10↑'~',aa←medeuma corpo
[101]  DEP[UDEP;11]←'*'
[102]  UDEP←UDEP+1
[103]  DEP[UDEP;⍳10]←10↑corpo[1],'v',aa
[104]  GLOBAL←GLOBAL,corpo[1]
[105]  DEP[UDEP;11]←'*'
```

```
[106]  SEQ←SEQ,[1]1 79⍴79↑'aplicando 6 (SD) a ',ocara[3 4],' deu =',(⍕(UDEP-1),UDEP),'=',,D
      EP[UDEP+¯1 0;]
[107]  SEQN←SEQN,[1]1 5⍴6,(UDEP-1),UDEP,¯1,⍪ocara[3 4]
[108] ⍎ SEQ←SEQ,[1]mostradep
[109]  →somai
[110] esete:
[111]  DEP[UDEP;⍳10]←10↑corpo[1],'→',aa←medeuma corpo
[112]  DEP[UDEP;11]←'*'
[113]  UDEP←UDEP+1
[114]  DEP[UDEP;⍳10]←10↑aa,'→',corpo[3]
[115]  DEP[UDEP;11]←'*'
[116]  SEQ←SEQ,[1]1 79⍴79↑'aplicando 7 (SH) a ',ocara[3 4],' deu =',(⍕(UDEP-1),UDEP),'=',,D
      EP[UDEP+¯1 0;]
[117]  SEQN←SEQN,[1]1 5⍴7,(UDEP-1),UDEP,¯1,⍪ocara[3 4]
[118] ⍎ SEQ←SEQ,[1]mostradep
[119]  →somai
[120] eoito:
[121]  DEP[UDEP;⍳10]←10↑(aa←medeuma corpo),'→',corpo[1]
[122]  DEP[UDEP;11]←'*'
[123]  UDEP←UDEP+1
[124]  DEP[UDEP;⍳10]←10↑(bb←medeuma corpo,aa),'→',corpo[3]
[125]  DEP[UDEP;11]←'*'
[126]  UDEP←UDEP+1
[127]  DEP[UDEP;⍳10]←10↑aa,'∨',bb
[128]  DEP[UDEP;11]←'*'
[129]  SEQ←SEQ,[1]1 79⍴79↑'aplicando 8 (DC) a ',ocara[3 4],' deu =',(⍕(UDEP-2),(UDEP-1),UDE
      P),'=',,DEP[UDEP+¯2 ¯1 0;]
[130]  SEQN←SEQN,[1]1 5⍴8,(UDEP-2),(UDEP-1),UDEP,⍪ocara[3 4]
[131] ⍎ SEQ←SEQ,[1]mostradep
[132]  →somai
[133] enove:
[134]  DEP[UDEP;⍳10]←10↑corpo[2],'→',aa←medeuma corpo
[135]  DEP[UDEP;11]←'*'
[136]  UDEP←UDEP+1
[137]  DEP[UDEP;⍳10]←10↑corpo[5],'→',bb←medeuma corpo,aa
[138]  DEP[UDEP;11]←'*'
[139]  UDEP←UDEP+1
[140]  DEP[UDEP;⍳10]←10↑'~',aa,'∨~',bb
[141]  DEP[UDEP;11]←'*'
[142]  SEQ←SEQ,[1]1 79⍴79↑'aplicando 9 (DD) a ',ocara[3 4],' deu =',⍕((UDEP-2),(UDEP-1),UDE
      P),'=',,DEP[UDEP+¯2 ¯1 0;]
[143]  SEQN←SEQN,[1]1 5⍴9,(UDEP-2),(UDEP-1),UDEP,⍪ocara[3 4]
[144] ⍎ SEQ←SEQ,[1]mostradep
[145]  →somai
[146] somai:
[147]  i←i+1
[148]  →t1
[149] fim:cc←(¯1↓,(DEP[;11]='*')/[1]DEP[;⍳10],',','),'⊢',exp
[150]  r←(cc≠' ')/cc
-----------------------------------------------------------
[0]  r←medeuma x;aa
[1]  VARS←'pqrstuvwxyz'
[2]  x←x,GLOBAL
[3]  r←0⍴0
[4]  aa←(~VARS∊x)/VARS
[5]  →(0=⍴aa)/0
[6]  r←aa[?⍴aa]
[7]  GLOBAL←GLOBAL,r
-----------------------------------------------------------
[0]  r←mostradep;i
[1]  r←''
[2]  i←1
[3] t1:→(i>UDEP)/fim
```

```
[4]  r←r,(⍕i),(trim DEP[i;⍳10]),DEP[i;11],'-'
[5]  i←i+1
[6]  →t1
[7] fim:r←1 79⍴79↑r
------------------------------------------------------------
[ 0]  r←tam quebra lin;i
[ 1] ⍝ esta funcao quebra a linha lin em linhas de tamanho tam, sem cortar nada - pkantek
      mai/12
[ 2]  r←(0,tam)⍴' '
[ 3]  i←tam
[ 4]  →(i>⍴lin)/erro
[ 5] t1:→(' '=,lin[i])/oba
[ 6]  i←i-1
[ 7]  →(i<2)/erro
[ 8]  →t1
[ 9] oba:r←r,[1](1,tam)⍴tam↑lin[⍳i]
[10]  lin←i↓lin
[11]  i←tam
[12]  →((⍴lin)>tam)/t1
[13]  r←r,[1](1,tam)⍴tam↑lin
[14]  →0
[15] erro:'nao foi possivel cortar'
[16]  r←0 0⍴' '
------------------------------------------------------------
[ 0]  r←regra x
[ 1]  →(x=0)/zero
[ 2]  →(x=1)/um
[ 3]  →(x=2)/dois
[ 4]  →(x=3)/tres
[ 5]  →(x=4)/quatro
[ 6]  →(x=5)/cinco
[ 7]  →(x=6)/seis
[ 8]  →(x=7)/sete
[ 9]  →(x=8)/oito
[10]  →(x=9)/nove
[11]  'deu xabu'
[12]  →0
[13] zero:r←'adicao'
[14]  →0
[15] um:r←'simplificacao'
[16]  →0
[17] dois:r←'conjuncao'
[18]  →0
[19] tres:r←'absorcao'
[20]  →0
[21] quatro:r←'modus ponens'
[22]  →0
[23] cinco:r←'modus tolens'
[24]  →0
[25] seis:r←'silogismo disjuntivo'
[26]  →0
[27] sete:r←'silogismo hipotetico'
[28]  →0
[29] oito:r←'dilema construtivo'
[30]  →0
[31] nove:r←'dilema destrutivo'
[32]  →0
------------------------------------------------------------
[ 0]  r←traduz lin;i;j;a
[ 1]  r←((1↑⍴lin),80)⍴' '
[ 2]  j←1
[ 3] t0:→(j>1↑⍴lin)/acabou
[ 4]  a←''
```

```
[ 5]  i←1
[ 6] t1:→(i>1↓⍴lin)/fim
[ 7]  →(lin[j;i]='∨')/ou
[ 8]  →(lin[j;i]='∧')/e
[ 9]  →(lin[j;i]='~')/nao
[10]  →(lin[j;i]='→')/to
[11]  →(lin[j;i]='⊢')/dash
[12]  a←a,lin[j;i]
[13]  i←i+1
[14]  →t1
[15] ou:a←a,' ⍱lor '
[16]  i←i+1
[17]  →t1
[18] e:a←a,' ⍱land '
[19]  i←i+1
[20]  →t1
[21] nao:a←a,' ⍱sim '
[22]  i←i+1
[23]  →t1
[24] to:a←a,' ⍱to '
[25]  i←i+1
[26]  →t1
[27] dash:a←a,' ⍱vdash '
[28]  i←i+1
[29]  →t1
[30] fim:
[31]  →((⍴a)=+/a=' ')/pula
[32]  a←'$',(trim a),'$⍱⍱*'
[33] pula:
[34]  r[j;]←80↑a
[35]  j←j+1
[36]  →t0
[37] acabou:
------------------------------------------------------------
[ 0]  r←traduzmanda x;alfa;ql;inds;te;tab;xx;rr;num;isola
[ 1]  xx←x,','
[ 2]  alfa←'abcdefghijklmnopqrstuvwxyz'
[ 3]  LITERA←((1↑⍴LITERA),50)↑LITERA
[ 4]  tab←5 52⍴' '
[ 5]  tab[1;]←52↑'∧ e '
[ 6]  tab[2;]←52↑'∨ ou '
[ 7]  tab[3;]←52↑'~ n↑o '
[ 8]  tab[4;]←52↑'⊢ acarreta '
[ 9]  tab[5;]←52↑'→ ent↑o '
[10]  ql←(alfa∈x)/alfa
[11]  inds←(⍴ql)?1↑⍴LITERA
[12]  te←((((⍴ql),1)⍴ql),' ',LITERA[inds;]),[1]tab
[13]  rr←''
[14] t1:→(0≥⍴xx)/aca
[15]  isola←(num←1↑(xx=',')/⍳⍴xx)↑xx
[16] ⍝ 'isola = ',isola
[17] denovo:
[18]  →(isola[1]=',')/poevirg
[19]  →(1=⍴isola)/segue
[20]  →(isola[2]≠'→')/segue
[21]  rr←rr,' se'
[22] segue:rr←rr,trim te[(,te[;1])⍳isola[1];1+⍳51]
[23]  →junta
[24] poevirg:rr←rr,','
[25] junta:
[26]  isola←1↓isola
[27]  →(0=⍴isola)/conta
[28]  →denovo
```

```
[29] conta:
[30]  xx←num↓xx
[31]  →t1
[32] aca:
[33]  rr←1↓¯1↓rr
[34]  ULTX←x
[35]  r←79 quebra rr
-------------------------------------------------------------
[ 0]  opesq vivo099b n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo099 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PL099b  '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[53]  relat[1↑⍴relat;;]←upag
[54]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[55]  lixonol←lixonol ΔFM'c:⊀apl2⊀',((~⍷∧⊀⍷EVENTO=' ')/EVENTO),'.tex'
[56]  'Arquivo criado com o nome de c:⊀apl2⊀',EVENTO,'    .tex (nao ha gpa)'
-------------------------------------------------------------
[ 0]  opesq vivo099h n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo099 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PL099h  '
[ 9]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⊀apl2⊀',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
------------------------------------------------------------
[ 0]  opesq vivo099j n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL099j  '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA099j←80 ajusta FOLHALA099j
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA099j)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 26⍴' '
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←99 80⍴' '
[16]  f←FOLHALA099j
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(resp←3 0⍎xk),' ',opesq
[31]  esse[98;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[99;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracaso099j
[35]  esse[7+⍳90;]←xx
[36]  acuja←(f[;2]='#')/⍳1↑⍴f
[37]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[39]  ⍞←(⍎xk←xk+1),'-'
[40]  →testa
[41] fim:upag←(1 0+⍴f)⍴' '
[42] terminando:
[43]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[44]  relat[1↑⍴relat;;]←upag
[45]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[46]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[47]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'    .tex (nao ha gpa)'
------------------------------------------------------------
```

vivo100

```
[0]  AVISO
[1]  'Em EXEMPLOS estao resolvidos 7 exemplos que foram para f:\p\n\100'
------------------------------------------------------------
[ 0]  r←acerta100 tt;i;troca;aa;tx
[ 1]  tt←,tt
[ 2]  i←1
[ 3]  r←''
```

```
[ 4]  TEXTO←50 ajusta TEXTO
[ 5]  ⍝'TEX',('00'⍕aa),'← 50 ajusta TEX','00'⍕aa←?12   ⍝ qtos TEX ha
[ 6]  tx←⍝'TEXTO,[1]TEX','00'⍕aa
[ 7] t1:→(i>⍴tt)/fim
[ 8]  →(tt[i]='#')/fim
[ 9]  →(tt[i]∈tx[;1])/ok
[10] nok:r←r,tt[i]
[11]  i←i+1
[12]  →t1
[13] ok:
[14]  troca←1↓,(tt[i]=tx[;1])/[1]tx
[15]  r←r,' ',(trim troca)
[16]  i←i+1
[17]  →t1
[18] fim:
------------------------------------------------------------
[ 0]  r←geracaso100;tab;res;i;cara;r1
[ 1]  TABSIM←ajusta80 TABSIM
[ 2]  TABNAO←ajusta80 TABNAO
[ 3]  r←2⍴0
[ 4]  tab←10 360⍴' '
[ 5]  r1←40 80⍴' '
[ 6]  res←⍳0
[ 7]  i←1
[ 8] t1:→(i>10)/oba
[ 9]  cara←?2
[10]  →(cara=1)/nao
[11] sim:
[12]  tab[i;]←360↑acerta100 TABSIM[?1↑⍴TABSIM;]
[13]  res←res,1
[14]  →soma
[15] nao:
[16]  tab[i;]←360↑acerta100 TABNAO[?1↑⍴TABNAO;]
[17]  res←res,0
[18]  →soma
[19] soma:
[20]  i←i+1
[21]  →t1
[22] oba:
[23]  i←1
[24] t2:→(i>10)/fim
[25]  r1[((i-1)×4)+⍳4;]←4 80↑80 quebra tab[i;]
[26]  i←i+1
[27]  →t2
[28] fim:r[1]←⊂r1
[29]  r[2]←⊂res
------------------------------------------------------------
[ 0]  r←tam quebra lin;i
[ 1] ⍝ esta funcao quebra a linha lin em linhas de tamanho tam, sem cortar nada - pkantek
      mai/12
[ 2]  r←(0,tam)⍴' '
[ 3]  i←tam
[ 4]  →(i>⍴lin)/erro
[ 5] t1:→(lin[i]=' ')/oba
[ 6]  i←i-1
[ 7]  →(i<2)/erro
[ 8]  →t1
[ 9] oba:r←r,[1](1,tam)⍴tam↑lin[⍳i]
[10]  lin←i↓lin
[11]  →((⍴lin)>tam)/t1
[12]  r←r,[1](1,tam)⍴tam↑lin
[13]  →0
[14] erro:'nao foi possivel cortar'
```

```
[15]  r←0 0⍴' '
-------------------------------------------------------------
[ 0]  r←quem replace depara;de;i;j;k;onde;para
[ 1] ⍝ forma de usar: texto replace 'strin-de' 'string para'
[ 2] ⍝ obviamente eles nao precisam ter o mesmo tamanho
[ 3]  de←,⊃depara[1] ⋄ para←,⊃depara[2]
[ 4]  i←1 ⋄ r←((1↑⍴quem),200)⍴' '
[ 5] t1:→(i>1↑⍴quem)/fim
[ 6]  →(0=∨/onde←de⍷quem[i;])/naotem
[ 7]  j←1 ⋄ k←1
[ 8] t2:→(k>⍴quem[i;])/acabou
[ 9]  →(onde[k]=0)/soma
[10]  r[i;(j-1)+⍳⍴para]←para
[11]  j←j+⍴para
[12]  k←k+⍴de
[13]  →t2
[14] soma:r[i;j]←quem[i;k]
[15]  k←k+1
[16]  →(j=j←j+1)/t2
[17] naotem:r[i;]←200↑quem[i;]
[18] acabou:→(i=i←i+1)/t1
[19] fim:r←trim4 r
-------------------------------------------------------------
[ 0]  opesq vivo100a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo100 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PL100   '
[ 9]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[38]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[39]  esse[88;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[40]  esse[89;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[41] inica:
[42]  xx←geracaso100
[43]  esse[7+⍳40;]←⊃xx[1]
[44]  resp←resp,⊃xx[2]
[45]  xx←geracaso100
[46]  esse[47+⍳40;]←⊃xx[1]
[47]  resp←resp,⊃xx[2]
[48]  resu←resu,[1]1 21⍴resp
[49]  acuja←(f[;2]='#')/⍳1↑⍴f
[50]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[51]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[52]  ⎕←(⍕xk←xk+1),'-'
[53]  →testa
[54] fim:upag←(1 0+⍴f)⍴' '
[55]  →(1=≡n)/elafa
[56]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[57]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[58]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 2 0 2 0 2 0 2 0 3 0 2 0 2 0 2 0 2 0 10 0 2
       0 2 0 2 0 2 0 3 0 2 0 2 0 2 0 2 0)⍕resu
[59]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[60]  →terminando
[61] AAAAAAAAAAA↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[62] elafa:aaa←(ylu[;⍳36],2 0 2 0 2 0 2 0 2 0 3 0 2 0 2 0 2 0 2 0 4 0 2 0 2 0 2 0 2 0 3 0
      2 0 2 0 2 0 2 0⍕0 1↓resu)
[63] AAAAAAAAAAA↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[64]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[65]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[66] terminando:
[67]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[68]  relat[1↑⍴relat;;]←upag
[69]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[70] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[71]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[72]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[73]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo101

```
[0]  r←botaecom x
[1]  r←x
[2]  r[;5+4×¯1+⍳7]←'&'
[3]  r←r,[2]3 9⍴'\\ \hline'
------------------------------------------------------------
[ 0]  res←geracaso1 alfa;a;b;c;m;n;p;q;r;s;t;u;v;w
[ 1]  a←⊃alfa[1]
[ 2]  b←⊃alfa[2]
[ 3]  c←⊃alfa[3]
[ 4]  m←,a inter b inter c
[ 5]  n←,(a inter b)menos c
[ 6]  p←,a menos b
[ 7]  q←,c menos(a uniao b)
[ 8]  r←,a inter(b uniao c)
[ 9]  s←,(b menos(a uniao c))uniao((a inter c)menos(a inter b inter c))
[10]  t←,a uniao b uniao c
[11]  u←,((a inter b)menos c)uniao((a inter c)menos b)uniao((b inter c)menos a)
[12]  v←,(a inter b)uniao(a inter c)uniao(b inter c)
[13]  w←,(a uniao b uniao c)menos v
[14]  res←4⍴0
```

```
[15]  res[1]←⊂a
[16]  res[2]←⊂b
[17]  res[3]←⊂c
[18]  res[4]←⊂(ρm),(ρn),(ρp),(ρq),(ρr),(ρs),(ρt),(ρu),(ρv),(ρw)
-------------------------------------------------------------
[0]  r←gerapa tiranu
[1]  r←tiranu[1]+tiranu[2]×¯1+ιtiranu[3]
-------------------------------------------------------------
[0]  r←a inter b
[1]  r←(a∈b)/a
-------------------------------------------------------------
[0]  r←a menos b
[1]  r←(~a∈b)/a
-------------------------------------------------------------
[ 0]  r←prova;x;z
[ 1]  x←geracaso1((8?15)(8?15)(8?15))
[ 2]  'A='
[ 3]  z←⊃x[1]
[ 4]  (⍕z[1]),',',(⍕z[2]),',',(⍕z[3]),',',(⍕z[4]),',',(⍕z[5]),',',(⍕z[6]),',',(⍕z[7]),',',
      (⍕z[8])
[ 5]  'B='
[ 6]  z←⊃x[2]
[ 7]  (⍕z[1]),',',(⍕z[2]),',',(⍕z[3]),',',(⍕z[4]),',',(⍕z[5]),',',(⍕z[6]),',',(⍕z[7]),',',
      (⍕z[8])
[ 8]  'C='
[ 9]  z←⊃x[3]
[10]  (⍕z[1]),',',(⍕z[2]),',',(⍕z[3]),',',(⍕z[4]),',',(⍕z[5]),',',(⍕z[6]),',',(⍕z[7]),',',
      (⍕z[8])
[11]  z←⊃x[4]
[12]  'M=',(⍕z[1]),' N=',(⍕z[2]),' P=',(⍕z[3]),' Q=',(⍕z[4]),' R=',(⍕z[5])
-------------------------------------------------------------
[0]  r←tiradups v
[1]  r←((v⍳v)=ιρv)/v
-------------------------------------------------------------
[0]  r←a uniao b
[1]  r←tiradups a,b
-------------------------------------------------------------
[ 0]  opesq vivo101b n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo101 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10ρ' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PL101b  '
[ 9]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎ιn
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[24]  esse[3;]←80↑4 2⍕VERSAOa←1.06
[25]  esse[4;]←80↑ylu[xk;⍳6]
[26] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[27]  →(36=1↓⍴ylu)/zebra
[28]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[29]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[30]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[31]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[32]  →maiszebra
[33] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA101c←ajusta80 FOLHALA101c
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA101c)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 11⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←18 80⍴' '
[16]  f←FOLHALA101c
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.06
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[17;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[18;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracaso1((8?15)(8?15)(8?15))
[35]  esse[8 9 10;]←3 80↑botaecom 4 0⍕3 8⍴(⊃xx[1]),(⊃xx[2]),⊃xx[3]
[36]  zz←⊃xx[4]
[37]  xx←geracaso1((8?15)(8?15)(8?15))
[38]  esse[11 12 13;]←3 80↑botaecom 4 0⍕3 8⍴(⊃xx[1]),(⊃xx[2]),⊃xx[3]
[39]  zz←zz+⊃xx[4]
[40]  xx←geracaso1((8?15)(8?15)(8?15))
[41]  esse[14 15 16;]←3 80↑botaecom 4 0⍕3 8⍴(⊃xx[1]),(⊃xx[2]),⊃xx[3]
[42]  zz←zz+⊃xx[4]
[43]  resu←resu,[1]1 11⍴resp,zz
[44]  acuja←(f[;2]='#')/⍳1↑⍴f
[45]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[46]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[47]  ⍞←(⍕xk←xk+1),'-'
[48]  →testa
[49] fim:upag←(1 0+⍴f)⍴' '
[50]  →(1=≡n)/elafa
[51]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[52]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[53]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0,4 0 4 0 4 0 4 0 5 0 4 0 4 0 4 0 4 0)⍕resu
[54]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[55]  →terminando
[56] elafa:aaa←(ylu[;⍳36],4 0⍕0 1↓resu)
[57]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[58]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[59] terminando:
[60]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[61]  relat[1↑⍴relat;;]←upag
[62]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[63]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[64]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[65]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo102

```
[0]  AVISO
[1]  'Nao esqueca de gerar "geraexemplofolha" e imprimi-la para'
[2]  'levar para a aula e preencher a primeira parte das folhas'
[3]  '----------------------'
[4]  'olhe tambem geragabas = contem todos os exercicios pedidos, feitos.'
------------------------------------------------------------
[0]  entra x
[1]  →(140≠+/BDR[x;]=' ')/0
[2]  BDQ[x;]
[3]  BDR[x;]←140↑□
------------------------------------------------------------
[ 0]  geraexemplofolha;dhx;cabe;zz;fol;xk;bloco;iikbd;lixo
[ 1]  CABE←ajusta80 CABE
[ 2]  EXEM←ajusta80 EXEM
[ 3]  fol←0 80⍴' '
[ 4]  fol←fol,[1]CABE
[ 5]  fol←fol,[1]1 80⍴80↑'\section*{Exemplos da folha}'
[ 6]  fol←fol,[1]EXEM
[ 7] fim:fol←fol,[1]1 80⍴80↑'\end{document}'
[ 8]  lixo←fol ⎕FM'c:\apl2\respexem.tex'
[ 9]  'gerada a cartela em c:\apl2\respexem.tex'
------------------------------------------------------------
[ 0]  geragabas;dhx;cabe;zz;fol;xk;bloco;iikbd;lixo;i
[ 1]  CABE←ajusta80 CABE
[ 2]  EXEM←ajusta80 EXEM
[ 3]  fol←0 80⍴' '
[ 4]  fol←fol,[1]CABE
[ 5]  fol←fol,[1]1 80⍴80↑'\section*{Exemplos da folha}'
[ 6]  fol←fol,[1]EXEM
[ 7]  fol←fol,[1]1 80⍴80↑'---------------------- \newline'
[ 8]  i←1
[ 9] t1:→(i>1↑⍴BDQ)/fim
[10]  fol←fol,[1]2 80↑2 70⍴BDQ[i;]
[11]  fol←fol,[1]1 80⍴80↑'\newline'
[12]  fol←fol,[1]2 80↑2 70⍴BDR[i;]
[13]  fol←fol,[1]1 80⍴80↑'\newline -------- \newline'
[14]  i←i+1
[15]  →t1
[16] fim:
[17] fim:fol←fol,[1]1 80⍴80↑'\end{document}'
[18]  lixo←fol ⎕FM'c:\apl2\respgaba.tex'
[19]  'gerada a listagem em c:\apl2\respgaba.tex'
------------------------------------------------------------
[0]  mo
[1]  1 numera(100 30↑BDQ),'-',(100 30↑BDR)
------------------------------------------------------------
[ 0]  ref;i;j;k;candi;qt;zz;r
[ 1]  zz←⎕FM'f:/infoland/lixo1234'
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10]  →(0=' '∈j↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80⍴80↑j↑candi
```

```
[15]  candi←j↓candi
[16]  →((⍴candi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80⍴80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
[22]  y←r
-------------------------------------------------------------
[0]  r←trim2 x;z
[1] ⍝f corta as linhas inferiores que sao brancas
[2]  →(2≠⍴⍴x)/erro
[3]  z←+/[2]x=' '
[4]  r←(z≠1↓⍴x)/[1]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
-------------------------------------------------------------
[0]  r←trim3 x;z
[1] ⍝f corta as colunas direitas que sao 0
[2]  →(2≠⍴⍴x)/erro
[3]  z←+/[1]x=0
[4]  r←(z≠1↑⍴x)/[2]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
-------------------------------------------------------------
[0]  r←trim4 x;z
[1] ⍝f corta as colunas direitas que sao brancos
[2]  →(2≠⍴⍴x)/erro
[3]  z←+/[1]x=' '
[4]  r←(z≠1↑⍴x)/[2]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
-------------------------------------------------------------
[ 0]  opesq vivo102a n;CORRECAO;EVENTO;aaa;acuja;altnums;dhx;esse;f;ii;lixo1;lixonol;lpor;
      nomes;nums;plog;ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL102   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⍙FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA102←ajusta80 FOLHALA102
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA102)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⍙FM'c:\apl2\VIVOBLOI'
[13]  xk←1 ⋄⍝resu←0___⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←49 80⍴' '
[16]  f←FOLHALA102
[17]  BDQ←((1↑⍴BDQ),140)↑BDQ
[18]  BDR←((1↑⍴BDR),140)↑BDR
[19]  esse[1;]←80↑dhx[1;]
[20]  esse[2;]←80↑dhx[2;]
[21]  esse[3;]←80↑4 2⍎VERSAOa←3.04
[22]  esse[4;]←80↑ylu[xk;⍳6]
[23] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[24]  →(36=1↓⍴ylu)/zebra
[25]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[26]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[27]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
```

```
[28]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[29]  →maiszebra
[30] ⍝⍝⍝
```

```
[17]  r←r,'/é possivel provar que ',(trim,NOMES[k;]),' nto ',(trim,REGRAS[j[1];60+⍳30]),'
      ? ' ⍝ ~c?
[18]  →fim
[19] tres:
[20]  r←'quem ',(trim,REGRAS[j[1];⍳30]),', ',trim,REGRAS[j[1];30+⍳30]  ⍝ a→b
[21]  r←r,'/','quem ',(trim,REGRAS[j[2];⍳30]),', ',trim,REGRAS[j[2];30+⍳30] ⍝ x→y
[22]  r←r,'/',(trim,NOMES[k;]),' ',(trim REGRAS[j[2];⍳30]),' ou ',trim REGRAS[j[1];⍳30] ⍝
      x ∨ a
[23]  r←r,'/',(trim,NOMES[k;]),' nto ',trim REGRAS[j[1];⍳30]  ⍝ ~a
[24]  r←r,'/é possivel provar que ',(trim,NOMES[k;]),' ',(trim REGRAS[j[1];30+⍳30]),' ? '
      ⍝ b ?
[25]  →fim
[26] quatro:
[27]  r←(trim,NOMES[k;]),' ',(trim REGRAS[j[1];⍳30]),' ou ',(trim,NOMES[k;]),' ',trim,REGR
      AS[j[2];⍳30]   ⍝ a ∨ b
[28]  r←r,'/quem ',(trim,REGRAS[j[1];⍳30]),', ',trim,REGRAS[j[1];30+⍳30]   ⍝ a→c
[29]  r←r,'/','quem ',(trim,REGRAS[j[2];⍳30]),', ',trim,REGRAS[j[2];30+⍳30]  ⍝ b→d
[30]  r←r,'/é possivel provar que ',(trim,NOMES[k;]),' ',(trim REGRAS[j[1];30+⍳30]),' e '
[31]  r←r,' ',(trim,NOMES[k;]),' ',(trim REGRAS[j[2];30+⍳30]),' ? '  ⍝ c ∧ d
[32]  →fim
[33] fim:
------------------------------------------------------------
[ 0]  r←montaver i;j;k
[ 1]  j←2?1↑⍴REGRAS
[ 2]  k←?1↑⍴NOMES
[ 3]  →(i=1)/um
[ 4]  →(i=2)/dois
[ 5]  →(i=3)/tres
[ 6]  →(i=4)/quatro
[ 7] um:r←'quem ',(trim,REGRAS[j[1];⍳30]),', ',trim,REGRAS[j[1];30+⍳30]  ⍝ a→b
[ 8]  r←r,'/','quem ',(trim,REGRAS[j[2];⍳30]),', ',trim,REGRAS[j[2];30+⍳30] ⍝ x→y
[ 9]  r←r,'/',(trim,NOMES[k;]),' nto ',trim,REGRAS[j[1];30+⍳30]           ⍝ ~b
[10]  r←r,'/',(trim,NOMES[k;]),' nto ',trim REGRAS[j[2];⍳30]              ⍝ ~x
[11]  r←r,'/é possivel provar que ',(trim,NOMES[k;]),' nao ',(trim,REGRAS[j[1];⍳30]),' ? '
        ⍝ ~a?
[12]  →fim
[13] dois:
[14]  r←'quem ',(trim,REGRAS[j[1];⍳30]),', ',trim,REGRAS[j[1];30+⍳30]   ⍝ a→b
[15]  r←r,'/quem ',(trim,REGRAS[j[1];30+⍳30]),', ',trim,REGRAS[j[1];60+⍳30] ⍝ b→c
[16]  r←r,'/',(trim,NOMES[k;]),' nto ',trim REGRAS[j[1];60+⍳30]       ⍝ ~c
[17]  r←r,'/é possivel provar que ',(trim,NOMES[k;]),' nto ',(trim,REGRAS[j[1];⍳30]),' ? '
       ⍝ ~a ?
[18]  →fim
[19] tres:
[20]  r←'quem ',(trim,REGRAS[j[1];⍳30]),', ',trim,REGRAS[j[1];30+⍳30]    ⍝ a→b
[21]  r←r,'/quem ',(trim,REGRAS[j[2];⍳30]),', ',trim,REGRAS[j[2];30+⍳30] ⍝ x→y
[22]  r←r,'/',(trim,NOMES[k;]),' ',(trim REGRAS[j[2];⍳30]),' ou ',trim REGRAS[j[1];⍳30] ⍝
      x ∨ a
[23]  r←r,'/',(trim,NOMES[k;]),' nto ',trim REGRAS[j[2];⍳30]  ⍝ ~x
[24]  r←r,'/é possivel provar que ',(trim,NOMES[k;]),' ',(trim REGRAS[j[1];30+⍳30]),' ? '
      ⍝ b ?
[25]  →fim
[26] quatro:
[27]  r←(trim,NOMES[k;]),' ',(trim REGRAS[j[1];⍳30]),' e ',(trim,NOMES[k;]),' ',trim,REGRA
      S[j[2];⍳30]  ⍝ a ∧ b
[28]  r←r,'/quem ',(trim,REGRAS[j[1];⍳30]),', ',trim,REGRAS[j[1];30+⍳30]   ⍝ a→c
[29]  r←r,'/','quem ',(trim,REGRAS[j[2];⍳30]),', ',trim,REGRAS[j[2];30+⍳30] ⍝ b→d
[30]  r←r,'/é possivel provar que ',(trim,NOMES[k;]),' ',(trim REGRAS[j[1];30+⍳30]),' ou '
[31]  r←r,' ',(trim,NOMES[k;]),' ',(trim REGRAS[j[2];30+⍳30]),' ? '    ⍝ c ∨ d ?
[32]  →fim
[33] fim:
------------------------------------------------------------
[ 0]  r←trazq zu;li;x;j
```

```
[ 1]  li←1
[ 2]  r←4 80⍴' '
[ 3]  →(zu=1)/ver
[ 4]  x←montafal?4
[ 5]  →junta
[ 6] ver:
[ 7]  x←montaver?4
[ 8] junta:
[ 9]  x←x,100⍴' '
[10]  j←80
[11] vorta:
[12]  →((x[j]=' ')∨(x[j]='/'))/achou
[13]  j←j-1
[14]  →vorta
[15] achou:r[li;]←80↑x[⍳j]
[16]  x←j↓x
[17]  →((⍴x)=+/(,x)=' ')/fim
[18]  →(0=⍴x)/fim
[19]  li←li+1
[20]  →vorta
[21] fim:
------------------------------------------------------------
[ 0]  opesq vivo103a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;jj;lixo1;lixonol;nomes;ql39;ql
      inha;qual;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo103 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PL103   '
[ 9]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
[15]  FOLHALA103←ajusta80 FOLHALA103
[16]  REGRAS←((1↑⍴REGRAS),90)↑REGRAS
[17]  NOMES←((1↑⍴NOMES),10)↑NOMES
[18]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA103)⍴' '
[19]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[20]  xk←1 ⋄ resu←0 11⍴0
[21] testa:→(xk>1↑⍴ylu)/fim
[22]  esse←49 80⍴' '
[23]  f←FOLHALA103
[24]  esse[1;]←80↑dhx[1;]
[25]  esse[2;]←80↑dhx[2;]
[26]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[27]  esse[4;]←80↑ylu[xk;⍳6]
[28] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[29]  →(36=1↓⍴ylu)/zebra
[30]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[31]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[32]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[33]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[34]  →maiszebra
[35] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
[36] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[37] ⍝ ↓↓↓↓ e ↑↑↑↑↑ idem
[38] maiszebra:
```

```
[39]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[40]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[41]  esse[48;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[42]  esse[49;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[43] inica:
[44]  jj←1
[45] kai:→(jj>10)/uja
[46]  qual←¯1+?2
[47]  esse[(7+(jj-1)×4)+⍳4;]←trazq qual
[48]  resp←resp,qual
[49]  jj←jj+1
[50]  →kai
[51] uja:
[52]  resu←resu,[1]1 11⍴resp
[53]  acuja←(f[;2]='#')/⍳1↑⍴f
[54]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[55]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[56]  ⍞←(⍕xk←xk+1),'-'
[57]  →testa
[58] fim:upag←(1 0+⍴f)⍴' '
[59]  →(1=≡n)/elafa
[60]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[61]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[62]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 6 0,(8⍴3 0),5 0,8⍴3 0)⍕resu
[63]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[64]  →terminando
[65] AAAAAAAAAAA↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[66] elafa:aaa←(ylu[;⍳36],((10⍴3 0),5 0,8⍴3 0)⍕0 1↓resu)
[67] AAAAAAAAAAA↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[68]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[69]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[70] terminando:
[71]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[72]  relat[1↑⍴relat;;]←upag
[73]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[74] A se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[75]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[76]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[77]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo104

```
[0]  AVISO
[1]  'Veja os teoremas demonstrados no arquivo TEOREMAS.TEX'
[2]  'um texto de apoio aos alunos esta em TEOR_ALUN.TEX'
[3]  ''
-------------------------------------------------------------
[0]  editadb n;x
[1]  x←DB827[n;;]
[2]  ⎕EDIT'x'
[3]  DB827[n;;]←(1↓⍴DB827)↑x
-------------------------------------------------------------
[0]  r←geracaso;som;qua
[1]  som←⍴RESP104
[2]  qua←5?som
[3]  r←qua,,RESP104[qua]
-------------------------------------------------------------
[0]  r←geracaso104;som;qua
[1]  som←¯3+⍴RESP104
[2]  qua←3+2?som
[3]  r←qua,,RESP104[qua]
```

```
------------------------------------------------------------
[ 0]  ref;i;j;k;candi;qt;zz;r
[ 1]  zz←ΔFM'f:/infoland/lixo1234'
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10]  →(0=' '∈j↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80⍴80↑j↑candi
[15]  candi←j↓candi
[16]  →((⍴candi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80⍴80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
[22]  y←r
------------------------------------------------------------
[ 0]  opesq vivo104a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xxx;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL104   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA104←ajusta80 FOLHALA104
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA104)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[12]  xk←1 ⋄ resu←0 3⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←43 80⍴' '
[15]  f←FOLHALA104
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←1.01
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  →(36=1↓⍴ylu)/zebra
[21]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[22]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[23]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[24]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[25]  →maiszebra
[26] zebra:
[27]  esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[42;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[43;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xxx←geracaso104
[35]  esse[7+⍳17;]←DB104[xxx[1];;]
```

```
[36]  esse[24+⍳17;]←DB104[xxx[2];;]
[37]  resu←resu,[1]1 3⍴resp,xxx[2+⍳2]
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[41]  ⍞←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 3 0)⍕resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu,5 0⍕0 1↓resu)
[51]  lixonol←aaa ⎕FM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[58]  lixonol←lixonol ⎕FM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo105

```
[ 0]  r←geracaso105;cands;cnum;lixo;rrr
[ 1]  r←4 4⍴0
[ 2]  cands←¯4 ¯3 ¯2 2 3 4 5 6 ¯3 ¯2 2 3 4 5 ¯2 2 3 4 2 3
[ 3]  cnum←4 5 6 7 3 4 5 6 7 4 5 6 7 4 5 6 7 8 9 9 9 9
[ 4]  r[;⍳2]←4 2⍴cands[8?⍴cands]
[ 5]  r[;3]←4 1⍴cnum[4?⍴cnum]
[ 6]  A←r[1;2]×⍳r[1;3]
[ 7]  A←A-A[1]-r[1;1]
[ 8]  B←r[2;2]×⍳r[2;3]
[ 9]  B←B-B[1]-r[2;1]
[10]  C←r[3;2]×⍳r[3;3]
[11]  C←C-C[1]-r[3;1]
[12]  D←r[4;2]×⍳r[4;3]
[13]  D←D-D[1]-r[4;1]
[14]  rrr←resolve105
[15]  →(4≠+/0 0 0 0=rrr)/oba
[16]  r←4 4⍴0
[17]  →0
[18] oba:
[19]  r[;4]←4 1⍴rrr
[20]  lixo←⎕EX 4 1⍴'ABCD'
------------------------------------------------------------
[0]  r←a inter b
[1]  r←(a∈b)/a
------------------------------------------------------------
[0]  r←a menos b
[1]  r←(~a∈b)/a
------------------------------------------------------------
[ 0]  r←resolve105;aa;uu
[ 1]  r←4⍴0
[ 2]  uu←A uniao B uniao C uniao D
[ 3]  aa←A uniao B
[ 4]  aa←aa[⍋aa]
```

```
[ 5]  →(5<ρaa)/ok
[ 6]  ⍞←'*'
[ 7]  r←0 0 0 0
[ 8]  →0
[ 9] ok:
[10]  r[1]←aa[6]
[11]  r[2]←+/A inter(B uniao C)
[12]  r[3]←ρB inter(uu menos C)
[13]  r[4]←⌈/C uniao D uniao A
-------------------------------------------------------------
[0]  r←tiradups v
[1]  r←((v⍳v)=⍳ρv)/v
-------------------------------------------------------------
[0]  r←a uniao b
[1]  r←tiradups a,b
-------------------------------------------------------------
[ 0]  opesq vivo105a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL105   '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA105←ajusta80 FOLHALA105
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALA105)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 9ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←33 80ρ' '
[16]  f←FOLHALA105
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.07
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑ρf),4)ρ'⍀#05')/⍳1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[32;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[33;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracaso105
[35]  →(16≠+/(16ρ0)=,xx)/forza
[36]  →inica
[37] forza:
[38]  esse[7+⍳12;]←12 80↑'¯-'edit 10 0⍎12 1ρxx[;⍳3]
[39]  resp←resp,,xx[;4]
[40] inica2:
[41]  xx←geracaso105
[42]  →(16≠+/(16ρ0)=,xx)/forza2
[43]  →inica2
[44] forza2:
```

```
[45]  esse[19+⍳12;]←12 80⍴'¯-'edit 10 0⍕12 1⍴xx[;⍳3]
[46]  resp←resp,,xx[;4]
[47]  resu←resu,[1]1 9⍴resp
[48]  acuja←(f[;2]='#')/⍳1↑⍴f
[49]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[50]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200⍴'\clearpage'
[51]  ⎕←(⍕xk←xk+1),'-'
[52]  →testa
[53] fim:upag←(1 0+⍴f)⍴' '
[54]  →(1=≡n)/elafa
[55]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[56]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[57]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←5 0 10 0 4 0 4 0 4 0 10 0 4 0 4 0 4 0)⍕resu
[58]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[59]  →terminando
[60] elafa:aaa←(ylu[;⍳36],'¯-'edit 10 0 4 0 4 0 4 0 10 0 4 0 4 0 4 0⍕0 1↓resu)
[61]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[62]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[63] terminando:
[64]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[65]  relat[1↑⍴relat;;]←upag
[66]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[67]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[68]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[69]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo106

```
[0]  AVISO
[1]  'Em f:\p\n\106 ha varios arquivos SITUS_ que contem as solucoes dos exercicios'
-------------------------------------------------------------
[ 0]  r←geraum106;vars;v2;op;depara;v3;op2;r1;r2;v4;op4
[ 1]  r←3 79⍴' ' ⋄ depara←'  ' ⋄ depara[1]←'"' ⋄ depara[2]←''''
[ 2]  vars←'ABCDFGHIJKLM'
[ 3]  v2←vars[2?⍴vars]
[ 4]  v2←v2[⎕AV⍋v2]
[ 5]  op←'+.'[?2]
[ 6]  →(1=?3)/deu3
[ 7]  r[1;]←79↑v2[1],op,v2[2]
[ 8]  →junta
[ 9] deu3:r[1;]←79↑depara edit'(',v2[1],op,v2[2],')"'
[10] junta:
[11]  v2←vars[2?⍴vars]
[12]  v2←v2[⎕AV⍋v2]
[13]  op←'+.'[?2]
[14]  →(1=?3)/deu4
[15]  r1←79↑'(',v2[1],op,v2[2],')'
[16]  →junta2
[17] deu4:r1←'(',depara edit'(',v2[1],op,v2[2],')"',')'
[18] junta2:
[19]  v4←vars[3?⍴vars]
[20]  v4←v4[⎕AV⍋v4]
[21]  op4←'..++.'[?2⍴5]
[22]  r[2;]←79↑'(',v4[1],op4[1],v4[2],')',op4[2],v4[3]
[23]  v3←vars[2?⍴vars]
[24]  v3←v3[⎕AV⍋v3]
[25]  op2←'+.'[?2]
[26]  →(1=?3)/deu5
[27]  r1←'(',v3[1],op2,v3[2],')'
[28]  →junta3
[29] deu5:r1←'(',depara edit'(',v3[1],op2,v3[2],')"',')'
```

```
[30] junta3:
[31]  v3←vars[2?⍴vars]
[32]  v3←v3[⍋AV⍳v3]
[33]  op2←'+.'[?2]
[34]  →(1=?3)/deu5a
[35]  r2←'(',v3[1],op2,v3[2],')'
[36]  →junta3a
[37] deu5a:r2←'(',depara edit'(',v3[1],op2,v3[2],')"',')'
[38] junta3a:
[39]  →(1=?3)/deu6
[40]  r[3;]←79↑r1,('+.'[?2]),r2
[41]  →junta4
[42] deu6:r[3;]←79↑'(',depara edit'(',r1,('+.'[?2]),r2,')"',')'
[43] junta4:
-------------------------------------------------------------
[ 0]  opesq vivo106a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;qual;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo106 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PL106   '
[ 9]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
[15]  FOLHALA106←ajusta80 FOLHALA106
[16]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA106)⍴' '
[17]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[18]  xk←1 ⋄ resu←0 0⍴0
[19] testa:→(xk>1↑⍴ylu)/fim
[20]  esse←25 80⍴' '
[21]  f←FOLHALA106
[22]  esse[1;]←80↑dhx[1;]
[23]  esse[2;]←80↑dhx[2;]
[24]  esse[3;]←80↑4 2⍎VERSAOa←1.04
[25]  esse[4;]←80↑ylu[xk;⍳6]
[26] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[27]  →(36=1↓⍴ylu)/zebra
[28]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[29]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[30]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[31]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[32]  →maiszebra
[33] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
[34] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[35] ⍝ ↓↓↓↓ e ↑↑↑↑↑ idem
[36] maiszebra:
[37]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[38]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[39]  esse[24;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[40]  esse[25;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[41] inica:
[42]  xx←geraum106
[43]  esse[7+⍳3;]←3 80↑xx
[44]  xx←geraum106
[45]  esse[10+⍳3;]←3 80↑xx
```

```
[46]  qual←?9
[47]  esse[13+⍳10;]←10 80↑⍕'SITUS',1 0⍕qual
[48] ⍝ resp←resp,,xx[2 3;5]
[49] ⍝ resu←resu,[1]1 3⍴resp
[50]  acuja←(f[;2]='#')/⍳1↑⍴f
[51]  f[acuja;⍳80]←esse[⍕,f[acuja;3 4],' ';]
[52]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[53]  ⎕←(⍕xk←xk+1),'-'
[54]  →testa
[55] fim:upag←(1 0+⍴f)⍴' '
[56]  →elafa
[57]  →(1=≡n)/elafa
[58]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[59]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[60]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍕resu
[61]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[62]  →terminando
[63] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[64] elafa:
[65]  →terminando
[66]  aaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[67] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[68]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[69]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[70] terminando:
[71]  'Nao ha aquivo GPA'
[72]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[73]  relat[1↑⍴relat;;]←upag
[74]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[75] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[76]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[77]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[78]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'    (.tex)'
------------------------------------------------------------
```

vivo108

```
[ 0]  opesq vivo108a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo108 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PL108   '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[23]  esse[2;]←80↑dhx[2;]
[24]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[25]  esse[4;]←80↑ylu[xk;⍳6]
[26] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[27]  →(36=1↓⍴ylu)/zebra
[28]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[29]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[30]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[31]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[32]  →maiszebra
[33] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[6]  r←1
------------------------------------------------------------
[0]  r←expp x
[1]  r←x[⎕IO],'$⍀gets$',3↓x
------------------------------------------------------------
[0]  r←gera3
[1]  r←(6⍴0),(2⍴2),(2⍴¯2),(2⍴1),(2⍴¯1),(1000+⍳5),-1000+⍳5
[2]  r←r[(⍴r)?⍴r]
[3]  r←r[3?⍴r]
------------------------------------------------------------
[0]  r←gera3letras
[1]  r←'TTTTTZZZZZVVVVVV'
[2]  r←r[3?⍴r]
------------------------------------------------------------
[ 0]  r←gerafinal;x
[ 1]  x←?3
[ 2]  →(x>⎕IO)/tem
[ 3] naotem:r←''
[ 4]  →0
[ 5] tem:
[ 6]  →(x=2+⎕IO)/letra
[ 7]  x←9-?18
[ 8]  →(x=⎕IO-1)/naotem
[ 9]  →(x>0)/pos
[10] neg:r←' - ',1 0⍕|x
[11]  →0
[12] pos:r←' + ',1 0⍕x
[13]  →0
[14] letra:x←10-?19
[15]  →(x=⎕IO-1)/naotem
[16]  →(x>0)/poca
[17] neca:r←' - ','AEHKM'[?5]
[18]  →0
[19] poca:r←' + ','AEHKM'[?5]
------------------------------------------------------------
[ 0]  r←geraquesprov;aa;bb
[ 1]  r←14 80⍴' '
[ 2]  geravars
[ 3]  r[1;]←80↑'Supondo:⍀⍀*'
[ 4]  r[2;]←80↑'⍀begin{tabular}{lllllllllllllllll}'
[ 5]  r[3;]←80↑expp,(¯1↓,((1 3⍴'V  '),[1]16 3⍴3 0⍕V),'&'),'⍀⍀'
[ 6]  r[4;]←80↑expp,(¯1↓,((1 3⍴'T  '),[1]16 3⍴3 0⍕T),'&'),'⍀⍀'
[ 7]  r[5;]←80↑expp,(¯1↓,((1 3⍴'Z  '),[1]16 3⍴3 0⍕Z),'&'),'⍀⍀'
[ 8]  r[6;]←80↑'⍀end{tabular}⍀⍀*'
[ 9]  r[7;]←80↑'e ainda supondo as variáveis⍀⍀*'
[10]  r[8;]←80↑'¯-'edit 75↑'A=',(2 0⍕A),' E=',(2 0⍕E),' H=',(2 0⍕H),' K=',(2 0⍕K),' M=',(2
       0⍕M),'⍀⍀*'
[11]  r[9;]←80↑'pergunta-se:⍀⍀*'
[12]  r[10;]←80↑'a. Qual o valor da expressto abaixo ?⍀⍀*'
[13]  r[11;]←80↑3↓aa←testa3
[14]  r[12;]←80↑'b. Qual o valor da expressto abaixo ?⍀⍀*'
[15]  r[13;]←80↑3↓bb←testa3
[16]  r[14;]←80↑('¯-'edit 3↑aa),'¯-'edit 80↑3↑bb
[17]  limpavars
------------------------------------------------------------
[0]  r←gerav tam
[1]  r←?((⌊tam÷2)⍴8),(⌈tam÷2)⍴20
------------------------------------------------------------
[0]  geravars
[1]  V←gerav 16
[2]  T←gerav 16
[3]  Z←gerav 16
[4]  A←9-?18
```

```
[5]  E←9-⍰18
[6]  H←9-⍰18
[7]  K←9-⍰18
[8]  M←9-⍰18
-------------------------------------------------------------
[0]  limpavars;lixo
[1]  lixo←⎕EX'A'
[2]  lixo←⎕EX'E'
[3]  lixo←⎕EX'H'
[4]  lixo←⎕EX'K'
[5]  lixo←⎕EX'M'
[6]  lixo←⎕EX'V'
[7]  lixo←⎕EX'T'
[8]  lixo←⎕EX'Z'
-------------------------------------------------------------
[  0]  livr161a como;esse;xx;f;acuja;aind
[  1]  esse←325 80⍴' '
[  2]  LIVRO161←ajusta80 LIVRO161
[  3]  f←LIVRO161
[  4] inica:
[  5]  aind←7
[  6]  xx←loop 40
[  7]  xx1←0 3↓xx
[  8]  xx2←xx[;⍳3]
[  9]  esse[aind+1;⍳75]←75↑,(⍕1↓,((1 3⍴'V  '),[1]16 3⍴3 0⍕V),'&'),'⍀⍀'
[ 10]  esse[aind+2;⍳75]←75↑,(⍕1↓,((1 3⍴'T  '),[1]16 3⍴3 0⍕T),'&'),'⍀⍀'
[ 11]  esse[aind+3;⍳75]←75↑,(⍕1↓,((1 3⍴'Z  '),[1]16 3⍴3 0⍕Z),'&'),'⍀⍀'
[ 12]  esse[aind+4;⍳75]←'⍎'-'edit 75↑'A=',(2 0⍕A),' E=',(2 0⍕E),' H=',(2 0⍕H),' K=',(2 0⍕K),
      ' M=',2 0⍕M
[ 13]  xx1←xx1,48 18⍴' '
[ 14]  xx1[;47+⍳8]←'_'
[ 15]  xx1[8×⍳6;55+⍳10]←6 10⍴,((6 1⍴1 0⍕⍳6),'.'),6 8⍴'_'
[ 16]  esse[aind+4+⍳48;⍳75]←xx1
[ 17]  oba←6 8⍴,⍪,xx2
[ 18]  esse[320;]←80↑4 0⍕,+/[2]oba
[ 19]  aind←59
[ 20]  xx←loop 40
[ 21]  xx1←0 3↓xx
[ 22]  xx2←xx[;⍳3]
[ 23]  esse[aind+1;⍳75]←75↑,(⍕1↓,((1 3⍴'V  '),[1]16 3⍴3 0⍕V),'&'),'⍀⍀'
[ 24]  esse[aind+2;⍳75]←75↑,(⍕1↓,((1 3⍴'T  '),[1]16 3⍴3 0⍕T),'&'),'⍀⍀'
[ 25]  esse[aind+3;⍳75]←75↑,(⍕1↓,((1 3⍴'Z  '),[1]16 3⍴3 0⍕Z),'&'),'⍀⍀'
[ 26]  esse[aind+4;⍳75]←'⍎'-'edit 75↑'A=',(2 0⍕A),' E=',(2 0⍕E),' H=',(2 0⍕H),' K=',(2 0⍕K),
      ' M=',2 0⍕M
[ 27]  xx1←xx1,48 18⍴' '
[ 28]  xx1[;47+⍳8]←'_'
[ 29]  xx1[8×⍳6;55+⍳10]←6 10⍴,((6 1⍴1 0⍕⍳6),'.'),6 8⍴'_'
[ 30]  esse[aind+4+⍳48;⍳75]←xx1
[ 31]  oba←6 8⍴,⍪,xx2
[ 32]  esse[321;]←80↑4 0⍕,+/[2]oba
[ 33]  aind←111
[ 34]  xx←loop 40
[ 35]  xx1←0 3↓xx
[ 36]  xx2←xx[;⍳3]
[ 37]  esse[aind+1;⍳75]←75↑,(⍕1↓,((1 3⍴'V  '),[1]16 3⍴3 0⍕V),'&'),'⍀⍀'
[ 38]  esse[aind+2;⍳75]←75↑,(⍕1↓,((1 3⍴'T  '),[1]16 3⍴3 0⍕T),'&'),'⍀⍀'
[ 39]  esse[aind+3;⍳75]←75↑,(⍕1↓,((1 3⍴'Z  '),[1]16 3⍴3 0⍕Z),'&'),'⍀⍀'
[ 40]  esse[aind+4;⍳75]←'⍎'-'edit 75↑'A=',(2 0⍕A),' E=',(2 0⍕E),' H=',(2 0⍕H),' K=',(2 0⍕K),
      ' M=',2 0⍕M
[ 41]  xx1←xx1,48 18⍴' '
[ 42]  xx1[;47+⍳8]←'_'
[ 43]  xx1[8×⍳6;55+⍳10]←6 10⍴,((6 1⍴1 0⍕⍳6),'.'),6 8⍴'_'
[ 44]  esse[aind+4+⍳48;⍳75]←xx1
```

```
[ 45]  oba←6 8ρ,⍬,xx2
[ 46]  esse[322;]←80↑4 0⍕,+/[2]oba
[ 47]  aind←163
[ 48]  xx←loop 40
[ 49]  xx1←0 3↓xx
[ 50]  xx2←xx[;⍳3]
[ 51]  esse[aind+1;⍳75]←75↑,(¯1↓,((1 3ρ'V  '),[1]16 3ρ3 0⍕V),'&'),'⍀⍀'
[ 52]  esse[aind+2;⍳75]←75↑,(¯1↓,((1 3ρ'T  '),[1]16 3ρ3 0⍕T),'&'),'⍀⍀'
[ 53]  esse[aind+3;⍳75]←75↑,(¯1↓,((1 3ρ'Z  '),[1]16 3ρ3 0⍕Z),'&'),'⍀⍀'
[ 54]  esse[aind+4;⍳75]←'¯'-'edit 75↑'A=',(2 0⍕A),' E=',(2 0⍕E),' H=',(2 0⍕H),' K=',(2 0⍕K),
      ' M=',2 0⍕M
[ 55]  xx1←xx1,48 18ρ' '
[ 56]  xx1[;47+⍳8]←'_'
[ 57]  xx1[8×⍳6;55+⍳10]←6 10ρ,((6 1ρ1 0⍕⍳6),'.'),6 8ρ'_'
[ 58]  esse[aind+4+⍳48;⍳75]←xx1
[ 59]  oba←6 8ρ,⍬,xx2
[ 60]  esse[323;]←80↑4 0⍕,+/[2]oba
[ 61]  aind←215
[ 62]  xx←loop 40
[ 63]  xx1←0 3↓xx
[ 64]  xx2←xx[;⍳3]
[ 65]  esse[aind+1;⍳75]←75↑,(¯1↓,((1 3ρ'V  '),[1]16 3ρ3 0⍕V),'&'),'⍀⍀'
[ 66]  esse[aind+2;⍳75]←75↑,(¯1↓,((1 3ρ'T  '),[1]16 3ρ3 0⍕T),'&'),'⍀⍀'
[ 67]  esse[aind+3;⍳75]←75↑,(¯1↓,((1 3ρ'Z  '),[1]16 3ρ3 0⍕Z),'&'),'⍀⍀'
[ 68]  esse[aind+4;⍳75]←'¯'-'edit 75↑'A=',(2 0⍕A),' E=',(2 0⍕E),' H=',(2 0⍕H),' K=',(2 0⍕K),
      ' M=',2 0⍕M
[ 69]  xx1←xx1,48 18ρ' '
[ 70]  xx1[;47+⍳8]←'_'
[ 71]  xx1[8×⍳6;55+⍳10]←6 10ρ,((6 1ρ1 0⍕⍳6),'.'),6 8ρ'_'
[ 72]  esse[aind+4+⍳48;⍳75]←xx1
[ 73]  oba←6 8ρ,⍬,xx2
[ 74]  esse[324;]←80↑4 0⍕,+/[2]oba
[ 75]  aind←267
[ 76]  xx←loop 40
[ 77]  xx1←0 3↓xx
[ 78]  xx2←xx[;⍳3]
[ 79]  esse[aind+1;⍳75]←75↑,(¯1↓,((1 3ρ'V  '),[1]16 3ρ3 0⍕V),'&'),'⍀⍀'
[ 80]  esse[aind+2;⍳75]←75↑,(¯1↓,((1 3ρ'T  '),[1]16 3ρ3 0⍕T),'&'),'⍀⍀'
[ 81]  esse[aind+3;⍳75]←75↑,(¯1↓,((1 3ρ'Z  '),[1]16 3ρ3 0⍕Z),'&'),'⍀⍀'
[ 82]  esse[aind+4;⍳75]←'¯'-'edit 75↑'A=',(2 0⍕A),' E=',(2 0⍕E),' H=',(2 0⍕H),' K=',(2 0⍕K),
      ' M=',2 0⍕M
[ 83]  xx1←xx1,48 18ρ' '
[ 84]  xx1[;47+⍳8]←'_'
[ 85]  xx1[8×⍳6;55+⍳10]←6 10ρ,((6 1ρ1 0⍕⍳6),'.'),6 8ρ'_'
[ 86]  esse[aind+4+⍳48;⍳75]←xx1
[ 87]  oba←6 8ρ,⍬,xx2
[ 88]  esse[325;]←80↑4 0⍕,+/[2]oba
[ 89]  acuja←(f[;2]='#')/⍳1↑⍴f
[ 90]  f[acuja;⍳80]←esse[⍬,f[acuja;3 4 5],' ';]
[ 91]  →(como=0)/vai
[ 92]  xx←ΔFM'f:⍀apl2⍀livrbloi'
[ 93]  xx←((1↑⍴xx),80)↑xx
[ 94]  f←xx,[⎕IO]f,[⎕IO]1 80ρ80↑'⍀end{document}'
[ 95] vai:f ΔFM'c:⍀apl2⍀L161'
-------------------------------------------------------------
[ 0]  r←loop qt;i;lx
[ 1]  geravars
[ 2]  i←1 ⋄ lx←0 60ρ' '
[ 3]  lx←lx,[⎕IO]1 60ρ60↑testa1
[ 4]  lx←lx,[⎕IO]1 60ρ60↑testa1
[ 5]  lx←lx,[⎕IO]1 60ρ60↑testa1
[ 6]  lx←lx,[⎕IO]1 60ρ60↑testa2
[ 7]  lx←lx,[⎕IO]1 60ρ60↑testa2
```

```
[ 8]  lx←lx,[⎕IO]1 60⍴60↑testa3
[ 9] ku:→(i>qt)/fim
[10]  lx←lx,[⎕IO]1 60⍴60↑testa1
[11]  lx←lx,[⎕IO]1 60⍴60↑testa2
[12]  lx←lx,[⎕IO]1 60⍴60↑testa3
[13]  i←i+3
[14]  →ku
[15] fim:r←lx
-------------------------------------------------------------
[ 0]  r←testa1;a;b;p1;p2;p3;y;li;z;z1;z2;z3;coma
[ 1] volta:ERRO←0
[ 2]  y←gera3
[ 3]  z←gera3letras ⋄ z1←z[⎕IO] ⋄ z2←z[⎕IO+1] ⋄ z3←z[⎕IO+2]
[ 4]  li←⍎coma←z1,'[',z1,' avalia (transexec y[⎕io])+p1  ←?20]'
[ 5]  →(ERRO=1)/volta
[ 6]  a←''
[ 7]  →(y[⎕IO]=0)/pula2
[ 8]  →(1000>|y[⎕IO])/oba1
[ 9]  a←trans y[⎕IO]
[10]  →pula2
[11] oba1:→(y[⎕IO]>0)/pos2
[12] neg2:a←a,' - ',(2 0⍕|y[⎕IO]),' '
[13]  →pula2
[14] pos2:
[15]  a←a,' + ',(2 0⍕y[⎕IO]),' '
[16] pula2:b←z1,' [ ',(2 0⍕p1),a,' ]'
[17]  b←b,gerafinal
[18]  r←(3 0⍕⍎COMANDO←b),b
-------------------------------------------------------------
[ 0]  r←testa2;a;b;p1;p2;p3;y;li;z;z1;z2;z3;coma
[ 1] volta:ERRO←0
[ 2]  y←gera3
[ 3]  z←gera3letras ⋄ z1←z[⎕IO] ⋄ z2←z[⎕IO+1] ⋄ z3←z[⎕IO+2]
[ 4]  li←⍎coma←z1,'[',z1,' avalia (transexec y[⎕io])+p2  ←',z2,'[',z2,' avalia (transexec
      y[⎕io+1])+p1  ←?20]]'
[ 5]  →(ERRO=1)/volta
[ 6]  a←''
[ 7]  →(y[⎕IO+1]=0)/pula2
[ 8]  →(1000>|y[⎕IO+1])/oba1
[ 9]  a←trans y[⎕IO+1]
[10]  →pula2
[11] oba1:→(y[⎕IO+1]>0)/pos2
[12] neg2:a←a,' - ',(2 0⍕|y[⎕IO+1]),' '
[13]  →pula2
[14] pos2:
[15]  a←a,' + ',(2 0⍕y[⎕IO+1]),' '
[16] pula2:b←z2,' [ ',(2 0⍕p1),a,' ]'
[17]  a←''
[18]  →(y[⎕IO]=0)/pula3
[19]  →(1000>|y[⎕IO])/oba2
[20]  a←trans y[⎕IO]
[21]  →pula3
[22] oba2:→(y[⎕IO]>0)/pos3
[23] neg3:a←' - ',(2 0⍕|y[⎕IO]),' '
[24]  →pula3
[25] pos3:
[26]  a←' + ',(2 0⍕y[⎕IO]),' '
[27] pula3:
[28]  b←z1,' [ ',b,a,' ]'
[29]  b←b,gerafinal
[30]  r←(3 0⍕⍎COMANDO←b),b
-------------------------------------------------------------
[ 0]  r←testa3;a;b;p1;p2;p3;y;li;z;z1;z2;z3;coma
```

```
[ 1] volta:ERRO←0
[ 2]  y←gera3
[ 3]  z←gera3letras ⋄ z1←z[⎕IO] ⋄ z2←z[⎕IO+1] ⋄ z3←z[⎕IO+2]
[ 4]  li←⍕coma←z1,'[',z1,' avalia (transexec y[⎕io])+p3  ←',z2,'[',z2,' avalia (transexec
      y[⎕io+1])+p2  ←',z3,'[',z3,' avalia (transexec y[⎕io+2])+p1  ←?20]]]'
[ 5]  →(ERRO=1)/volta
[ 6]  a←''
[ 7]  →(y[⎕IO+2]=0)/pula1
[ 8]  →(1000>|y[⎕IO+2])/oba1
[ 9]  a←trans y[⎕IO+2]
[10]  →pula1
[11] oba1:→(y[⎕IO+2]>0)/pos1
[12] neg1:a←' - ',(2 0⍕|y[⎕IO+2]),' '
[13]  →pula1
[14] pos1:a←' + ',(2 0⍕y[⎕IO+2]),' '
[15] pula1:b←z3,' [ ',(2 0⍕p1),a,' ]'
[16]  a←''
[17]  →(y[⎕IO+1]=0)/pula2
[18]  →(1000>|y[⎕IO+1])/oba2
[19]  a←trans y[⎕IO+1]
[20]  →pula2
[21] oba2:→(y[⎕IO+1]>0)/pos2
[22] neg2:a←' - ',(2 0⍕|y[⎕IO+1]),' '
[23]  →pula2
[24] pos2:
[25]  a←' + ',(2 0⍕y[⎕IO+1]),' '
[26] pula2:b←z2,' [ ',b,a,' ]'
[27]  a←''
[28]  →(y[⎕IO]=0)/pula3
[29]  →(1000>|y[⎕IO])/oba3
[30]  a←trans y[⎕IO]
[31]  →pula3
[32] oba3:→(y[⎕IO]>0)/pos3
[33] neg3:a←' - ',(2 0⍕|y[⎕IO]),' '
[34]  →pula3
[35] pos3:
[36]  a←' + ',(2 0⍕y[⎕IO]),' '
[37] pula3:
[38]  b←z1,' [ ',b,a,' ]'
[39]  b←b,gerafinal
[40]  r←(3 0⍕⍎COMANDO←b),b
-------------------------------------------------------------
[ 0]  r←trans val
[ 1]  →(999+⎕IO>|val)/blz
[ 2]  r←(val=¯1001 ¯1001 1001 1001 ¯1002 ¯1002 1002 1002 ¯1003 ¯1003 1003 1003 ¯1004 ¯1004
       1004 1004 ¯1005 ¯1005 1005 1005)/'-A+A-E+E-H+H-K+K-M+M'
[ 3]  r←0 1 0 1 0⍉r
[ 4]  →0
[ 5] blz:r←2 0⍕val
-------------------------------------------------------------
[ 0]  r←transexec val
[ 1]  →(999+⎕IO>|val)/blz
[ 2]  r←(val=¯1001 ¯1001 1001 1001 ¯1002 ¯1002 1002 1002 ¯1003 ¯1003 1003 1003 ¯1004 ¯1004
       1004 1004 ¯1005 ¯1005 1005 1005)/'-A+A-E+E-H+H-K+K-M+M'
[ 3]  r←⍎r
[ 4]  →0
[ 5] blz:r←val
-------------------------------------------------------------
[ 0]  opesq vivo110c n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;oba;r;relat;resp
      ;resu;upag;xixo;xk;xx;xx1;xx2;ylu
[ 1]  ⎕IO←0
[ 2]  →(0≠⎕NC'opesq')/qveio
[ 3]  opesq←10⍴' '
```

```
[ 4] qveio:
[ 5]  ⎕RL←⌊(⎕TS[5+⎕IO]+⎕TS[4]+⎕TS[3])*2.7364736473
[ 6]  EVENTO←'PL110c  '
[ 7]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[2 1 0]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      3 4],⎕TS[5]+⎕TS[6]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n+1),'.ALU' ⋄ EVENTO←n+1
[ 9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕1+⍳n
[10]  FOLHALA110c←ajusta80 FOLHALA110c
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA110c)⍴' '
[12]  relat[0;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[13]  xk←0 ⋄ resu←0 7⍴0
[14] testa:→(xk≥1↑⍴ylu)/fim
[15]  esse←61 80⍴' '
[16]  f←FOLHALA110c
[17]  esse[0;]←80↑dhx[0;]
[18]  esse[1;]←80↑dhx[1;]
[19]  esse[2;]←80↑4 2⍕VERSAOa←1.18
[20]  esse[3;]←80↑ylu[xk;⍳6]
[21]  esse[4;]←80↑ylu[xk;6+⍳30]
[22]  →(~1=≡n)/1+⎕LC ⋄ esse[5;]←80↑EVENTO
[23]  esse[6;]←80↑(3 0⍕resp←xk),' ',opesq
[24]  esse[59;⍳10]←'@',esse[6;5+⍳3],esse[3;1+⍳5],'@'
[25]  esse[60;⍳17]←esse[6;5+⍳3],'-',esse[3;1+⍳5],' - ',opesq[5 6],'/',opesq[8 9]
[26] inica:
[27]  xx←loop 40
[28]  xx1←0 3↓xx
[29]  xx2←xx[;⍳3]
[30]  esse[7;⍳75]←75↑,(¯1↓,((1 3⍴'V  '),[⎕IO]16 3⍴3 0⍕V),'&'),'\\'
[31]  esse[8;⍳75]←75↑,(¯1↓,((1 3⍴'T  '),[⎕IO]16 3⍴3 0⍕T),'&'),'\\'
[32]  esse[9;⍳75]←75↑,(¯1↓,((1 3⍴'Z  '),[⎕IO]16 3⍴3 0⍕Z),'&'),'\\'
[33]  esse[10;⍳75]←'¯-'edit 75↑'$A=',(2 0⍕A),'; \; E=',(2 0⍕E),'; \; H=',(2 0⍕H),'; \; K='
      ,(2 0⍕K),'; \; M=',(2 0⍕M),'$'
[34]  xx1←xx1,48 18⍴' '
[35]  xx1[;47+⍳8]←((1↑⍴xx1),8)⍴(63⍴'_______+'),'='
[36]  xx1[¯1+8×1+⍳6;55+⍳8]←6 8⍴'_'
[37]  esse[11+⍳48;⍳75]←xx1
[38]  oba←6 8⍴,⍉,xx2
[39]  resp←resp,,+/[1]oba
[40]  resu←resu,[0]1 7⍴resp
[41]  acuja←(f[;1]='#')/⍳1↑⍴f
[42]  f[acuja;⍳80]←esse[¯1+⍉,f[acuja;2 3],' ';]     ⍝ ¯1+ eh novo
[43]  relat[1+xk;;]←f,[0](1,1↓⍴f)⍴200↑'\newpage'
[44]  ⍞←(⍕xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+⍴f)⍴' '
[47]  →(1=≡n)/elafa
[48]  upag[0;]←(1↓⍴upag)↑'\begin{verbatim}'
[49]  upag[1;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[50]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 5 0 5 0 5 0 5 0)⍕resu
[51]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[52]  →terminando
[53] elafa:aaa←(ylu,5 0⍕0 1↓resu)
[54]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[55]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[56] terminando:
[57]  upag[⎕IO+¯1+1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[58]  relat[⎕IO+¯1+1↑⍴relat;;]←upag
[59]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[60] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[61]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[62]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[63]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

```
[ 0]  opesq vivo110v n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;oba;r;relat;resp
      ;resu;upag;xixo;xk;xx;xx1;xx2;ylu
[ 1]  ⎕IO←1
[ 2]  →(0≠⎕NC'opesq')/qveio
[ 3]  opesq←10⍴' '
[ 4] qveio:
[ 5]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 6]  CORRECAO←6 ⋄ EVENTO←'PL110v  '
[ 7]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←⍙FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[10]  FOLHALA110v←ajusta80 FOLHALA110v
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA110v)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⍙FM'c:\apl2\VIVOBLOI'
[13]  xk←1 ⋄ resu←0 7⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←61 80⍴' '
[16]  f←FOLHALA110v
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←3.18
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  esse[5;]←80↑ylu[xk;6+⍳30]
[22]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[23]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[24]  esse[60;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[25]  esse[61;⍳17]←esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[26] inica:
[27]  xx←loop 40
[28]  xx1←0 3↓xx
[29]  xx2←xx[;⍳3]
[30]  esse[8;⍳75]←75↑,(⍕1↓,((1 3⍴'V  '),[1]16 3⍴3 0⍎V),'&'),'\\'
[31]  esse[9;⍳75]←75↑,(⍕1↓,((1 3⍴'T  '),[1]16 3⍴3 0⍎T),'&'),'\\'
[32]  esse[10;⍳75]←75↑,(⍕1↓,((1 3⍴'Z  '),[1]16 3⍴3 0⍎Z),'&'),'\\'
[33]  esse[11;⍳75]←'⍕-'edit 75↑'$A=',(2 0⍎A),'; \; E=',(2 0⍎E),'; \; H=',(2 0⍎H),'; \; K='
      ,(2 0⍎K),'; \; M=',(2 0⍎M),'$'
[34]  xx1←xx1,48 18⍴' '
[35]  xx1[;47+⍳8]←((1↑⍴xx1),8)⍴(63⍴'_______+'),'='
[36]  xx1[8×⍳6;55+⍳8]←6 8⍴'_'
[37]  esse[11+⍳48;⍳75]←xx1
[38]  oba←6 8⍴,⍤,xx2
[39]  resp←resp,,+/[2]oba
[40]  resu←resu,[1]1 7⍴resp
[41]  acuja←(f[;2]='#')/⍳1↑⍴f
[42]  f[acuja;⍳80]←esse[⍤,f[acuja;3 4],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[44]  ⍞←(⍎xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+⍴f)⍴' '
[47]  →(1=≡n)/elafa
[48]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[49]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[50]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 5 0 5 0 5 0 5 0)⍎resu
[51]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[52]  →terminando
[53] elafa:aaa←(ylu,5 0⍎0 1↓resu)
[54]  lixonol←aaa ⍙FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[55]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[56] terminando:
[57]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[58]  relat[1↑⍴relat;;]←upag
[59]  lixonol←(((×/2↑⍴relat),⍕1↑⍴relat)⍴relat)
```

```
[60] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[61]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[62]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[63]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo111

```
[0]  AVISO
[1]  'Rode a funcao niladica vivo111co para obter o gabarito de todas as funcoes'
[2]  'gerado no arquivo PL111CO.TEX'
-------------------------------------------------------------
[ 0]  r←abrevia N;i;vb;ivb;j;tvb
[ 1]  i←1
[ 2]  vb←20⍴0
[ 3]  ivb←1
[ 4]  r←(⍴N)⍴' '
[ 5] t1:→(i>⍴N)/fim
[ 6]  →(N[i]=' ')/ach
[ 7]  →(ivb≠1)/ufa
[ 8]  r[i]←N[i]
[ 9] ufa:
[10]  i←i+1
[11]  →t1
[12] ach:vb[ivb]←i
[13]  ivb←ivb+1
[14]  i←i+1
[15]  →t1
[16] fim:
[17]  tvb←ivb
[18]  ivb←1
[19]  j←vb[1]+1
[20] t3:→(ivb≥tvb)/fim4
[21]  i←vb[ivb]
[22]  r[j]←N[i+1]
[23]  r[j+1]←'.'
[24]  r[j+2]←' '
[25]  j←j+3
[26]  ivb←ivb+1
[27]  →t3
[28] fim4:j←j-4
[29] fim6:
[30]  →(i>⍴N)/fim5
[31]  r[j]←N[i]
[32]  j←j+1
[33]  i←i+1
[34]  →fim6
[35] fim5:
-------------------------------------------------------------
[ 0]  r←t just a;i;j;k;aux
[ 1]  r←t⍴' '
[ 2]  r←t↑a
[ 3]  →(a[t+1]=' ')/fim
[ 4]  i←t
[ 5] t1:→(r[i]=' ')/u1
[ 6]  i←i-1
[ 7]  →t1
[ 8] u1:j←i
[ 9]  aux←1+t-i
[10]  j←j-1
[11] t2:→(r[j]=' ')/u2
[12]  j←j-1
```

```
[13]  →t2
[14] u2:
[15]  k←0
[16] t3:→(k≥i-j)/fim
[17]  r[t-k]←r[(i-1)-k]
[18]  k←k+1
[19]  →t3
[20] fim:
[21]  →(aux≤0)/uza
[22]  r[t-k]←' '
[23]  k←k+1
[24]  aux←aux-1
[25]  →fim
[26] uza:
-------------------------------------------------------------
[ 0]  r←maior frase;dir;esq;ct;max;onde;tam
[ 1]  dir←1
[ 2]  esq←0
[ 3]  ct←1
[ 4]  max←-99999
[ 5] t1:→(dir>⍴frase)/f1
[ 6] t2:→((frase[dir]=' ')∨(frase[dir]='.'))/f0
[ 7]  dir←dir+1
[ 8]  →t2
[ 9] f0:tam←dir-esq
[10]  esq←dir
[11]  →(tam≤max)/ufa
[12]  max←tam-1
[13]  onde←ct
[14] ufa:ct←ct+1
[15]  dir←dir+1
[16]  →t1
[17] f1:r←(onde×1000)+max
-------------------------------------------------------------
[ 0]  opesq vivo111a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;num;relat
      ;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←8 ⋄ EVENTO←'PL111   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA111←ajusta80 FOLHALA111
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA111)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[12]  xk←1 ⋄ resu←0 0⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←9 80⍴' '
[15]  f←FOLHALA111
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←1.02
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[23]  esse[8;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[9;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] ini1:
[26]  acuja←(f[;2]='#')/⍳1↑⍴f
```

```
[27]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[28]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[29]  ⍞←(⍕xk←xk+1),'-'
[30]  →testa
[31] fim:'!!!!!  nao ha arquivo GPA'
[32] terminando:
[33]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[34]  lixonol←lixonol,[1]1 80⍴80↑'\end{document}'
[35]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[36]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[ 0]  vivo111co;EVENTO;dhx;relat;xk;esse;f;VERSAOa;resp;lixonol
[ 1]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 2]  EVENTO←'PL111CO   '
[ 3]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 4]  FOLHACO111←ajusta80 FOLHACO111
[ 5]  relat←⎕FM'c:\apl2\VIVOBLOI'
[ 6]  relat←ajusta80 relat
[ 7]  xk←1
[ 8] testa:
[ 9]  esse←7 80⍴' '
[10]  f←FOLHACO111
[11]  esse[1;]←80↑dhx[1;]
[12]  esse[2;]←80↑dhx[2;]
[13]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[14]  esse[4;]←80↑'gabarito completo'
[15]  esse[7;]←80↑(3 0⍕resp←1)
[16] ini1:
[17] fim:'!!!!!  nao ha arquivo GPA'
[18] terminando:
[19]  lixonol←relat,[1]f,[1]1 80⍴80↑'\end{document}'
[20]  lixonol←lixonol ⎕FM'c:\apl2\PL111CO.tex'
[21]  'Arquivo(s) criado(s) com o nome de c:\apl2\PL111CO.TEX'
-------------------------------------------------------------
```

vivo112

```
[0]  r←geracaso112
[1]  r←3 80⍴' '
[2]  r[1;]←80↑'$$',(⍕2+?30),'x^4+',(⍕2+?30),'x^2+',(⍕2+?30),'=0$$'
[3]  r[2;]←80↑'¯-'edit⍕geraiota(5-?10),(2+?4),(20+?10)
[4]  r[3;]←80↑'¯-'edit⍕geraiota(5-?10),(2+?4),(20+?10)
-------------------------------------------------------------
[ 0]  r←geraiota a
[ 1]  →(3=⍴a)/ok
[ 2]  a←a[1],1,a[2]
[ 3] ok:
[ 4]  r←a[1]
[ 5]  →(a[2]<0)/nega
[ 6]  →(a[3]<a[1])/deuxabu
[ 7] t1:→((a[2]+¯1↑r)>a[3])/ufa
[ 8]  r←r,(¯1↑r)+a[2]
[ 9]  →t1
[10] ufa:
[11]  →0
[12] nega:
[13]  →(a[3]>a[1])/deuxabu
[14] t3:→((a[2]+¯1↑r)<a[3])/blu
[15]  r←r,(¯1↑r)+a[2]
[16]  →t3
[17] blu:
```

```
[18]  →0
[19] deuxabu:r←ι0
-------------------------------------------------------------
[ 0]  opesq vivo112a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL112   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍞n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA112←ajusta80 FOLHALA112
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA112)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALA112
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.06
[20]  esse[4;]←80↑ylu[xk;ι6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;ι4]=((1↑⍴f),4)⍴'\#05')/ι1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+ι30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[11;ι10]←'@',esse[6;5+ι3],esse[4;1+ι5],'@'
[32]  esse[12;]←80↑esse[6;5+ι3],'-',esse[4;1+ι5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracaso112
[35]  esse[7+ι3;]←xx
[36] ⍝ resp←resp,,xx[2 3;5]
[37]  resu←resu,[1]1 3⍴resp
[38]  acuja←(f[;2]='#')/ι1↑⍴f
[39]  f[acuja;ι80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⍞←(⍎xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+ι1↑⍴resu;ι+/lixo1]←(lixo1←5 0 10 0 8 0)⍎resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;ι36],9 0⍎0 1↓resu)
[51]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
```

```
[58]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo114

```
[ 0]  opesq vivo114a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;num;relat
      ;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←8 ⋄ EVENTO←'PL114   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA114←ajusta80 FOLHALA114
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA114)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[12]  xk←1 ⋄ resu←0 2⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←9 80⍴' '
[15]  f←FOLHALA114
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←1.02
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[23]  esse[8;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[9;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] ini1:
[26]  acuja←(f[;2]='#')/⍳1↑⍴f
[27]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[28]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[29]  ⍞←(⍎xk←xk+1),'-'
[30]  →testa
[31] fim:upag←(1 0+⍴f)⍴' '
[32]  →(1=≡n)/elafa
[33]  →terminando
[34] elafa:
[35]  '!!!!! N↑o há geracao de arquivo GPA !!!!!!'
[36] terminando:
[37]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[38]  relat[1↑⍴relat;;]←upag
[39]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[40] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[41]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[42]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo116

```
[0]  r←k buscalin tab;i;cnt;qtd
[1]  cnt←1 ⋄ qtd←0
[2] testa:→(cnt>⍴tab)/achou
[3]  qtd←qtd+2
[4]  →(k=tab[cnt])/achou
[5]  →(cnt=cnt←cnt+1)/testa
```

```
[6] achou:r←qtd
-------------------------------------------------------------
[0]  r←k buscalinord tab;i;cnt;qtd
[1]  cnt←1 ⋄ qtd←0
[2] testa:→(cnt>⍴tab)/achou
[3]  →(k≤tab[cnt])/achou
[4]  qtd←qtd+2
[5]  →(cnt=cnt←cnt+1)/testa
[6] achou:r←qtd
-------------------------------------------------------------
[0]  r←k buscalinsen tab;i;cnt;qtd
[1]  cnt←1 ⋄ qtd←0 ⋄ tab←tab,k
[2] testa:→(k=tab[cnt])/achou
[3]  qtd←qtd+1
[4]  →(cnt=cnt←cnt+1)/testa
[5] achou:r←qtd
-------------------------------------------------------------
[ 0]  r←formataexemplo116 x
[ 1]  r←9 73⍴' '
[ 2]  r[1 2 3;⍳3]←3 3⍴3 0⍕x[1 2 3;17]
[ 3]  r[1 2 3;4+⍳8]←3 8⍴'BUSCALIN'
[ 4]  r[1 2 3;17+⍳45]←3 0⍕x[1 2 3;1+⍳15]
[ 5]  r[;65]←'é'
[ 6]  r[1 2 3;68+⍳3]←3 3⍴3 0⍕x[1 2 3;18]
[ 7]  r[3+1 2 3;68+⍳3]←3 3⍴3 0⍕x[3+1 2 3;18]
[ 8]  r[3+1 2 3;⍳3]←3 3⍴3 0⍕x[3+1 2 3;17]
[ 9]  r[3+1 2 3;4+⍳11]←3 11⍴'BUSCALINORD'
[10]  r[3+1 2 3;17+⍳45]←3 0⍕x[3+1 2 3;1+⍳15]
[11]  r[3+1 2 3;68+⍳3]←3 3⍴3 0⍕x[3+1 2 3;18]
[12]  r[6+1 2 3;68+⍳3]←3 3⍴3 0⍕x[6+1 2 3;18]
[13]  r[6+1 2 3;⍳3]←3 3⍴3 0⍕x[6+1 2 3;17]
[14]  r[6+1 2 3;4+⍳11]←3 11⍴'BUSCALINSEN'
[15]  r[6+1 2 3;17+⍳45]←3 0⍕x[6+1 2 3;1+⍳15]
[16]  r[6+1 2 3;68+⍳3]←3 3⍴3 0⍕x[6+1 2 3;18]
-------------------------------------------------------------
[0]  r←geracaso116;x;in;zz
[1]  x←formataexemplo116 zz←geraexemplo116 15
[2]  in←0 3 6+(?3),(?3),?3
[3]  r←x[in;⍳66],3 5⍴'='
[4]  RES←zz[in;18]    ⍝ era 12 e estava errado...
-------------------------------------------------------------
[ 0]  r←geraexemplo116 n;aa;bb;lim;ult;penul
[ 1]  r←(9,(n+2))⍴0 ⋄ ult←n+2 ⋄ penul←n+1
[ 2]  →(n>80)/m1
[ 3]  lim←99
[ 4]  →m3
[ 5] m1:→(n>800)/m2
[ 6]  lim←999
[ 7]  →m3
[ 8] m2:lim←9999
[ 9] m3:
[10] ⍝ buscalin
[11]  r[1;⍳n]←aa←n?lim
[12]  r[1;penul]←aa[?n]
[13]  r[1;ult]←r[1;penul]buscalin r[1;⍳n]
[14]  r[2;⍳n]←aa←n?lim
[15]  r[2;penul]←aa[?n]
[16]  r[2;ult]←r[2;penul]buscalin r[2;⍳n]
[17]  r[3;⍳n]←1↓aa←penul?lim
[18]  r[3;penul]←aa[1]
[19]  r[3;ult]←r[3;penul]buscalin r[3;⍳n]
[20] ⍝ buscalinord
[21]  aa←n?lim
```

```
[22]  aa←aa[⍋aa]
[23]  r[4;⍳n]←aa
[24]  r[4;penul]←aa[?n]
[25]  r[4;ult]←r[4;penul]buscalinord r[4;⍳n]
[26]  aa←n?lim
[27]  aa←aa[⍋aa]
[28]  r[5;⍳n]←aa
[29]  r[5;penul]←aa[?n]
[30]  r[5;ult]←r[5;penul]buscalinord r[5;⍳n]
[31]  aa←penul?lim
[32]  bb←1↑aa
[33]  aa←1↓aa
[34]  aa←aa[⍋aa]
[35]  r[6;⍳n]←aa
[36]  r[6;penul]←bb
[37]  r[6;ult]←r[6;penul]buscalinord r[6;⍳n]
[38] ⍙ buscalinsen
[39]  r[7;⍳n]←aa←n?lim
[40]  r[7;penul]←aa[?n]
[41]  r[7;ult]←r[7;penul]buscalinsen r[7;⍳n]
[42]  r[8;⍳n]←aa←n?lim
[43]  r[8;penul]←aa[?n]
[44]  r[8;ult]←r[8;penul]buscalinsen r[8;⍳n]
[45]  r[9;⍳n]←1↓aa←penul?lim
[46]  r[9;penul]←aa[1]
[47]  r[9;ult]←r[9;penul]buscalinsen r[9;⍳n]
[48]  r←(9 1⍴1 1 1 2 2 2 3 3 3),r
-------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10]  →(0=' 'ϵj↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80⍴80↑j↑candi
[15]  candi←j↓candi
[16]  →((⍴candi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80⍴80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
-------------------------------------------------------------
[0]  r←resume y;x
[1]  x←,18 ¯1↑y
[2]  r←0.33×+/x[1 2 3]
[3]  r←r,0.33×+/x[3+1 2 3]
[4]  r←r,0.33×+/x[6+1 2 3]
[5]  r←r,0.33×+/x[9+1 2 3]
[6]  r←r,0.33×+/x[12+1 2 3]
[7]  r←r,0.33×+/x[15+1 2 3]
-------------------------------------------------------------
[ 0]  opesq vivo116b n;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixonol;xixo;aa
      a;lixo1
[ 1]  →(0≠⎕NC'opesq')/qveio
```

```
[ 2]  opesq←10ρ' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  EVENTO←'PL116b  '
[ 5]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕⍳n
[ 8]  FOLHALA116b←ajusta80 FOLHALA116b
[ 9]  relat←((2+1↑ρylu),1 0+ρFOLHALA116b)ρ' '
[10]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLO1'
[11]  xk←1 ⋄ resu←0 4ρ0
[12] testa:→(xk>1↑ρylu)/fim
[13]  esse←9 80ρ' '
[14]  f←FOLHALA116b
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍕VERSAOa←3.03
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[22]  esse[8;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[9;]←80↑,esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25]  acuja←(f[;2]='#')/⍳1↑ρf
[26]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[27]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\newpage'
[28]  ⍞←(⍕xk←xk+1),'-'
[29]  →testa
[30] fim:upag←(1 0+ρf)ρ' '
[31]  →(1=≡n)/elafa
[32]  →terminando
[33] elafa:aaa←(ylu,5 0⍕0 1↓resu)
[34]  lixonol←aaa ΔFM('c:\apl2\',((~⍲\⍲EVENTO=' ')/EVENTO),'.gpa')
[35]  '!!!!!  Nao há arquivo GPA'
[36] terminando:
[37]  upag[1↑ρupag;]←(1↓ρupag)↑'\end{document}'
[38]  relat[1↑ρrelat;;]←upag
[39]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)ΔFM'c:\apl2\',((~⍲\⍲EVENTO=' ')/EVENTO),'.t
      ex'
[40]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[41]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'    .tex '
-------------------------------------------------------------
[ 0]  opesq vivo116c n;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixonol;xixo;aa
      a;lixo1
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  EVENTO←'PL116c  '
[ 5]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕⍳n
[ 8]  FOLHALA116c←ajusta80 FOLHALA116c
[ 9]  relat←((2+1↑ρylu),1 0+ρFOLHALA116c)ρ' '
[10]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLO1'
[11]  xk←1 ⋄ resu←0 4ρ0
[12] testa:→(xk>1↑ρylu)/fim
[13]  esse←15 80ρ' '
[14]  f←FOLHALA116c
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍕VERSAOa←3.03
```

```
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[22]  esse[14;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[15;]←80↑,esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25]  esse[7+⍳6;]←6 80⍴6 36⍴3 72↑geracaso116
[26]  resp←resp,RES
[27]  resu←resu,[1]1 4⍴resp
[28]  acuja←(f[;2]='#')/⍳1↑⍴f
[29]  f[acuja;⍳80]←esse[⌽,f[acuja;3 4],' ';]
[30]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[31]  ⎕←(⍕xk←xk+1),'-'
[32]  →testa
[33] fim:upag←(1 0+⍴f)⍴' '
[34]  →(1=≡n)/elafa
[35]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[36]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[37]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 5 0)⍕resu
[38]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[39]  →terminando
[40] elafa:aaa←(ylu,5 0⍕0 1↓resu)
[41]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[42]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[43] terminando:
[44]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[45]  relat[1↑⍴relat;;]←upag
[46]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.t
      ex'
[47]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[48]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
```

---

vivo119

```
[ 0]  r←geradirx x;i;tam;onde
[ 1]  i←1 ⋄ r←0 3⍴0 ⋄ ENUN←ajusta80 ENUN
[ 2] v1:→(i>1↑⍴x)/fim
[ 3] v2:→(2=+/x[i;1 2]='%i')/inicio
[ 4] v3:→(2=+/x[i;1 2]='%f')/final
[ 5] soma:
[ 6]  tam←tam+1 ⋄ i←i+1
[ 7]  →v1
[ 8] inicio:tam←0 ⋄ onde←i
[ 9]  →soma
[10] final:r←r,[1]1 3⍴onde,i,tam-1
[11]  →soma
[12] fim:→(25<⌈,r[;3])/erro
[13]  →0
[14] erro:'tem um enunciado maior que 25 linhas, corrija'
[15]  r←0⍴0
```

```
[ 0]  opesq vivo119a n;CORRECAO;EVENTO;ylu;relat;f;xk;esse;dhx;acuja;lixonol;resp;rr;ind
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL119   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
```

```
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA119←ajusta80 FOLHALA119
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA119)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←32 80⍴' '
[15]  f←FOLHALA119
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.04
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23] inica:
[24]  rr←geradirx ENUN
[25]  ind←1+(1↑⍴rr)⍳xk
[26]  esse[7+⍳25;]←25 80↑ENUN[rr[ind;1]+⍳rr[ind;3];]
[27]  acuja←(f[;2]='#')/⍳1↑⍴f
[28]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[29]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[30]  ⍞←(⍕xk←xk+1),'-'
[31]  →testa
[32] fim:
[33] terminando:
[34]  relat[1↑⍴relat;1↑1↓⍴relat;]←80↑'\end{document}'
[35]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[36] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[37]  lixonol←lixonol ΔFM'c:\apl2\',((~⍬∧\⍬EVENTO=' ')/EVENTO),'.tex'
[38]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[39]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'    (.tex)'
[40]  'Nao ha aquivo GPA'
------------------------------------------------------------
```

vivo121

```
[ 0]  r←geracaso121a;i;j;k;a;b;c;alfa
[ 1]  alfa←(4 5 6)[3?3]
[ 2]  r←3⍴0
[ 3]  i←alfa[1]
[ 4]  j←alfa[2]
[ 5]  k←alfa[3]
[ 6]  a←(i,j)⍴(-50)+?100⍴100
[ 7]  b←(j,k)⍴(-50)+?100⍴100
[ 8]  c←a+.×b
[ 9]  r[1]←⊂a
[10]  r[2]←⊂b
[11]  r[3]←⊂c
------------------------------------------------------------
[0]  r←geracaso121b;a;b;c
[1] novo:r←3⍴0
[2]  r[1]←⊂7 7⍴a←?49⍴1000
[3]  r[2]←⊂b←(3 4 6 7 9 11 13 14 15 17 18 19 21 23 24)[?15]
[4]  r[3]←⊂c←+/(0=b|a)/a
[5]  →(c=0)/novo
------------------------------------------------------------
[ 0]  r←geracaso121c;a;b;aux;i;j;mult;bini
[ 1]  a←7 7⍴0
[ 2]  b←bini←40+?50
[ 3]  aux←1+?8
[ 4]  mult←1+?4
```

```
[ 5]  i←1
[ 6] t1:→(i>7)/fim
[ 7]  j←1
[ 8] t2:→(j>7)/mer
[ 9]  a[i;j]←b
[10]  b←b+aux
[11]  j←j+1
[12]  →t2
[13] mer:
[14]  b←b+(i×mult)
[15]  i←i+1
[16]  →t1
[17] fim:
[18]  r←2ρ0
[19]  r[1]←⊂a
[20]  r[2]←⊂bini,aux,mult
-------------------------------------------------------------
[0]  r←montatab x;i
[1]  r←9 80ρ' '
[2]  r[1;]←80↑'\begin{tabular}{|',((7×1↓ρx)ρ'p{1cm}|'),'} \hline'
[3]  i←1
[4] t1:→(i>1↑ρx)/fim
[5]  r[1+i;]←80↑(¯1↓(1↓ρx)ρ'&'),'\\ \hline'
[6]  i←i+1
[7]  →t1
[8] fim:r[1+i;]←80↑'\end{tabular}'
-------------------------------------------------------------
[ 0]  opesq vivo121f n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zica;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL121f  '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA121f←ajusta80 FOLHALA121f
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALA121f)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 11ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←45 80ρ' '
[16]  f←FOLHALA121f
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑ρf),4)ρ'\#05')/⍳1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[44;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[45;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
```

```
[34]  xx←geracaso121a
[35]  esse[7+⍳6;]←6 80⍴'¯'-'edit 7 0⍕⊃xx[1]
[36]  esse[13+⍳6;]←6 80⍴'¯'-'edit 7 0⍕⊃xx[2]
[37]  zica←⊃xx[3]
[38]  esse[19+⍳9;]←montatab zica
[39]  resp←resp,,6⍴,zica[;1↓⍴zica]
[40]  xx←geracaso121b
[41]  esse[29;]←80⍴5 0⍕⊃xx[2]
[42]  esse[29+⍳7;]←7 80⍴7 0⍕⊃xx[1]
[43]  resp←resp,⊃xx[3]
[44]  xx←geracaso121c
[45]  esse[36+⍳7;]←7 80⍴7 0⍕⊃xx[1]
[46]  resp←resp,,⊃xx[2]
[47]  resu←resu,[1]1 11⍴resp
[48]  acuja←(f[;2]='#')/⍳1↑⍴f
[49]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[50]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200⍴'\clearpage'
[51]  ⍞←(⍕xk←xk+1),'-'
[52]  →testa
[53] fim:upag←(1 0+⍴f)⍴' '
[54]  →(1=≡n)/elafa
[55]  upag[1;]←(1↓⍴upag)⍴'\begin{verbatim}'
[56]  upag[2;]←(1↓⍴upag)⍴(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[57]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯'-'edit(lixo1←5 0 10 0,(10⍴8 0),12 0,6 0 3 0 3 0)⍕resu
[58]  upag[3+1↑⍴resu;]←(1↓⍴upag)⍴'\end{verbatim}'
[59]  →terminando
[60] elafa:aaa←(ylu[;⍳36],'¯'-'edit 9 0⍕0 1↓resu)
[61]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[62]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[63] terminando:
[64]  upag[1↑⍴upag;]←(1↓⍴upag)⍴'\end{document}'
[65]  relat[1↑⍴relat;;]←upag
[66]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[67]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[68]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[69]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo121p n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zica;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL121p  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA121p←ajusta80 FOLHALA121p
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA121p)⍴' '
[12]  relat[1;;]←(1↓⍴relat)⍴⎕FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 11⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←45 80⍴' '
[16]  f←FOLHALA121p
[17]  esse[1;]←80⍴dhx[1;]
[18]  esse[2;]←80⍴dhx[2;]
[19]  esse[3;]←80⍴4 2⍕VERSAOa←1.05
[20]  esse[4;]←80⍴ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)⍴((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
```

```
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[44;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[45;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracaso121a
[35]  esse[7+⍳6;]←6 80↑'¯-'edit 7 0⍕⊃xx[1]
[36]  esse[13+⍳6;]←6 80↑'¯-'edit 7 0⍕⊃xx[2]
[37]  zica←⊃xx[3]
[38]  esse[19+⍳9;]←montatab zica
[39]  resp←resp,,6↑,zica[;1↓⍴zica]
[40]  xx←geracaso121b
[41]  esse[29;]←80↑5 0⍕⊃xx[2]
[42]  esse[29+⍳7;]←7 80↑7 0⍕⊃xx[1]
[43]  resp←resp,⊃xx[3]
[44]  xx←geracaso121c
[45]  esse[36+⍳7;]←7 80↑7 0⍕⊃xx[1]
[46]  resp←resp,,⊃xx[2]
[47]  resu←resu,[1]1 11⍴resp
[48]  acuja←(f[;2]='#')/⍳1↑⍴f
[49]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[50]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[51]  ⎕←(⍕xk←xk+1),'-'
[52]  →testa
[53] fim:upag←(1 0+⍴f)⍴' '
[54]  →(1=≡n)/elafa
[55]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[56]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[57]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←5 0 10 0,(10⍴8 0),12 0,6 0 3 0 3 0)⍕resu
[58]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[59]  →terminando
[60] elafa:aaa←(ylu[;⍳36],'¯-'edit 9 0⍕0 1↓resu)
[61]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[62]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[63] terminando:
[64]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[65]  relat[1↑⍴relat;;]←upag
[66]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[67]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[68]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[69]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo125

```
[ 0]  RRRR←A01PRIM AAAA;N;M;T;X;Z;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ008;Δ009
[ 1]  N←AAAA[1]
[ 2]  M←0
[ 3]  X←⌈N*0.5
[ 4]  T←2
[ 5] Δ001:
[ 6]  Δ003←T≤X
[ 7]  →(~Δ003)/Δ002
[ 8]  Z←T|N
[ 9]  Δ004←Z=0
[10]  →(~Δ004)/Δ005
[11]  M←M+1
```

```
[12] Δ005:
[13]  T←T+1
[14]  →Δ001
[15] Δ002:
[16]  Δ006←M=0
[17]  →(~Δ006)/Δ007
[18]  RRRR←'PRIMO'
[19]  →Δ008
[20] Δ007:
[21]  RRRR←'NAOPRIMO'
[22] Δ008:
-------------------------------------------------------------
[ 0]  RRRR←A02SOMD AAAA;N;M;Z;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;T
[ 1]  N←AAAA[1]
[ 2]  M←0
[ 3]  T←2
[ 4] Δ001:
[ 5]  Δ003←T≤N-1
[ 6]  →(~Δ003)/Δ002
[ 7]  Z←T|N
[ 8]  Δ004←Z=0
[ 9]  →(~Δ004)/Δ005
[10]  M←M+T
[11] Δ005:
[12]  T←T+1
[13]  →Δ001
[14] Δ002:
[15]  RRRR←M
-------------------------------------------------------------
[ 0]  RRRR←A03POTE AAAA;N;X;R;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007
[ 1]  N←AAAA[1]
[ 2]  X←AAAA[2]
[ 3]  R←1
[ 4]  Δ001←X>0
[ 5]  →(~Δ001)/Δ002
[ 6] Δ003:
[ 7]  Δ005←X>0
[ 8]  →(~Δ005)/Δ004
[ 9]  R←R×N
[10]  X←X-1
[11]  →Δ003
[12] Δ004:
[13]  RRRR←R
[14]  →Δ006
[15] Δ002:
[16]  RRRR←-1
[17] Δ006:
-------------------------------------------------------------
[ 0]  RRRR←A04DATA AAAA;D;M;A;biss;erro;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ008;Δ009;
      Δ010;Δ011;Δ012;Δ013;Δ014;Δ015;Δ016;Δ017;Δ018;Δ019;Δ020;Δ021;Δ022;Δ023;Δ024;Δ025;Δ026;
      Δ027;Δ028;Δ029
[ 1]  D←AAAA[1]
[ 2]  M←AAAA[2]
[ 3]  A←AAAA[3]
[ 4]  Δ001←0=400|A
[ 5]  →(~Δ001)/Δ002
[ 6]  biss←1
[ 7]  →Δ003
[ 8] Δ002:
[ 9]  Δ004←0=100|A
[10]  →(~Δ004)/Δ005
[11]  biss←0
[12]  →Δ006
```

```
[13] Δ005:
[14]  Δ007←0=4|A
[15]  →(~Δ007)/Δ008
[16]  biss←1
[17]  →Δ009
[18] Δ008:
[19]  biss←0
[20] Δ009:
[21] Δ006:
[22] Δ003:
[23]  erro←0
[24]  Δ010←M=2
[25]  →(~Δ010)/Δ011
[26]  Δ012←biss=1
[27]  →(~Δ012)/Δ013
[28]  Δ014←D>29
[29]  →(~Δ014)/Δ015
[30]  erro←1
[31] Δ015:
[32]  →Δ016
[33] Δ013:
[34]  Δ017←D>28
[35]  →(~Δ017)/Δ018
[36]  erro←1
[37] Δ018:
[38] Δ016:
[39]  →Δ019
[40] Δ011:
[41]  Δ020←(M=4)∨(M=6)∨(M=9)∨(M=11)
[42]  →(~Δ020)/Δ021
[43]  Δ022←D>30
[44]  →(~Δ022)/Δ023
[45]  erro←1
[46] Δ023:
[47]  →Δ024
[48] Δ021:
[49]  Δ025←D>31
[50]  →(~Δ025)/Δ026
[51]  erro←1
[52] Δ026:
[53] Δ024:
[54] Δ019:
[55]  Δ027←M>12
[56]  →(~Δ027)/Δ028
[57]  erro←1
[58] Δ028:
[59]  RRRR←erro
-------------------------------------------------------------
[ 0]  RRRR←A05DIAG AAAA;X;Y;Z;diag;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007
[ 1]  X←AAAA[1]
[ 2]  Y←AAAA[2]
[ 3]  Z←AAAA[3]
[ 4]  diag←(X*2)+(Y*2)+(Z*2)
[ 5]  diag←diag*0.5
[ 6]  Δ001←diag>40
[ 7]  →(~Δ001)/Δ002
[ 8]  RRRR←30
[ 9]  →Δ003
[10] Δ002:
[11]  Δ004←diag>20
[12]  →(~Δ004)/Δ005
[13]  RRRR←20
[14]  →Δ006
```

```
[15] Δ005:
[16]  RRRR←10
[17] Δ006:
[18] Δ003:
-------------------------------------------------------------
[0]  AVISO
[1]  'na resposta, os itens positivos estao certos. Os negativos errados'
[2]  'e eles sinalizam qual item errado foi incluido no algoritmo original'
-------------------------------------------------------------
[ 0]  RRRR←B01ACHM AAAA;N;I;MAI;QUA;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006
[ 1]  N←AAAA[1]
[ 2]  N←AAAA[⍳10]
[ 3] ⍝ inteiro MAI,QUA
[ 4]  I←1
[ 5]  MAI←-99999
[ 6] Δ001:
[ 7]  Δ003←I<11
[ 8]  →(~Δ003)/Δ002
[ 9]  Δ004←N[I]>MAI
[10]  →(~Δ004)/Δ005
[11]  MAI←N[I]
[12]  QUA←I
[13] Δ005:
[14]  I←I+1
[15]  →Δ001
[16] Δ002:
[17]  RRRR←QUA
-------------------------------------------------------------
[ 0]  RRRR←B02ACHK AAAA;K;N;RES;I;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006
[ 1]  K←AAAA[1]
[ 2]  N←AAAA[1+⍳10]
[ 3] ⍝ inteiro RES,I
[ 4]  RES←-1
[ 5]  I←1
[ 6] Δ001:
[ 7]  Δ003←I<11
[ 8]  →(~Δ003)/Δ002
[ 9]  Δ004←N[I]=K
[10]  →(~Δ004)/Δ005
[11]  RES←I
[12]  I←11
[13] Δ005:
[14]  I←I+1
[15]  →Δ001
[16] Δ002:
[17]  RRRR←RES
-------------------------------------------------------------
[ 0]  RRRR←B03CONK AAAA;K;I;N;QTD;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006
[ 1]  K←AAAA[1]
[ 2]  N←AAAA[1+⍳10]
[ 3] ⍝ inteiro QTD,I
[ 4]  QTD←0
[ 5]  I←1
[ 6] Δ001:
[ 7]  Δ003←I≤10
[ 8]  →(~Δ003)/Δ002
[ 9]  Δ004←N[I]=K
[10]  →(~Δ004)/Δ005
[11]  QTD←QTD+1
[12] Δ005:
[13]  I←I+1
[14]  →Δ001
[15] Δ002:
```

```
[16]  RRRR←QTD
-------------------------------------------------------------
[ 0]  RRRR←B04ESTA AAAA;N;CTDR;J;I;SOM;MED;MAN;MAI;ASA;MOD;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ
      006;Δ007;Δ008;Δ009;Δ010;Δ011;Δ012;Δ013;Δ014;Δ015;Δ016;Δ017
[ 1]  N←AAAA[1]
[ 2]  N←AAAA[⍳11]
[ 3] ⍝ inteiro MED,MOD,MAN,SOM,I,J,ASA
[ 4]  I←1
[ 5]  SOM←0
[ 6] Δ001:
[ 7]  Δ003←I<12
[ 8]  →(~Δ003)/Δ002
[ 9]  SOM←SOM+N[I]
[10]  I←I+1
[11]  →Δ001
[12] Δ002:
[13]  MED←SOM÷11
[14]  MAN←N[6]
[15]  CTDR←11⍴0
[16]  I←1
[17] Δ004:
[18]  Δ006←I≤11
[19]  →(~Δ006)/Δ005
[20]  SOM←0
[21]  J←1
[22] Δ007:
[23]  Δ009←J≤11
[24]  →(~Δ009)/Δ008
[25]  Δ010←N[I]=N[J]
[26]  →(~Δ010)/Δ011
[27]  SOM←SOM+1
[28] Δ011:
[29]  J←J+1
[30]  →Δ007
[31] Δ008:
[32]  CTDR[I]←SOM
[33]  I←I+1
[34]  →Δ004
[35] Δ005:
[36]  MAI←-9999
[37]  J←1
[38] Δ012:
[39]  Δ014←J≤11
[40]  →(~Δ014)/Δ013
[41]  Δ015←CTDR[J]>MAI
[42]  →(~Δ015)/Δ016
[43]  MAI←CTDR[J]
[44]  ASA←J
[45] Δ016:
[46]  J←J+1
[47]  →Δ012
[48] Δ013:
[49]  MOD←N[ASA]
[50]  RRRR←MED,MOD,MAN
-------------------------------------------------------------
[ 0]  RRRR←B05ESOR AAAA;N;RES;I;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006
[ 1]  N←AAAA[1]
[ 2]  N←AAAA[⍳10]
[ 3] ⍝ inteiro I,RES
[ 4]  RES←0
[ 5]  I←1
[ 6] Δ001:
[ 7]  Δ003←I<10
```

```
[ 8]  →(~Δ003)/Δ002
[ 9]  Δ004←N[I]>N[I+1]
[10]  →(~Δ004)/Δ005
[11]  RES←1
[12] Δ005:
[13]  I←I+1
[14]  →Δ001
[15] Δ002:
[16]  RRRR←RES
-------------------------------------------------------------
[ 0]  RRRR←C01PALI AAAA;X;TAM;INI;FIM;EPAL;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ008;Δ0
      09;Δ010;Δ011;Δ012;Δ013;Δ014;Δ015;ESP
[ 1]  X←AAAA[1]
[ 2]  X←AAAA
[ 3]  ESP←' '
[ 4] ⍝ inteiro INI,FIM,EPAL
[ 5]  TAM←1
[ 6] Δ001:
[ 7]  Δ003←X[TAM]≠'.'
[ 8]  →(~Δ003)/Δ002
[ 9]  TAM←TAM+1
[10]  →Δ001
[11] Δ002:
[12]  INI←1
[13]  FIM←TAM-1
[14]  EPAL←1
[15] Δ004:
[16]  Δ006←(INI<FIM)
[17]  →(~Δ006)/Δ005
[18] Δ007:
[19]  Δ009←X[INI]=ESP
[20]  →(~Δ009)/Δ008
[21]  INI←INI+1
[22]  →Δ007
[23] Δ008:
[24] Δ010:
[25]  Δ012←X[FIM]=ESP
[26]  →(~Δ012)/Δ011
[27]  FIM←FIM-1
[28]  →Δ010
[29] Δ011:
[30]  Δ013←X[INI]≠X[FIM]
[31]  →(~Δ013)/Δ014
[32]  EPAL←0
[33] Δ014:
[34]  INI←INI+1
[35]  FIM←FIM-1
[36]  →Δ004
[37] Δ005:
[38]  RRRR←EPAL
-------------------------------------------------------------
[ 0]  RRRR←C02INCL AAAA;K;R;I;J;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;V
[ 1]  K←AAAA[1]
[ 2]  V←(AAAA[1+⍳10])
[ 3]  R←(11⍴0)
[ 4]  R←V,0
[ 5] ⍝ inteiro I
[ 6]  I←1
[ 7] Δ001:
[ 8]  Δ003←(R[I]≤K)∧(I<11)
[ 9]  →(~Δ003)/Δ002
[10]  I←I+1
[11]  →Δ001
```

```
[12] Δ002:
[13]  J←10
[14] Δ004:
[15]  Δ006←J≥I
[16]  →(~Δ006)/Δ005
[17]  R[J+1]←R[J]
[18]  J←J-1
[19]  →Δ004
[20] Δ005:
[21]  R[J+1]←K
[22]  RRRR←R
-------------------------------------------------------------
[ 0]  RRRR←C03PALM AAAA;X;TAM;CTP;I;J;MAI;QUA;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ008
      ;Δ009;Δ010;Δ011;Δ012;Δ013;Δ014;TMS;SP
[ 1]  X←AAAA[1]
[ 2]  X←AAAA
[ 3]  TMS←20⍴0
[ 4]  SP←' '
[ 5] ⍝ inteiro INI,FIM,EPAL
[ 6]  TAM←1
[ 7] Δ001:
[ 8]  Δ003←X[TAM]≠'.'
[ 9]  →(~Δ003)/Δ002
[10]  TAM←TAM+1
[11]  →Δ001
[12] Δ002:
[13]  CTP←1
[14]  I←1
[15]  J←0
[16] Δ004:
[17]  Δ006←I≤TAM
[18]  →(~Δ006)/Δ005
[19]  Δ007←X[I]=SP
[20]  →(~Δ007)/Δ008
[21]  TMS[CTP]←I-J
[22]  TMS[CTP]←TMS[CTP]-1
[23]  CTP←CTP+1
[24]  J←I
[25] Δ008:
[26]  I←I+1
[27]  →Δ004
[28] Δ005:
[29]  TMS[CTP]←I-J
[30]  TMS[CTP]←TMS[CTP]-2
[31]  MAI←-99999
[32]  I←1
[33] Δ009:
[34]  Δ011←I≤CTP
[35]  →(~Δ011)/Δ010
[36]  Δ012←TMS[I]>MAI
[37]  →(~Δ012)/Δ013
[38]  MAI←TMS[I]
[39]  QUA←I
[40] Δ013:
[41]  I←I+1
[42]  →Δ009
[43] Δ010:
[44]  RRRR←QUA
-------------------------------------------------------------
[ 0]  RRRR←C04EXCL AAAA;I;J;K;R;RRRR;V;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ008;Δ009
[ 1]  K←AAAA[1]
[ 2]  V←(AAAA[1+⍳10])
[ 3]  R←(10⍴0)
```

```
[ 4] ⍝ inteiro I
[ 5]  I←1
[ 6]  J←1
[ 7] Δ001:
[ 8]  Δ003←I<11
[ 9]  →(~Δ003)/Δ002
[10]  Δ004←V[I]≠K
[11]  →(~Δ004)/Δ005
[12]  R[J]←V[I]
[13]  J←J+1
[14] Δ005:
[15]  I←I+1
[16]  →Δ001
[17] Δ002:
[18] Δ006:
[19]  Δ008←J<11
[20]  →(~Δ008)/Δ007
[21]  R[J]←0
[22]  J←J+1
[23]  →Δ006
[24] Δ007:
[25]  RRRR←R
-------------------------------------------------------------
[ 0]  RRRR←C05AMPL AAAA;X;MAI;MEN;AMP;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ008;I
[ 1]  X←AAAA[1]
[ 2]  X←AAAA
[ 3] ⍝ inteiro I,MAI,MEN,AMP
[ 4]  MAI←-9999
[ 5]  MEN←+9999
[ 6]  I←1
[ 7] Δ001:
[ 8]  Δ003←I≤10
[ 9]  →(~Δ003)/Δ002
[10]  Δ004←X[I]>MAI
[11]  →(~Δ004)/Δ005
[12]  MAI←X[I]
[13] Δ005:
[14]  Δ006←X[I]<MEN
[15]  →(~Δ006)/Δ007
[16]  MEN←X[I]
[17] Δ007:
[18]  I←I+1
[19]  →Δ001
[20] Δ002:
[21]  AMP←MAI-MEN
[22]  RRRR←AMP
-------------------------------------------------------------
[ 0]  RRRR←D01VESO AAAA;K;SOM;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;M;V;J;I
[ 1]  K←AAAA[1]
[ 2]  M←(3 3⍴AAAA[1+⍳9])
[ 3]  V←3⍴0
[ 4]  J←1
[ 5] Δ001:
[ 6]  Δ003←J≤3
[ 7]  →(~Δ003)/Δ002
[ 8]  SOM←0
[ 9]  I←1
[10] Δ004:
[11]  Δ006←I≤3
[12]  →(~Δ006)/Δ005
[13]  SOM←SOM+M[I;J]
[14]  I←I+1
[15]  →Δ004
```

```
[16] Δ005:
[17]  V[J]←SOM
[18]  J←J+1
[19]  →Δ001
[20] Δ002:
[21]  RRRR←V
-------------------------------------------------------------
[ 0]  RRRR←D02MSMI AAAA;K;NUM;DEN;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ008;Δ009;Δ010;M
      ;V;J;I
[ 1]  K←AAAA[1]
[ 2]  M←(4 4ρAAAA[1+ι16])
[ 3]  V←4ρ0
[ 4]  J←1
[ 5] Δ001:
[ 6]  Δ003←J≤4
[ 7]  →(~Δ003)/Δ002
[ 8]  NUM←0
[ 9]  DEN←0
[10]  I←1
[11] Δ004:
[12]  Δ006←I≤J-1
[13]  →(~Δ006)/Δ005
[14]  NUM←NUM+M[I;J]
[15]  I←I+1
[16]  →Δ004
[17] Δ005:
[18]  I←J
[19] Δ007:
[20]  Δ009←I≤4
[21]  →(~Δ009)/Δ008
[22]  DEN←DEN+M[I;J]
[23]  I←I+1
[24]  →Δ007
[25] Δ008:
[26]  V[J]←NUM÷DEN
[27]  J←J+1
[28]  →Δ001
[29] Δ002:
[30]  RRRR←V
-------------------------------------------------------------
[ 0]  RRRR←D03MEHO AAAA;K;MEN;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ008;Δ009;M;V;I;J
[ 1]  K←AAAA[1]
[ 2]  M←(4 5ρAAAA[1+ι20])
[ 3]  V←4ρ0
[ 4]  I←1
[ 5] Δ001:
[ 6]  Δ003←I≤4
[ 7]  →(~Δ003)/Δ002
[ 8]  MEN←999999
[ 9]  J←1
[10] Δ004:
[11]  Δ006←J≤5
[12]  →(~Δ006)/Δ005
[13]  Δ007←M[I;J]<MEN
[14]  →(~Δ007)/Δ008
[15]  MEN←M[I;J]
[16] Δ008:
[17]  J←J+1
[18]  →Δ004
[19] Δ005:
[20]  V[I]←MEN
[21]  I←I+1
[22]  →Δ001
```

```
[23] Δ002:
[24]  RRRR←V
------------------------------------------------------------
[ 0]  RRRR←D04MUMA AAAA;K;SOM;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ008;Δ009;Δ010;A;B;V
      ;I;J
[ 1]  K←AAAA[1]
[ 2]  A←3 4⍴AAAA[1+⍳12]
[ 3]  B←4 3⍴AAAA[13+⍳12]
[ 4]  V←3 3⍴0
[ 5]  I←1
[ 6] Δ001:
[ 7]  Δ003←I≤3
[ 8]  →(~Δ003)/Δ002
[ 9]  J←1
[10] Δ004:
[11]  Δ006←J≤3
[12]  →(~Δ006)/Δ005
[13]  SOM←0
[14]  K←1
[15] Δ007:
[16]  Δ009←K≤4
[17]  →(~Δ009)/Δ008
[18]  SOM←SOM+A[I;K]×B[K;J]
[19]  K←K+1
[20]  →Δ007
[21] Δ008:
[22]  V[I;J]←SOM
[23]  J←J+1
[24]  →Δ004
[25] Δ005:
[26]  I←I+1
[27]  →Δ001
[28] Δ002:
[29]  RRRR←V
------------------------------------------------------------
[ 0]  RRRR←D05ELEI AAAA;I;K;MAI;NUL;QUEM;RRRR;TOT;VAL;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ
      008;Δ009;Δ010;Δ011;Δ012;Δ013;Δ014;Δ015;Δ016;Δ017;Δ018
[ 1]  K←AAAA[1]
[ 2]  VOT←6 2⍴AAAA[1+⍳12]
[ 3]  VAL←0
[ 4]  I←1
[ 5] Δ001:
[ 6]  Δ003←I≤6
[ 7]  →(~Δ003)/Δ002
[ 8]  Δ004←VOT[I;1]≠999
[ 9]  →(~Δ004)/Δ005
[10]  VAL←VAL+VOT[I;2]
[11]  →Δ006
[12] Δ005:
[13]  NUL←VOT[I;2]
[14] Δ006:
[15]  I←I+1
[16]  →Δ001
[17] Δ002:
[18]  TOT←VAL÷2
[19]  Δ007←NUL>TOT
[20]  →(~Δ007)/Δ008
[21]  RRRR←-1
[22]  →Δ009
[23] Δ008:
[24]  MAI←-9999
[25]  I←1
[26] Δ010:
```

```
[27]  Δ012←I≤6
[28]  →(~Δ012)/Δ011
[29]  Δ013←VOT[I;2]>MAI
[30]  →(~Δ013)/Δ014
[31]  MAI←VOT[I;2]
[32]  QUEM←VOT[I;1]
[33] Δ014:
[34]  I←I+1
[35]  →Δ010
[36] Δ011:
[37]  Δ015←(QUEM=998)∨(QUEM=999)
[38]  →(~Δ015)/Δ016
[39]  RRRR←1
[40]  →Δ017
[41] Δ016:
[42]  RRRR←QUEM
[43] Δ017:
[44] Δ009:
------------------------------------------------------------
[ 0]  DESCREVE
[ 1]  Este workspace possui 30 funcoes,divididos em 6 grupos de 5 cada
[ 2]  os grupos sao :
[ 3]  a=conceitos iniciais,ainda sem vetor
[ 4]  b=vetor complexidade menor
[ 5]  c=vetor compl media
[ 6]  d=vetor compl alta
[ 7]  e=vetor compl mais alta
[ 8]  m=matriz
[ 9]  A.Dado um numero,dizer se ele e primo
[10]  A.Dado um numero,devolver a soma de seus divisores
[11]  A.Dado um numero e uma potencia,devolver o resultado,usando iteracao
[12]  A.Dada uma data,dizer se estß certa
[13]  A.Achar a caixa para um presente(Pirralhos endiabrados)
[14]  B.Dado um vetor de 10 inteiros,devolver o endereco do maior valor.
[15]  Se houver mais de um,trazer o primeiro
[16]  B.Dado um vetor ordenado e uma chave,devolver a posiṽ⊃o da primeira chave,ou-1
[17]  B.Dado um vetor desordenado e uma chave,devolver quantas vezes ela aparece.
[18]  B.Dado um vetor numᵉrico ordenado,devolver,media,moda e mediana
[19]  B.Dado um vetor numᵉrico,dizer se o mesmo estß em ordem.
[20]  C.Dada uma frase,dizer se a mesmaᵉum palȏndromo
[21]  C.Dado um vetor e uma chave,incluȏ-la na sua posiṽ⊃o
[22]  C.Dada uma frase,devolver o n ṽmero da palavra maior,que serß ṽnica
[23]  C.Dado um vetor e uma chave presente,excluȏ-la reorganizando
[24]  os restantes
[25]  C.Dada uma frase,devolver o tamanho da palavra maior,que serß ṽnica
[26]  ---------------------------------
[27]  Dada uma frase,implementar a linguagem do P
[28]  C.Dado um vetor,dizer qual o valor mais frequente
[29]  D.
[30]  D.Dado um vetor desordenado,devolve-lo ordenado,usando bolha
[31]  D.Dado um vetor desordenado,devolve-lo ordenado,usando seleṽ⊃o
[32]  D.Dado um vetor desordenado e uma chave,devolver a posiṽ⊃o da
[33]  primeira chave,ou-1,usando sentinela
[34]  D.Dado um vetor numᵉrico,devolver a subtraṽ⊃o da mᵉdia dos
[35]  maiores que 200,menos a mᵉdia global
[36]  E.
[37]  E.Dado um vetor ordenado e uma chave,devolver a posiṽ⊃o da primeira chave,ou-1,usand
      o busca binßria
[38]  E.Dado um vetor desordenado,devolve-lo ordenado,usando inserṽ⊃o
[39]  T.Dada uma matriz numᵉrica,devolver o vetor soma na vertical
[40]  T.Dada uma matriz numᵉrica,devolver o vetor multiplicaṽ⊃o na horizontal
[41]  T.Dada uma matriz numᵉrica,devolver o vetor maior na vertical
[42]  T.Dada uma matriz numᵉrica,devolver o vetor menor na horizontal
```

```
[43]  T.Dada uma matriz de eleiṽ⊃o,dizer quem ganhou
[44]  Cada funcao possui 3 variaveis e uma funcao
[45]  Fonte CPC :
[46]  Lnnffff,onde L=letra(A,B,C,D,E ou T)
[47]  nn=numero entre 1 e 30
[48]  ffff=quatro letras com a funcao deste algoritmo
[49]  A variavel acima e compilada pelo cpc e gera a funcao de mesmo
[50]  nome que e chamada para testar se a logica funciona ou nao
[51]  e tambem para gerar os casos de teste na folha
[52]  Depois deve-se fazer Lnntffff←tradfunca lnnffff(note o t na
[53]  quarta posicao do nome)
[54]  Nesta variavel "t "estara a traducao latex do algoritmo original.
[55]  Deve-se fazer as correcoes especificas do latex e depois
[56]  enfiar no algoritmo as variaveis AAA,BBB,CCC,ate JJJ(10 v ars).
[57]  Paralelamente a isto,criar Lnnresp,que e a matriz de respostas
[58]  com ate 10 linhas por 60(fixo)colunas com o valor que foi
[59]  acima substituido.
[60]  As primeiras 30 colunas da variavel Lnnresp contem a resposta
[61]  correta e as outras 30 contem uma substituicao que estragara
[62]  a resposta
[63]  Na hora de gerar folhas,deve-se
[64]  a)gerar SIM←¯1+?2
[65]  se SIM=1,deve-se listar seguido do algoritmo a colunaι30,e
[66]  com isto apos as substituiṽ~oes do aluno o algoritmo estara CORRETO.
[67]  Se SIM=0,deve-se gerar um inteiro I<=que o tamanho vertical de
[68]  Lnnresp,Dai,listar a colunaι30,exceto nessa linha quando entao
[69]  dever ┤a ser colocado na instrucao ao aluno a Lnnresp[I;30+ι30]
[70]  e com isto o algoritmo estara ERRADO.
[71]  Para gerar a resposta faca RESP←RESP+SIM×2*contador.
-------------------------------------------------------------
[0]  r←a acert b
[1]  r←¯1↓,(⍕(((⍴,b)÷a),a)⍴b),','
-------------------------------------------------------------
[ 0]  acertaresp
[ 1]  a01resp←5 60↑a01resp
[ 2]  a02resp←9 60↑a02resp
[ 3]  a03resp←6 60↑a03resp
[ 4]  a04resp←9 60↑a04resp
[ 5]  a05resp←3 60↑a05resp
[ 6]  b01resp←7 60↑b01resp
[ 7]  b02resp←7 60↑b02resp
[ 8]  b03resp←7 60↑b03resp
[ 9]  b04resp←9 60↑b04resp
[10]  b05resp←3 60↑b05resp
[11]  c01resp←9 60↑c01resp
[12]  c02resp←9 60↑c02resp
[13]  c03resp←9 60↑c03resp
[14]  c04resp←7 60↑c04resp
[15]  c05resp←4 60↑c05resp
[16]  d01resp←4 60↑d01resp
[17]  d02resp←6 60↑d02resp
[18]  d03resp←4 60↑d03resp
[19]  d04resp←6 60↑d04resp
[20]  d05resp←7 60↑d05resp
-------------------------------------------------------------
[  0]  cavaleiro125d n;CORRECAO;EVENTO;aaa;acuja;axa;dax;dhx;esse;f;frases;inds;lixo1;lixon
       ol;qda;qua;re1;re2;re3;re4;re5;relat;resp;resu;upag;x;xk;ylu;zica
[  1]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[  2]  FOLHALA125d←ajusta80 FOLHALA125d
[  3]  relat←ΔFM'c:\apl2\VIVOBLO1'
[  4]  xk←1
[  5] testa:→(xk>n)/fim
[  6]  esse←24 80⍴' '
```

```
[  7]  f←FOLHALA125d
[  8]  esse[1;⍳⍴x]←x←'  -- Cavaleiros da Tavola Redonda'
[  9]  esse[3;]←80↑4 2⍕1.02
[ 10]  esse[23;⍳8]←'@OOOOOO@'
[ 11] inica:
[ 12]  frases←10 40⍴' ' ⋄ frases[1;]←40↑'ROMA AMOR.' ⋄ frases[2;]←40↑'ARA.'
[ 13]  frases[3;]←40↑'OTO COME MOCOTO.' ⋄ frases[4;]←40↑'ROTOR.'
[ 14]  frases[5;]←40↑'A MAN A PLAN A CAT A CANAL PANAMA.'
[ 15]  frases[6;]←40↑'MURDER FOR A JAR OF RED RUM.' ⋄ frases[10;]←40↑'OBA.'
[ 16]  frases[8;]←40↑'XUCRICUNICO.' ⋄ frases[9;]←40↑'ABRACADABRA.'
[ 17]  frases[7;]←40↑'BRASIL E LISARB.'
[ 18]  inds←(2?7),7+?3
[ 19]  inds←inds[3?3]
[ 20]  axa←C01PALI dax←frases[inds[1];]
[ 21]  esse[8;]←80↑'C01PALI(',(⍕dax),') = ',⍕axa
[ 22]  axa←C01PALI,dax←frases[inds[2];]
[ 23]  esse[9;]←80↑'C01PALI(',(⍕dax),') = ',⍕axa
[ 24]  axa←C01PALI,dax←frases[inds[3];]
[ 25]  esse[10;]←80↑'C01PALI(',(⍕dax),') = ',⍕axa
[ 26]  zica←c01resp[;⍳30]
[ 27]  re1←¯1+?2
[ 28]  qua←¯1
[ 29]  →(re1=1)/cer1
[ 30]  zica[qua;]←c01resp[qua←?9;30+⍳30]
[ 31] cer1:
[ 32]  f←f replace'AAA1'(trim zica[1;])
[ 33]  f←f replace'BBB1'(trim zica[2;])
[ 34]  f←f replace'CCC1'(trim zica[3;])
[ 35]  f←f replace'DDD1'(trim zica[4;])
[ 36]  f←f replace'EEE1'(trim zica[5;])
[ 37]  f←f replace'FFF1'(trim zica[6;])
[ 38]  f←f replace'GGG1'(trim zica[7;])
[ 39]  f←f replace'HHH1'(trim zica[8;])
[ 40]  f←f replace'III1'(trim zica[9;])
[ 41]  resp←qua
[ 42] ⍝----------------------
[ 43]  axa←C02INCL(qda←?99),dax←(4+?4)×⍳10
[ 44]  esse[11;]←80↑'C02INCL(',(⍕qda),',',(⍕dax),')=',⍕axa
[ 45]  axa←C02INCL,(qda←100+?99),dax←(4+?4)×⍳10
[ 46]  esse[12;]←80↑'C02INCL(',(⍕qda),',',(⍕dax),')=',⍕axa
[ 47]  axa←C02INCL(qda←?7),dax←10+(4+?4)×⍳10
[ 48]  esse[13;]←80↑'C02INCL(',(⍕qda),',',(⍕dax),')=',⍕axa
[ 49]  zica←c02resp[;⍳30]
[ 50]  re2←¯1+?2
[ 51]  qua←¯2
[ 52]  →(re2=1)/cer2
[ 53]  zica[qua;]←c02resp[qua←?9;30+⍳30]
[ 54] cer2:
[ 55]  f←f replace'AAA2'(trim zica[1;])
[ 56]  f←f replace'BBB2'(trim zica[2;])
[ 57]  f←f replace'CCC2'(trim zica[3;])
[ 58]  f←f replace'DDD2'(trim zica[4;])
[ 59]  f←f replace'EEE2'(trim zica[5;])
[ 60]  f←f replace'FFF2'(trim zica[6;])
[ 61]  f←f replace'GGG2'(trim zica[7;])
[ 62]  f←f replace'HHH2'(trim zica[8;])
[ 63]  f←f replace'III2'(trim zica[9;])
[ 64]  resp←resp,qua
[ 65] ⍝-------------------------
[ 66]  inds←3?1↑⍴frasesx
[ 67]  axa←C03PALM dax←frasesx[inds[1];]
[ 68]  esse[14;]←80↑'C03PALM(',dax,')=',⍕axa
[ 69]  axa←C03PALM dax←frasesx[inds[2];]
```

```
[ 70]  esse[15;]←80↑'C03PALM(',dax,')=',⍕axa
[ 71]  axa←C03PALM dax←frasesx[inds[3];]
[ 72]  esse[16;]←80↑'C03PALM(',dax,')=',⍕axa
[ 73]  zica←c03resp[;⍳30]
[ 74]  re3←¯1+?2
[ 75]  qua←¯3
[ 76]  →(re3=1)/cer3
[ 77]  zica[qua;]←c03resp[qua←?9;30+⍳30]
[ 78] cer3:
[ 79]  f←f replace'AAA3'(trim zica[1;])
[ 80]  f←f replace'BBB3'(trim zica[2;])
[ 81]  f←f replace'CCC3'(trim zica[3;])
[ 82]  f←f replace'DDD3'(trim zica[4;])
[ 83]  f←f replace'EEE3'(trim zica[5;])
[ 84]  f←f replace'FFF3'(trim zica[6;])
[ 85]  f←f replace'GGG3'(trim zica[7;])
[ 86]  f←f replace'HHH3'(trim zica[8;])
[ 87]  f←f replace'III3'(trim zica[9;])
[ 88]  resp←resp,qua
[ 89] ⍝--------------------------------
[ 90]  axa←C04EXCL(qda←?8),dax←?10⍴8
[ 91]  esse[17;]←80↑'C04EXCL(',(⍕qda),',',(⍕dax),') = ',⍕axa
[ 92]  axa←C04EXCL(qda←?99),dax←10?50
[ 93]  esse[18;]←80↑'C04EXCL(',(⍕qda),',',(⍕dax),') = ',⍕axa
[ 94]  axa←C04EXCL(qda←?12),dax←?10⍴10
[ 95]  esse[19;]←80↑'C04EXCL(',(⍕qda),',',(⍕dax),') = ',⍕axa
[ 96]  zica←c04resp[;⍳30]
[ 97]  re4←¯1+?2
[ 98]  qua←¯4
[ 99]  →(re4=1)/cer4
[100]  zica[qua;]←c04resp[qua←?7;30+⍳30]
[101] cer4:
[102]  f←f replace'AAA4'(trim zica[1;])
[103]  f←f replace'BBB4'(trim zica[2;])
[104]  f←f replace'CCC4'(trim zica[3;])
[105]  f←f replace'DDD4'(trim zica[4;])
[106]  f←f replace'EEE4'(trim zica[5;])
[107]  f←f replace'FFF4'(trim zica[6;])
[108]  f←f replace'GGG4'(trim zica[7;])
[109]  resp←resp,qua
[110] ⍝------------------------------
[111]  axa←C05AMPL dax←10?99
[112]  esse[20;]←80↑'C05AMPL(',(⍕dax),') = ',⍕axa
[113]  axa←C05AMPL dax←?10⍴8
[114]  esse[21;]←80↑'C05AMPL(',(⍕dax),') = ',⍕axa
[115]  axa←C05AMPL dax←10?99
[116]  esse[22;]←80↑'C05AMPL(',(⍕dax),') = ',⍕axa
[117]  zica←c05resp[;⍳30]
[118]  re5←¯1+?2
[119]  qua←¯5
[120]  →(re5=1)/cer5
[121]  zica[qua;]←c05resp[qua←?4;30+⍳30]
[122] cer5:
[123]  f←f replace'AAA5'(trim zica[1;])
[124]  f←f replace'BBB5'(trim zica[2;])
[125]  f←f replace'CCC5'(trim zica[3;])
[126]  f←f replace'DDD5'(trim zica[4;])
[127]  resp←resp,qua
[128] ⍝----------------------
[129]  f←ajusta80 f
[130]  resp←resp×5⍴¯1
[131]  resp←'¯-'edit⍕resp
[132]  acuja←(f[;2]='#')/⍳1↑⍴f
```

```
[133]  f[acuja;]←esse[⍋,f[acuja;3 4 5],' ';]
[134]  ⍞←(⍕xk←xk+1),'-'
[135]  f←(((1↑⍴relat),1↓⍴f)↑relat),[1]f
[136]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'\end{document}'
[137]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'%',resp
[138]  lixo1←f ⎕FM'c:\apl2\CA125d',('00'⍕xk-1),'.tex'
[139]  →testa
[140] fim:
------------------------------------------------------------
[ 0]  r←geraelei;x
[ 1]  r←6 2⍴0
[ 2]  x←?3
[ 3]  →(x=1)/um
[ 4]  →(x=2)/dois
[ 5] tres:r[1 2 3 4;1]←10×4?9
[ 6]  r[1 2 3 4;2]←20×4?20
[ 7]  →junta
[ 8] dois:
[ 9]  r[1 2 3;1]←10×3?9
[10]  r[1 2 3;2]←20×3?20
[11]  →junta
[12] um:
[13]  r[1 2;1]←10×2?9
[14]  r[1 2;2]←100×2?20
[15] junta:r[5;1]←998
[16]  r[5;2]←20×?20
[17]  r[6;1]←999
[18]  r[6;2]←30×?20
------------------------------------------------------------
[0]  r←a igual b;maior
[1]  maior←(1↑⍴a)⌈1↑⍴b
[2]  a←maior↑a ⋄ b←maior↑b
[3]  r←maior=+/a=b
------------------------------------------------------------
[0]  r←ltrim a
[1]  r←(~∧\a=' ')/a
------------------------------------------------------------
[0]  r←queb2 x;z
[1]  r←2 80⍴' '
[2]  z←70
[3] t1:→(x[z]=' ')/achou
[4]  →(z=z←z+1)/t1
[5] achou:
[6]  r[1;]←80↑z↑x
[7]  x←z↓x
[8]  r[2;]←80↑x
------------------------------------------------------------
[ 0]  r←quem replace depara;de;i;j;k;onde;para
[ 1] ⍝ forma de usar: texto replace 'strin-de' 'string para'
[ 2] ⍝ obviamente eles nao precisam ter o mesmo tamanho
[ 3]  de←,⊃depara[1] ⋄ para←,⊃depara[2]
[ 4]  i←1 ⋄ r←((1↑⍴quem),200)⍴' '
[ 5] t1:→(i>1↑⍴quem)/fim
[ 6]  →(0=∨/onde←de⍷quem[i;])/naotem
[ 7]  j←1 ⋄ k←1
[ 8] t2:→(k>⍴quem[i;])/acabou
[ 9]  →(onde[k]=0)/soma
[10]  r[i;(j-1)+⍳⍴para]←para
[11]  j←j+⍴para
[12]  k←k+⍴de
[13]  →t2
[14] soma:r[i;j]←quem[i;k]
[15]  k←k+1
```

```
[16]  →(j=j←j+1)/t2
[17] naotem:r[i;]←200↑quem[i;]
[18] acabou:→(i=i←i+1)/t1
[19] fim:r←trim4 r
------------------------------------------------------------
[ 0]  r←tradcoma x;i;j
[ 1] ⍝ v 1.06 - traduz um comando de cpc para latex
[ 2]  i←j←1 ⋄ r←100⍴' '
[ 3] t1:→(i>⍴x)/fim
[ 4]  →(i=⍴x)/pula
[ 5]  →((x[i]='<')∧(x[i+1]='-'))/recebe
[ 6] pula:→(x[i]='∨')/ou
[ 7]  →(x[i]='∧')/e
[ 8]  →(x[i]='~')/nao
[ 9]  →(x[i]='≠')/diferente
[10]  →(x[i]='≤')/menig
[11]  →(x[i]='≥')/maiig
[12]  →(x[i]='×')/vezes
[13]  →(x[i]='>')/maior
[14]  →(x[i]='<')/menor
[15]  →(x[i]='⍝')/coment
[16] nada:r[j]←x[i]
[17]  i←i+1
[18]  j←j+1
[19]  →t1
[20] coment:
[21]  r[j]←' '
[22]  i←i+1
[23]  j←j+1
[24]  →t1
[25] recebe:r[j+¯1+⍳7]←'$\gets$'
[26]  j←j+7
[27]  i←i+2
[28]  →t1
[29] ou:r[j+¯1+⍳6]←'$\lor$'
[30]  j←j+6
[31]  i←i+1
[32]  →t1
[33] nao:r[j+¯1+⍳6]←'$\sim$'
[34]  j←j+6
[35]  i←i+1
[36]  →t1
[37] e:r[j+¯1+⍳7]←'$\land$'
[38]  j←j+7
[39]  i←i+1
[40]  →t1
[41] diferente:r[j+¯1+⍳6]←'$\neq$'
[42]  j←j+6
[43]  i←i+1
[44]  →t1
[45] menig:r[j+¯1+⍳5]←'$\le$'
[46]  j←j+5
[47]  i←i+1
[48]  →t1
[49] maiig:r[j+¯1+⍳5]←'$\ge$'
[50]  j←j+5
[51]  i←i+1
[52]  →t1
[53] vezes:r[j+¯1+⍳8]←'$\times$'
[54]  j←j+8
[55]  i←i+1
[56]  →t1
[57] maior:r[j+¯1+⍳3]←'$>$'
```

```
[58]  j←j+3
[59]  i←i+1
[60]  →t1
[61] menor:r[j+¯1+⍳3]←'$<$'
[62]  j←j+3
[63]  i←i+1
[64]  →t1
[65] fim:r←trim r
-------------------------------------------------------------
[ 0]  r←tradfunca fun;y;aaa;i
[ 1]  y←'({'edit')}'edit fun
[ 2]  y←y replace'fimse' '⍀ENDIF'
[ 3]  y←y replace'fim{se}' '⍀ENDIF'
[ 4]  y←y replace'se ' '⍀IF {'
[ 5]  y←y replace'fim{enquanto}' '⍀ENDWHILE'
[ 6]  y←y replace'fimenquanto' '⍀ENDWHILE'
[ 7]  y←y replace'enquanto ' '⍀WHILE {'
[ 8]  y←y replace'repita' '⍀REPEAT'
[ 9]  y←y replace'senao' '⍀ELSE'
[10]  y←y replace'ate' '⍀UNTIL {'
[11]  y←y replace'fim{para}' '⍀ENDFOR'
[12]  y←y replace'fimpara' '⍀ENDFOR'
[13]  y←y replace'para' '⍀FOR {'
[14]  y←y replace'fim{funcao}' 'fimfuncao'
[15]  y←y replace'RRRR<-' 'devolva '
[16]  y←((1↑⍴y),60)↑y
[17]  y←((1,1↓⍴y)⍴100↑'⍀begin{algorithmic}[1]'),[1]y
[18]  y←y,[1](1,1↓⍴y)⍴100↑'⍀end{algorithmic}'
[19]  i←1
[20]  r←((1↑⍴y),100)⍴' '
[21] t1:→(i>1↑⍴r)/fim
[22]  aaa←100↑⌽trim tradcoma y[i;]
[23]  →(aaa[1]='⍀')/blz
[24]  aaa←100↑'⍀STATE ',aaa
[25] blz:r[i;]←aaa
[26]  →(i=i←i+1)/t1
[27] fim:i←1
[28] test34:→(i>1↑⍴r)/acabou
[29]  →(5=+/r[i;⍳5]='⍀IF {')/poe
[30]  →(5=+/r[i;⍳5]='⍀WHIL')/poe
[31]  →(5=+/r[i;⍳5]='⍀UNTI')/poe
[32]  →(5=+/r[i;⍳5]='⍀FOR ')/poe
[33]  →(i=i←i+1)/test34
[34] poe:
[35]  r[i;]←100↑(trim r[i;]),'}'
[36]  →(i=i←i+1)/test34
[37] acabou:r←trim4 r
-------------------------------------------------------------
[0]  r←trim4 x;z
[1] ⍝f corta as colunas direitas que sao brancos
[2]  →(2≠⍴⍴x)/erro
[3]  z←+/[1]x=' '
[4]  r←(z≠1↑⍴x)/[2]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
-------------------------------------------------------------
[ 0]  r←vetoriza x;i;rr;letra;aspa;nume
[ 1] ⍝ versao 1.07
[ 2]  aspa←'''' ⋄ nume←'0123456789'
[ 3]  letra←'abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ()',aspa
[ 4] ⍝ tira os brancos
[ 5]  i←1 ⋄ rr←1
[ 6] t2:→(i>¯2+⍴x)/vaiz
```

```
[ 7]  →((x[i+1]=' ')∧(x[i]∈letra)∧(x[i+2]∈nume))/mataz
[ 8]  →((x[i+1]=' ')∧(x[i]∈nume)∧(x[i+2]∈letra))/mataz
[ 9]  →((x[i]∈letra)∧(x[i+2]∈letra))/naopode
[10]  →(((x[1]='p')∨(x[1]='P'))∧(x[2]='a')∧(x[i]∈letra)∧((x[i+2]='-')∨(x[i+2]='¯')))/naopo
      de  ⍝ comando incluido para o passo negativo
[11] ⍝ →((x[i]∈letra)∧((x[i+2]='-')∨(x[i+2]='¯')))/naopode  ⍝ comando incluido para o pass
      o negativo
[12] ⍝ os 3 testes iniciais (pPa) foram incluidos porque o comando acima estava
[13] ⍝ fazendo besteira: vetoriza 'A <- A -1' estava gerando 4 tokens e nao 3.
[14] ⍝ correcao em 13/03/12 - P.kantek
[15]  →(x[i+1]≠' ')/naopode
[16] pode:rr←rr,0
[17]  →(i=i←i+1)/t2
[18] mataz:x[i+1]←'!'
[19] naopode:rr←rr,1
[20]  →(i=i←i+1)/t2
[21] vaiz:rr←rr,1
[22]  x←rr/x
[23] ⍝ separa o sinal <-
[24]  →(2≠+/'<-'∈x)/faca
[25]  i←1 ⋄ rr←⍳0
[26] t1:→(i>¯1+⍴x)/vaix
[27]  →((x[i]='<')∧(x[i+1]='-'))/esim
[28]  rr←rr,1
[29]  →(i=i←i+1)/t1
[30] esim:rr←rr,0 1 1 0
[31]  →(i=i←i+2)/t1
[32] vaix:rr←rr,1
[33]  x←rr⌿x
[34] faca:x←'! 'edit x
[35]  r←(~' '=x)⊂x
------------------------------------------------------------
[  0]  opesq vivo125b n;CORRECAO;EVENTO;aaa;acuja;axa;dax;dhx;esse;f;lixo1;lixonol;qua;re1;
       re2;re3;re4;re5;relat;resp;resu;upag;xk;ylu;zica
[  1]  →(0≠⎕NC'opesq')/qveio
[  2]  opesq←10⍴' '
[  3] qveio:
[  4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[  5]  CORRECAO←1 ⋄ EVENTO←'PL125b  '
[  6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
       4 5],⎕TS[6]+⎕TS[7]÷1000
[  7]  →(isnum n)/1+⎕LC ⋄ ylu←⍙FM'c:⌿apl2⌿',(5↑n),'.ALU' ⋄ EVENTO←n
[  8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[  9]  FOLHALA125b←ajusta80 FOLHALA125b
[ 10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA125b)⍴' '
[ 11]  relat[1;;]←(1↓⍴relat)↑⍙FM'c:⌿apl2⌿VIVOBLO1'
[ 12]  xk←1 ⋄ resu←0 6⍴0
[ 13] testa:→(xk>1↑⍴ylu)/fim
[ 14]  esse←24 80⍴' '
[ 15]  f←FOLHALA125b
[ 16]  esse[1;]←80↑dhx[1;]
[ 17]  esse[2;]←80↑dhx[2;]
[ 18]  esse[3;]←80↑4 2⍎VERSAOa←1.03
[ 19]  esse[4;]←80↑ylu[xk;⍳6]
[ 20]  esse[5;]←80↑ylu[xk;6+⍳30]
[ 21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[ 22]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[ 23]  esse[23;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[ 24]  esse[24;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[ 25] inica:
[ 26]  axa←A01PRIM,dax←10+?20
[ 27]  esse[8;]←80↑'A01PRIM(',(⍎dax),') = ',⍎axa
[ 28]  axa←A01PRIM,dax←20+?80
```

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[ 29]  esse[9;]←80↑'A01PRIM(',(⍕dax),') = ',⍕axa
[ 30]  axa←A01PRIM,dax←(17 19 23 29 31 37 43 47 53 67 71)[?11]
[ 31]  esse[10;]←80↑'A01PRIM(',(⍕dax),') = ',⍕axa
[ 32]  zica←a01resp[;⍳30]
[ 33]  re1←¯1+?2
[ 34]  qua←¯1
[ 35]  →(re1=1)/cer1
[ 36]  zica[qua;]←a01resp[qua←?4;30+⍳30]
[ 37] cer1:
[ 38]  f←f replace'AAA1'(trim zica[1;])
[ 39]  f←f replace'BBB1'(trim zica[2;])
[ 40]  f←f replace'CCC1'(trim zica[3;])
[ 41]  f←f replace'DDD1'(trim zica[4;])
[ 42]  resp←resp,qua
[ 43]  axa←A02SOMD,dax←10+?20
[ 44]  esse[11;]←80↑'A02SOMD(',(⍕dax),') = ',⍕axa
[ 45]  axa←A02SOMD,dax←20+?80
[ 46]  esse[12;]←80↑'A02SOMD(',(⍕dax),') = ',⍕axa
[ 47]  axa←A02SOMD,dax←(17 19 23 29 31 37 43 47 53 67 71)[?11]
[ 48]  esse[13;]←80↑'A02SOMD(',(⍕dax),') = ',⍕axa
[ 49]  zica←a02resp[;⍳30]
[ 50]  re2←¯1+?2
[ 51]  qua←¯2
[ 52]  →(re2=1)/cer2
[ 53]  zica[qua;]←a02resp[qua←?9;30+⍳30]
[ 54] cer2:
[ 55]  f←f replace'AAA2'(trim zica[1;])
[ 56]  f←f replace'BBB2'(trim zica[2;])
[ 57]  f←f replace'CCC2'(trim zica[3;])
[ 58]  f←f replace'DDD2'(trim zica[4;])
[ 59]  f←f replace'EEE2'(trim zica[5;])
[ 60]  f←f replace'FFF2'(trim zica[6;])
[ 61]  f←f replace'GGG2'(trim zica[7;])
[ 62]  f←f replace'HHH2'(trim zica[8;])
[ 63]  f←f replace'III2'(trim zica[9;])
[ 64]  resp←resp,qua
[ 65]  axa←A03POTE dax←(2+?4),2+?4
[ 66]  esse[14;]←80↑'A03POTE(',(⍕dax),') = ',⍕axa
[ 67]  axa←A03POTE dax←(2+?4),2+?4
[ 68]  esse[15;]←80↑'A03POTE(',(⍕dax),') = ',⍕axa
[ 69]  axa←A03POTE dax←(2+?4),2+?4
[ 70]  esse[16;]←80↑'A03POTE(',(⍕dax),') = ',⍕axa
[ 71]  zica←a03resp[;⍳30]
[ 72]  re3←¯1+?2
[ 73]  qua←¯3
[ 74]  →(re3=1)/cer3
[ 75]  zica[qua;]←a03resp[qua←?6;30+⍳30]
[ 76] cer3:
[ 77]  f←f replace'AAA3'(trim zica[1;])
[ 78]  f←f replace'BBB3'(trim zica[2;])
[ 79]  f←f replace'CCC3'(trim zica[3;])
[ 80]  f←f replace'DDD3'(trim zica[4;])
[ 81]  f←f replace'EEE3'(trim zica[5;])
[ 82]  f←f replace'FFF3'(trim zica[6;])
[ 83]  resp←resp,qua
[ 84]  axa←A04DATA dax←(20+?14),(8+?4),?9999
[ 85]  esse[17;]←80↑'A04DATA(',(⍕dax),') = ',⍕axa
[ 86]  axa←A04DATA dax←(26+?3),2,1800+4×?80
[ 87]  esse[18;]←80↑'A04DATA(',(⍕dax),') = ',⍕axa
[ 88]  axa←A04DATA dax←29,2,(1600 1700 1800 1900 2000)[?5]
[ 89]  esse[19;]←80↑'A04DATA(',(⍕dax),') = ',⍕axa
[ 90]  zica←a04resp[;⍳30]
[ 91]  re4←¯1+?2
```

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[ 92]  qua←¯4
[ 93]  →(re4=1)/cer4
[ 94]  zica[qua;]←a04resp[qua←?8;30+⍳30]
[ 95] cer4:
[ 96]  f←f replace'AAA4'(trim zica[1;])
[ 97]  f←f replace'BBB4'(trim zica[2;])
[ 98]  f←f replace'EEE4'(trim zica[3;])
[ 99]  f←f replace'FFF4'(trim zica[4;])
[100]  f←f replace'GGG4'(trim zica[5;])
[101]  f←f replace'HHH4'(trim zica[6;])
[102]  f←f replace'III4'(trim zica[7;])
[103]  f←f replace'JJJ4'(trim zica[8;])
[104]  resp←resp,qua
[105]  axa←A05DIAG dax←(?14),(?10),?15
[106]  esse[20;]←80↑'A05DIAG(',(⍕dax),') = ',⍕axa
[107]  axa←A05DIAG dax←(20+?8),(24+?6),24+?5
[108]  esse[21;]←80↑'A05DIAG(',(⍕dax),') = ',⍕axa
[109]  axa←A05DIAG dax←(?10),(?10),?10
[110]  esse[22;]←80↑'A05DIAG(',(⍕dax),') = ',⍕axa
[111]  zica←a05resp[;⍳30]
[112]  re5←¯1+?2
[113]  qua←¯5
[114]  →(re5=1)/cer5
[115]  zica[qua;]←a05resp[qua←?3;30+⍳30]
[116] cer5:
[117]  f←f replace'AAA5'(trim zica[1;])
[118]  f←f replace'BBB5'(trim zica[2;])
[119]  f←f replace'CCC5'(trim zica[3;])
[120]  f←ajusta80 f
[121]  resp←resp,qua
[122]  resp←resp×1,5⍴¯1
[123]  resu←resu,[1]1 6⍴resp
[124]  acuja←(f[;2]='#')/⍳1↑⍴f
[125]  f[acuja;]←esse[⍋,f[acuja;3 4 5],' ';]
[126]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[127]  ⎕←(⍕xk←xk+1),'-'
[128]  →testa
[129] fim:upag←(1 0+⍴f)⍴' '
[130]  →(1=≡n)/elafa
[131]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[132]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[133]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯'-'edit(lixo1←4 0 8 0 3 0 3 0 3 0 3 0)⍕resu
[134]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[135]  →terminando
[136] elafa:aaa←(ylu,'¯'-'edit 3 0 3 0 3 0 3 0 3 0⍕0 1↓resu)
[137]  aaa←aaa,((1↑⍴aaa),18)⍴' +=certo, -=errado'
[138]  aaa[1;35 36]←2 0⍕CORRECAO
[139]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[140]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[141] terminando:
[142] ⍝ upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[143]  relat[1↑⍴relat;;]←upag
[144]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[145] ⍝ lixonol←lixonol,[1]1 80⍴80↑'os certos aparecem como +. Os - indicam a linha errada'
[146]  lixonol←lixonol,[1]1 80⍴80↑'\end{document}'
[147]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[148]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[  0]  opesq vivo125c n;CORRECAO;EVENTO;aaa;acuja;axa;dax;dhx;esse;f;lixo1;lixonol;qda;qua;
       re1;re2;re3;re4;re5;relat;resp;resu;upag;xk;ylu;zica
[  1]  →(0≠⎕NC'opesq')/qveio
[  2]  opesq←10⍴' '
[  3] qveio:
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[  4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[  5]  CORRECAO←1 ⋄ EVENTO←'PL125c  '
[  6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
       4 5],⎕TS[6]+⎕TS[7]÷1000
[  7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[  8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[  9]  FOLHALA125c←ajusta80 FOLHALA125c
[ 10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA125c)⍴' '
[ 11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[ 12]  xk←1 ⋄ resu←0 6⍴0
[ 13] testa:→(xk>1↑⍴ylu)/fim
[ 14]  esse←24 80⍴' '
[ 15]  f←FOLHALA125c
[ 16]  esse[1;]←80↑dhx[1;]
[ 17]  esse[2;]←80↑dhx[2;]
[ 18]  esse[3;]←80↑4 2⍕VERSAOa←1.08
[ 19]  esse[4;]←80↑ylu[xk;⍳6]
[ 20]  esse[5;]←80↑ylu[xk;6+⍳30]
[ 21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[ 22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[ 23]  esse[23;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[ 24]  esse[24;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[ 25] inica:
[ 26]  axa←B01ACHM dax←?10⍴7
[ 27]  esse[8;]←80↑'B01ACHM(',(⍕dax),') = ',⍕axa
[ 28]  axa←B01ACHM,dax←10?20
[ 29]  esse[9;]←80↑'B01ACHM(',(⍕dax),') = ',⍕axa
[ 30]  axa←B01ACHM,dax←?10⍴5
[ 31]  esse[10;]←80↑'B01ACHM(',(⍕dax),') = ',⍕axa
[ 32]  zica←b01resp[;⍳30]
[ 33]  re1←¯1+?2
[ 34]  qua←¯1
[ 35]  →(re1=1)/cer1
[ 36]  zica[qua;]←b01resp[qua←?7;30+⍳30]
[ 37] cer1:
[ 38]  f←f replace'AAA1'(trim zica[1;])
[ 39]  f←f replace'BBB1'(trim zica[2;])
[ 40]  f←f replace'CCC1'(trim zica[3;])
[ 41]  f←f replace'DDD1'(trim zica[4;])
[ 42]  f←f replace'EEE1'(trim zica[5;])
[ 43]  f←f replace'FFF1'(trim zica[6;])
[ 44]  f←f replace'GGG1'(trim zica[7;])
[ 45]  resp←resp,qua
[ 46] ⍝----------------------
[ 47]  axa←B02ACHK(qda←dax[?10]),dax←10+10?20
[ 48]  esse[11;]←80↑'B02ACHK(',(⍕qda),',',(⍕dax),')=','¯'-'edit⍕axa
[ 49]  axa←B02ACHK,(qda←dax[?10]),dax←10+10?20
[ 50]  esse[12;]←80↑'B02ACHK(',(⍕qda),',',(⍕dax),')=','¯'-'edit⍕axa
[ 51]  axa←B02ACHK,17,dax←10+10?30
[ 52]  esse[13;]←80↑'B02ACHK(17,',(⍕dax),')=','¯'-'edit⍕axa
[ 53]  zica←b02resp[;⍳30]
[ 54]  re2←¯1+?2
[ 55]  qua←¯2
[ 56]  →(re2=1)/cer2
[ 57]  zica[qua;]←b02resp[qua←?7;30+⍳30]
[ 58] cer2:
[ 59]  f←f replace'AAA2'(trim zica[1;])
[ 60]  f←f replace'BBB2'(trim zica[2;])
[ 61]  f←f replace'CCC2'(trim zica[3;])
[ 62]  f←f replace'DDD2'(trim zica[4;])
[ 63]  f←f replace'EEE2'(trim zica[5;])
[ 64]  f←f replace'FFF2'(trim zica[6;])
[ 65]  f←f replace'GGG2'(trim zica[7;])
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[ 66]  resp←resp,qua
[ 67] ⍝-------------------------
[ 68]  axa←B03CONK(qda←dax[?10]),dax←10+?10⍴8
[ 69]  esse[14;]←80↑'B03CONK(',(⍕qda),',',(⍕dax),')=',⍕axa
[ 70]  axa←B03CONK,(qda←dax[?10]),dax←10+?10⍴8
[ 71]  esse[15;]←80↑'B03CONK(',(⍕qda),',',(⍕dax),')=',⍕axa
[ 72]  axa←B03CONK,17,dax←10+10?30
[ 73]  esse[16;]←80↑'B03CONK(17,',(⍕dax),')=',⍕axa
[ 74]  zica←b03resp[;⍳30]
[ 75]  re3←¯1+?2
[ 76]  qua←¯3
[ 77]  →(re3=1)/cer3
[ 78]  zica[qua;]←b03resp[qua←?7;30+⍳30]
[ 79] cer3:
[ 80]  f←f replace'AAA3'(trim zica[1;])
[ 81]  f←f replace'BBB3'(trim zica[2;])
[ 82]  f←f replace'CCC3'(trim zica[3;])
[ 83]  f←f replace'DDD3'(trim zica[4;])
[ 84]  f←f replace'EEE3'(trim zica[5;])
[ 85]  f←f replace'FFF3'(trim zica[6;])
[ 86]  f←f replace'GGG3'(trim zica[7;])
[ 87]  resp←resp,qua
[ 88] ⍝---------------------------------
[ 89]  axa←B04ESTA dax←dax[⍋dax←?11⍴8]
[ 90]  esse[17;]←80↑'B04ESTA(',(⍕dax),') = ',4 1 2 0 2 0⍕axa
[ 91]  axa←B04ESTA dax←dax[⍋dax←?11⍴8]
[ 92]  esse[18;]←80↑'B04ESTA(',(⍕dax),') = ',4 1 2 0 2 0⍕axa
[ 93]  axa←B04ESTA dax←dax[⍋dax←?11⍴8]
[ 94]  esse[19;]←80↑'B04ESTA(',(⍕dax),') = ',4 1 2 0 2 0⍕axa
[ 95]  zica←b04resp[;⍳30]
[ 96]  re4←¯1+?2
[ 97]  qua←¯4
[ 98]  →(re4=1)/cer4
[ 99]  zica[qua;]←b04resp[qua←?9;30+⍳30]
[100] cer4:
[101]  f←f replace'AAA4'(trim zica[1;])
[102]  f←f replace'BBB4'(trim zica[2;])
[103]  f←f replace'CCC4'(trim zica[3;])
[104]  f←f replace'DDD4'(trim zica[4;])
[105]  f←f replace'EEE4'(trim zica[5;])
[106]  f←f replace'FFF4'(trim zica[6;])
[107]  f←f replace'GGG4'(trim zica[7;])
[108]  f←f replace'HHH4'(trim zica[8;])
[109]  f←f replace'III4'(trim zica[9;])
[110]  resp←resp,qua
[111] ⍝-------------------------------
[112]  axa←B05ESOR dax←dax[⍋dax←10?99]
[113]  esse[20;]←80↑'B05ESOR(',(⍕dax),') = ',⍕axa
[114]  dax←dax[⍋dax←10?99]
[115]  dax[7]←?99
[116]  axa←B05ESOR dax
[117]  esse[21;]←80↑'B05ESOR(',(⍕dax),') = ',⍕axa
[118]  dax←dax[⍋dax←10?99]
[119]  dax[7]←?99
[120]  axa←B05ESOR dax
[121]  esse[22;]←80↑'B05ESOR(',(⍕dax),') = ',⍕axa
[122]  zica←b05resp[;⍳30]
[123]  re5←¯1+?2
[124]  qua←¯5
[125]  →(re5=1)/cer5
[126]  zica[qua;]←b05resp[qua←?3;30+⍳30]
[127] cer5:
[128]  f←f replace'AAA5'(trim zica[1;])
```

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[129]  f←f replace'BBB5'(trim zica[2;])
[130]  f←f replace'CCC5'(trim zica[3;])
[131]  f←ajusta80 f
[132]  resp←resp,qua
[133]  resp←resp×1,5⍴¯1
[134]  resu←resu,[1]1 6⍴resp
[135]  acuja←(f[;2]='#')/⍳1↑⍴f
[136]  f[acuja;]←esse[⍎,f[acuja;3 4 5],' ';]
[137]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[138]  ⍞←(⍕xk←xk+1),'-'
[139]  →testa
[140] fim:upag←(1 0+⍴f)⍴' '
[141]  →(1=≡n)/elafa
[142]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[143]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[144]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯'-'edit(lixo1←4 0 8 0 3 0 3 0 3 0 3 0)⍕resu
[145]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[146]  →terminando
[147] elafa:aaa←(ylu,'¯'-'edit 3 0 3 0 3 0 3 0 3 0⍕0 1↓resu)
[148]  aaa←aaa,((1↑⍴aaa),18)⍴' +=certo, -=errado'
[149]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[150]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[151] terminando:
[152]  relat[1↑⍴relat;;]←upag
[153]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[154] ⍝ lixonol←lixonol,[1]1 80⍴80↑'positivos estao certos. negativos sinalizam o erro'
[155]  lixonol←lixonol,[1]1 80⍴80↑'\end{document}'
[156]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[157]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[  0]  opesq vivo125d n;CORRECAO;EVENTO;aaa;acuja;axa;dax;dhx;esse;f;frases;inds;lixo1;lixo
       nol;qda;qua;re1;re2;re3;re4;re5;relat;resp;resu;upag;xk;ylu;zica
[  1]  →(0≠⎕NC'opesq')/qveio
[  2]  opesq←10⍴' '
[  3] qveio:
[  4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[  5]  CORRECAO←1 ⋄ EVENTO←'PL125d  '
[  6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
       4 5],⎕TS[6]+⎕TS[7]÷1000
[  7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[  8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[  9]  FOLHALA125d←ajusta80 FOLHALA125d
[ 10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA125d)⍴' '
[ 11]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[ 12]  xk←1 ⋄ resu←0 6⍴0
[ 13] testa:→(xk>1↑⍴ylu)/fim
[ 14]  esse←24 80⍴' '
[ 15]  f←FOLHALA125d
[ 16]  esse[1;]←80↑dhx[1;]
[ 17]  esse[2;]←80↑dhx[2;]
[ 18]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[ 19]  esse[4;]←80↑ylu[xk;⍳6]
[ 20]  esse[5;]←80↑ylu[xk;6+⍳30]
[ 21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[ 22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[ 23]  esse[23;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[ 24]  esse[24;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[ 25] inica:
[ 26]  frases←10 40⍴' ' ⋄ frases[1;]←40↑'ROMA AMOR.' ⋄ frases[2;]←40↑'ARA.'
[ 27]  frases[3;]←40↑'OTO COME MOCOTO.' ⋄ frases[4;]←40↑'ROTOR.'
[ 28]  frases[5;]←40↑'A MAN A PLAN A CAT A CANAL PANAMA.'
[ 29]  frases[6;]←40↑'MURDER FOR A JAR OF RED RUM.' ⋄ frases[10;]←40↑'OBA.'
[ 30]  frases[8;]←40↑'XUCRICUNICO.' ⋄ frases[9;]←40↑'ABRACADABRA.'
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[ 31]  frases[7;]←40↑'BRASIL E LISARB.'
[ 32]  inds←(2?7),7+?3
[ 33]  inds←inds[3?3]
[ 34]  axa←C01PALI dax←frases[inds[1];]
[ 35]  esse[8;]←80↑'C01PALI(',(⍕dax),') = ',⍕axa
[ 36]  axa←C01PALI,dax←frases[inds[2];]
[ 37]  esse[9;]←80↑'C01PALI(',(⍕dax),') = ',⍕axa
[ 38]  axa←C01PALI,dax←frases[inds[3];]
[ 39]  esse[10;]←80↑'C01PALI(',(⍕dax),') = ',⍕axa
[ 40]  zica←c01resp[;⍳30]
[ 41]  re1←¯1+?2
[ 42]  qua←¯1
[ 43]  →(re1=1)/cer1
[ 44]  zica[qua;]←c01resp[qua←?9;30+⍳30]
[ 45] cer1:
[ 46]  f←f replace'AAA1'(trim zica[1;])
[ 47]  f←f replace'BBB1'(trim zica[2;])
[ 48]  f←f replace'CCC1'(trim zica[3;])
[ 49]  f←f replace'DDD1'(trim zica[4;])
[ 50]  f←f replace'EEE1'(trim zica[5;])
[ 51]  f←f replace'FFF1'(trim zica[6;])
[ 52]  f←f replace'GGG1'(trim zica[7;])
[ 53]  f←f replace'HHH1'(trim zica[8;])
[ 54]  f←f replace'III1'(trim zica[9;])
[ 55]  resp←resp,qua
[ 56] ⍝----------------------
[ 57]  axa←C02INCL(qda←?99),dax←(4+?4)×⍳10
[ 58]  esse[11;]←80↑'C02INCL(',(⍕qda),',',(⍕dax),')=',⍕axa
[ 59]  axa←C02INCL,(qda←100+?99),dax←(4+?4)×⍳10
[ 60]  esse[12;]←80↑'C02INCL(',(⍕qda),',',(⍕dax),')=',⍕axa
[ 61]  axa←C02INCL(qda←?7),dax←10+(4+?4)×⍳10
[ 62]  esse[13;]←80↑'C02INCL(',(⍕qda),',',(⍕dax),')=',⍕axa
[ 63]  zica←c02resp[;⍳30]
[ 64]  re2←¯1+?2
[ 65]  qua←¯2
[ 66]  →(re2=1)/cer2
[ 67]  zica[qua;]←c02resp[qua←?9;30+⍳30]
[ 68] cer2:
[ 69]  f←f replace'AAA2'(trim zica[1;])
[ 70]  f←f replace'BBB2'(trim zica[2;])
[ 71]  f←f replace'CCC2'(trim zica[3;])
[ 72]  f←f replace'DDD2'(trim zica[4;])
[ 73]  f←f replace'EEE2'(trim zica[5;])
[ 74]  f←f replace'FFF2'(trim zica[6;])
[ 75]  f←f replace'GGG2'(trim zica[7;])
[ 76]  f←f replace'HHH2'(trim zica[8;])
[ 77]  f←f replace'III2'(trim zica[9;])
[ 78]  resp←resp,qua
[ 79] ⍝--------------------------
[ 80]  inds←3?1↑⍴frasesx
[ 81]  axa←C03PALM dax←frasesx[inds[1];]
[ 82]  esse[14;]←80↑'C03PALM(',dax,')=',⍕axa
[ 83]  axa←C03PALM dax←frasesx[inds[2];]
[ 84]  esse[15;]←80↑'C03PALM(',dax,')=',⍕axa
[ 85]  axa←C03PALM dax←frasesx[inds[3];]
[ 86]  esse[16;]←80↑'C03PALM(',dax,')=',⍕axa
[ 87]  zica←c03resp[;⍳30]
[ 88]  re3←¯1+?2
[ 89]  qua←¯3
[ 90]  →(re3=1)/cer3
[ 91]  zica[qua;]←c03resp[qua←?9;30+⍳30]
[ 92] cer3:
[ 93]  f←f replace'AAA3'(trim zica[1;])
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[ 94]  f←f replace'BBB3'(trim zica[2;])
[ 95]  f←f replace'CCC3'(trim zica[3;])
[ 96]  f←f replace'DDD3'(trim zica[4;])
[ 97]  f←f replace'EEE3'(trim zica[5;])
[ 98]  f←f replace'FFF3'(trim zica[6;])
[ 99]  f←f replace'GGG3'(trim zica[7;])
[100]  f←f replace'HHH3'(trim zica[8;])
[101]  f←f replace'III3'(trim zica[9;])
[102]  resp←resp,qua
[103] ⍝--------------------------------
[104]  axa←C04EXCL(qda←?8),dax←?10⍴8
[105]  esse[17;]←80↑'C04EXCL(',(⍕qda),',',(⍕dax),') = ',⍕axa
[106]  axa←C04EXCL(qda←?99),dax←10?50
[107]  esse[18;]←80↑'C04EXCL(',(⍕qda),',',(⍕dax),') = ',⍕axa
[108]  axa←C04EXCL(qda←?12),dax←?10⍴10
[109]  esse[19;]←80↑'C04EXCL(',(⍕qda),',',(⍕dax),') = ',⍕axa
[110]  zica←c04resp[;⍳30]
[111]  re4←¯1+?2
[112]  qua←¯4
[113]  →(re4=1)/cer4
[114]  zica[qua;]←c04resp[qua←?7;30+⍳30]
[115] cer4:
[116]  f←f replace'AAA4'(trim zica[1;])
[117]  f←f replace'BBB4'(trim zica[2;])
[118]  f←f replace'CCC4'(trim zica[3;])
[119]  f←f replace'DDD4'(trim zica[4;])
[120]  f←f replace'EEE4'(trim zica[5;])
[121]  f←f replace'FFF4'(trim zica[6;])
[122]  f←f replace'GGG4'(trim zica[7;])
[123]  resp←resp,qua
[124] ⍝------------------------------
[125]  axa←C05AMPL dax←10?99
[126]  esse[20;]←80↑'C05AMPL(',(⍕dax),') = ',⍕axa
[127]  axa←C05AMPL dax←?10⍴8
[128]  esse[21;]←80↑'C05AMPL(',(⍕dax),') = ',⍕axa
[129]  axa←C05AMPL dax←10?99
[130]  esse[22;]←80↑'C05AMPL(',(⍕dax),') = ',⍕axa
[131]  zica←c05resp[;⍳30]
[132]  re5←¯1+?2
[133]  qua←¯5
[134]  →(re5=1)/cer5
[135]  zica[qua;]←c05resp[qua←?4;30+⍳30]
[136] cer5:
[137]  f←f replace'AAA5'(trim zica[1;])
[138]  f←f replace'BBB5'(trim zica[2;])
[139]  f←f replace'CCC5'(trim zica[3;])
[140]  f←f replace'DDD5'(trim zica[4;])
[141]  resp←resp,qua
[142] ⍝----------------------
[143]  resp←resp×1,5⍴¯1
[144]  resu←resu,[1]1 6⍴resp
[145]  f←ajusta80 f
[146]  acuja←(f[;2]='#')/⍳1↑⍴f
[147]  f[acuja;]←esse[⍎,f[acuja;3 4 5],' ';]
[148]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[149]  ⎕←(⍕xk←xk+1),'-'
[150]  →testa
[151] fim:upag←(1 0+⍴f)⍴' '
[152]  →(1=≡n)/elafa
[153]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[154]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[155]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯'-'edit(lixo1←4 0 8 0 3 0 3 0 3 0 3 0)⍕resu
[156]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
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[157]  →terminando
[158] elafa:aaa←(ylu,'¯-'edit 3 0 3 0 3 0 3 0 3 0⍕0 1↓resu)
[159]  aaa←aaa,((1↑⍴aaa),18)⍴' +=certo, -=errado'
[160]  aaa[1;35 36]←2 0⍕CORRECAO
[161]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[162]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[163] terminando:
[164]  relat[1↑⍴relat;;]←upag
[165]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[166] ⍝ lixonol←lixonol,[1]1 80⍴80↑'+ esta certo, - indica a linha errada'
[167]  lixonol←lixonol,[1]1 80⍴80↑'⍀end{document}'
[168]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[169]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[  0]  opesq vivo125e n;CORRECAO;EVENTO;aaa;acuja;axa;dax;dhx;esse;f;frases;inds;lixo1;lixo
       nol;qda;qua;re1;re2;re3;re4;re5;relat;resp;resu;upag;xk;ylu;zica
[  1]  →(0≠⎕NC'opesq')/qveio
[  2]  opesq←10⍴' '
[  3] qveio:
[  4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[  5]  CORRECAO←1 ⋄ EVENTO←'PL125e  '
[  6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
       4 5],⎕TS[6]+⎕TS[7]÷1000
[  7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[  8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[  9]  FOLHALA125e←ajusta80 FOLHALA125e
[ 10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA125e)⍴' '
[ 11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[ 12]  xk←1 ⋄ resu←0 6⍴0
[ 13] testa:→(xk>1↑⍴ylu)/fim
[ 14]  esse←27 80⍴' '
[ 15]  f←FOLHALA125e
[ 16]  esse[1;]←80↑dhx[1;]
[ 17]  esse[2;]←80↑dhx[2;]
[ 18]  esse[3;]←80↑4 2⍕VERSAOa←1.06
[ 19]  esse[4;]←80↑ylu[xk;⍳6]
[ 20]  esse[5;]←80↑ylu[xk;6+⍳30]
[ 21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[ 22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[ 23]  esse[26;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[ 24]  esse[27;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[ 25] inica:
[ 26]  axa←D01VESO dax←1,?9⍴9
[ 27]  esse[8;]←80↑'D01VESO (',(3 acert 1↓dax),') = ',⍕axa
[ 28]  axa←D01VESO,dax←1,?9⍴9
[ 29]  esse[9;]←80↑'D01VESO (',(3 acert 1↓dax),') = ',⍕axa
[ 30]  axa←D01VESO,dax←1,?9⍴9
[ 31]  esse[10;]←80↑'D01VESO (',(3 acert 1↓dax),') = ',⍕axa
[ 32]  zica←d01resp[;⍳30]
[ 33]  re1←¯1+?2
[ 34]  qua←¯1
[ 35]  →(re1=1)/cer1
[ 36]  zica[qua;]←d01resp[qua←?4;30+⍳30]
[ 37] cer1:
[ 38]  f←f replace'AAA1'(trim zica[1;])
[ 39]  f←f replace'BBB1'(trim zica[2;])
[ 40]  f←f replace'CCC1'(trim zica[3;])
[ 41]  f←f replace'DDD1'(trim zica[4;])
[ 42]  resp←resp,qua
[ 43] ⍝----------------------
[ 44]  axa←D02MSMI dax←1,?16⍴20
[ 45]  esse[11;]←80↑'D02MSMI (',(4 acert 1↓dax),')=',5 1⍕axa
[ 46]  axa←D02MSMI dax←1,?16⍴20
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[ 47]  esse[12;]←80↑'D02MSMI (',(4 acert 1↓dax),')=',5 1⍕axa
[ 48]  axa←D02MSMI dax←1,?16⍴20
[ 49]  esse[13;]←80↑'D02MSMI (',(4 acert 1↓dax),')=',5 1⍕axa
[ 50]  zica←d02resp[;⍳30]
[ 51]  re2←¯1+?2
[ 52]  qua←¯2
[ 53]  →(re2=1)/cer2
[ 54]  zica[qua;]←d02resp[qua←?6;30+⍳30]
[ 55] cer2:
[ 56]  f←f replace'AAA2'(trim zica[1;])
[ 57]  f←f replace'BBB2'(trim zica[2;])
[ 58]  f←f replace'CCC2'(trim zica[3;])
[ 59]  f←f replace'DDD2'(trim zica[4;])
[ 60]  f←f replace'EEE2'(trim zica[5;])
[ 61]  f←f replace'FFF2'(trim zica[6;])
[ 62]  resp←resp,qua
[ 63] ⍝-------------------------
[ 64]  axa←D03MEHO dax←1,?20⍴10
[ 65]  esse[14;]←80↑'D03MEHO (',(5 acert 1↓dax),')=',⍕axa
[ 66]  axa←D03MEHO dax←1,?20⍴10
[ 67]  esse[15;]←80↑'D03MEHO (',(5 acert 1↓dax),')=',⍕axa
[ 68]  axa←D03MEHO dax←1,?20⍴10
[ 69]  esse[16;]←80↑'D03MEHO (',(5 acert 1↓dax),')=',⍕axa
[ 70]  zica←d03resp[;⍳30]
[ 71]  re3←¯1+?2
[ 72]  qua←¯3
[ 73]  →(re3=1)/cer3
[ 74]  zica[qua;]←d03resp[qua←?4;30+⍳30]
[ 75] cer3:
[ 76]  f←f replace'AAA3'(trim zica[1;])
[ 77]  f←f replace'BBB3'(trim zica[2;])
[ 78]  f←f replace'CCC3'(trim zica[3;])
[ 79]  f←f replace'DDD3'(trim zica[4;])
[ 80]  resp←resp,qua
[ 81] ⍝---------------------------------
[ 82]  axa←D04MUMA dax←1,¯1+?24⍴7
[ 83]  esse[17 18;]←queb2'D04MUMA (',(4 acert dax[1+⍳12]),';',(3 acert dax[13+⍳12]),') = ',
       3 acert,axa
[ 84]  axa←D04MUMA dax←1,¯1+?24⍴7
[ 85]  esse[19 20;]←queb2'D04MUMA (',(4 acert dax[1+⍳12]),';',(3 acert dax[13+⍳12]),') = ',
       3 acert,axa
[ 86]  axa←D04MUMA dax←1,¯1+?24⍴7
[ 87]  esse[21 22;]←queb2'D04MUMA (',(4 acert dax[1+⍳12]),';',(3 acert dax[13+⍳12]),') = ',
       3 acert,axa
[ 88]  zica←d04resp[;⍳30]
[ 89]  re4←¯1+?2
[ 90]  qua←¯4
[ 91]  →(re4=1)/cer4
[ 92]  zica[qua;]←d04resp[qua←?6;30+⍳30]
[ 93] cer4:
[ 94]  f←f replace'AAA4'(trim zica[1;])
[ 95]  f←f replace'BBB4'(trim zica[2;])
[ 96]  f←f replace'CCC4'(trim zica[3;])
[ 97]  f←f replace'DDD4'(trim zica[4;])
[ 98]  f←f replace'EEE4'(trim zica[5;])
[ 99]  f←f replace'FFF4'(trim zica[6;])
[100]  resp←resp,qua
[101] ⍝-------------------------------
[102]  axa←D05ELEI dax←1,,geraelei
[103]  esse[23;]←80↑'D05ELEI (',(2 acert 1↓dax),') = ','¯-'edit⍕axa
[104]  axa←D05ELEI dax←1,,geraelei
[105]  esse[24;]←80↑'D05ELEI (',(2 acert 1↓dax),') = ','¯-'edit⍕axa
[106]  axa←D05ELEI dax←1,,geraelei
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[107]  esse[25;]←80↑'DO5ELEI (',(2 acert 1↓dax),') = ','¯-'edit⍕axa
[108]  zica←d05resp[;⍳30]
[109]  re5←¯1+?2
[110]  qua←¯5
[111]  →(re5=1)/cer5
[112]  zica[qua;]←d05resp[qua←?7;30+⍳30]
[113] cer5:
[114]  f←f replace'AAA5'(trim zica[1;])
[115]  f←f replace'BBB5'(trim zica[2;])
[116]  f←f replace'CCC5'(trim zica[3;])
[117]  f←f replace'DDD5'(trim zica[4;])
[118]  f←f replace'EEE5'(trim zica[5;])
[119]  f←f replace'FFF5'(trim zica[6;])
[120]  f←f replace'GGG5'(trim zica[7;])
[121]  resp←resp,qua
[122] ⍝---------------------
[123]  resp←resp×1,5⍴¯1
[124]  resu←resu,[1]1 6⍴resp
[125]  f←ajusta80 f
[126]  acuja←(f[;2]='#')/⍳1↑⍴f
[127]  f[acuja;]←esse[⍋,f[acuja;3 4 5],' ';]
[128]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[129]  ⎕←(⍕xk←xk+1),'-'
[130]  →testa
[131] fim:upag←(1 0+⍴f)⍴' '
[132]  →(1=≡n)/elafa
[133]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[134]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[135]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←4 0 8 0 3 0 3 0 3 0 3 0)⍕resu
[136]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[137]  →terminando
[138] elafa:aaa←(ylu,'¯-'edit 3 0 3 0 3 0 3 0 3 0⍕0 1↓resu)
[139]  aaa←aaa,((1↑⍴aaa),18)⍴18↑' +=certo, -=errado'
[140]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[141]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[142] terminando:
[143]  relat[1↑⍴relat;;]←upag
[144]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[145] ⍝ lixonol←lixonol,[1]1 80⍴80↑'+ esta certo, - indica o erro'
[146]  lixonol←lixonol,[1]1 80⍴80↑'\end{document}'
[147]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[148]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo128

```
[ 0]  AVISO
[ 1]  'este exercicio PODE ser resolvido em VISUALG'
[ 2]  'o programa esta aqui neste WS com o nome de PRGVISUALG'
[ 3]  'Para acompanhar uma execucao, faca resolvetapa x, onde x'
[ 4]  'e uma matriz [n][n+1] com os dados do sistema'
[ 5]  'use resolvetapa caso1 (4 eqs e 4 inc)'
[ 6]  '                      2 (3 e 3)'
[ 7]  '                      3 (5 e 5)'
[ 8]  ''
[ 9]  'em apl, faca: a←n n⍴valores coeficientes da matriz'
[10]  '              b←n 1⍴termos independentes (matriz coluna)'
[11]  'a resposta estara em b⌸a'
-------------------------------------------------------------
[0]  r←formamat x
[1]  →((×/⍴x)=+/(,x)=⌊,x)/inte
[2]  →frac
```

```
[3] inte:r←((1↑⍴x)⍴65↓⎕AV),[2]'.',[2]' ',[2]⍕x
[4]  →0
[5] frac:((1↑⍴x)⍴65↓⎕AV),[2]'.',[2]' ',[2]2⍕x
-------------------------------------------------------------
[ 0]  r←geracasos;rr;zz;xx;cc
[ 1] denow:rr←gerasima 8
[ 2]  cc←rr[;9]resolvel 8 8↑rr
[ 3]  →(8=+/(±16 2⍕cc)=±16 2⍕rr[;10])/lindo
[ 4]  ⎕←'*'
[ 5]  →denow
[ 6] lindo:
[ 7]  zz←'-111 & -111 & -111 & -111 & -111 & -111 & -111 & -111 && -1110  ⍀⍀ '⍕rr[;⍳9]
[ 8]  xx←rr[;10]
[ 9]  r←2⍴0
[10]  r[1]←⊂zz ⋄ r[2]←⊂xx
[11]  →0
-------------------------------------------------------------
[ 0]  r←gerasima n;xx;z
[ 1]  r←(2⍴n)⍴(?200⍴2 2 2 2 2 3 3 3 4 4 4 5 6)×2+-⌊1.5×?200⍴2 1 1 1 2 1 2
[ 2]  xx←(n?(⌊n×1.3))
[ 3]  z←+/[2]r×(⍴r)⍴xx
[ 4]  r←r,[2]((n,1)⍴z),[2](n,1)⍴xx
[ 5] ⍝ r[;⍳n] contem os coeficientes (y em x∘.y)
[ 6] ⍝ r[;n+1] contem os termos independentes (x em x∘.y)
[ 7] ⍝ r[;n+2] contem a solucao do sistema (resposta de x∘.y)
[ 8] ⍝ se esta funcao der DOMAIN ERROR, e porque a matriz gerada
[ 9] ⍝ nao tem linhas linearmente independentes. Isso nao eh nenhum problema...
-------------------------------------------------------------
[ 0]  r←vet resolvel mat;x;y;z;i;k;j;ola;a;qual;l1
[ 1]  a←mat,[2]((⍴,vet),1)⍴vet
[ 2]  ANDAMENTO←(0,⍴a)⍴0
[ 3]  r←(⍴vet)⍴0
[ 4]  i←1
[ 5] t1:→(i≥⍴vet)/fim
[ 6]  j←⍴vet
[ 7] t2:→(j<1+i)/viva
[ 8]  k←1
[ 9]  →(a[j-1;i]≠0)/calcu
[10]  ⎕←'o'
[11]  l1←a[j-1;]
[12]  a[j-1;]←a[j;]
[13]  a[j;]←l1
[14] calcu:ola←-a[j;i]÷a[j-1;i]  ⍝ lembre: 0÷0=1 em APL
[15] t3:→(k>1+⍴vet)/fica
[16]  a[j;k]←a[j;k]+a[j-1;k]×ola
[17]  k←k+1
[18]  →t3
[19] fica:
[20]  j←j-1
[21]  →t2
[22] viva:
[23]  ANDAMENTO←ANDAMENTO,[1]a
[24]  i←i+1
[25]  →t1
[26] fim:
[27]  i←⍴vet ⋄ qual←1
[28] h1:→(i<1)/ucav
[29]  r[i]←a[i;i+1]÷a[i;i]
[30]  k←⍴vet
[31] t5:→(k<1)/ulao
[32]  a[k;i]←a[k;i+1]-a[k;i]×r[i]
[33]  k←k-1
[34]  →t5
```

```
[35] ulao:ANDAMENTO←ANDAMENTO,[1](ρa)↑((-qual),0)↓(0,-qual)↓a
[36]  ANDAMENTO[1↑ρANDAMENTO;;¯1↑ρANDAMENTO]←r
[37]  qual←qual+1
[38]  i←i-1
[39]  →h1
[40] ucav:ANDAMENTO[¯1+1↑ρANDAMENTO;1;¯1↑ρANDAMENTO]←r[1]
[41] ⍝ANDAMENTO←28 1⍕¯1 0 0↓ANDAMENTO
------------------------------------------------------------
[ 0]  resolvetapa mat;x;y;z;i;k;j;ola;a;qual;l1;vet;r;let;aaa;xxx
[ 1]  let←'ABCDEFGHIJKLMNOPQRSTUVWXYZ'
[ 2]  a←mat
[ 3]  'matriz original '
[ 4]  formamat a
[ 5]  aaa←a
[ 6]  xxx←⍞
[ 7]  r←(vet←1↑ρmat)ρ0
[ 8]  i←1
[ 9] t1:→(i≥vet)/fim
[10]  'coluna ',(⍕i),'   ----------------------'
[11]  j←vet
[12] t2:→(j<1+i)/viva
[13]  k←1
[14]  →(a[j-1;i]≠0)/calcu
[15]  'invertendo as linhas ',(⍕j-1),' e ',⍕j
[16]  l1←a[j-1;]
[17]  a[j-1;]←a[j;]
[18]  a[j;]←l1
[19] calcu:ola←-a[j;i]÷a[j-1;i]  ⍝ lembre: 0÷0=1 em APL
[20]  'fazendo linha ',(let[j-1]),' vezes ',(⍕ola),' mais linha ',(let[j]),' no lugar de '
      ,let[j]
[21]  a[j;]←a[j;]+a[j-1;]×ola
[22]  j←j-1
[23]  xxx←⍞
[24]  'fica '
[25]  formamat a
[26]  xxx←⍞
[27]  →t2
[28] viva:
[29]  i←i+1
[30]  →t1
[31] fim:
[32]  '================================='
[33]  i←vet ⋄ qual←1
[34] h1:→(i<1)/ucav
[35]  r[i]←a[i;i+1]÷a[i;i]
[36]  'calculo de r[',(⍕i),'] = ',⍕r[i]
[37]  xxx←⍞
[38]  a[;i]←a[;i+1]-a[;i]×r[i]
[39]  'nova matriz a'
[40]  a[;i+1]←0
[41]  formamat a
[42]  xxx←⍞
[43]  qual←qual+1
[44]  i←i-1
[45]  →h1
[46] ucav:'O vetor resposta r, é ',⍕r
[47]  xxx←⍞
[48]  'lembrando da matriz original '
[49]  formamat aaa
[50]  xxx←⍞
[51]  'verificaçao se esta certo...'
[52]  i←1
[53] biba:→(i>vet)/ufaa
```

```
[54]  tiradentro(¯3↓2↓((17×vet)ρ' + ( -10 × -10 )')⍕,((vet,1)ρaaa[i;]),[2](vet,1)ρr),'  =
      '
[55]  xxx←⍞
[56]  i←i+1
[57]  →biba
[58] ufaa:
------------------------------------------------------------
[0]  testa1;aa
[1]  aa←gerasima 8
[2]  aa[;9]resolvel aa[;⍳8]
[3]  aa[;9]⌹aa[;⍳8]
[4]  ,aa[;10]
------------------------------------------------------------
[ 0]  testaresolvedor;i;aa;bb;rr;rr1
[ 1]  i←1
[ 2] t1:→(i>100)/0
[ 3]  aa←8 8ρ64?100
[ 4]  bb←8?25
[ 5]  rr←bb resolvel aa
[ 6]  rr1←bb⌹aa
[ 7]  →(8≠+/(⍪10 2⍕rr)=⍪10 2⍕rr1)/erro
[ 8]  i←i+1
[ 9]  i
[10]  →t1
[11] erro:'i=',⍕i
[12]  'rr=',⍕rr
[13]  'rr1=',⍕rr1
------------------------------------------------------------
[0]  r←tiradentro x
[1]  r←(x≠' ')/x
------------------------------------------------------------
[ 0]  opesq vivo128a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;num;relat
      ;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←8 ⋄ EVENTO←'PL128   '
[ 6]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕⍳n
[ 9]  FOLHALA128←ajusta80 FOLHALA128
[10]  relat←((2+1↑ρylu),1 0+ρFOLHALA128)ρ' '
[11]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[12]  xk←1 ⋄ resu←0 9ρ0
[13] testa:→(xk>1↑ρylu)/fim
[14]  esse←17 80ρ' '
[15]  f←FOLHALA128
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.07
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[16;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[17;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] ini1:
[26]  zzz←geracasos
[27]  esse[7+⍳8;]←8 80↑⊃zzz[1]
[28]  resp←resp,⊃zzz[2]
[29]  resu←resu,[1]1 9ρresp
```

```
[30]  acuja←(f[;2]='#')/⍳1↑⍴f
[31]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[32]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[33]  ⎕←(⍕xk←xk+1),'-'
[34]  →testa
[35] fim:upag←(1 0+⍴f)⍴' '
[36]  →(1=≡n)/elafa
[37]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[38]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[39]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←4 0 8 0,14⍴4 0)⍕resu
[40]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[41]  →terminando
[42] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),4 0⍕0 1↓resu)
[43]  aaa[1;35 36]←2 0⍕CORRECAO
[44]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[45]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[46] terminando:
[47]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[48]  relat[1↑⍴relat;;]←upag
[49]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[50] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[51]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[52]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo129

```
[0]  AVISO
[1]  'No diretorio f:\p\n\129 tem uma folha exemplo'
[2]  'bem como 10 (na verdade 11) programas em C '
[3]  'que a resolvem...'
-------------------------------------------------------------
[ 0]  r←formata1 x
[ 1]  r←17 80⍴' '
[ 2]  r[1;]←80↑'\begin{algorithmic}[1]'
[ 3]  r[2;]←80↑'\STATE funcao EXERC1'
[ 4]  r[3;]←80↑'\STATE MA : matriz[1..5][1..6]de inteiro'
[ 5]  r[4;]←80↑'\STATE J,K,AUX : inteiro'
[ 6]  r[5;]←80↑'\STATE AUX $\gets$ ',3 0⍕x[1]
[ 7]  r[6;]←80↑'\STATE J $\gets$ 5'
[ 8]  r[7;]←80↑'\WHILE {J $>$ 0}'
[ 9]  r[8;]←80↑'\STATE K $\gets$ 6'
[10]  r[9;]←80↑'\WHILE {K $>$ 0}'
[11]  r[10;]←80↑'\STATE MA[J][K] $\gets$ AUX'
[12]  r[11;]←80↑'\STATE AUX $\gets$ AUX + ',3 0⍕x[2]
[13]  r[12;]←80↑'\STATE K$--$'
[14]  r[13;]←80↑'\ENDWHILE'
[15]  r[14;]←80↑'\STATE J$--$'
[16]  r[15;]←80↑'\ENDWHILE'
[17]  r[16;]←80↑'\STATE imprima MA[',(⍕x[3]),'][',(⍕x[6]),']+MA[',(⍕x[4]),'][',(⍕x[7]),']+
      MA[',(⍕x[5]),'][',(⍕x[8]),']'
[18]  r[17;]←80↑'\end{algorithmic}'
-------------------------------------------------------------
[0]  r←formata10 x
[1]  r←5 80⍴' '
[2]  r[1;]←80↑'Neste exercício você deve criar uma matriz 4 $\times$ 4 começando com'
[3]  r[2;]←80↑'o valor ',(⍕x[1]),' e continuando na sequência natural (primeiro a '
[4]  r[3;]←80↑'linha 1, e nesta todas as colunas e depois a linha 2 e assim por '
[5]  r[4;]←80↑'diante). Após cada atribuiçto incremente o valor usado em ',(⍕x[2]),'.'
[6]  r[5;]←80↑'Ao final, descubra o maior valor da diagonal secundária.'
-------------------------------------------------------------
[ 0]  r←formata2 x
```

```
[ 1]  r←23 80⍴' '
[ 2]  r[1;]←80↑'\begin{algorithmic}[1]'
[ 3]  r[2;]←80↑'\STATE funcao EXER2'
[ 4]  r[3;]←80↑'\STATE M[1..6][1..7] de inteiros'
[ 5]  r[4;]←80↑'\STATE SOMA,DELTA,AUX,J,K : inteiro'
[ 6]  r[5;]←80↑'\STATE AUX $\gets$ ','¯-'edit⍕x[1]
[ 7]  r[6;]←80↑'\STATE SOMA $\gets$ DELTA $\gets$ 0'
[ 8]  r[7;]←80↑'\FOR{J=1;J$<$7;J++}'
[ 9]  r[8;]←80↑'\FOR{K=1;K$<$8;K++}'
[10]  r[9;]←80↑'\STATE M[J][K] $\gets$ AUX+DELTA'
[11]  r[10;]←80↑'\STATE AUX $\gets$ AUX + DELTA + ',⍕x[2]
[12]  r[11;]←80↑'\ENDFOR'
[13]  r[12;]←80↑'\STATE DELTA $\gets$ DELTA + ',⍕x[3]
[14]  r[13;]←80↑'\ENDFOR'
[15]  r[14;]←80↑'\STATE SOMA $\gets$ SOMA + M[',(⍕x[4]-1),'][',(⍕x[5]-1),']'
[16]  r[15;]←80↑'\STATE SOMA $\gets$ SOMA + M[',(⍕x[4]-1),'][',(⍕x[5]),']'
[17]  r[16;]←80↑'\STATE SOMA $\gets$ SOMA + M[',(⍕x[4]-1),'][',(⍕x[5]+1),']'
[18]  r[17;]←80↑'\STATE SOMA $\gets$ SOMA + M[',(⍕x[4]),'][',(⍕x[5]-1),']'
[19]  r[18;]←80↑'\STATE SOMA $\gets$ SOMA + M[',(⍕x[4]),'][',(⍕x[5]+1),']'
[20]  r[19;]←80↑'\STATE SOMA $\gets$ SOMA + M[',(⍕x[4]+1),'][',(⍕x[5]-1),']'
[21]  r[20;]←80↑'\STATE SOMA $\gets$ SOMA + M[',(⍕x[4]+1),'][',(⍕x[5]),']'
[22]  r[21;]←80↑'\STATE SOMA $\gets$ SOMA + M[',(⍕x[4]+1),'][',(⍕x[5]+1),']'
[23]  r[22;]←80↑'\STATE imprima SOMA'
[24]  r[23;]←80↑'\end{algorithmic}'
------------------------------------------------------------
[ 0]  r←formata3 x
[ 1]  r←13 80⍴' '
[ 2]  r[1;]←80↑'\begin{algorithmic}[1]'
[ 3]  r[2;]←80↑'\STATE funcao EXER3'
[ 4]  r[3;]←80↑'\STATE MX[1..5][1..5] : inteiro'
[ 5]  r[4;]←80↑'\STATE Z : inteiro'
[ 6]  r[5;]←80↑'\STATE MX[1][]=\{',(⍕x[1]),',',(⍕x[2]),',',(⍕x[3]),',',(⍕x[4]),',',(⍕x[5])
      ,'\}'
[ 7]  r[6;]←80↑'\STATE MX[2][]=\{',(⍕x[6]),',',(⍕x[7]),',',(⍕x[8]),',',(⍕x[9]),',',(⍕x[10]
      ),'\}'
[ 8]  r[7;]←80↑'\STATE MX[3][]=\{',(⍕x[11]),',',(⍕x[12]),',',(⍕x[13]),',',(⍕x[14]),',',(⍕x
      [15]),'\}'
[ 9]  r[8;]←80↑'\STATE MX[4][]=\{',(⍕x[16]),',',(⍕x[17]),',',(⍕x[18]),',',(⍕x[19]),',',(⍕x
      [20]),'\}'
[10]  r[9;]←80↑'\STATE MX[5][]=\{',(⍕x[21]),',',(⍕x[22]),',',(⍕x[23]),',',(⍕x[24]),',',(⍕x
      [25]),'\}'
[11]  r[10;]←80↑'\STATE Z $\gets$ MX[MX[MX[4][4]][3]][MX[2][4]]'
[12]  r[11;]←80↑'\STATE Z $\gets$ Z + MX[MX[5][5]][MX[3][3]]'
[13]  r[12;]←80↑'\STATE imprima Z $\times$ MX[MX[1][1]][MX[2][5]]'
[14]  r[13;]←80↑'\end{algorithmic}'
[15] ⍵  (x[x[x[4;4];3];x[2;4]]+x[x[5;5];x[3;3]])×x[x[1;1];x[2;5]]
------------------------------------------------------------
[ 0]  r←formata4 x
[ 1]  r←47 80⍴' '
[ 2]  r[1;]←80↑'\begin{algorithmic}[1]'
[ 3]  r[2;]←80↑'\STATE funcao EXER4'
[ 4]  r[3;]←80↑'\STATE M[1..6][1..8] de inteiros = ',(⍕x[1]),' // todos iguais'
[ 5]  r[4;]←80↑'\STATE L,C,T,R,SOMA : inteiro'
[ 6]  r[5;]←80↑'\STATE T $\gets$ ',(⍕x[2]),'; R $\gets$ ',⍕x[3]
[ 7]  r[6;]←80↑'\STATE SOMA $\gets$ 0'
[ 8]  r[7;]←80↑'\FOR{L=3;L$<$5;L++}'
[ 9]  r[8;]←80↑'\STATE M[L][4] $\gets$ T; T=T+R '
[10]  r[9;]←80↑'\ENDFOR'
[11]  r[13;]←80↑'\FOR{L=4;L$>$1;L$--$}'
[12]  r[14;]←80↑'\STATE M[L][5] $\gets$ T; T=T+R'
[13]  r[15;]←80↑'\ENDFOR'
[14]  r[16;]←80↑'\FOR{C=4;C$>$2;C$--$}'
[15]  r[17;]←80↑'\STATE M[2][C] $\gets$ T; T=T+R'
```

```
[16]  r[18;]←80↑'\ENDFOR'
[17]  r[19;]←80↑'\FOR{L=3;L$<$6;L++}'
[18]  r[20;]←80↑'\STATE M[L][3] $\gets$ T; T=T+R'
[19]  r[21;]←80↑'\ENDFOR'
[20]  r[22;]←80↑'\FOR{C=4;C$<$7;C++}'
[21]  r[23;]←80↑'\STATE M[5][C] $\gets$ T; T=T+R'
[22]  r[24;]←80↑'\ENDFOR'
[23]  r[25;]←80↑'\FOR{L=4;L$>$0;L$--$}'
[24]  r[26;]←80↑'\STATE M[L][6] $\gets$ T; T=T+R'
[25]  r[27;]←80↑'\ENDFOR'
[26]  r[28;]←80↑'\FOR{C=5;C$>$1;C$--$}'
[27]  r[29;]←80↑'\STATE M[1][C] $\gets$ T; T=T+R'
[28]  r[30;]←80↑'\ENDFOR'
[29]  r[31;]←80↑'\FOR{L=2;L$<$7;L++}'
[30]  r[32;]←80↑'\STATE M[L][2] $\gets$ T; T=T+R'
[31]  r[33;]←80↑'\ENDFOR'
[32]  r[34;]←80↑'\FOR{C=3;C$<$8;C++}'
[33]  r[35;]←80↑'\STATE M[6][C] $\gets$ T; T=T+R'
[34]  r[36;]←80↑'\ENDFOR'
[35]  r[37;]←80↑'\FOR{L=5;L$>$0;L$--$}'
[36]  r[38;]←80↑'\STATE M[L][7] $\gets$ T; T=T+R'
[37]  r[39;]←80↑'\ENDFOR'
[38]  r[40;]←80↑'\FOR{C=1;C$<$9;C++}'
[39]  r[41;]←80↑'\STATE SOMA $\gets$ SOMA + M[3][C]'
[40]  r[42;]←80↑'\ENDFOR'
[41]  r[43;]←80↑'\FOR{L=1;L$<$7;L++}'
[42]  r[44;]←80↑'\STATE SOMA $\gets$ SOMA - M[L][5]'
[43]  r[45;]←80↑'\ENDFOR'
[44]  r[46;]←80↑'\STATE imprima SOMA'
[45]  r[47;]←80↑'\end{algorithmic}'
-------------------------------------------------------------
[ 0]  r←formata5 x
[ 1]  r←12 80⍴' '
[ 2]  r[1;]←80↑'\begin{algorithmic}[1]'
[ 3]  r[2;]←80↑'\STATE funcao EXER5'
[ 4]  r[3;]←80↑'\STATE M[1..5][1..6] de inteiros '
[ 5]  r[4;]←80↑'\STATE L,C,T : inteiro'
[ 6]  r[5;]←80↑'\STATE T $\gets$ ',(⍕x[1])
[ 7]  r[6;]←80↑'\FOR{L=1;L$<$6;L++}'
[ 8]  r[7;]←80↑'\FOR{C=1;C$<$7;C++}'
[ 9]  r[8;]←80↑'\STATE M[L][C] $\gets$ T+(2 $\times$ L)+C'
[10]  r[9;]←80↑'\ENDFOR'
[11]  r[10;]←80↑'\ENDFOR'
[12]  r[11;]←80↑'\STATE imprima M[',(⍕x[2]),'][',(⍕x[3]),']'
[13]  r[12;]←80↑'\end{algorithmic}'
-------------------------------------------------------------
[ 0]  r←formata6 x
[ 1]  r←8 80⍴' '
[ 2]  r[1;]←80↑'Neste exercício, você deve criar uma matriz de 6 linhas por'
[ 3]  r[2;]←80↑'6 colunas e deve colocar no elemento linha=1, coluna=1 o valor ',('¯-'edit
      ⍕x[1]),'.'
[ 4]  r[3;]←80↑'O preenchimento deve seguir na maneira normal da escrita (primeiro a linha
       1'
[ 5]  r[4;]←80↑'e nela todas as colunas, depois a linha 2, todas as colunas e assim por'
[ 6]  r[5;]←80↑'diante). A cada novo elemento preenchido adicionar ',(⍕x[2]),' ao valor '
[ 7]  r[6;]←80↑'anterior. Depois de preencher toda a matriz, somar os valores que est↑o na
      '
[ 8]  r[7;]←80↑'diagonal principal e também os valores que est↑o na diagonal secundária'
[ 9]  r[8;]←80↑'Ao final, imprimir o valor desta soma.'
-------------------------------------------------------------
[ 0]  r←formata7 x
[ 1]  r←27 80⍴' '
[ 2]  r[1;]←80↑'\begin{algorithmic}[1]'
```

```
[ 3]  r[2;]←80↑'\STATE funcao EXER7'
[ 4]  r[3;]←80↑'\STATE M[1..5][1..10] de inteiro'
[ 5]  r[4;]←80↑'\STATE L,C,MAXL,MINL,MI : inteiro'
[ 6]  r[5;]←80↑'\STATE M[1][]=\{',(¯1↓,(2 0⍕10 1⍴x[⍳10]),','),'\}'
[ 7]  r[6;]←80↑'\STATE M[2][]=\{',(¯1↓,(2 0⍕10 1⍴x[10+⍳10]),','),'\}'
[ 8]  r[7;]←80↑'\STATE M[3][]=\{',(¯1↓,(2 0⍕10 1⍴x[20+⍳10]),','),'\}'
[ 9]  r[8;]←80↑'\STATE M[4][]=\{',(¯1↓,(2 0⍕10 1⍴x[30+⍳10]),','),'\}'
[10]  r[9;]←80↑'\STATE M[5][]=\{',(¯1↓,(2 0⍕10 1⍴x[40+⍳10]),','),'\}'
[11]  r[10;]←80↑'\STATE MI $\gets$ +99999'
[12]  r[11;]←80↑'\FOR{L=1;L$<$6;L++}'
[13]  r[12;]←80↑'\STATE MAXL $\gets$ -99999'
[14]  r[13;]←80↑'\STATE MINL $\gets$ +99999'
[15]  r[14;]←80↑'\FOR {C=1;C$<$11;C++}'
[16]  r[15;]←80↑'\IF {M[L][C]$>$ MAXL}'
[17]  r[16;]←80↑'\STATE MAXL $\gets$ M[L][C]'
[18]  r[17;]←80↑'\ENDIF'
[19]  r[18;]←80↑'\IF {M[L][C]$<$ MINL}'
[20]  r[19;]←80↑'\STATE MINL $\gets$ M[L][C]'
[21]  r[20;]←80↑'\ENDIF'
[22]  r[21;]←80↑'\ENDFOR'
[23]  r[22;]←80↑'\IF {(MAXL-MINL) $<$ MI}'
[24]  r[23;]←80↑'\STATE MI $\gets$ MAXL-MINL'
[25]  r[24;]←80↑'\ENDIF'
[26]  r[25;]←80↑'\ENDFOR'
[27]  r[26;]←80↑'\STATE imprima MI'
[28]  r[27;]←80↑'\end{algorithmic}'
-------------------------------------------------------------
[ 0]  r←formata8 x
[ 1]  r←31 80⍴' '
[ 2]  r[1;]←80↑'\begin{algorithmic}[1]'
[ 3]  r[2;]←80↑'\STATE funcao EXER8'
[ 4]  r[3;]←80↑'\STATE M1[1..3][1..4] de inteiro'
[ 5]  r[4;]←80↑'\STATE M2[1..4][1..5] de inteiro'
[ 6]  r[5;]←80↑'\STATE M3[1..3][1..5] de inteiro'
[ 7]  r[6;]←80↑'\STATE L, C, K, T, X : inteiro'
[ 8]  r[7;]←80↑'\STATE T $\gets$ ',(⍕x[1])
[ 9]  r[8;]←80↑'\FOR{L=1; L$<$4 ;L++}'
[10]  r[9;]←80↑'\FOR{C=1; C$<$5; C++}'
[11]  r[10;]←80↑'\STATE M1[L][C] $\gets$ T'
[12]  r[11;]←80↑'\STATE T $\gets$ T + ',⍕x[2]
[13]  r[12;]←80↑'\ENDFOR'
[14]  r[13;]←80↑'\ENDFOR'
[15]  r[14;]←80↑'\STATE T $\gets$ ',(⍕x[3])
[16]  r[15;]←80↑'\FOR{L=1; L$<$5; L++}'
[17]  r[16;]←80↑'\FOR{C=1; C$<$6; C++}'
[18]  r[17;]←80↑'\STATE M2[L][C] $\gets$ T'
[19]  r[18;]←80↑'\STATE T $\gets$ T + ',⍕x[4]
[20]  r[19;]←80↑'\ENDFOR'
[21]  r[20;]←80↑'\ENDFOR'
[22]  r[21;]←80↑'\FOR{L=1; L$<$4; L++}'
[23]  r[22;]←80↑'\FOR{C=1; C$<$6; C++}'
[24]  r[23;]←80↑'\STATE X $\gets$ 0'
[25]  r[24;]←80↑'\FOR{K=1; K$<$5; K++}'
[26]  r[25;]←80↑'\STATE X $\gets$ X + (M1[L][K] $\times$ M2[K] [C])'
[27]  r[26;]←80↑'\ENDFOR'
[28]  r[27;]←80↑'\STATE M3[L][C]$\gets$ X'
[29]  r[28;]←80↑'\ENDFOR'
[30]  r[29;]←80↑'\ENDFOR'
[31]  r[30;]←80↑'\STATE imprima M3[',(⍕x[5]),'][',(⍕x[6]),']'
[32]  r[31;]←80↑'\end{algorithmic}'
-------------------------------------------------------------
[0]  r←formata9 x
[1]  r←5 80⍴' '
```

```
[2]  r[1;]←80↑'Neste exercício você deve criar uma matriz 4 $\times$ 4 começando com'
[3]  r[2;]←80↑'o valor ',(⍕x[1]),' e continuando na sequência natural (primeiro a '
[4]  r[3;]←80↑'linha 1, e nesta todas as colunas e depois a linha 2 e assim por '
[5]  r[4;]←80↑'diante). Após cada atribuição incremente o valor usado em ',(⍕x[2]),'.'
[6]  r[5;]←80↑'Ao final, totalize a diagonal principal.'
-------------------------------------------------------------
[0]  r←gera1;x;a;b;ind;z
[1]  x←5 6⍴(a←1+?6)×(30+?40)-⍳30
[2] ⍝ '-----'
[3] ⍝ x
[4] ⍝ '-----'
[5]  ind←(3?5),(3?6)
[6]  z←x[ind[1];ind[4]]+x[ind[2];ind[5]]+x[ind[3];ind[6]]
[7]  r←x[5;6],a,ind,z
-------------------------------------------------------------
[0]  r←gera10;x;a;b
[1]  x←4 4⍴(a←10+?10)+(b←1+?5)×0,⍳15
[2]  r←a,b,⌈/x[1;4],x[2;3],x[3;2],x[4;1]
-------------------------------------------------------------
[ 0]  r←gera2;a;b;col;delta;i;j;lin;res;x;p
[ 1]  x←6 7⍴0
[ 2]  p←-60+?60
[ 3]  a←2+?6
[ 4]  b←?3
[ 5] ⍝ a,b
[ 6]  delta←0
[ 7]  i←1
[ 8] t1:→(i>6)/fim
[ 9]  j←1
[10] t2:→(j>7)/so
[11]  x[i;j]←p+delta
[12]  p←p+a+delta
[13]  j←j+1
[14]  →t2
[15] so:delta←delta+b
[16]  i←i+1
[17]  →t1
[18] fim:
[19]  lin←1+?4
[20]  col←1+?5
[21]  res←(+/x[lin-1;(col-2)+⍳3])+(+/x[lin;(col-1),col+1])++/x[lin+1;(col-2)+⍳3]
[22]  r←x[1;1],a,b,lin,col,res
-------------------------------------------------------------
[0]  r←gera3;x;z
[1]  x←5 5⍴?25⍴5
[2]  z←(x[x[x[4;4];3];x[2;4]]+x[x[5;5];x[3;3]])×x[x[1;1];x[2;5]]
[3]  r←(,x),z
-------------------------------------------------------------
[ 0]  r←gera4;x;a;b;c;bi
[ 1]  x←6 8⍴a←10+?20
[ 2]  bi←b←10+?10
[ 3]  x[3;4]←b
[ 4]  b←b+c←1+?4
[ 5]  x[4;4]←b
[ 6]  b←b+c
[ 7]  x[4;5]←b
[ 8]  b←b+c
[ 9]  x[3;5]←b
[10]  b←b+c
[11]  x[2;5]←b
[12]  b←b+c
[13]  x[2;4]←b
[14]  b←b+c
```

```
[15]  x[2;3]←b
[16]  b←b+c
[17]  x[3;3]←b
[18]  b←b+c
[19]  x[4;3]←b
[20]  b←b+c
[21]  x[5;3]←b
[22]  b←b+c
[23]  x[5;4]←b
[24]  b←b+c
[25]  x[5;5]←b
[26]  b←b+c
[27]  x[5;6]←b
[28]  b←b+c
[29]  x[4;6]←b
[30]  b←b+c
[31]  x[3;6]←b
[32]  b←b+c
[33]  x[2;6]←b
[34]  b←b+c
[35]  x[1;6]←b
[36]  b←b+c
[37]  x[1;5]←b
[38]  b←b+c
[39]  x[1;4]←b
[40]  b←b+c
[41]  x[1;3]←b
[42]  b←b+c
[43]  x[1;2]←b
[44]  b←b+c
[45]  x[2;2]←b
[46]  b←b+c
[47]  x[3;2]←b
[48]  b←b+c
[49]  x[4;2]←b
[50]  b←b+c
[51]  x[5;2]←b
[52]  b←b+c
[53]  x[6;2]←b
[54]  b←b+c
[55]  x[6;3]←b
[56]  b←b+c
[57]  x[6;4]←b
[58]  b←b+c
[59]  x[6;5]←b
[60]  b←b+c
[61]  x[6;6]←b
[62]  b←b+c
[63]  x[6;7]←b
[64]  b←b+c
[65]  x[5;7]←b
[66]  b←b+c
[67]  x[4;7]←b
[68]  b←b+c
[69]  x[3;7]←b
[70]  b←b+c
[71]  x[2;7]←b
[72]  b←b+c
[73]  x[1;7]←b
[74]  b←b+c
[75]  r←a,bi,c,(+/x[3;])-+/x[;5]
------------------------------------------------------------
[ 0]  r←gera4fixo;x;a;b;c;bi
```

```
[ 1]  x←6 8⍴a←20
[ 2]  bi←b←19
[ 3]  x[3;4]←b
[ 4]  b←b+c←5
[ 5]  x[4;4]←b
[ 6]  b←b+c
[ 7]  x[4;5]←b
[ 8]  b←b+c
[ 9]  x[3;5]←b
[10]  b←b+c
[11]  x[2;5]←b
[12]  b←b+c
[13]  x[2;4]←b
[14]  b←b+c
[15]  x[2;3]←b
[16]  b←b+c
[17]  x[3;3]←b
[18]  b←b+c
[19]  x[4;3]←b
[20]  b←b+c
[21]  x[5;3]←b
[22]  b←b+c
[23]  x[5;4]←b
[24]  b←b+c
[25]  x[5;5]←b
[26]  b←b+c
[27]  x[5;6]←b
[28]  b←b+c
[29]  x[4;6]←b
[30]  b←b+c
[31]  x[3;6]←b
[32]  b←b+c
[33]  x[2;6]←b
[34]  b←b+c
[35]  x[1;6]←b
[36]  b←b+c
[37]  x[1;5]←b
[38]  b←b+c
[39]  x[1;4]←b
[40]  b←b+c
[41]  x[1;3]←b
[42]  b←b+c
[43]  x[1;2]←b
[44]  b←b+c
[45]  x[2;2]←b
[46]  b←b+c
[47]  x[3;2]←b
[48]  b←b+c
[49]  x[4;2]←b
[50]  b←b+c
[51]  x[5;2]←b
[52]  b←b+c
[53]  x[6;2]←b
[54]  b←b+c
[55]  x[6;3]←b
[56]  b←b+c
[57]  x[6;4]←b
[58]  b←b+c
[59]  x[6;5]←b
[60]  b←b+c
[61]  x[6;6]←b
[62]  b←b+c
[63]  x[6;7]←b
```

```
[64]  b←b+c
[65]  x[5;7]←b
[66]  b←b+c
[67]  x[4;7]←b
[68]  b←b+c
[69]  x[3;7]←b
[70]  b←b+c
[71]  x[2;7]←b
[72]  b←b+c
[73]  x[1;7]←b
[74]  b←b+c
[75]  x
[76]  '------------------------------'
[77]  r←a,bi,c,(+/x[3;])-+/x[;5]
-------------------------------------------------------------
[ 0]  r←gera5;x;L;C;T;nl;nc
[ 1]  T←1+?5
[ 2]  x←5 6⍴0
[ 3]  L←1
[ 4] t1:→(L>5)/fim
[ 5]  C←1
[ 6] t2:→(C>6)/ovo
[ 7]  x[L;C]←T+(2×L)+C
[ 8]  C←C+1
[ 9]  →t2
[10] ovo:L←L+1
[11]  →t1
[12] fim:
[13]  nl←2+?3
[14]  nc←3+?3
[15] ⍝ x
[16]  r←T,nl,nc,x[nl;nc]
-------------------------------------------------------------
[0]  r←gera6;x;s;t;b;a
[1]  x←6 6⍴(b←¯40+?40)+(a←1+?3)×0,⍳35
[2]  s←+/,(6 6⍴1 0 0 0 0 0 0)×x
[3]  t←+/,(⊖[2]6 6⍴1 0 0 0 0 0 0)×x
[4]  r←b,a,s+t
-------------------------------------------------------------
[0]  r←gera7;max;x
[1]  x←5 10⍴99?99
[2]  max←⌊/(⌈/[2]x)-⌊/[2]x
[3]  r←(,x),max
-------------------------------------------------------------
[0]  r←gera8;m1;m2;a;b;c;z;llcc
[1]  b←1+2?3
[2]  llcc←(1+?2),(3+?2)
[3]  m1←3 4⍴(a←4+?5)+(b[1])×0,⍳11
[4]  m2←4 5⍴(c←4+?5)+(b[2])×0,⍳19
[5]  z←m1+.×m2
[6]  r←a,b[1],c,b[2],llcc,z[llcc[1];llcc[2]]
-------------------------------------------------------------
[0]  r←gera9;x;a;b
[1]  x←4 4⍴(a←10+?10)+(b←1+?5)×0,⍳15
[2]  r←a,b,x[1;1]+x[2;2]+x[3;3]+x[4;4]
-------------------------------------------------------------
[ 0]  opesq vivo129a n;CORRECAO;EVENTO;aa;aaa;acuja;bb;cab;cc;dhx;esse;f;lixo1;lixonol;rel
      at;resp;resu;upag;xixa;xk;xx;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL129   '
```

```
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA129←ajusta80 FOLHALA129
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA129)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[12]  xk←1 ⋄ resu←0 11⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←197 80⍴' '
[15]  f←FOLHALA129
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←1.07
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23] ⍝ esse[293;]←80↑pedemail ylu[xk;36+⍳40]
[24]  esse[196;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[25]  esse[197;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[26] inica:
[27]  xx←gera1
[28]  esse[7+⍳17;]←formata1 xx
[29]  resp←resp,xx[9]
[30]  xx←gera2
[31]  esse[24+⍳23;]←formata2 xx
[32]  resp←resp,xx[6]
[33]  xx←gera3
[34]  esse[47+⍳13;]←formata3 xx
[35]  resp←resp,xx[26]
[36]  xx←gera4
[37]  esse[60+⍳47;]←formata4 xx
[38]  resp←resp,xx[4]
[39]  xx←gera5
[40]  esse[107+⍳12;]←formata5 xx
[41]  resp←resp,xx[4]
[42]  xx←gera6
[43]  esse[119+⍳8;]←formata6 xx
[44]  resp←resp,xx[3]
[45]  xx←gera7
[46]  esse[127+⍳27;]←formata7 xx
[47]  resp←resp,xx[51]
[48]  xx←gera8
[49]  esse[154+⍳31;]←formata8 xx
[50]  resp←resp,xx[7]
[51]  xx←gera9
[52]  esse[185+⍳5;]←formata9 xx
[53]  resp←resp,xx[3]
[54]  xx←gera10
[55]  esse[190+⍳5;]←formata10 xx
[56]  resp←resp,xx[3]
[57]  resu←resu,[1]1 11⍴resp
[58]  acuja←(f[;2]='#')/⍳1↑⍴f
[59]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4 5],' ';]
[60]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[61]  ⍞←(⍕xk←xk+1),'-'
[62]  →testa
[63] fim:upag←(1 0+⍴f)⍴' '
[64]  →(1=≡n)/elafa
[65]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[66]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[67]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←4 0 10 0 6 0 6 0 6 0 6 0 8 0 6 0 6 0 6 0 6
```

```
      0)⍕resu
[68]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[69]  →terminando
[70] elafa:aaa←(ylu,'¯-'edit 10 0 6 0 6 0 6 0 6 0 8 0 6 0 6 0 6 0 6 0⍕0 1↓resu)
[71]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[72]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[73] terminando:
[74]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[75]  relat[1↑⍴relat;;]←upag
[76]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[77] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[78]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[79]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo131

```
[0]  r←altura vv;xx;lixo
[1]  xx←crarvore vv
[2]  r←⌈/xx[;4]
[3]  lixo←limpa
-------------------------------------------------------------
[0]  r←a ate b
[1]  r←a,a+⍳b-a
-------------------------------------------------------------
[ 0]  r←crarvore elems;aspa;i;ealfa
[ 1] ⍝ cria uma arvore para desenho com elems / p.kantek / v2.1
[ 2] ⍝ col [1] = &fe
[ 3] ⍝ col [2] = &fd
[ 4] ⍝ col [3] = conteudo
[ 5] ⍝ col [4] = profundidade
[ 6] ⍝ col [5] = &pai
[ 7] ⍝ col [6] = largura do bloco grafico
[ 8] ⍝ col [7] = 0  ≠se bloco grafico ja foi criado (1=significa que ele e o
[ 9] ⍝           raiz do bloco. 2=ja foi usado para construir outro mais
[10] ⍝           acima
[11]  r←((⍴elems),7)⍴0 ⋄ ealfa←1 ⋄ aspa←''''
[12]  →(isnum elems)/nume
[13]  ealfa←¯1
[14]  elems←1000+⎕AV⍳elems
[15] nume:i←2 ⋄ r[1;1 2 3]←¯1,¯1,elems[1]
[16] inica:→(i>⍴elems)/acabou
[17]  r←r inarvore elems[i]
[18]  →(i=i←i+1)/inica
[19] acabou:
[20]  i←1
[21] conta:→(i>⍴elems)/mesmo
[22]  →((r[i;1]≠¯1)∨(r[i;2]≠¯1))/pula
[23]  →(ealfa=¯1)/letra
[24]  ⍞'A',('05'⍕i),'  ←',aspa,'<',(formata elems[i]),'>',aspa
[25]  →indo
[26] letra:⍞'A',('05'⍕i),'  ←',aspa,'(  ⊃',⎕AV[elems[i]-1000],'  ⊂)',aspa
[27] indo:r[i;7]←1
[28]  r[i;6]←3
[29] pula:→(i=i←i+1)/conta
[30] mesmo:
-------------------------------------------------------------
[ 0]  r←e de2f d;lin;col
[ 1]  →(2=⍴⍴e)/ee
[ 2]  e←(1,⍴e)⍴e
[ 3] ee:→(2=⍴⍴d)/dd
[ 4]  d←(1,⍴d)⍴d
```

```
[ 5] dd:lin←(1↑⍴e)⌈1↑⍴d
[ 6] ⍝ col  ←(3+1  ↓  ⍴e)  ⌊3+1  ↓  ⍴d
[ 7]  col←(1↓⍴e)⌈1↓⍴d
[ 8]  e←(lin,col)↑e ⋄ d←(lin,col)↑d
[ 9] ⍝ e  ←(lin,(1  ↓  ⍴e))  ↑e   ⋄ d  ←(lin,(1  ↓  ⍴d))  ↑d
[10]  r←e,' ',d
[11]  r←((4,1↓⍴r)⍴' '),[1]r
[12]  r[1;((meio 1↓⍴r)-3)+⍳5]←PAI
[13]  r[2;((meio 1↓⍴r)-2)+⍳3]←'_&_'
[14]  r[3;(ONDE1)ate ¯1+meio 1↓⍴r]←'_'
[15]  r[3;(1+meio 1↓⍴r)ate(1+ONDE2+1↓⍴e)-1]←'_'
[16]  r[3;meio 1↓⍴r]←'#'
[17]  r[3;ONDE1]←'%'
[18]  r[3;(1↓⍴e)+1+ONDE2]←'!'
[19]  r[4;ONDE1+¯1 0 1]←r[4;1+(1↓⍴e)+ONDE2+¯1 0 1]←'_#_'
-------------------------------------------------------------
[ 0]  r←a dearvore b;prim;paiprim;filhos;fe;fd;X;x;aspa;ois;carac;nivel;larg
[ 1] ⍝ 'carac=1/ascii/2=apld/3=apls/4=hdup/5=vdup   niveis=1/2/3/4' v.2.1
[ 2]  r←b
[ 3]  carac←a[1] ⋄ nivel←a[2] ⋄ larg←a[3]
[ 4]  aspa←''''
[ 5] inicio:→(1=r[1;7])/acabou
[ 6]  ois←(r[;7]=1)/⍳1↑⍴r
[ 7]  →(1=⍴ois)/sotem1
[ 8]  prim←1↑(r[ois;4]=⌈/r[ois;4])/ois
[ 9]  →voltaj
[10] sotem1:prim←ois
[11] voltaj:paiprim←r[prim;5]
[12]  →(r[paiprim;3]>1000)/le
[13]  ⍞'PAI  ←',aspa,'<',(formata r[paiprim;3]),'>',aspa
[14]  →indo
[15] le:⍞'PAI  ←',aspa,'(⊃',⎕AV[r[paiprim;3]-1000],'⊂)',aspa
[16] indo:→(2=⍴filhos←((r[;5]=paiprim)∧(r[;7]=1))/⍳1↑⍴r)/tem2
[17] tem1:→(r[paiprim;1]=prim)/efe
[18] efd:fd←⍞'A','05'⍕prim
[19]  ONDE←r[prim;6]
[20]  ⍞'A',('05'⍕paiprim),'  ←defd fd'
[21]  r[paiprim;7]←1 ⋄ r[prim;7]←2 ⋄ r[paiprim;6]←3
[22]  →inicio
[23] efe:
[24]  fe←⍞'A','05'⍕prim
[25]  ONDE←r[prim;6]
[26]  ⍞'X  ←1  ↓  ⍴A',('05'⍕paiprim),'  ←defe fe'
[27]  r[paiprim;7]←1 ⋄ r[prim;7]←2 ⋄ r[paiprim;6]←X-2
[28]  →inicio
[29] tem2:
[30]  →(r[filhos[1];3]>r[filhos[2];3])/ummaior
[31]  x←filhos[1] ⋄ filhos[1]←filhos[2] ⋄ filhos[2]←x
[32] ummaior:
[33]  ONDE1←r[filhos[2];6] ⋄ ONDE2←r[filhos[1];6]
[34]  fe←⍞'A','05'⍕filhos[2]   ⍝1
[35]  fd←⍞'A','05'⍕filhos[1]   ⍝2
[36]  ⍞'X  ←1  ↓  ⍴A',('05'⍕paiprim),'  ←fe de2f fd'
[37]  r[paiprim;7]←1 ⋄ r[filhos[1];7]←r[filhos[2];7]←2 ⋄ r[paiprim;6]←meio X
[38]  →inicio
[39] acabou:MAT←r   ⍝ aqui esta a matriz de entrada devidamente ja processada
[40]  →(larg=1)/jump
[41]  A01←(~∧/[1]((A01=' ')∨(A01='_')))/[2]A01
[42] jump:A01←'∘ 'edit A01
[43]  A01←'⊃ 'edit A01
[44]  A01←'⊂ 'edit A01
[45]  r←carac edita A01
[46]  x←limpa
```

```
[47]  →(nivel=4)/0
[48]  →(nivel=3)/tres
[49]  →(nivel=2)/dois
[50]  →(nivel=1)/um
[51]  'erro de nivel'
[52]  →fin
[53] um:r←((1↑⍴r)⍴1 0)/[1]r
[54]  →fin
[55] dois:r←((1↑⍴r)⍴1 1 1 0)/[1]r
[56]  →fin
[57] tres:r←((1↑⍴r)⍴1 0 1 1)/[1]r
[58]  →fin
[59] fin:
------------------------------------------------------------
[ 0]  r←defd x
[ 1]  →(2=⍴⍴x)/esim
[ 2]  x←(1,⍴x)⍴x
[ 3] esim:r←((1↑⍴x),-(1↓⍴x)+4)↑x
[ 4]  r←((4,1↓⍴r)⍴' '),[1]r
[ 5]  r[1;⍳5]←PAI
[ 6]  r[2;2 3 4]←'_&_'
[ 7]  r[3;3]←'$'
[ 8]  r[3;4+ONDE]←'!'
[ 9]  r[3;4 ate 3+ONDE]←'_'
[10]  r[4;4+ONDE+¯1 0 1]←'_#_'
------------------------------------------------------------
[ 0]  r←defe x
[ 1]  →(2=⍴⍴x)/esim
[ 2]  x←(1,⍴x)⍴x
[ 3] esim:r←((1↑⍴x),(1↓⍴x)+4)↑x
[ 4]  r←((4,1↓⍴r)⍴' '),[1]r
[ 5]  r[1;((1↓⍴r)-5)+⍳5]←PAI
[ 6]  r[2;((1↓⍴r)-4)+⍳3]←'_&_'
[ 7]  r[3;(1↓⍴r)-2]←'@'
[ 8]  r[3;(ONDE)ate((1↓⍴r)-3)]←'_'
[ 9]  r[3;ONDE]←'%'
[10]  r[4;ONDE+¯1 0 1]←'_#_'
------------------------------------------------------------
[ 0]  r←qual edita tudo
[ 1]  →(qual=1)/ascii
[ 2]  →(qual=2)/apldu
[ 3]  →(qual=3)/aplsi
[ 4]  →(qual=4)/aplds
[ 5]  →(qual=5)/aplsd
[ 6]  'erro'
[ 7]  →0
[ 8] ⍝              |                          |          |
[ 9] ⍝ %=+--   #=--+--   _=---   !=--+   $=+--   @=--+   &=--+--
[10] ⍝   |                              |                       |
[11] ascii:
[12]  r←'%+'edit tudo
[13]  r←'#+'edit r
[14]  r←'_-'edit r
[15]  r←'!+'edit r
[16]  r←'$+'edit r
[17]  r←'@+'edit r
[18]  r←'&+'edit r
[19]  →0
[20] apldu:
[21]  r←('%',⎕AV[202])edit tudo
[22]  r←('#',⎕AV[203])edit r
[23]  r←('_',⎕AV[206])edit r
[24]  r←('!',⎕AV[188])edit r
```

```
[25]  r←('$',⎕AV[201])edit r
[26]  r←('@',⎕AV[189])edit r
[27]  r←('&',⎕AV[204])edit r
[28]  →0
[29] aplsi:
[30]  r←('%',⎕AV[219])edit tudo
[31]  r←('#',⎕AV[194])edit r
[32]  r←('_',⎕AV[197])edit r
[33]  r←('!',⎕AV[192])edit r
[34]  r←('$',⎕AV[193])edit r
[35]  r←('@',⎕AV[218])edit r
[36]  r←('&',⎕AV[195])edit r
[37]  →0
[38] aplds:
[39]  r←('%',⎕AV[219])edit tudo
[40]  r←('#',⎕AV[194])edit r
[41]  r←('_',⎕AV[197])edit r
[42]  r←('!',⎕AV[192])edit r
[43]  r←('$',⎕AV[193])edit r
[44]  r←('@',⎕AV[218])edit r
[45]  r←('&',⎕AV[195])edit r
[46]  →0
[47] aplsd:
[48]  r←('%',⎕AV[215])edit tudo
[49]  r←('#',⎕AV[209])edit r
[50]  r←('_',⎕AV[197])edit r
[51]  r←('!',⎕AV[184])edit r
[52]  r←('$',⎕AV[212])edit r
[53]  r←('@',⎕AV[190])edit r
[54]  r←('&',⎕AV[211])edit r
[55]  →0
------------------------------------------------------------
[ 0]  r←jg filho qual;com
[ 1]  →((jg=1)∨(jg=6))/um
[ 2]  →((jg=2)∨(jg=5))/do
[ 3]  →((jg=3)∨(jg=4))/tr
[ 4]  'erro'
[ 5]  →0
[ 6] um:com←2 3 4 5
[ 7]  →res
[ 8] do:com←1 3 4 6
[ 9]  →res
[10] tr:com←1 2 5 6
[11] res:r←com[qual]
------------------------------------------------------------
[ 0]  r←formata x
[ 1]  →(x>1000)/t4
[ 2]  →(x>99)/t3
[ 3]  →(x>9)/t2
[ 4] t1:r←'∘',(1 0⍕x),'∘'
[ 5]  →0
[ 6] t2:r←'∘',2 0⍕x
[ 7]  →0
[ 8] t3:r←3 0⍕x
[ 9]  →0
[10] t4:r←'∘',⎕AV[x-1000],'∘'
[11]  →0
------------------------------------------------------------
[ 0]  r←gera31;x
[ 1]  x←12 3⍴0
[ 2]  x[1;]←22 2 0
[ 3]  x[2;]←22 3 0
[ 4]  x[3;]←22 4 0
```

```
[ 5]  x[4;]←22 5 0
[ 6]  x[5;]←22 6 0
[ 7]  x[6;]←23 3 0
[ 8]  x[7;]←23 4 0
[ 9]  x[8;]←23 2 0
[10]  x[9;]←24 2 0
[11]  x[10;]←24 3 0
[12]  x[11;]←24 1 0
[13]  x[12;]←25 1 0
[14]  r←x[?1↑⍴x;]
------------------------------------------------------------
[0]  r←gerafron
[1]  r←fronteira[?1↑⍴fronteira;]
------------------------------------------------------------
[ 0]  r←a inarvore elem;li;ipivot;prof
[ 1]  r←a
[ 2]  li←1↑(r[;1]=0)/⍳1↑⍴r
[ 3]  r[li;]←¯1 ¯1,elem,0,0,0,0
[ 4]  ipivot←1 ⋄ prof←1
[ 5] testa:→(elem>r[ipivot;3])/maior
[ 6] menor:→(¯1=r[ipivot;1])/meok
[ 7]  prof←prof+1
[ 8]  →(ipivot=ipivot←r[ipivot;1])/testa
[ 9] meok:r[ipivot;1]←li
[10]  →fim
[11] maior:→(¯1=r[ipivot;2])/maok
[12]  prof←prof+1
[13]  →(ipivot=ipivot←r[ipivot;2])/testa
[14] maok:r[ipivot;2]←li
[15] fim:r[li;5]←ipivot
[16]  r[li;4]←prof
------------------------------------------------------------
[ 0]  r←vl joga31 jg;bbb;i;U;pai;a
[ 1] ⍝ o teu adversario jogou 'jg' e o valor chegou a 'vl'. Eh tua vez
[ 2]  a←500 9⍴0
[ 3]  U←1  ⍝ ultima linha preenchida
[ 4] ⍝c[1]=o que foi jogado
[ 5] ⍝c[2]=o valor do nodo
[ 6] ⍝c[3]=eu(1), ele(-1)
[ 7] ⍝c[4..7]=&do filho1,2,3 e 4
[ 8] ⍝c[8]=& do pai
[ 9] ⍝c[9]=resultado (+1=eu ganho; -1=eu perco). A ser preenchido depois
[10]  a[1;1]←jg
[11]  a[1;2]←vl
[12]  a[1;3]←1
[13]  a[1;4]←2
[14]  a[2;1]←bbb←jg filho 1
[15]  a[2;2]←bbb+vl
[16]  a[1;5]←3
[17]  a[3;1]←bbb←jg filho 2
[18]  a[3;2]←bbb+vl
[19]  a[1;6]←4
[20]  a[4;1]←bbb←jg filho 3
[21]  a[4;2]←bbb+vl
[22]  a[1;7]←5
[23]  a[5;1]←bbb←jg filho 4
[24]  a[5;2]←bbb+vl
[25]  a[2 3 4 5;8]←1
[26]  a[1;8]←¯1 ⍝ a raiz nao tem pai
[27]  i←2
[28]  U←5
[29] t0:→(i>500)/fim
[30]  →((a[i;2]>31)∨(a[i;2]=0))/fim
```

```
[31]  pai←a[i;8]
[32]  →(pai=0)/soma
[33]  jg←a[i;1]
[34]  vl←a[i;2]
[35]  bbb←jg filho 1
[36]  →((vl+bbb)>30)/soma
[37]  a[i;3]←a[pai;3]×¯1
[38]  a[i;4]←U←U+1
[39]  a[U;1]←bbb
[40]  a[U;2]←bbb+vl
[41]  bbb←jg filho 2
[42]  →((vl+bbb)>30)/soma
[43]  a[i;5]←U←U+1
[44]  a[U;1]←bbb
[45]  a[U;2]←bbb+vl
[46]  bbb←jg filho 3
[47]  →((vl+bbb)>30)/soma
[48]  a[i;6]←U←U+1
[49]  a[U;1]←bbb
[50]  a[U;2]←bbb+vl
[51]  bbb←jg filho 4
[52]  →((vl+bbb)>30)/soma
[53]  a[i;7]←U←U+1
[54]  a[U;1]←bbb
[55]  a[U;2]←bbb+vl
[56]  a[(U-4)+⍳4;8]←i
[57] soma:i←i+1
[58]  →t0
[59] fim:r←(a[;2]≠0)/[1]a
-------------------------------------------------------------
[0]  r←limpa
[1]  r←⎕EX 20 3⍴'A01A02A03A04A05A06A07A08A09A10A11A12A13A14A15A16A17A18A19A20'
[2]  r←⎕EX 20 3⍴'A21A22A23A24A25A26A27A28A29A30A31A32A33A34A35A36A37A38A39A40'
[3]  r←⎕EX 20 3⍴'A41A42A43A44A45A46A47A48A49A50A51A52A53A54A55A56A57A58A59A60'
[4]  r←⎕EX 10 5⍴'ONDE ONDE1PAI  ONDE2'
[5]  r←⎕EX 2 10⍴'PPL       PPVELHO   '
-------------------------------------------------------------
[0]  r←meio x
[1]  r←⌈x÷2
-------------------------------------------------------------
[ 0]  opesq vivo131a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;relat;resp;resu;
      upag;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←8 ⋄ EVENTO←'PL131   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA131←ajusta80 FOLHALA131
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA131)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[12]  xk←1 ⋄ resu←0 4⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←14 80⍴' '
[15]  f←FOLHALA131
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←1.02
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
```

```
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[13;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[14;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] ini1:
[26]  aaa←gerafron
[27]  esse[8;]←80↑aaa[1;1 2]
[28]  esse[9;]←80↑aaa[1;3 4]
[29]  resp←resp,⍪aaa[1;5]
[30]  aaa←gera31
[31]  esse[10;]←80↑80 0⍕aaa[1;1]
[32]  esse[11;]←80↑80 0⍕aaa[1;2]
[33]  resp←resp,aaa[1;3]
[34]  aaa←15?90
[35]  esse[12;]←80↑4 0⍕aaa
[36]  resp←resp,altura aaa
[37]  resu←resu,[1]1 4⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;]←esse[⍪,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[41]  ⍞←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←4 0 8 0 4 0 4 0)⍕resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),4 0⍕0 1↓resu)
[51]  aaa[1;35 36]←2 0⍕CORRECAO
[52]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[59]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo132

```
[0]  EXT
------------------------------------------------------------
[ 0]  r←FBOLHA v;i;j;aux
[ 1]  EXT←(0,⍴v)⍴0
[ 2]  i←⍴v
[ 3]  j←2
[ 4] inica:→(i<2)/fim
[ 5] oba:→(j>i)/ops
[ 6]  →(v[j-1]≤v[j])/pula
[ 7]  aux←v[j]
[ 8]  v[j]←v[j-1]
[ 9]  v[j-1]←aux
[10] pula:j←j+1
[11]  →oba
[12] ops:i←i-1
[13]  j←2
[14]  EXT←EXT,[1]v
[15]  →(i≠¯2+⍴v)/inica
```

```
[16]  BLZ←v
[17]  →inica
[18] fim:r←v
-------------------------------------------------------------
[ 0]  r←FBOLHAEST v;i;j;aux;mudou
[ 1]  i←⍴v ⋄ mudou←1 ⋄ EXT←(0,⍴v)⍴0
[ 2]  j←2
[ 3] inica:→(i<2)/fim
[ 4]  →(mudou=0)/fim
[ 5]  mudou←0
[ 6] oba:→(j>i)/ops
[ 7]  →(v[j-1]≤v[j])/pula
[ 8]  aux←v[j]
[ 9]  v[j]←v[j-1]
[10]  v[j-1]←aux
[11]  mudou←1
[12] pula:j←j+1
[13]  →oba
[14] ops:i←i-1
[15]  j←2
[16]  EXT←EXT,[1]v
[17]  →(i≠¯2+⍴v)/inica
[18]  BLZ←v
[19]  →inica
[20] fim:r←v
-------------------------------------------------------------
[0]  r←FIM;lixo
[1]  →(2≠⎕NC'HI')/0
[2]  r←'Duracao :',(5 1⍕((100 100 100 24 60 60 1000⊥⎕TS)-100 100 100 24 60 60 1000⊥HI)÷10
      00),' segundos'
[3]  lixo←⎕EX'HI'
-------------------------------------------------------------
[ 0]  r←FINSERCAO v;i;j;x
[ 1]  i←2 ⋄ EXT←(0,⍴v)⍴0
[ 2] huj:→(i>⍴v)/uba
[ 3]  x←v[i]
[ 4]  j←i-1
[ 5] test:→(j<1)/bfu
[ 6]  →(v[j]≤x)/bfu
[ 7]  v[j+1]←v[j]
[ 8]  j←j-1
[ 9]  →test
[10] bfu:
[11]  v[j+1]←x
[12]  i←i+1
[13]  EXT←EXT,[1]v
[14]  →(i≠4)/huj
[15]  BLZ←v
[16]  →huj
[17] uba:r←v
-------------------------------------------------------------
[ 0]  r←FSELECAO v;i;j;inui;cor;x
[ 1]  i←1 ⋄ EXT←(0,⍴v)⍴0
[ 2] eba:→(i>⍴v)/fica
[ 3]  cor←v[i]
[ 4]  inui←i
[ 5]  j←i+1
[ 6] ohhh:→(j>⍴v)/opas
[ 7]  →(v[j]≥cor)/naoe
[ 8]  cor←v[j]
[ 9]  inui←j
[10] naoe:j←j+1
[11]  →ohhh
```

```
[12] opas:x←v[i]
[13]  v[i]←v[inui]
[14]  v[inui]←x
[15]  i←i+1
[16]  EXT←EXT,[1]v
[17]  →(i≠3)/eba
[18]  BLZ←v
[19]  →eba
[20] fica:r←v
-------------------------------------------------------------
[0]  INICIO
[1]  HI←⎕TS
-------------------------------------------------------------
[0]  LEIA
[1]  'Em 23 de outubro de 2009, testei o algoritmo de heapsort'
[2]  'usando a linguagem APLX (por conta dos :if e :while)'
[3]  'e funcionou exatamente como esta na folha, de prima'
-------------------------------------------------------------
[ 0]  r1←geracaso;x;arqs;algo;r;z;t
[ 1]  x←⍉2 3⍴(3?6),(3?4)
[ 2]  arqs←6 8⍴'ORDE01  ORDE02  ORDE03  ORDE04  ORDE05  ORDE06  '
[ 3]  algo←4 8⍴'bolha   bolh*   insercaoselecao '
[ 4]  r←6 8⍴arqs[x[1;1];],algo[x[1;2];],arqs[x[2;1];],algo[x[2;2];],arqs[x[3;1];],algo[x[3
      ;2];]
[ 5]  z←TEMPOS[x[1;2];x[1;1]],TEMPOS[x[2;2];x[2;1]],TEMPOS[x[3;2];x[3;1]]
[ 6]  t←(z[1]÷z[2]),(z[1]÷z[3]),(z[2]÷z[3])
[ 7]  r1←3⍴0
[ 8]  r1[1]←⊂r
[ 9]  r1[2]←⊂z
[10]  r1[3]←⊂t
-------------------------------------------------------------
[ 0]  r←mostrabolha v;i;j;aux
[ 1]  INICIO
[ 2]  i←⍴v
[ 3]  j←2
[ 4] inica:→(i<2)/fim
[ 5]  v
[ 6] oba:→(j>i)/ops
[ 7]  →(v[j-1]≤v[j])/pula
[ 8]  aux←v[j]
[ 9]  v[j]←v[j-1]
[10]  v[j-1]←aux
[11] pula:j←j+1
[12]  →oba
[13] ops:i←i-1
[14]  j←2
[15]  →(i≠¯2+⍴v)/inica
[16]  BLZ←v
[17]  →inica
[18] fim:r←v
[19]  FIM
-------------------------------------------------------------
[ 0]  r←mostrabolhae v;i;j;aux;mudou
[ 1]  i←⍴v ⋄ mudou←1 ⋄ INICIO
[ 2]  j←2
[ 3] inica:→(i<2)/fim
[ 4]  v
[ 5]  →(mudou=0)/fim
[ 6]  mudou←0
[ 7] oba:→(j>i)/ops
[ 8]  →(v[j-1]≤v[j])/pula
[ 9]  aux←v[j]
[10]  v[j]←v[j-1]
```

```
[11]  v[j-1]←aux
[12]  mudou←1
[13] pula:j←j+1
[14]  →oba
[15] ops:i←i-1
[16]  j←2
[17]  →(i≠¯2+⍴v)/inica
[18]  BLZ←v
[19]  →inica
[20] fim:r←v
[21]  FIM
```

```
[ 0]  r←mostrabolhaeorde v;i;j;aux;mudou
[ 1]  INICIO
[ 2]  i←1↑⍴v ⋄ mudou←1
[ 3]  j←2
[ 4] inica:→(i<2)/fim
[ 5]  →(mudou=0)/fim
[ 6]  mudou←0
[ 7] oba:→(j>i)/ops
[ 8]  →(((4⍴256)⊥⎕AVι⍳v[j-1;⍳4])≤(4⍴256)⊥⎕AVι⍳v[j;⍳4])/pula
[ 9]  aux←v[j;]
[10]  v[j;]←v[j-1;]
[11]  v[j-1;]←aux
[12]  mudou←1
[13] pula:j←j+1
[14]  →oba
[15] ops:i←i-1
[16]  j←2
[17]  →(i≠¯2+1↑⍴v)/inica
[18] ⍝ BLZ←v
[19]  →inica
[20] fim:⍝r←v
[21]  FIM
```

```
[ 0]  r←mostrabolhaorde v;i;j;aux
[ 1]  INICIO
[ 2]  i←1↑⍴v
[ 3]  j←2
[ 4] inica:→(i<2)/fim
[ 5] oba:→(j>i)/ops
[ 6]  →(((4⍴256)⊥⎕AVι⍳v[j-1;⍳4])≤(4⍴256)⊥⎕AVι⍳v[j;⍳4])/pula
[ 7]  aux←v[j;]
[ 8]  v[j;]←v[j-1;]
[ 9]  v[j-1;]←aux
[10] pula:j←j+1
[11]  →oba
[12] ops:i←i-1
[13]  j←2
[14]  →(i≠¯2+1↑⍴v)/inica
[15] ⍝ BLZ←v
[16]  →inica
[17] fim:⍝r←v
[18]  FIM
```

```
[ 0]  r←mostrainse v;i;j;x
[ 1]  i←2 ⋄ INICIO
[ 2] huj:→(i>⍴v)/uba
[ 3]  v
[ 4]  x←v[i]
[ 5]  j←i-1
[ 6] test:→(j<1)/bfu
[ 7]  →(v[j]≤x)/bfu
```

```
[ 8]  v[j+1]←v[j]
[ 9]  j←j-1
[10]  →test
[11] bfu:
[12]  v[j+1]←x
[13]  i←i+1
[14]  →(i≠4)/huj
[15]  BLZ←v
[16]  →huj
[17] uba:r←v
[18]  FIM
------------------------------------------------------------
[ 0]  r←mostrainseorde v;i;j;x;xa
[ 1]  INICIO
[ 2]  i←2
[ 3] huj:→(i>1↑⍴v)/uba
[ 4]  x←((4⍴256)⊥⍉AV⍳v[i;⍳4])
[ 5]  xa←v[i;]
[ 6]  j←i-1
[ 7] test:→(j<1)/bfu
[ 8]  →(((4⍴256)⊥⍉AV⍳v[j;⍳4])≤x)/bfu
[ 9]  v[j+1;]←v[j;]
[10]  j←j-1
[11]  →test
[12] bfu:
[13]  v[j+1;]←xa
[14]  i←i+1
[15] ⍝ →(i≠4)/huj
[16] ⍝ BLZ←v
[17]  →huj
[18] uba:⍝r←v
[19]  FIM
------------------------------------------------------------
[ 0]  r←mostrasele v;i;j;inui;cor;x
[ 1]  i←1 ⋄ INICIO
[ 2] eba:→(i>⍴v)/fica
[ 3]  v
[ 4]  cor←v[i]
[ 5]  inui←i
[ 6]  j←i+1
[ 7] ohhh:→(j>⍴v)/opas
[ 8]  →(v[j]≥cor)/naoe
[ 9]  cor←v[j]
[10]  inui←j
[11] naoe:j←j+1
[12]  →ohhh
[13] opas:x←v[i]
[14]  v[i]←v[inui]
[15]  v[inui]←x
[16]  i←i+1
[17]  →(i≠3)/eba
[18]  BLZ←v
[19]  →eba
[20] fica:r←v
[21]  FIM
------------------------------------------------------------
[ 0]  r←mostraseleorde v;i;j;inui;cor;x
[ 1]  INICIO
[ 2]  i←1
[ 3] eba:→(i>1↑⍴v)/fica
[ 4]  cor←(4⍴256)⊥⍉AV⍳v[i;⍳4]
[ 5]  inui←i
[ 6]  j←i+1
```

```
[ 7] ohhh:→(j>1↑ρv)/opas
[ 8]  →(((4ρ256)⊥⎕AVιv[j;ι4])≥cor)/naoe
[ 9]  cor←(4ρ256)⊥⎕AVιv[j;ι4]
[10]  inui←j
[11] naoe:j←j+1
[12]  →ohhh
[13] opas:x←v[i;]
[14]  v[i;]←v[inui;]
[15]  v[inui;]←x
[16]  i←i+1
[17] ⍝ →(i≠3)/eba
[18] ⍝ BLZ←v
[19]  →eba
[20] fica:⍝r←v
[21]  FIM
-------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80ρ' '
[ 6] te:→(i≥⎕IO+1↑ρzz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>ρcandi)/eca
[ 9]  j←qt
[10]  →(0=' 'єj↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80ρ80↑j↑candi
[15]  candi←j↓candi
[16]  →((ρcandi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80ρ80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
-------------------------------------------------------------
[0]  r←vetempos;x;y
[1]  x←2 60ρ(60↑'Tempos (decisegundos) num i7 com 8 procs'),(¯10↑'o01'),(¯10↑'o02'),(¯10↑
      'o03'),(¯10↑'o04'),(¯10↑'o05'),¯10↑'o06'
[2]  y←4 10ρ(10↑'Bolha'),(10↑'Bolha-*'),(10↑'Insercao'),(10↑'Selecao')
[3]  r←((2 10ρ' '),x),[1]y,[2]10 0⍕TEMPOS
-------------------------------------------------------------
[ 0]  opesq vivo132a n;CORRECAO;EVENTO;aaa;acuja;caso;dhx;esse;f;lixo1;lixonol;nomes;ql39;
      qlinha;qui;relat;resp;resu;upag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  EVENTO←'PL132   '
[ 5]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕ιn
[ 8]  FOLHALA132←ajusta80 FOLHALA132
[ 9]  ylu←n grupo ylu
[10]  relat←((2+1↑ρylu),1 0+ρFOLHALA132)ρ' '
[11]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLO1'
[12]  xk←1 ⋄ resu←0 4ρ0
[13] testa:→(xk>1↑ρylu)/fim
[14]  esse←15 80ρ' '
[15]  f←FOLHALA132
```

```
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←1.02
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  →(36=1↓⍴ylu)/zebra
[21]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[22]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[23]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[24]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[25]  →maiszebra
[26] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[27] maiszebra:
[28]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[29]  esse[7;]←80↑(3 0⍕resp←xk),'-',opesq
[30]  esse[14;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[31]  esse[15;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[32] inica:
[33]  qui←geracaso
[34]  caso←⊃qui[1]
[35]  esse[8;]←80↑caso[1;]
[36]  esse[9;]←80↑30↑3 0⍕caso[2;]
[37]  esse[10;]←80↑caso[3;]
[38]  esse[11;]←80↑caso[4;]
[39]  esse[12;]←80↑caso[5;]
[40]  esse[13;]←80↑caso[6;]
[41]  resp←resp,⊃qui[3]
[42]  resu←resu,[1]1 4⍴resp
[43]  acuja←(f[;2]='#')/⍳1↑⍴f
[44]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[45]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[46]  ⎕←(⍕xk←xk+1),'-'
[47]  →testa
[48] fim:upag←(1 0+⍴f)⍴' '
[49]  →(1=≡n)/elafa
[50]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[51]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[52]  upag[2+⍳1↑⍴presu;⍳(+/lixo1)-12]←(lixo1←4 0 13 4 11 4 11 4)⍕resu
[53]  upag[3+1↑⍴presu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[54]  →terminando
[55] elafa:aaa←(ylu,11 4⍕0 1↓resu)
[56] ⍝ lixonol←aaa ⎕FM('c:⍀apl2⍀',((~⍬∧⍀⍬EVENTO=' ')/EVENTO),'.gpa')
[57] ⍝ '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[58]  'nao ha GPA'
[59] terminando:
[60]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[61]  relat[1↑⍴relat;;]←upag
[62]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)⎕FM'c:⍀apl2⍀',((~⍬∧⍀⍬EVENTO=' ')/EVENTO),'.t
      ex'
[63]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[64]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[ 0]  ⎕RAP xx;ANT;DEP;MEI;x
[ 1]  ANT←xx[1]
[ 2]  DEP←xx[2]
[ 3]  MEI←VVV[⌊(+/xx)÷2]
[ 4] inica:
[ 5] xica1:→(VVV[ANT]≥MEI)/uca
[ 6]  ANT←ANT+1
[ 7]  →xica1
[ 8] uca:→(VVV[DEP]≤MEI)/uca22
[ 9]  DEP←DEP-1
[10]  →uca
[11] uca22:→(ANT>DEP)/pula
```

```
[12]  x←VVV[DEP]
[13]  VVV[DEP]←VVV[ANT]
[14]  VVV[ANT]←x
[15]  ANT←ANT+1
[16]  DEP←DEP-1
[17] pula:→(ANT≤DEP)/inica
[18]  →(xx[1]≥DEP)/opas
[19]  ΔRAP(xx[1],DEP)
[20] opas:→(ANT≥xx[2])/fim
[21]  ΔRAP(ANT,xx[2])
[22] fim:
------------------------------------------------------------
[ 0]  r←Δbolha v;i;j;aux
[ 1]  INICIO
[ 2]  i←ρv
[ 3]  j←2
[ 4] inica:→(i<2)/fim
[ 5] oba:→(j>i)/ops
[ 6]  →(v[j-1]≤v[j])/pula
[ 7]  aux←v[j]
[ 8]  v[j]←v[j-1]
[ 9]  v[j-1]←aux
[10] pula:j←j+1
[11]  →oba
[12] ops:i←i-1
[13]  j←2
[14]  →(i≠¯2+ρv)/inica
[15]  BLZ←v
[16]  →inica
[17] fim:r←v
[18]  FIM
------------------------------------------------------------
[ 0]  r←Δbolhae v;i;j;aux;mudou
[ 1]  i←ρv ⋄ mudou←1 ⋄ INICIO
[ 2]  j←2
[ 3] inica:→(i<2)/fim
[ 4]  →(mudou=0)/fim
[ 5]  mudou←0
[ 6] oba:→(j>i)/ops
[ 7]  →(v[j-1]≤v[j])/pula
[ 8]  aux←v[j]
[ 9]  v[j]←v[j-1]
[10]  v[j-1]←aux
[11]  mudou←1
[12] pula:j←j+1
[13]  →oba
[14] ops:i←i-1
[15]  j←2
[16]  →(i≠¯2+ρv)/inica
[17]  BLZ←v
[18]  →inica
[19] fim:r←v
[20]  FIM
------------------------------------------------------------
[ 0]  r←Δinse v;i;j;x
[ 1]  i←2 ⋄ INICIO
[ 2] huj:→(i>ρv)/uba
[ 3]  x←v[i]
[ 4]  j←i-1
[ 5] test:→(j<1)/bfu
[ 6]  →(v[j]≤x)/bfu
[ 7]  v[j+1]←v[j]
[ 8]  j←j-1
```

```
[ 9]  →test
[10] bfu:
[11]  v[j+1]←x
[12]  i←i+1
[13]  →(i≠4)/huj
[14]  BLZ←v
[15]  →huj
[16] uba:r←v
[17]  FIM
------------------------------------------------------------
[0]  r←Δquick v
[1]  INICIO
[2]  VVV←v
[3]  ΔRAP(1,⍴v)
[4]  r←VVV
[5]  FIM
------------------------------------------------------------
[ 0]  r←Δsele v;i;j;inui;cor;x
[ 1]  i←1 ⋄ INICIO
[ 2] eba:→(i>⍴v)/fica
[ 3]  cor←v[i]
[ 4]  inui←i
[ 5]  j←i+1
[ 6] ohhh:→(j>⍴v)/opas
[ 7]  →(v[j]≥cor)/naoe
[ 8]  cor←v[j]
[ 9]  inui←j
[10] naoe:j←j+1
[11]  →ohhh
[12] opas:x←v[i]
[13]  v[i]←v[inui]
[14]  v[inui]←x
[15]  i←i+1
[16]  →(i≠3)/eba
[17]  BLZ←v
[18]  →eba
[19] fica:r←v
[20]  FIM
------------------------------------------------------------
```

vivo135

```
[ 0]  r←a achap b;c;jog;w;l
[ 1] ⍝ recebe 2 cubos (na forma 54⍴...) e escolhe um lugar aleatorio onde
[ 2] ⍝ houve mudanca e a seguir localiza: face, linha e coluna do segundo
[ 3] ⍝ cubo (aquele que mudou). Entrega tambem o valor atual
[ 4]  r←4 20⍴' '
[ 5]  w←(a≠b)/⍳54
[ 6]  jog←w[?⍴w]
[ 7]  →(jog<10)/sup
[ 8]  →(jog<19)/esq
[ 9]  →(jog<28)/fro
[10]  →(jog<37)/dir
[11]  →(jog<46)/pos
[12] inf:r[1;]←20↑'inferior'
[13]  r[2;]←20↑1 0⍕l←1+3|(jog-45)-1
[14]  r[3;]←20↑1 0⍕c←⌈(jog-45)÷3
[15]  r[4;]←20↑,1 0⍕(3 3⍴45↓b)[l;c]
[16]  →fim
[17] pos:r[1;]←20↑'posterior'
[18]  r[2;]←20↑1 0⍕l←1+3|(jog-36)-1
[19]  r[3;]←20↑1 0⍕c←⌈(jog-36)÷3
```

```
[20]  r[4;]←20↑,1 0⍕(3 3⍴9↑36↓b)[l;c]
[21]  →fim
[22] dir:r[1;]←20↑'direita'
[23]  r[2;]←20↑1 0⍕l←1+3|(jog-27)-1
[24]  r[3;]←20↑1 0⍕c←⌈(jog-27)÷3
[25]  r[4;]←20↑,1 0⍕(3 3⍴9↑27↓b)[l;c]
[26]  →fim
[27] fro:r[1;]←20↑'frontal'
[28]  r[2;]←20↑1 0⍕l←1+3|(jog-18)-1
[29]  r[3;]←20↑1 0⍕c←⌈(jog-18)÷3
[30]  r[4;]←20↑,1 0⍕(3 3⍴9↑18↓b)[l;c]
[31]  →fim
[32] esq:r[1;]←20↑'esquerdo'
[33]  r[2;]←20↑1 0⍕l←1+3|(jog-9)-1
[34]  r[3;]←20↑1 0⍕c←⌈(jog-9)÷3
[35]  r[4;]←20↑,1 0⍕(3 3⍴9↑9↓b)[l;c]
[36]  →fim
[37] sup:r[1;]←20↑'superior'
[38]  r[2;]←20↑1 0⍕l←1+3|jog-1
[39]  r[3;]←20↑1 0⍕c←⌈jog÷3
[40]  r[4;]←20↑,1 0⍕(3 3⍴9↑b)[l;c]
[41]  →fim
[42] fim:
-------------------------------------------------------------
[ 0]  r←ajustares x
[ 1] ⍝ acerta o que o aluno deve fazer para DESFAZER o que o programa
[ 2] ⍝ gerador de instancias fez.
[ 3] ⍝ Para desfazser o operador 4, ha que se aplicar o 7. Para 5, o 8,
[ 4] ⍝ Para 6 o 9. Para 7 o 4, para 8 o 5 e para 9 o 6.
[ 5]  →(x[1]>6)/sub1
[ 6]  r←x[1]+3
[ 7]  →ve2
[ 8] sub1:r←x[1]-3
[ 9] ve2:→(x[2]>6)/sub2
[10]  r←r,x[2]+3
[11]  →fim
[12] sub2:r←r,x[2]-3
[13] fim:
-------------------------------------------------------------
[0]  r←cubozero
[1] ⍝r←(9⍴'1'),(9⍴'2'),(9⍴'3'),(9⍴'4'),(9⍴'5'),(9⍴'6')
[2]  r←alfa←'123456789abcdefghiABCDEFGHIjklmnopqrJKLMNOPQRstuvxyz()'
[3] ⍝ r=alfa
-------------------------------------------------------------
[ 0]  r←geracaso;x;a;y;z;a1;a2;z1;z2
[ 1] ⍝ cria uma instancia completa de 4 exercicios para jogar em uma
[ 2] ⍝ folha
[ 3]  r←45 20⍴' '
[ 4]  x←qualquer 10
[ 5]  a←?9
[ 6]  y←a opera x
[ 7]  z←x achap y
[ 8]  r[1;1]←1 0⍕a
[ 9]  r[1+⍳11;]←mol x
[10]  r[13;⍳10]←z[1;⍳10]
[11]  r[13+⍳3;1]←z[2 3 4;1]
[12]  x←qualquer 10
[13]  a←?9
[14]  y←a opera x
[15]  z←x achap y
[16]  r[17;1]←1 0⍕a
[17]  r[17+⍳11;]←mol x
[18]  r[29;⍳10]←z[1;⍳10]
```

```
[19]  r[29+⍳3;1]←z[2 3 4;1]
[20] dezero:z←cubozero
[21]  a1←3+?6
[22]  a2←3+?6
[23]  z1←a1 opera z
[24]  z2←a2 opera z1
[25]  →(54≠+/z=z2)/uxac
[26]  □←'Δ'
[27]  →dezero
[28] uxac:
[29]  r[32+⍳11;]←mol z2
[30]  r[44 45;1]←2 1⍴1 0⍪ajustares a2,a1
------------------------------------------------------------
[  0]  r←geraoperads
[  1]  OPERADOR←9 54⍴0
[  2]  OPERADOR[1;1]←3
[  3]  OPERADOR[1;2]←6
[  4]  OPERADOR[1;3]←9
[  5]  OPERADOR[1;4]←2
[  6]  OPERADOR[1;5]←5
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[ 10]  OPERADOR[1;9]←7
[ 11]  OPERADOR[1;10]←37
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[ 49]  OPERADOR[1;48]←46
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[175]  OPERADOR[4;12]←39
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[238]  OPERADOR[5;21]←27
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[301]  OPERADOR[6;30]←28
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[364]  OPERADOR[7;39]←12
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[485]  OPERADOR[9;52]←52
[486]  OPERADOR[9;53]←53
[487]  OPERADOR[9;54]←27
-------------------------------------------------------------
[0]  r←mo c
[1]  r←9 15⍴' '
```

```
[2]  r[⍳3;4+⍳3]←3 3⍴c[⍳9]
[3]  r[3+⍳3;⍳3]←3 3⍴c[9+⍳9]
[4]  r[3+⍳3;4+⍳3]←3 3⍴c[18+⍳9]
[5]  r[3+⍳3;8+⍳3]←3 3⍴c[27+⍳9]
[6]  r[3+⍳3;12+⍳3]←3 3⍴c[36+⍳9]
[7]  r[6+⍳3;4+⍳3]←3 3⍴c[45+⍳9]
-------------------------------------------------------------
[ 0]  r←mol c;rr
[ 1]  rr←9 15⍴' '
[ 2]  rr[⍳3;4+⍳3]←3 3⍴c[⍳9]
[ 3]  rr[3+⍳3;⍳3]←3 3⍴c[9+⍳9]
[ 4]  rr[3+⍳3;4+⍳3]←3 3⍴c[18+⍳9]
[ 5]  rr[3+⍳3;8+⍳3]←3 3⍴c[27+⍳9]
[ 6]  rr[3+⍳3;12+⍳3]←3 3⍴c[36+⍳9]
[ 7]  rr[6+⍳3;4+⍳3]←3 3⍴c[45+⍳9]
[ 8]  r←11 20⍴' '
[ 9]  r[1;]←20↑'\begin{verbatim}'
[10]  r[1+⍳9;⍳15]←rr
[11]  r[11;]←20↑'\end{verbatim}'
-------------------------------------------------------------
[0]  r←qual opera cu;i;ind
[1]  i←1 ⋄ r←54⍴' '
[2] in:→(i>54)/fom
[3]  ind←OPERADOR[qual;i]
[4]  r[i]←cu[ind]
[5]  →(i=i←i+1)/in
[6] fom:
-------------------------------------------------------------
[ 0]  r←qualquer qt;i;aa
[ 1] ⍝ aplica qt vezes um operador aleatorio ao cubo inicial. A sequencia
[ 2] ⍝ de operadores usados fica guardada na variavel global CAM
[ 3]  r←cubozero ⋄ CAM←⍳0
[ 4]  i←1
[ 5] t1:→(i>qt)/fi
[ 6]  r←(aa←?9)opera r
[ 7]  CAM←CAM,aa
[ 8]  i←i+1
[ 9]  →t1
[10] fi:
-------------------------------------------------------------
[ 0]  r←anticam resolve cu
[ 1] ⍝ deve receber um cubo (54⍴...) e uma sequencia de operadores na
[ 2] ⍝ ordem em que eles foram aplicados (ou seja, CAM) e desfaz a
[ 3] ⍝ sequencia, ou seja gera o cubo inicial. Em outras palavras,
[ 4] ⍝ resolve o cubo.
[ 5]  c←⊖anticam ⋄ r←cu
[ 6]  i←1
[ 7] t1:→(i>⍴c)/fim
[ 8]  →(c[i]=1)/um
[ 9]  →(c[i]=2)/do
[10]  →(c[i]=3)/tr
[11]  →(c[i]=4)/qu
[12]  →(c[i]=5)/ci
[13]  →(c[i]=6)/se
[14]  →(c[i]=7)/st
[15]  →(c[i]=8)/oi
[16]  →(c[i]=9)/no
[17] um:r←1 opera r
[18]  r←1 opera r
[19]  r←1 opera r
[20]  →soma
[21] do:r←2 opera r
[22]  r←2 opera r
```

```
[23]  r←2 opera r
[24]  →soma
[25] tr:r←3 opera r
[26]  r←3 opera r
[27]  r←3 opera r
[28]  →soma
[29] qu:r←7 opera r
[30]  →soma
[31] ci:r←8 opera r
[32]  →soma
[33] se:r←9 opera r
[34]  →soma
[35] st:r←4 opera r
[36]  →soma
[37] oi:r←5 opera r
[38]  →soma
[39] no:r←6 opera r
[40]  →soma
[41] soma:i←i+1
[42]  →t1
[43] fim:
------------------------------------------------------------
[ 0]  opesq vivo135a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;nomes;num
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;xz;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←4 ⋄ EVENTO←'PL135   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA135←ajusta80 FOLHALA135
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA135)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 7⍴' '
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←50 80⍴' '
[16]  f←FOLHALA135
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←3.2
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(resp←3 0⍎xk),' ',opesq
[31]  esse[49;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[50;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] ini1:
[34]  xz←geracaso
[35]  esse[8;1]←xz[1;1]
[36]  esse[8+⍳11;⍳20]←11 20↑xz[1+⍳11;]
[37]  esse[20;]←80↑xz[13;]
[38]  esse[21 22;1]←xz[14 15;1]
```

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[39]  resp←resp,xz[16;1]
[40]  esse[23;1]←xz[17;1]
[41]  esse[23+⍳11;⍳20]←11 20⍴xz[17+⍳11;]
[42]  esse[35;]←80⍴xz[29;]
[43]  esse[36 37;1]←xz[30 31;1]
[44]  resp←resp,xz[32;1]
[45]  esse[37+⍳11;⍳20]←11 20⍴xz[32+⍳11;]
[46]  resp←resp,xz[44;1],xz[45;1]
[47]  resu←resu,[1]1 7⍴resp
[48]  acuja←(f[;2]='#')/⍳1↑⍴f
[49]  f[acuja;]←esse[⍬,f[acuja;3 4],' ';]
[50]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[51]  ⍞←(⍕xk←xk+1),'-'
[52]  →testa
[53] fim:upag←(1 0+⍴f)⍴' '
[54]  →(1=≡n)/elafa
[55]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[56]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[57]  upag[2+⍳1↑⍴resu;⍳12]←(1 1 1 0 1 0 1 0 1 0 1 0)⌿[2]resu
[58]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[59]  →terminando
[60] elafa:aaa←(ylu[;⍳36],0 3↓resu)
[61]  aaa[1;35 36]←2 0⍕CORRECAO
[62]  lixonol←aaa ⎕FM('c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.gpa')
[63]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[64] terminando:
[65]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[66]  relat[1↑⍴relat;;]←upag
[67]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[68] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[69]  lixonol←lixonol ⎕FM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.tex'
[70]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo140

```
[0]  AVISO
[1]  'Este WS tem a funcao graham que as vezes da zebra'
[2]  'assim, se der, basta reexecutar, ate dar certo'
-------------------------------------------------------------
[0]  CRIAPILHA
[1]  PILHA←0 2⍴0
[2]  TOPO←0
-------------------------------------------------------------
[ 0]  r←DESEMP
[ 1] ⍝ 'desempilhou'
[ 2]  →(TOPO≤0)/erro
[ 3]  TOPO←TOPO-1
[ 4]  r←,PILHA[1;]
[ 5]  PILHA←1 0↓PILHA
[ 6] ⍝ PILHA
[ 7] ⍝ '----------------'
[ 8]  →0
[ 9] erro:'deu xabu'
-------------------------------------------------------------
[0]  EMPILHA par
[1] ⍝ 'empilhou'
[2]  TOPO←TOPO+1
[3]  MAX←MAX⌈TOPO
[4]  PILHA←(1 2⍴par),[1]PILHA
[5] ⍝ PILHA
[6] ⍝ '------------------'
```

```
------------------------------------------------------------
[0]  r←VENEXT
[1]  r←,PILHA[2;]
------------------------------------------------------------
[0]  r←VETOPO
[1]  r←,PILHA[1;]
------------------------------------------------------------
[0]  r←areatr102 x;z;r1;r2
[1]  z←3 3ρx[1],x[2],1,x[3],x[4],1,x[5],x[6],1
[2]  r1←(z[1;1]×z[2;2]×z[3;3])+(z[1;3]×z[2;1]×z[3;2])+(z[1;2]×z[2;3]×z[3;1])
[3]  r2←(z[1;3]×z[2;2]×z[3;1])+(z[1;2]×z[2;1]×z[3;3])+(z[1;1]×z[2;3]×z[3;2])
[4]  r←0.5×r1-r2
------------------------------------------------------------
[ 0]  r←g140_1;a;b
[ 1]  b←4ρ0
[ 2]  a←¯10+?4ρ19
[ 3]  a←a[⍋a]
[ 4]  b←a
[ 5]  →(b[1]<b[3])/p1
[ 6]  b[3]←a[1]
[ 7]  b[1]←a[3]
[ 8] p1:
[ 9]  →(b[2]>b[4])/p2
[10]  b[2]←a[4]
[11]  b[4]←a[2]
[12] p2:
[13]  r←b
------------------------------------------------------------
[ 0]  r←g140_2;a;z;xx
[ 1] denovo:
[ 2]  →(1=?2)/cara
[ 3] coroa:z←3 2ρ0
[ 4]  a←¯10+2?19
[ 5]  z[1;1]←z[2;1]←a[1]
[ 6]  z[3;1]←a[2]
[ 7]  a←¯10+2?19
[ 8]  a←a[⍋a]
[ 9]  z[2;2]←a[1]
[10]  z[1;2]←a[2]
[11]  z[3;2]←¯10+?19
[12]  r←z
[13]  →junta
[14] cara:
[15]  z←3 2ρ0
[16]  a←¯10+2?19
[17]  z[1;2]←z[2;2]←a[1]
[18]  z[3;2]←a[2]
[19]  a←¯10+2?19
[20]  a←a[⍋a]
[21]  z[1;1]←a[1]
[22]  z[2;1]←a[2]
[23]  z[3;1]←¯10+?19
[24]  r←z
[25]  →junta
[26] junta:r←r[3?3;]
[27]  xx←r140_2 r
[28]  →(¯1≠xx)/ok8
[29]  ⍞←'o'
[30]  →denovo
[31] ok8:
------------------------------------------------------------
[0]  r←g140_3
[1]  r←¯10+4?19
```

```
------------------------------------------------------------
[0]  r←g140_4;z
[1] denovo:r←10 2⍴19
[2]  r←¯10+?r
[3]  z←r140_4 r
[4]  →(z=¯1)/denovo
------------------------------------------------------------
[0]  r←g140_5
[1]  r←3 2⍴6?19
[2]  r←¯10+r
------------------------------------------------------------
[0]  r←g140_6;z
[1]  z←10 2⍴19
[2]  z←?z
[3]  z[;1]←10?19
[4]  r←¯10+z
[5]  →(1=?3)/faca
[6]  →0
[7] faca:r[?10;]←0 0
[8]  →0
------------------------------------------------------------
[0]  r←g140_7;z
[1] t0:r←5 2⍴10?19
[2]  r←¯10+r
[3] t1:z←r140_7 r
[4]  →(z≠¯1)/0
[5]  ⎕←'o'
[6]  →t0
------------------------------------------------------------
[0]  r←g140_8;z
[1] t0:r←6 2⍴12?19
[2]  r←¯10+r
[3]  z←r140_8 r
[4]  →(z≠¯1)/0
[5]  ⎕←'o'
[6]  →t0
------------------------------------------------------------
[0]  r←g140_9
[1]  r←4 4⍴0
[2]  r[1;]←g140_1
[3]  r[2;]←2×g140_1
[4]  r[3;]←3×g140_1
[5]  r[4;]←g140_1
[6]  r←30+r[3?4;]
------------------------------------------------------------
[ 0]  r←g140_a;cids;hom;mul
[ 1]  r←6 40⍴' '
[ 2]  cids←(15↑'Trobobo'),(15↑'Jardinzinho'),(15↑'Ca de judas'),15↑'Trufas'
[ 3]  cids←cids,(15↑'Cajuzeiras'),(15↑'Gloriba'),(15↑'Wqxr'),15↑'O de cima'
[ 4]  cids←cids,(15↑'Cajatinho'),(15↑'Rio lindo'),(15↑'Rinoska'),15↑'Bubas'
[ 5]  cids←cids,(15↑'Uruca'),(15↑'Buxunta'),(15↑'Caquirosal'),15↑'Ufala'
[ 6]  cids←16 15⍴cids
[ 7]  hom←(15↑'Beto'),(15↑'Xavier'),(15↑'Rosangelo'),(15↑'Arlindo'),15↑'Ze'
[ 8]  hom←hom,(15↑'Zequinha'),(15↑'Ubirajara'),(15↑'Rosalvo'),15↑'Patrico'
[ 9]  hom←hom,(15↑'Rouxinol'),(15↑'Zebrao'),(15↑'Armindo'),15↑'Cristaldo'
[10]  hom←13 15⍴hom
[11]  mul←(15↑'Astrid'),(15↑'Lu'),(15↑'Veruska'),(15↑'Judith'),15↑'Zelinda'
[12]  mul←mul,(15↑'Gloria'),(15↑'Liza'),(15↑'Rosalva'),15↑'Patricia'
[13]  mul←mul,(15↑'Pombinha'),(15↑'Flavinha'),(15↑'Arminda'),15↑'Cristalda'
[14]  mul←13 15⍴mul
[15]  r[1+⍳5;15+⍳15]←cids[5?16;]
[16]  →(1=?2)/cara
[17] coroa:
```

```
[18]  r[1;1]←'1' ⍝ homem + 3 namoradas
[19]  r[2;⍳15]←hom[?13;]
[20]  r[2;30+⍳10]←(5 0⍕100+?500),5 0⍕100+?500
[21]  r[2+⍳4;⍳15]←mul[4?13;]
[22]  r[2+⍳3;30+⍳10]←5 0⍕3 2⍴100+6?500
[23]  r[6;30+⍳10]←10 0⍕100+?500
[24]  →0
[25] cara: ⍝ mulher + 3 namorados
[26]  r[1;1]←'2'
[27]  r[2;⍳15]←mul[?13;]
[28]  r[2;30+⍳10]←(5 0⍕100+?500),5 0⍕100+?500
[29]  r[2+⍳4;⍳15]←hom[4?13;]
[30]  r[2+⍳3;30+⍳10]←5 0⍕3 2⍴100+6?500
[31]  r[6;30+⍳10]←10 0⍕20+?300
[32]  →0
-------------------------------------------------------------
[0]  geraci;a;b;c;d
[1]  a←10-?20
[2]  b←10-?20
[3]  c←10-?20
[4]  d←10-?20
[5]  '¯-'edit'Centro:(',(⍕a),',',(⍕b),') e Ponto qualquer:(',(⍕c),',',(⍕d),')'
[6]  ''
[7]  'Area circulo: ',6 1⍕○(((a-c)*2)+((b-d)*2))*0.5
-------------------------------------------------------------
[0]  gerapts;a;b;c;d
[1]  a←10-?20
[2]  b←10-?20
[3]  c←10-?20
[4]  d←10-?20
[5]  '¯-'edit'Ponto 1:(',(⍕a),',',(⍕b),') e Ponto 2:(',(⍕c),',',(⍕d),')'
[6]  ''
[7]  'Distancia superhomem: ',4 1⍕(((a-c)*2)+((b-d)*2))*0.5
[8]  'Distancia manhattan : ',4 0⍕(|a-c)+|b-d
-------------------------------------------------------------
[ 0]  r←graham x;cands;c2;c3;p0;i;aa;bb;pn;lixo
[ 1] ⍝ esta funcao devolve a quantidade de pontos que fazem parte da
[ 2] ⍝ envoltoria.
[ 3]  cands←((,x[;2])=⌊/,x[;2])/⍳1↑⍴x
[ 4]  MAX←0
[ 5]  c2←x[cands;]
[ 6]  →(1=,⍴cands)/ufa
[ 7]  c3←((,c2[;1])=⌊/,c2[;1])/⍳1↑⍴c2
[ 8]  p0←,x[c3;]
[ 9]  →conta
[10] ufa:c3←,cands
[11]  p0←,x[c3;]
[12] conta:   ⍝'Eis o p0=',  ⍕p0
[13]  pn←((c3≠⍳1↑⍴x)/[1]x),0
[14]  i←1
[15] t1:→(i>1↑⍴pn)/fim
[16]  →(0≠pn[i;1]-p0[1])/blz
[17]  pn[i;3]←○0.5
[18]  →soma
[19] blz:pn[i;3]←¯3○(pn[i;2]-p0[2])÷(pn[i;1]-p0[1])
[20]  pn[i;3]←pn[i;3]+○pn[i;3]<0
[21] soma:→(i=i←i+1)/t1
[22] fim:pn←pn[⍋pn[;3];]
[23] ⍝ verificacao de integriadde
[24]  i←1
[25] tfg:→(i>1↑⍴pn)/uga
[26]  →(2<+/pn[i;3]=pn[;3])/errt
[27]  →(i=i←i+1)/tfg
```

```
[28] uga:
[29]  PN←pn
[30]  CRIAPILHA
[31]  EMPILHA p0
[32]  EMPILHA pn[1;⍳2]
[33]  EMPILHA pn[2;⍳2]
[34]  i←3
[35] t2:→(i>1↑⍴pn)/fim2
[36]  aa←(pn[i;1]-VENEXT[1])×(VETOPO[2]-VENEXT[2])
[37]  bb←(VETOPO[1]-VENEXT[1])×(pn[i;2]-VENEXT[2])
[38]  →((aa-bb)<0)/terminou
[39]  lixo←DESEMP
[40]  →t2
[41] terminou:EMPILHA pn[i;1 2]
[42]  →(i=i←i+1)/t2
[43] fim2:r←TOPO
[44]  →0
[45] errt:r←¯1
[46]  →0
------------------------------------------------------------
[0]  r←r140_1 x
[1]  r←(|x[3]-x[1])×(|x[4]-x[2])
------------------------------------------------------------
[0]  r←r140_2 x;z;w1;w2;w
[1]  z←x,1
[2]  w1←(z[1;1]×z[2;2]×z[3;3])+(z[1;2]×z[2;3]×z[3;1])+(z[2;1]×z[3;2]×z[1;3])
[3]  w2←(z[3;1]×z[2;2]×z[1;3])+(z[1;1]×z[2;3]×z[3;2])+(z[2;1]×z[1;2]×z[3;3])
[4]  →(1=2||w1-w2)/impar
[5]  w←(|w1-w2)÷2
[6]  r←w
[7]  →0
[8] impar:r←¯1
------------------------------------------------------------
[0]  r←r140_3 x;z
[1]  z←(((x[1]-x[3])*2)+((x[2]-x[4])*2))*0.5
[2]  r←⌊○z*2
------------------------------------------------------------
[0]  r←r140_4 x;z
[1]  z←graham x
[2]  →(z≠¯1)/ok
[3]  r←¯1
[4]  →0
[5] ok:r←10-z
[6]  →0
------------------------------------------------------------
[ 0]  r←r140_5 x;y;tot;a1;a2;a3
[ 1]  y←,x
[ 2]  tot←|areatr102 y
[ 3]  a1←|areatr102 y[1 2],0 0,y[5 6]
[ 4]  a2←|areatr102 y[1 2 3 4],0 0
[ 5]  a3←|areatr102 0 0,y[3 4 5 6]
[ 6]  →(tot≠a1+a2+a3)/nao
[ 7] sim:r←1
[ 8]  →0
[ 9] nao:r←0
------------------------------------------------------------
[0]  r←r140_6 w;a1;a2
[1]  a1←(+/(w[;1]≥0)∧(w[;2]≥0)),(+/(w[;1]≤0)∧(w[;2]≥0))
[2]  a2←(+/(w[;1]≤0)∧(w[;2]≤0)),(+/(w[;1]≥0)∧(w[;2]≤0))
[3]  r←a1,a2
------------------------------------------------------------
[0]  r←r140_7 x;w;z
[1]  w←x,0
```

```
[2]  w[;3]←((w[;1]*2)+(w[;2]*2))*0.5
[3]  z←,(,w[;3])ι⌈/,w[;3]
[4]  →(1≠ρz)/erro
[5]  r←z
[6]  →0
[7] erro:r←¯1
-------------------------------------------------------------
[0]  r←r140_8 x;w;z
[1]  w←x,0
[2]  w[;3]←(((w[;1]-w[1;1])*2)+((w[;2]-w[1;2])*2))*0.5
[3]  z←,(,w[1+ι5;3])ι⌊/,w[1+ι5;3]
[4]  →(1≠ρz)/erro
[5]  r←z
[6]  →0
[7] erro:r←¯1
-------------------------------------------------------------
[0]  r←r140_9 z
[1]  w←4 80 80ρ0
[2]  w[1;((z[1;4]-1)+ιz[1;2]-z[1;4]);(z[1;1]-1)+ιz[1;3]-z[1;1]]←1
[3]  w[2;((z[2;4]-1)+ιz[2;2]-z[2;4]);(z[2;1]-1)+ιz[2;3]-z[2;1]]←1
[4]  w[3;((z[3;4]-1)+ιz[3;2]-z[3;4]);(z[3;1]-1)+ιz[3;3]-z[3;1]]←1
[5]  w[4;;]←∨/[1]w[ι3;;]
[6]  r←+/,w[4;;]
-------------------------------------------------------------
[0]  r←r140_a x;z
[1]  z←3ρ0
[2]  z[1]←((((⍟x[2;30+ι5])-(⍟x[3;30+ι5]))*2)+(((⍟x[2;35+ι5])-(⍟x[3;35+ι5]))*2))*0.5
[3]  z[2]←((((⍟x[2;30+ι5])-(⍟x[4;30+ι5]))*2)+(((⍟x[2;35+ι5])-(⍟x[4;35+ι5]))*2))*0.5
[4]  z[3]←((((⍟x[2;30+ι5])-(⍟x[5;30+ι5]))*2)+(((⍟x[2;35+ι5])-(⍟x[5;35+ι5]))*2))*0.5
[5]  z←z,⍟x[6;30+ι10]
[6]  r←x[2+zι⌊/z;ι15]
-------------------------------------------------------------
[  0]  opesq vivo140a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
       a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[  1]  →(0≠⎕NC'opesq')/qveio
[  2]  opesq←10ρ' '
[  3] qveio:
[  4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[  5]  CORRECAO←1 ⋄ EVENTO←'PL140   '
[  6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
       4 5],⎕TS[6]+⎕TS[7]÷1000
[  7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[  8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎ιn
[  9]  ylu←n grupo ylu
[ 10]  FOLHALA140←ajusta80 FOLHALA140
[ 11]  relat←((2+1↑ρylu),1 0+ρFOLHALA140)ρ' '
[ 12]  relat[1;;]←(1↓relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[ 13]  xk←1 ⋄ resu←0 57ρ' '
[ 14] testa:→(xk>1↑ρylu)/fim
[ 15]  esse←25 80ρ' '
[ 16]  f←FOLHALA140
[ 17]  esse[1;]←80↑dhx[1;]
[ 18]  esse[2;]←80↑dhx[2;]
[ 19]  esse[3;]←80↑4 2⍎VERSAOa←1.03
[ 20]  esse[4;]←80↑ylu[xk;ι6]
[ 21]  →(36=1↓ρylu)/zebra
[ 22]  qlinha←(1=∧/[2]f[;ι4]=((1↑ρf),4)ρ'⍀#05')/ι1↑ρf
[ 23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[ 24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[ 25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[ 26]  →maiszebra
[ 27] zebra:esse[5;]←80↑ylu[xk;6+ι30]
[ 28] maiszebra:
```

```
[ 29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[ 30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[ 31]  esse[24;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[ 32]  esse[25;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[ 33] inica:
[ 34]  resp←3 0⍕resp
[ 35]  resp←resp,'/',4 0⍕r140_1 xx←g140_1
[ 36]  xx←4 0⍕xx
[ 37]  xx[5 9 13]←','
[ 38]  esse[8;]←80↑'¯-'edit xx
[ 39]  resp←resp,4 0⍕r140_2 xx←g140_2
[ 40]  xx←10 0⍕xx
[ 41]  xx[1 2 3;11]←','
[ 42]  xx←xx,';'
[ 43]  esse[9;]←80↑'¯-'edit ¯1↓,xx
[ 44]  resp←resp,6 0⍕r140_3 xx←g140_3
[ 45]  xx←,5 0⍕xx
[ 46]  xx[1 2 6 11 12 13 16]←'C=,.P=,'
[ 47]  esse[10;]←80↑'¯-'edit xx
[ 48]  resp←resp,2 0⍕r140_4 xx←g140_4
[ 49]  xx←3 0⍕,xx
[ 50]  xx[4 10 16 22 28 34 40 46 52 58]←','
[ 51]  xx[7 13 19 25 31 37 43 49 55]←';'
[ 52]  esse[11;]←80↑'¯-'edit xx
[ 53]  resp←resp,2 0⍕r140_5 xx←g140_5
[ 54]  xx←10 0⍕,xx
[ 55]  xx[11 31 51]←','
[ 56]  xx[21 41]←';'
[ 57]  esse[12;]←80↑'¯-'edit xx
[ 58]  resp←resp,10 0⍕+/r140_6 xx←g140_6
[ 59]  xx←3 0⍕,xx
[ 60]  xx[4 10 16 22 28 34 40 46 52 58]←','
[ 61]  xx[7 13 19 25 31 37 43 49 55]←';'
[ 62]  esse[13;]←80↑'¯-'edit xx
[ 63]  resp←resp,2 0⍕r140_7 xx←g140_7
[ 64]  xx←3 0⍕,xx
[ 65]  xx[4 10 16 22 28]←','
[ 66]  xx[7 13 19 25]←';'
[ 67]  esse[14;]←80↑'¯-'edit xx
[ 68]  resp←resp,2 0⍕r140_8 xx←g140_8
[ 69]  esse[15;]←80↑'¯-'edit(3 0⍕xx[1;1]),',',(3 0⍕xx[1;2])
[ 70]  xx←1 0↓xx
[ 71]  xx←3 0⍕,xx
[ 72]  xx[4 10 16 22 28]←','
[ 73]  xx[7 13 19 25]←';'
[ 74]  esse[16;]←80↑'¯-'edit xx
[ 75]  resp←resp,5 0⍕r140_9 xx←g140_9
[ 76]  xx←4 0⍕xx
[ 77]  xx←xx,3 1⍴';; '
[ 78]  esse[17;]←80↑'¯-'edit,xx
[ 79]  resp←resp,' ',15↑r140_a xx←g140_a
[ 80]  →(xx[1;1]='2')/mu
[ 81] ho:esse[18;]←80↑xx[2;⍳15],' mora em ',xx[2;15+⍳15],'(X=',xx[2;30+⍳5],', Y=',xx[2;35+⍳
       5],').'
[ 82]  esse[19;]←80↑'Ele tem 4 namoradas: ',xx[3;⍳15],' mora em ',xx[3;15+⍳15],'(X=',xx[3;3
       0+⍳5],', Y=',xx[3;35+⍳5],'),'
[ 83]  esse[20;]←80↑xx[4;⍳15],' mora em ',xx[4;15+⍳15],'(X=',xx[4;30+⍳5],', Y=',xx[4;35+⍳5]
       ,'),'
[ 84]  esse[21;]←80↑xx[5;⍳15],' mora em ',xx[5;15+⍳15],'(X=',xx[5;30+⍳5],', Y=',xx[5;35+⍳5]
       ,') e'
[ 85]  esse[22;]←80↑xx[6;⍳15],' mora a ',xx[6;30+⍳10],' quilômetros da cidade dele.'
[ 86]  esse[23;]←80↑'Qual o nome da namorada que mora mais perto dele ?'
[ 87]  →juu
```

```
[ 88] mu:esse[18;]←80↑xx[2;⍳15],' mora em ',xx[2;15+⍳15],'(X=',xx[2;30+⍳5],', Y=',xx[2;35+⍳
      5],').'
[ 89]  esse[19;]←80↑'Ela tem 4 namorados: ',xx[3;⍳15],' mora em ',xx[3;15+⍳15],'(X=',xx[3;3
      0+⍳5],', Y=',xx[3;35+⍳5],'),'
[ 90]  esse[20;]←80↑xx[4;⍳15],' mora em ',xx[4;15+⍳15],'(X=',xx[4;30+⍳5],', Y=',xx[4;35+⍳5]
      ,'),'
[ 91]  esse[21;]←80↑xx[5;⍳15],' mora em ',xx[5;15+⍳15],'(X=',xx[5;30+⍳5],', Y=',xx[5;35+⍳5]
      ,') e'
[ 92]  esse[22;]←80↑xx[6;⍳15],' mora a ',xx[6;30+⍳10],' quilômetros da cidade dela.'
[ 93]  esse[23;]←80↑'Qual o nome do namorado que mora mais perto dela ?'
[ 94] juu:
[ 95]  resu←resu,[1]1 57⍴resp
[ 96]  acuja←(f[;2]='#')/⍳1↑⍴f
[ 97]  f[acuja;⍳80]←esse[⍎,f[acuja;3 4],' ';]
[ 98]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[ 99]  □←(⍕xk←xk+1),'-'
[100]  →testa
[101] fim:upag←(1 0+⍴f)⍴' '
[102]  →(1=≡n)/elafa
[103]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[104]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO,'/',opesq
[105]  upag[2+⍳1↑⍴resu;⍳57]←resu
[106]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[107]  →terminando
[108] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[109]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[110]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[111] terminando:
[112]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[113]  relat[1↑⍴relat;;]←upag
[114]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[115]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[116]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[117]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo144

```
[0]  AVISO
[1]  'mostrar as funcoes '
[2]  'a2r = arabico para romano de acordo com a folha 144'
[3]  'r2a = funcao maluca APL de 1 linha - funciona !'
[4]  'r2ai = funcao usando recursos do APL- idem'
[5]  'r2ainx = funcao conforme a folha 144'
[6]  ''
[7]  'vejaa2r = a2r para mostrar...'
[8]  'vejar2a = r2ainx para mostrar...'
-------------------------------------------------------------
[ 0]  r←a2r v;d
[ 1]  r←''
[ 2]  d←⌊v÷1000
[ 3]  v←v-d×1000
[ 4]  r←r,(-d)ard'MMM'
[ 5] ⍝------
[ 6]  d←⌊v÷100
[ 7]  v←v-d×100
[ 8]  r←r,d ard'CDM'
[ 9] ⍝----
[10]  d←⌊v÷10
[11]  v←v-d×10
[12]  r←r,d ard'XLC'
[13] ⍝----
```

```
[14]  r←r,v ard'IVX'
-------------------------------------------------------------
[ 0]  r←ad ard letra
[ 1]  →(ad<0)/nega
[ 2]  →(ad=0)/ze
[ 3]  →(ad=1)/um
[ 4]  →(ad=2)/do
[ 5]  →(ad=3)/tr
[ 6]  →(ad=4)/qu
[ 7]  →(ad=5)/ci
[ 8]  →(ad=6)/se
[ 9]  →(ad=7)/st
[10]  →(ad=8)/oi
[11]  →no
[12] um:r←letra[1]
[13]  →fi
[14] do:r←letra[1 1]
[15]  →fi
[16] tr:r←letra[1 1 1]
[17]  →fi
[18] qu:r←letra[1 2]
[19]  →fi
[20] ci:r←letra[2]
[21]  →fi
[22] se:r←letra[2 1]
[23]  →fi
[24] st:r←letra[2 1 1]
[25]  →fi
[26] oi:r←letra[2 1 1 1]
[27]  →fi
[28] no:r←letra[1 3]
[29]  →fi
[30] ze:r←''
[31]  →fi
[32] nega:r←(|ad)⍴(,letra)[1]
[33] fi:r←,r
-------------------------------------------------------------
[ 0]  r←geraca2a;z;k;w
[ 1]  r←7 80⍴' '
[ 2]  w←6⍴0
[ 3]  w[2?6]←1000+?2000
[ 4]  z←(6?900)+w
[ 5]  k←1
[ 6] t1:→(k>6)/fim
[ 7]  r[k;]←80↑a2r z[k]
[ 8]  k←k+1
[ 9]  →t1
[10] fim:r[7;]←80↑'5555,'⍪z
-------------------------------------------------------------
[ 0]  r←geraca2r;k;rr;z;w
[ 1] volta:r←7 80⍴' '
[ 2]  w←6⍴0
[ 3]  w[2?6]←1000+?2000
[ 4]  r[⍳6;⍳4]←6 4⍴4 0⍪z←(6?900)+w
[ 5]  k←1 ⋄ rr←''
[ 6] te:→(k>6)/fim
[ 7]  rr←rr,(a2r z[k]),','
[ 8]  k←k+1
[ 9]  →te
[10] fim:
[11]  →(46≥⍴rr)/blz
[12]  □←'o'
[13]  →volta
```

```
[14] blz:
[15]  r[7;]←80↑¯1↓rr
-------------------------------------------------------------
[0]  r←multm x
[1]  r←xρ'M'
-------------------------------------------------------------
[0]  r←r2a C;I
[1]  r←+/I×¯1*I<1⌽I←0,(,(1,10*⍳3)∘.×1 5)['IVXLCDM'⍳C]
-------------------------------------------------------------
[ 0]  r←r2ai c;t;sum;v
[ 1]  t←'IVXLCDM' ⋄ v←1 5 10 50 100 500 1000
[ 2]  sum←0
[ 3] vorta:→(2>ρ,c)/term
[ 4]  →((t⍳c[1])<(t⍳c[2]))/menor
[ 5]  sum←sum+v[t⍳c[1]]
[ 6]  c←1↓c
[ 7]  →(0=ρc)/fim
[ 8]  →vorta
[ 9] menor:sum←sum+v[t⍳c[2]]-v[t⍳c[1]]
[10]  c←2↓c
[11]  →(0=ρc)/fim
[12]  →vorta
[13] term:sum←sum+v[t⍳(,c)[1]]
[14] fim:r←sum
-------------------------------------------------------------
[ 0]  r←r2ainx c;t;sum;v;k;m;i
[ 1]  t←'IVXLCDM' ⋄ v←1 5 10 50 100 500 1000
[ 2]  sum←0 ⋄ i←1
[ 3] vorta:→(i>ρc)/term
[ 4]  k←1
[ 5] ufa1:→(t[k]=c[i])/achou1
[ 6]  →(k=k←k+1)/ufa1
[ 7] achou1:m←1
[ 8]  →(i=ρc)/obaa
[ 9] ufa2:
[10]  →(t[m]=c[i+1])/achou2
[11]  →(m=m←m+1)/ufa2
[12] achou2:
[13]  →(v[k]<v[m])/menor
[14] obaa:sum←sum+v[k]
[15]  i←i+1
[16]  →vorta
[17] menor:sum←sum+v[m]-v[k]
[18]  i←i+2
[19]  →vorta
[20] term:
[21]  r←sum
-------------------------------------------------------------
[ 0]  testa;x;w1;w2;w3;w4;z
[ 1]  x←1
[ 2] ini:→(x>3999)/fim
[ 3]  →(0≠100|x)/conta
[ 4]  ⍞←'*'
[ 5] conta:z←a2r x
[ 6]  w1←r2a z
[ 7]  w2←r2ai z
[ 8]  w3←r2ainx z
[ 9]  w4←r2ainx z
[10]  x←x+1
[11]  →((w1=w2)∧(w1=w3)∧(w1=w4))/ini
[12]  'erro'
[13]  w1
[14]  w2
```

```
[15]  w3
[16]  w4
[17]  x
[18]  →0
[19] fim:
-------------------------------------------------------------
[ 0]  vejaa2r v;lixo;aa;r;E1;E2;E3;D1;D2;D3
[ 1]  'vamos converter o valor ',⍕v
[ 2]  r←''
[ 3]  E3←⌊v÷1000
[ 4]  ' E3 vale = ',⍕E3
[ 5]  D3←v-E3×1000
[ 6]  ' D3 vale = ',⍕D3
[ 7]  lixo←⍞
[ 8] ⍝------
[ 9]  E2←⌊D3÷100
[10]  ' E2 vale = ',⍕E2
[11]  D2←D3-E2×100
[12]  ' D2 vale = ',⍕D2
[13]  lixo←⍞
[14] ⍝----
[15]  E1←⌊D2÷10
[16]  ' E1 vale = ',⍕E1
[17]  D1←D2-E1×10
[18]  ' D1 vale = ',⍕D1
[19]  lixo←⍞
[20] ⍝----
[21]  aa←multm E3
[22]  'a chamada a MULTM retornou = ',aa
[23]  lixo←⍞
[24]  r←r,aa
[25]  aa←E2 ard'CDM'
[26]  'a primeira chamada a ARD retornou = ',aa
[27]  r←r,aa
[28]  lixo←⍞
[29]  aa←E2 ard'XLC'
[30]  'a segunda  chamada a ARD retornou = ',aa
[31]  lixo←⍞
[32]  r←r,aa
[33]  aa←D1 ard'IVX'
[34]  'a terceira chamada a ARD retornou = ',aa
[35]  lixo←⍞
[36]  r←r,aa
[37]  'o resultado final é ',r
-------------------------------------------------------------
[ 0]  vejar2a c;t;sum;v;k;m;i;r;lixo
[ 1]  t←'IVXLCDM' ⋄ v←1 5 10 50 100 500 1000
[ 2]  sum←0 ⋄ i←1
[ 3] vorta33:→(i>⍴c)/term
[ 4]  k←1
[ 5] ufa1:→(t[k]=c[i])/achou1
[ 6]  →(k=k←k+1)/ufa1
[ 7] achou1:
[ 8]  'tratando c[',(⍕i),']=',(c[i]),' com k = ',⍕k
[ 9]  m←1
[10]  →(i=⍴c)/obaa
[11] ufa2:
[12]  →(t[m]=c[i+1])/achou2
[13]  →(m=m←m+1)/ufa2
[14] achou2:
[15]  '    olhando o c[',(⍕i+1),']=',(⍕c[i+1]),' com m = ',⍕m
[16]  →(v[k]<v[m])/menor
[17]  '   como k≥m , soma-se VALAUX[K]=',(⍕v[k]),' (sum era=',(⍕sum),')'
```

```
[18] obaa:sum←sum+v[k]
[19]  '        e agora sum=',⍕sum
[20]  i←i+1
[21]  →vorta
[22] menor:
[23]  '   como k<m, subtrai-se VALAUX[K]=',(⍕v[k]),' (sum era=',(⍕sum),')'
[24]  sum←sum+v[m]-v[k]
[25]  '        e agora sum=',⍕sum
[26]  '        e note que i+2'
[27]  i←i+2
[28]  →vorta
[29] vorta:'-------------------------'
[30]  lixo←⍞
[31]  →vorta33
[32] term:
[33]  r←sum
------------------------------------------------------------
[ 0]  opesq vivo144a n;CORRECAO;EVENTO;aaa;acuja;caso1;caso2;dhx;esse;f;lixonol;relat;resp
      ;resu;upag;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←0 ⋄ EVENTO←'PL144   '
[ 5]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 8]  FOLHALA144←ajusta80 FOLHALA144
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA144)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[11]  xk←1 ⋄ resu←0 80⍴0
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←21 80⍴' '
[14]  f←FOLHALA144
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍕VERSAOa←3.11
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[22]  esse[20;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[21;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25]  caso1←geraca2a
[26]  esse[7+⍳6;]←caso1[⍳6;]
[27]  resp←(3 0⍕resp),' ',caso1[7;⍳30]
[28]  caso2←geraca2r
[29]  esse[13+⍳6;]←caso2[⍳6;]
[30]  resp←resp,caso2[7;⍳46]
[31]  resu←resu,[1]1 80⍴resp
[32]  acuja←(f[;2]='#')/⍳1↑⍴f
[33]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[34]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[35]  ⍞←(⍕xk←xk+1),'-'
[36]  →testa
[37] fim:upag←(1 0+⍴f)⍴' '
[38]  →(1=≡n)/elafa
[39]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[40]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[41]  upag[2+⍳1↑⍴resu;]←resu
[42]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[43]  →terminando
```

```
[44] elafa:
[45]  aaa←(ylu,0 4↓resu)
[46]  aaa[1;35 36]←2 0⍕CORRECAO
[47]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍬∧⍀⍬EVENTO=' ')/EVENTO),'.gpa')
[48]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[49] terminando:
[50]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[51]  relat[1↑⍴relat;;]←upag
[52]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)ΔFM'c:⍀apl2⍀',((~⍬∧⍀⍬EVENTO=' ')/EVENTO),'.t
      ex'
[53]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[54]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo145

```
[0]  AVISO
[1]  '  emagrece 3 1 2 dearvore crarvore a  ← 10?99'
-------------------------------------------------------------
[ 0]  r←acertabrancos a;b;i
[ 1]  b←,a
[ 2]  i←1
[ 3] t1:→(i>¯1+⍴b)/fim
[ 4]  →((b[i]='<')∧(b[i+1]=' '))/troca
[ 5]  →((b[i]=' ')∧(b[i+1]='>'))/troca2
[ 6]  →((b[i]='(')∧(b[i+1]=' '))/troca3
[ 7]  →((b[i]=' ')∧(b[i+1]=')'))/troca4
[ 8]  i←i+1
[ 9]  →t1
[10] troca:b[i]←' '
[11]  b[i+1]←'<'
[12]  i←i+2
[13]  →t1
[14] troca2:b[i]←'>'
[15]  b[i+1]←' '
[16]  i←i+2
[17]  →t1
[18] troca3:b[i]←' '
[19]  b[i+1]←'('
[20]  i←i+2
[21]  →t1
[22] troca4:b[i]←')'
[23]  b[i+1]←' '
[24]  i←i+2
[25]  →t1
[26] fim:r←(⍴a)⍴b
-------------------------------------------------------------
[0]  r←a ate b
[1]  r←a,a+⍳b-a
-------------------------------------------------------------
[ 0]  r←crarvore elems;aspa;i;ealfa
[ 1] ⍝ cria uma arvore para desenho com elems / p.kantek / v2.1
[ 2] ⍝ col [1] = &fe
[ 3] ⍝ col [2] = &fd
[ 4] ⍝ col [3] = conteudo
[ 5] ⍝ col [4] = profundidade
[ 6] ⍝ col [5] = &pai
[ 7] ⍝ col [6] = largura do bloco grafico
[ 8] ⍝ col [7] = 0  ≠se bloco grafico ja foi criado (1=significa que ele e o
[ 9] ⍝           raiz do bloco. 2=ja foi usado para construir outro mais
[10] ⍝           acima
[11]  r←((⍴elems),7)⍴0 ⋄ ealfa←1 ⋄ aspa←''''
```

```
[12]  →(isnum elems)/nume
[13]  ealfa←¯1
[14]  elems←1000+⎕AV⍳elems
[15] nume:i←2 ⋄ r[1;1 2 3]←¯1,¯1,elems[1]
[16] inica:→(i>⍴elems)/acabou
[17]  r←r inarvore elems[i]
[18]  →(i=i←i+1)/inica
[19] acabou:
[20]  i←1
[21] conta:→(i>⍴elems)/mesmo
[22]  →((r[i;1]≠¯1)∨(r[i;2]≠¯1))/pula
[23]  →(ealfa=¯1)/letra
[24]  ⍞'A',('05'⍕i),'←',aspa,'<',(formata elems[i]),'>',aspa
[25]  →indo
[26] letra:⍞'A',('05'⍕i),'←',aspa,'(⊃',⎕AV[elems[i]-1000],'⊂)',aspa
[27] indo:r[i;7]←1
[28]  r[i;6]←3
[29] pula:→(i=i←i+1)/conta
[30] mesmo:
------------------------------------------------------------
[ 0]  r←e de2f d;lin;col
[ 1]  →(2=⍴⍴e)/ee
[ 2]  e←(1,⍴e)⍴e
[ 3] ee:→(2=⍴⍴d)/dd
[ 4]  d←(1,⍴d)⍴d
[ 5] dd:lin←(1↑⍴e)⌈1↑⍴d
[ 6] ⍝ col  ←(3+1  ↓  ⍴e)  ⌊3+1  ↓  ⍴d
[ 7]  col←(1↓⍴e)⌈1↓⍴d
[ 8]  e←(lin,col)↑e ⋄ d←(lin,col)↑d
[ 9] ⍝ e  ←(lin,(1  ↓  ⍴e))  ↑e   ⋄ d  ←(lin,(1  ↓  ⍴d))  ↑d
[10]  r←e,' ',d
[11]  r←((4,1↓⍴r)⍴' '),[1]r
[12]  r[1;((meio 1↓⍴r)-3)+⍳5]←PAI
[13]  r[2;((meio 1↓⍴r)-2)+⍳3]←'_&_'
[14]  r[3;(ONDE1)ate ¯1+meio 1↓⍴r]←'_'
[15]  r[3;(1+meio 1↓⍴r)ate(1+ONDE2+1↓⍴e)-1]←'_'
[16]  r[3;meio 1↓⍴r]←'#'
[17]  r[3;ONDE1]←'%'
[18]  r[3;(1↓⍴e)+1+ONDE2]←'!'
[19]  r[4;ONDE1+¯1 0 1]←r[4;1+(1↓⍴e)+ONDE2+¯1 0 1]←'_#_'
------------------------------------------------------------
[ 0]  r←a dearvore b;prim;paiprim;filhos;fe;fd;X;x;aspa;ois;carac;nivel;larg
[ 1]  →(0≠⎕NC'a')/veio
[ 2]  a←3 1 2
[ 3] ⍝ 'carac=1/ascii/2=apld/3=apls/4=hdup/5=vdup   niveis=1/2/3/4' v.2.1
[ 4] veio:r←b
[ 5]  carac←a[1] ⋄ nivel←a[2] ⋄ larg←a[3]
[ 6]  aspa←''''
[ 7] inicio:→(1=r[1;7])/acabou
[ 8]  ois←(r[;7]=1)/⍳1↑⍴r
[ 9]  →(1=⍴ois)/sotem1
[10]  prim←1↑(r[ois;4]=⌈/r[ois;4])/ois
[11]  →voltaj
[12] sotem1:prim←ois
[13] voltaj:paiprim←r[prim;5]
[14]  →(r[paiprim;3]>1000)/le
[15]  ⍞'PAI  ←',aspa,'<',(formata r[paiprim;3]),'>',aspa
[16]  →indo
[17] le:⍞'PAI  ←',aspa,'(⊃',⎕AV[r[paiprim;3]-1000],'⊂)',aspa
[18] indo:→(2=⍴filhos←((r[;5]=paiprim)∧(r[;7]=1))/⍳1↑⍴r)/tem2
[19] tem1:→(r[paiprim;1]=prim)/efe
[20] efd:fd←⍞'A','05'⍕prim
[21]  ONDE←r[prim;6]
```

```
[22]  ⍎'A',('05'⍕paiprim),'  ←defd fd'
[23]  r[paiprim;7]←1 ⋄ r[prim;7]←2 ⋄ r[paiprim;6]←3
[24]  →inicio
[25] efe:
[26]  fe←⍎'A','05'⍕prim
[27]  ONDE←r[prim;6]
[28]  ⍎'X  ←1  ↓  ρA',('05'⍕paiprim),'  ←defe fe'
[29]  r[paiprim;7]←1 ⋄ r[prim;7]←2 ⋄ r[paiprim;6]←X-2
[30]  →inicio
[31] tem2:
[32]  →(r[filhos[1];3]>r[filhos[2];3])/ummaior
[33]  x←filhos[1] ⋄ filhos[1]←filhos[2] ⋄ filhos[2]←x
[34] ummaior:
[35]  ONDE1←r[filhos[2];6] ⋄ ONDE2←r[filhos[1];6]
[36]  fe←⍎'A','05'⍕filhos[2]   ⍝1
[37]  fd←⍎'A','05'⍕filhos[1]   ⍝2
[38]  ⍎'X  ←1  ↓  ρA',('05'⍕paiprim),'  ←fe de2f fd'
[39]  r[paiprim;7]←1 ⋄ r[filhos[1];7]←r[filhos[2];7]←2 ⋄ r[paiprim;6]←meio X
[40]  →inicio
[41] acabou:MAT←r   ⍝ aqui esta a matriz de entrada devidamente ja processada
[42]  →(larg=1)/jump
[43]  AO1←(~∧/[1]((AO1=' ')∨(AO1='_')))/[2]AO1
[44] jump:AO1←'∘ 'edit AO1
[45]  AO1←'⊃ 'edit AO1
[46]  AO1←'⊂ 'edit AO1
[47]  r←carac edita AO1
[48]  x←limpa
[49]  →(nivel=4)/0
[50]  →(nivel=3)/tres
[51]  →(nivel=2)/dois
[52]  →(nivel=1)/um
[53]  'erro de nivel'
[54]  →fin
[55] um:r←((1↑ρr)ρ1 0)/[1]r
[56]  →fin
[57] dois:r←((1↑ρr)ρ1 1 1 0)/[1]r
[58]  →fin
[59] tres:r←((1↑ρr)ρ1 0 1 1)/[1]r
[60]  →fin
[61] fin:r←acertabrancos r
-------------------------------------------------------------
[0]  r←decimo mat;zz
[1]  zz←largura mat
[2]  r←zz[10]
-------------------------------------------------------------
[ 0]  r←defd x
[ 1]  →(2=ρρx)/esim
[ 2]  x←(1,ρx)ρx
[ 3] esim:r←((1↑ρx),-(1↓ρx)+4)↑x
[ 4]  r←((4,1↓ρr)ρ' '),[1]r
[ 5]  r[1;⍳5]←PAI
[ 6]  r[2;2 3 4]←'_&_'
[ 7]  r[3;3]←'$'
[ 8]  r[3;4+ONDE]←'!'
[ 9]  r[3;4 ate 3+ONDE]←'_'
[10]  r[4;4+ONDE+¯1 0 1]←'_#_'
-------------------------------------------------------------
[ 0]  r←defe x
[ 1]  →(2=ρρx)/esim
[ 2]  x←(1,ρx)ρx
[ 3] esim:r←((1↑ρx),(1↓ρx)+4)↑x
[ 4]  r←((4,1↓ρr)ρ' '),[1]r
[ 5]  r[1;((1↓ρr)-5)+⍳5]←PAI
```

```
[ 6]  r[2;((1↓⍴r)-4)+⍳3]←'_&_'
[ 7]  r[3;(1↓⍴r)-2]←'@'
[ 8]  r[3;(ONDE)ate((1↓⍴r)-3)]←'_'
[ 9]  r[3;ONDE]←'%'
[10]  r[4;ONDE+¯1 0 1]←'_#_'
------------------------------------------------------------
[ 0]  r←qual edita tudo
[ 1]  →(qual=1)/ascii
[ 2]  →(qual=2)/apldu
[ 3]  →(qual=3)/aplsi
[ 4]  →(qual=4)/aplds
[ 5]  →(qual=5)/aplsd
[ 6]  'erro'
[ 7]  →0
[ 8] ⍝              |                          |          |
[ 9] ⍝ %=+--   #=--+--   _=---   !=--+   $=+--   @=--+   &=--+--
[10] ⍝   |                              |                      |
[11] ascii:
[12]  r←'%+'edit tudo
[13]  r←'#+'edit r
[14]  r←'_-'edit r
[15]  r←'!+'edit r
[16]  r←'$+'edit r
[17]  r←'@+'edit r
[18]  r←'&+'edit r
[19]  →0
[20] apldu:
[21]  r←('%',⎕AV[202])edit tudo
[22]  r←('#',⎕AV[203])edit r
[23]  r←('_',⎕AV[206])edit r
[24]  r←('!',⎕AV[188])edit r
[25]  r←('$',⎕AV[201])edit r
[26]  r←('@',⎕AV[189])edit r
[27]  r←('&',⎕AV[204])edit r
[28]  →0
[29] aplsi:
[30]  r←('%',⎕AV[219])edit tudo
[31]  r←('#',⎕AV[194])edit r
[32]  r←('_',⎕AV[197])edit r
[33]  r←('!',⎕AV[192])edit r
[34]  r←('$',⎕AV[193])edit r
[35]  r←('@',⎕AV[218])edit r
[36]  r←('&',⎕AV[195])edit r
[37]  →0
[38] aplds:
[39]  r←('%',⎕AV[219])edit tudo
[40]  r←('#',⎕AV[194])edit r
[41]  r←('_',⎕AV[197])edit r
[42]  r←('!',⎕AV[192])edit r
[43]  r←('$',⎕AV[193])edit r
[44]  r←('@',⎕AV[218])edit r
[45]  r←('&',⎕AV[195])edit r
[46]  →0
[47] aplsd:
[48]  r←('%',⎕AV[215])edit tudo
[49]  r←('#',⎕AV[209])edit r
[50]  r←('_',⎕AV[197])edit r
[51]  r←('!',⎕AV[184])edit r
[52]  r←('$',⎕AV[212])edit r
[53]  r←('@',⎕AV[190])edit r
[54]  r←('&',⎕AV[211])edit r
[55]  →0
------------------------------------------------------------
```

```
[ 0]  r←emagrece arv;vv;lin;i;zz;pp;cc;aa
[ 1] ⍝ qual o caractere a matar ???
[ 2]  zz←(,arv)
[ 3]  zz←(zz≠' ')/zz
[ 4]  pp←((zz⍳zz)=⍳⍴zz)/zz
[ 5]  cc←(⍴pp)⍴0
[ 6]  i←1
[ 7] t0:→(i>⍴zz)/oba
[ 8]  cc[aa]←cc[aa←pp⍳zz[i]]+1
[ 9]  i←i+1
[10]  →t0
[11] oba:
[12]  pp←pp[⍒cc]
[13]  i←1
[14]  vv←⍳0
[15] t1:→(i>1↓⍴arv)/fim
[16]  lin←arv[;i]
[17]  lin←(lin≠' ')/lin
[18]  →((⍴lin)=+/pp[1]=lin)/tira
[19]  vv←vv,1
[20]  →soma
[21] tira:vv←vv,0
[22] soma:
[23]  i←i+1
[24]  →t1
[25] fim:r←vv/[2]arv
------------------------------------------------------------
[ 0]  r←formata x
[ 1]  →(x>1000)/t4
[ 2]  →(x>99)/t3
[ 3]  →(x>9)/t2
[ 4] t1:r←'0',(1 0⍕x),'0'
[ 5]  →0
[ 6] t2:r←'0',2 0⍕x
[ 7]  →0
[ 8] t3:r←3 0⍕x
[ 9]  →0
[10] t4:r←'0',⎕AV[x-1000],'0'
[11]  →0
------------------------------------------------------------
[ 0]  r←g145f01 x;f;g
[ 1]  →(x≠1)/oba
[ 2]  r←0
[ 3]  →0
[ 4] oba:
[ 5]  →(x>3)/oba2
[ 6]  r←1
[ 7]  →0
[ 8] oba2:
[ 9]  →(0≠2|x)/oba3
[10]  r←0
[11]  →0
[12] oba3:
[13]  →(x>8)/oba4
[14]  r←1
[15]  →0
[16] oba4:
[17]  →(0≠3|x)/oba5
[18]  r←0
[19]  →0
[20] oba5:
[21]  g←⌊x*0.5
[22]  f←5
```

```
[23] t3:→(f>g)/aca
[24]  →((0≠f|x)∧(0≠(f+2)|x))/soma
[25]  r←0
[26]  →0
[27] soma:
[28]  f←f+6
[29]  →t3
[30] aca:
[31]  r←1
-------------------------------------------------------------
[ 0]  r←g145f02 n;divs;i;rr
[ 1]  divs←1
[ 2]  i←2
[ 3]  rr←⌊n*0.5
[ 4] t1:→(i>rr)/fi
[ 5]  →(0≠i|n)/oba
[ 6]  divs←divs+i
[ 7]  divs←divs+⌊n÷i
[ 8] oba:
[ 9]  i←i+1
[10]  →t1
[11] fi:
[12]  →(rr=n*0.5)/tira
[13]  r←divs
[14]  →0
[15] tira:
[16]  r←divs-rr
-------------------------------------------------------------
[ 0]  r←g145f03 x;⎕IO;i;ult;onde;pai;esqdir
[ 1]  ⎕IO←0
[ 2]  r←((⍴x),3)⍴0
[ 3]  r[0;]←¯1 ¯1,x[0]
[ 4]  i←1
[ 5]  ult←0
[ 6] ufa:→(i≥⍴x)/acabou
[ 7]  ult←ult+1
[ 8]  r[ult;]←¯1,¯1,x[i]
[ 9]  onde←0
[10] testa:→(onde=¯1)/oba
[11]  pai←onde
[12]  →(x[i]>r[onde;2])/maior
[13]  esqdir←0
[14]  onde←r[onde;0]
[15]  →junta
[16] maior:
[17]  esqdir←1
[18]  onde←r[onde;1]
[19] junta:
[20]  →testa
[21] oba:
[22]  r[pai;esqdir]←ult
[23]  i←i+1
[24]  →ufa
[25] acabou:
-------------------------------------------------------------
[ 0]  r←g145f04 x;minimo;i;j;ca;mini;minj
[ 1]  minimo←9999999
[ 2]  i←1
[ 3] t1:→(i≥100)/fim
[ 4]  j←1
[ 5] t2:→(j≥100)/oba
[ 6]  ca←i÷j
[ 7]  →(minimo≤|x-ca)/soma
```

```
[ 8]  minimo←|x-ca
[ 9]  mini←i
[10]  minj←j
[11] soma:
[12]  j←j+1
[13]  →t2
[14] oba:
[15]  i←i+1
[16]  →t1
[17] fim:r←mini,minj
------------------------------------------------------------
[0]  r←ger145f01
[1]  r←PRIS[2?400]
------------------------------------------------------------
[0]  r←ger145f02
[1]  r←1000000+2?1000000
------------------------------------------------------------
[0]  r←ger145f03
[1]  r←(11+?3)?99
------------------------------------------------------------
[0]  r←ger145f04;res;num;den
[1] novo:
[2]  num←1+?97
[3]  den←2+?97
[4]  res←num÷den
[5]  →(res=⌊res)/novo
[6]  r←res
------------------------------------------------------------
[ 0]  r←gera145;x;res;aa
[ 1]  x←69 80⍴' '
[ 2]  x[⍳18;⍳80]←18 80↑g145c01 gerac 2
[ 3]  aa←ger145f01
[ 4]  x[62;]←80↑⍕aa[1]
[ 5]  x[63;]←80↑⍕aa[2]
[ 6]  res←(g145f01 aa[1]),g145f01 aa[2]
[ 7]  x[19+⍳8;]←8 80↑g145c02 gerac 2
[ 8]  aa←ger145f02
[ 9]  x[64;]←1 80⍴80↑⍕aa[1]
[10]  x[65;]←1 80⍴80↑⍕aa[2]
[11]  res←res,(g145f02 aa[1]),g145f02 aa[2]
[12]  x[26+⍳21;]←21 80↑g145c03 gerac 2
[13]  aa←ger145f03
[14]  x[66;]←80↑⍕aa
[15]  res←res,decimo g145f03 aa
[16]  aa←ger145f03
[17]  x[67;]←80↑⍕aa
[18]  res←res,decimo g145f03 aa
[19]  x[47+⍳14;]←14 80↑g145c04 gerac 2
[20]  aa←ger145f04
[21]  x[68;]←80↑⍕aa
[22]  res←res,g145f04 aa
[23]  aa←ger145f04
[24]  x[69;]←80↑⍕aa
[25]  res←res,g145f04 aa
[26]  r←2⍴0
[27]  r[1]←⊂x
[28]  r[2]←⊂res
------------------------------------------------------------
[ 0]  r←quem gerac qtos;cand;fix;quais;tam;z
[ 1]  z←quem
[ 2]  cand←(z[;1]='*')/⍳1↑⍴z
[ 3]  fix←(z[;1]='Y')/⍳1↑⍴z
[ 4]  →(qtos>(⍴cand)+⍴,fix)/erro
```

```
[ 5]  quais←(,fix),cand[qtos?ρcand]
[ 6]  tam←1↓ρquem
[ 7]  z[quais;⍳tam]←((ρquais),tam)ρ'_'
[ 8]  r←0 1↓z
[ 9]  →0
[10] erro:'nao tem tantos candidatos a branco...'
------------------------------------------------------------
[ 0]  r←a inarvore elem;li;ipivot;prof
[ 1]  r←a
[ 2]  li←1↑(r[;1]=0)/⍳1↑ρr
[ 3]  r[li;]←¯1 ¯1,elem,0,0,0,0
[ 4]  ipivot←1 ⋄ prof←1
[ 5] testa:→(elem>r[ipivot;3])/maior
[ 6] menor:→(¯1=r[ipivot;1])/meok
[ 7]  prof←prof+1
[ 8]  →(ipivot=ipivot←r[ipivot;1])/testa
[ 9] meok:r[ipivot;1]←li
[10]  →fim
[11] maior:→(¯1=r[ipivot;2])/maok
[12]  prof←prof+1
[13]  →(ipivot=ipivot←r[ipivot;2])/testa
[14] maok:r[ipivot;2]←li
[15] fim:r[li;5]←ipivot
[16]  r[li;4]←prof
------------------------------------------------------------
[ 0]  r←largura x;fila;⎕IO
[ 1]  ⎕IO←0
[ 2]  fila←,0
[ 3]  r←⍳0
[ 4] t1:→(0=ρfila)/fim
[ 5]  r←r,x[1↑fila;2]
[ 6]  →(x[1↑fila;0]=¯1)/oba
[ 7]  fila←fila,x[1↑fila;0]
[ 8] oba:
[ 9]  →(x[1↑fila;1]=¯1)/oha
[10]  fila←fila,x[1↑fila;1]
[11] oha:fila←1↓fila
[12]  →t1
[13] fim:
------------------------------------------------------------
[0]  r←limpa
[1]  r←⎕EX 20 3ρ'A01A02A03A04A05A06A07A08A09A10A11A12A13A14A15A16A17A18A19A20'
[2]  r←⎕EX 20 3ρ'A21A22A23A24A25A26A27A28A29A30A31A32A33A34A35A36A37A38A39A40'
[3]  r←⎕EX 20 3ρ'A41A42A43A44A45A46A47A48A49A50A51A52A53A54A55A56A57A58A59A60'
[4]  r←⎕EX 10 5ρ'ONDE ONDE1PAI  ONDE2'
[5]  r←⎕EX 2 10ρ'PPL       PPVELHO   '
------------------------------------------------------------
[0]  r←meio x
[1]  r←⌈x÷2
------------------------------------------------------------
[ 0]  opesq vivo145a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL145   '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA145←ajusta80 FOLHALA145
```

```
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA145)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 11⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←78 80⍴' '
[16]  f←FOLHALA145
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.06
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[77;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[78;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera145
[35]  esse[7+⍳69;]←69 80↑(⊃xx[1])[⍳69;]
[36]  resp←resp,,(⊃xx[2])
[37]  resu←resu,[1]1 11⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⎕←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 5 0 3 0 10 0 8 0 5 0 3 0 5 0 3 0 5 0 3 0)⍕resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],3 0 3 0 10 0 8 0 5 0 3 0 5 0 3 5 0 3 0⍕0 1↓resu)
[51]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo146

```
[ 0]  AVISO
[ 1]  'Veja a funcao geraadhoc ivo'
[ 2]  'r←geraadhoc msg;x;y;ct;a;b;c;d;resto;⎕IO  '
[ 3]  'A msg←conv msg   '
[ 4]  ' ⎕IO←0 '
[ 5]  ' y←trim msg'
[ 6]  ' ct←conta458 y   '
[ 7]  ' ct←ct[⍋⍷,ct[;1+⍳5];]  '
[ 8]  ' a←ct  '
```

```
[ 9]  ' B←b←ca458 a '
[10]  ' C←c←formarv458 b '
[11]  ' dicionario←0 9⍴" "'
[12]  ' fazdic458(⊂¯1+1↑⍴b),(⊂""),⊂b '
[13]  ' D←dicionario '
[14]  ' d←comprime458 y '
[15]  ' E←d'
[16]  '⍝ grava458(⊂c),(⊂"c:\apl2\F458",resto,("000"⍕nnn),".myd"),⊂d'
[17]  ' r←y'
[18]  ''
[19]  ''
[20]  ' desenha458 B'
[21]  ' '
[22]  ' A funcao  imprimetudo       mostra todo o codigo'
-------------------------------------------------------------
[ 0]  r←a acertavertical b;nt;tt
[ 1]  nt←((1↑⍴a)+1↑⍴b),1↓⍴b
[ 2]  r←nt⍴' '
[ 3]  →((1↓⍴a)≤1↓⍴b)/aemenorqueb
[ 4] aemaiorqueb:
[ 5]  r[⍳1↑⍴a;]←a
[ 6]  tt←(((,r[¯1+1↑⍴a;])=CA[7])/⍳1↓⍴a)-⌊(1↓⍴b)÷2
[ 7]  r[(1↑⍴a)+⍳1↑⍴b;tt+⍳1↓⍴b]←b
[ 8]  →ok
[ 9] aemenorqueb:
[10]  r[(1↑⍴a)+⍳1↑⍴b;]←b
[11]  tt←(((,r[1↑⍴a;])=CA[10])/⍳1↓⍴b)
[12]  tt←tt-⌊(1↓⍴a)÷2
[13]  r[⍳1↑⍴a;tt+⍳1↓⍴a]←a
[14] ok:
-------------------------------------------------------------
[ 0]  r←arruma x;z;c;l;t;cars;ca
[ 1] nesca:z←' ',[1](((' ',[0]x),[0]' '),[1]' ')
[ 2] ⍝ z←' ',[1](z,[1]' ')
[ 3] ⍝ z←' ',[1](((' ',[0]z),[0]' '),[1]' ')
[ 4]  c←1↓⍴z
[ 5]  l←1↑⍴z
[ 6]  z[;¯1+c]←z[;0]←CA[2]
[ 7]  z[0;]←z[¯1+l;]←CA[1]
[ 8]  z[0;0]←CA[3]
[ 9]  z[0;¯1+c]←CA[5]
[10]  z[¯1+l;0]←CA[4]
[11]  z[¯1+l;¯1+c]←CA[6]
[12]  t←⌊c÷2
[13]  z[0;t]←CA[10]
[14]  →((,x)∊'ABCDEFGHIJKLMNOPQRSTUVXYZW-=/')/fim
[15] naoefim:
[16]  z[¯1+l;t]←CA[7]
[17] fim:r←z
-------------------------------------------------------------
[ 0]  r←ca458 x;y;i;lin;arv;w;alfa;beta;⎕IO
[ 1]  ⎕IO←0
[ 2]  arv←0 3⍴0
[ 3]  y←((1↑⍴x),9)⍴' '
[ 4]  i←0
[ 5]  lin←1↑⍴x
[ 6] t1:→(i≥lin)/fim
[ 7]  y[i;⍳4]←4 0⍕-⎕AV⍳,x[i;0]
[ 8]  y[i;4+⍳5]←x[i;1+⍳5]
[ 9]  i←i+1
[10]  →t1
[11] fim:
[12]  i←1
```

```
[13] t2:→(2>1↑ρy)/fim3
[14]  y←y[⍋⍤1,y[;4+⍳5];]
[15]  w←(⍤1y[0;4+⍳5])+⍤1y[1;4+⍳5]
[16]  alfa←⍤1y[1;⍳4]
[17]  →(alfa≤0)/apos
[18]  alfa←alfa-1
[19] apos:
[20]  beta←⍤1y[0;⍳4]
[21]  →(beta≤0)/bpos
[22]  beta←beta-1
[23] bpos:
[24]  arv←arv,[0]1 3ρ(i-1),alfa,beta
[25]  y←y,[0]1 9ρ(4 0⍪i),5 0⍪w
[26]  y←2 0↓y
[27]  i←i+1
[28]  →t2
[29] fim3:
[30]  r←arv
------------------------------------------------------------
[0]  r←a centra b;t
[1]  t←1↓ρa
[2]  r←((1,t)ρ' '),[0]a
[3]  r[0;(⌊t÷2)+⍳2]←b
------------------------------------------------------------
[ 0]  r←comprime458 texto;i;ind;⎕IO
[ 1]  ⎕IO←0
[ 2]  r←''
[ 3]  i←0
[ 4] t1:→(i≥ρtexto)/fim
[ 5]  ind←(texto[i]=dicionario[;0])/⍳1↑ρdicionario
[ 6]  r←r,trim,dicionario[ind;1+⍳8]
[ 7]  i←i+1
[ 8]  →t1
[ 9] fim:
------------------------------------------------------------
[ 0]  r←conta458 y;i;lin;⎕IO
[ 1]  ⎕IO←0
[ 2]  i←0
[ 3]  r←0 6ρ' '
[ 4] t1:→(i≥ρy)/fim
[ 5]  →(y[i]∈r)/tem
[ 6] naotem:
[ 7]  r←r,[0]1 6ρy[i],'    1'
[ 8]  →soma
[ 9] tem:
[10]  lin←(r[;0]=y[i])/⍳1↑ρr
[11]  r[lin;1+⍳5]←5 0⍪1+⍤1,r[lin;1+⍳5]
[12] soma:i←i+1
[13]  →t1
[14] fim:
------------------------------------------------------------
[0]  r←conv x
[1]  x[(x=' ')/⍳ρx]←'/'
[2]  r←x
------------------------------------------------------------
[ 0]  r←q desenha458 x;aaa;cars;i;t;v;vj;z;z1;z2;z3;⎕IO
[ 1]  →(0≠⎕NC'q')/obaoba
[ 2]  q←1
[ 3] obaoba:
[ 4]  ⎕IO←0
[ 5]  cars←3 11ρ⎕AV[197 196 179 218 192 191 217 194 195 180 193 206 205 186 201 200 187 18
      8 203 204 185 202 43 45 124,8ρ43]
[ 6]  CA←cars[q;]
```

```
[ 7]  i←0
[ 8]  v←0 3⍴0
[ 9]  vj←0
[10] t1:⍎V←v
[11]  →(i≥1↑⍴x)/fim
[12]  v←v,[0]1 3⍴0
[13]  →((x[i;1]<0)∧(x[i;2]<0))/ambos
[14]  →((x[i;1]≥0)∧(x[i;2]<0))/soesqpos
[15]  →((x[i;1]<0)∧(x[i;2]≥0))/sodirpos
[16] nenhum:
[17]  z1←⊃v[x[i;1];2]
[18]  z2←⊃v[x[i;2];2]
[19]  z3←i ajeita((((1↑⍴z1)⌈(1↑⍴z2)),1↓⍴z1)↑z1),'⍥',((((1↑⍴z1)⌈(1↑⍴z2)),1↓⍴z2)↑z2)
[20]  →todos
[21] soesqpos:z1←⊃v[x[i;1];2]
[22]  z2←arruma 1 1⍴⎕AV[|x[i;2]]
[23]  z3←i ajeita((((1↑⍴z1)⌈(1↑⍴z2)),1↓⍴z1)↑z1),'⍥',((((1↑⍴z1)⌈(1↑⍴z2)),1↓⍴z2)↑z2)
[24]  →todos
[25] sodirpos:z1←arruma 1 1⍴⎕AV[|x[i;1]]
[26]  z2←⊃v[x[i;2];2]
[27]  z3←i ajeita((((1↑⍴z1)⌈(1↑⍴z2)),1↓⍴z1)↑z1),'⍥',((((1↑⍴z1)⌈(1↑⍴z2)),1↓⍴z2)↑z2)
[28]  →todos
[29] todos:
[30]  v[vj;0 1]←⍴z3
[31]  v[vj;2]←⊂'⍥ 'edit tirab z3
[32]  vj←vj+1
[33]  i←i+1
[34]  →t1
[35] ambos:
[36]  z1←arruma 1 1⍴⎕AV[|x[i;1]]
[37]  z2←arruma 1 1⍴⎕AV[|x[i;2]]
[38]  z3←i ajeita z1,'⍥',z2
[39]  v[vj;0 1]←⍴z3
[40]  v[vj;2]←⊂'⍥ 'edit z3
[41]  vj←vj+1
[42]  i←i+1
[43]  →t1
[44] fim:
[45]  aaa←⊃v[i-1;2]
[46]  aaa[0;(aaa[0;]=CA[10])/⍳1↓⍴aaa]←CA[1]
[47]  r←aaa
-------------------------------------------------------------
[ 0]  r←fazdic458 xx;raiz;ateaqui;arv;xica;⎕IO
[ 1]  ⎕IO←0
[ 2]  raiz←⊃xx[0]
[ 3]  ateaqui←⊃xx[1]
[ 4]  arv←⊃xx[2]
[ 5]  →(arv[raiz;1]≥0)/ufa
[ 6]  xica←ateaqui,'0'
[ 7]  dicionario←dicionario,[0]1 9⍴⎕AV[|arv[raiz;1]],8↑xica
[ 8]  →junta
[ 9] ufa:fazdic458(⊂arv[raiz;1]),(⊂ateaqui,'0'),⊂arv
[10] junta:
[11]  →(arv[raiz;2]≥0)/ufa2
[12]  xica←ateaqui,'1'
[13]  dicionario←dicionario,[0]1 9⍴⎕AV[|arv[raiz;2]],8↑xica
[14]  →junta2
[15] ufa2:fazdic458(⊂arv[raiz;2]),(⊂ateaqui,'1'),⊂arv
[16] junta2:
-------------------------------------------------------------
[ 0]  r←formarv458 a;i;⎕IO
[ 1]  ⎕IO←0
[ 2]  r←'['
```

```
[ 3]  i←0
[ 4] t1:→(i≥1↑⍴a)/fim
[ 5]  r←r,'[',(⍕a[i;0]),',',('¯'-'edit⍕a[i;1]),',',('¯'-'edit⍕a[i;2]),'],'
[ 6]  i←i+1
[ 7]  →t1
[ 8] fim:r←(¯1↓r),']'
-------------------------------------------------------------
[ 0]  r←gera146;r1;⎕IO;resp;fra;r2;frase
[ 1]  ⎕IO←1
[ 2]  r←3⍴0
[ 3]  r1←102 80⍴' '
[ 4]  r1[⍳13;]←13 80↑'f146conta gerac 1
[ 5]  r1[13+⍳20;]←20 80↑'f146marv gerac 1
[ 6]  r1[33+⍳15;]←15 80↑'f146mdic gerac 1
[ 7]  r1[48+⍳8;]←8 80↑'f146comp gerac 1
[ 8]  r1[56+⍳17;]←17 80↑'f146desc gerac 1
[ 9]  r1[73+⍳19;]←19 80↑'f146grav gerac 1
[10]  r1[92+⍳10;]←10 80↑'f146lera gerac 1
[11]  r[1]←⊂r1
[12]  fra←,LUSI[1?1↑⍴LUSI;]
[13]  frase←geraadhoc fra
[14]  resp←D[(D[;1]='/')/⍳1↑⍴D;1+⍳(¯1+1↓⍴D)]
[15]  r2←2 80⍴' '
[16]  r2[1;]←1 80⍴80↑fra
[17]  r2[2;]←1 80⍴80↑'/'
[18]  r[2]←⊂r2
[19]  r[3]←⊂,resp
-------------------------------------------------------------
[ 0]  r←n gera458 nnn;x;y;ct;a;b;c;d;resto
[ 1]  resto←'N'
[ 2]  →(isnum n)/pulao
[ 3]  resto←1↑4↓n
[ 4] pulao:
[ 5]  ⎕IO←0
[ 6]  x←3?1↑⍴LUSI
[ 7]  y←(trim LUSI[x[0];]),'-',(trim LUSI[x[1];]),'-',trim LUSI[x[2];]
[ 8]  ct←conta458 y
[ 9]  ct←ct[⍋⊇,ct[;1+⍳5];]
[10]  a←ct
[11]  B←b←ca458 a
[12]  C←c←formarv458 b
[13]  dicionario←0 9⍴' '
[14]  fazdic458(⊂¯1+1↑⍴b),(⊂''),⊂b
[15]  D←dicionario
[16]  d←comprime458 y
[17]  E←d
[18]  grava458(⊂c),(⊂'c:\apl2\F458',resto,('000'⍕nnn),'.myd'),⊂d
[19]  r←y
-------------------------------------------------------------
[ 0]  r←geraadhoc msg;x;y;ct;a;b;c;d;resto;⎕IO
[ 1] ⍝ msg←conv msg
[ 2]  ⎕IO←0
[ 3]  y←trim msg
[ 4]  ct←conta458 y
[ 5]  ct←ct[⍋⊇,ct[;1+⍳5];]
[ 6]  a←ct
[ 7]  B←b←ca458 a
[ 8]  C←c←formarv458 b
[ 9]  dicionario←0 9⍴' '
[10]  fazdic458(⊂¯1+1↑⍴b),(⊂''),⊂b
[11]  D←dicionario
[12]  d←comprime458 y
[13]  E←d
```

```
[14] ⍝ grava458(⊂c),(⊂'c:\apl2\F458',resto,('000'⍕nnn),'.myd'),⊂d
[15]  r←y
-------------------------------------------------------------
[ 0]  r←quem gerac qtos;cand;fix;quais;tam;z
[ 1]  z←quem
[ 2]  cand←(z[;1]='*')/⍳1↑⍴z
[ 3]  fix←(z[;1]='Y')/⍳1↑⍴z
[ 4]  →(qtos>(⍴cand)+⍴,fix)/erro
[ 5]  quais←(,fix),cand[qtos?⍴cand]
[ 6]  tam←1↓⍴quem
[ 7]  z[quais;⍳tam]←((⍴quais),tam)⍴'_'
[ 8]  r←0 1↓z
[ 9]  →0
[10] erro:'nao tem tantos candidatos a branco...'
-------------------------------------------------------------
[ 0]  r←grava458 xx;a1;a2;a3;a4;aba;arv;i;onde;oque;tam;tamu;xis;xoque;lixo
[ 1]  ⎕IO←0
[ 2]  arv←⊃xx[0]
[ 3]  onde←⊃xx[1]
[ 4]  oque←⊃xx[2]
[ 5]  xis←512↑arv
[ 6]  tam←⍴oque
[ 7]  xoque←(tamu←8×⌈tam÷8)↑oque,'0000000'
[ 8]  a1←256|tam
[ 9]  tam←⌊tam÷256
[10]  a2←256|tam
[11]  tam←⌊tam÷256
[12]  a3←256|tam
[13]  tam←⌊tam÷256
[14]  a4←256|tam
[15]  xis←xis,(⎕AV[a4,a3,a2,a1])
[16]  i←0
[17] t3:→(i≥tamu)/fim
[18]  aba←(⍎xoque[i])×2*7
[19]  aba←aba+(⍎xoque[i+1])×2*6
[20]  aba←aba+(⍎xoque[i+2])×2*5
[21]  aba←aba+(⍎xoque[i+3])×2*4
[22]  aba←aba+(⍎xoque[i+4])×2*3
[23]  aba←aba+(⍎xoque[i+5])×2*2
[24]  aba←aba+(⍎xoque[i+6])×2*1
[25]  aba←aba+⍎xoque[i+7]
[26]  xis←xis,⎕AV[aba]
[27]  i←i+8
[28]  →t3
[29] fim:lixo←xis ⍙FM onde
[30]  lixo←(512↓xis)⍙FM'c:\apl2\lixoult'
-------------------------------------------------------------
[0]  r←hex2 en;rr;⎕IO
[1]  ⎕IO←1
[2] ⍝fconverte um numero entre 0 e 255 em um byte hexadecimal
[3]  →((en>255)∨(en<0))/0
[4]  rr←16 16⊤en
[5]  r←'0123456789ABCDEF'[1+rr]
-------------------------------------------------------------
[ 0]  r←imprimetudo;x
[ 1]  x←0 75⍴' '
[ 2]  x←x,[1]((1↑⍴f146conta),75)↑1 numera 0 1↓f146conta
[ 3]  x←x,[1]1 75⍴75↑30⍴'-'
[ 4]  x←x,[1]((1↑⍴f146marv),75)↑1 numera 0 1↓f146marv
[ 5]  x←x,[1]1 75⍴75↑30⍴'-'
[ 6]  x←x,[1]((1↑⍴f146mdic),75)↑1 numera 0 1↓f146mdic
[ 7]  x←x,[1]1 75⍴75↑30⍴'-'
[ 8]  x←x,[1]((1↑⍴f146comp),75)↑1 numera 0 1↓f146comp
```

```
[ 9]  x←x,[1]1 75⍴75↑30⍴'-'
[10]  x←x,[1]((1↑⍴f146desc),75)↑1 numera 0 1↓f146desc
[11]  x←x,[1]1 75⍴75↑30⍴'-'
[12]  x←x,[1]((1↑⍴f146grav),75)↑1 numera 0 1↓f146grav
[13]  x←x,[1]1 75⍴75↑30⍴'-'
[14]  x←x,[1]((1↑⍴f146lera),75)↑1 numera 0 1↓f146lera
[15]  x←x,[1]1 75⍴75↑30⍴'='
[16]  x←x,[1]((1↑⍴conj),75)↑1 numera conj
[17]  r←x
-------------------------------------------------------------
[ 0]  r←lecgerab c;x;fina;cand;can
[ 1]  x←1↓¯1↓c
[ 2]  r←0 3⍴0
[ 3] t1:→(2>⍴x)/fim
[ 4]  fina←1↑(x=']')/⍳⍴x
[ 5]  cand←fina↑x
[ 6]  x←fina↓x
[ 7] volta:
[ 8]  →(('['≠1↑cand)∧(','≠1↑cand))/ok1
[ 9]  cand←1↓cand
[10]  →volta
[11] ok1:
[12]  →((']'≠¯1↑cand)∧(','≠1↑cand))/ok2
[13]  cand←¯1↓cand
[14]  →ok1
[15] ok2:
[16]  cand←'-¯'edit cand
[17]  can←⍎cand
[18]  r←r,[1]1 3⍴can
[19]  →t1
[20] fim:
-------------------------------------------------------------
[0]  r←tirab x;z;b;c
[1]  z←x=' '
[2]  b←((+/[0]z)≠1↑⍴x)/[1]x
[3]  c←b=' '
[4]  r←((+/[1]c)≠1↓⍴b)/[0]b
-------------------------------------------------------------
[0]  r←trim4 x;z
[1] ⍝f corta as colunas direitas que sao brancos
[2]  →(2≠⍴⍴x)/erro
[3]  z←+/[1]x=' '
[4]  r←(z≠1↑⍴x)/[2]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
-------------------------------------------------------------
[ 0]  opesq vivo146a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL146   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA146←ajusta80 FOLHALA146
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA146)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 12⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
```

```
[15]  esse←113 80ρ' '
[16]  f←FOLHALA146
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑ρf),4)ρ'⍀#05')/⍳1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[112;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[113;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera146
[35]  esse[7+⍳102;]←102 80↑(⊃xx[1])
[36]  esse[109+⍳2;]←⊃xx[2]
[37]  resp←(3 0⍕resp),'-',,(⊃xx[3])
[38]  resu←resu,[1]1 12ρresp
[39]  acuja←(f[;2]='#')/⍳1↑ρf
[40]  f[acuja;⍳80]←esse[⌹,f[acuja;3 4 5],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'⍀clearpage'
[42]  ⎕←(⍕xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+ρf)ρ' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓ρupag)↑'⍀begin{verbatim}'
[47]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[48]  upag[2+⍳1↑ρresu;⍳12]←resu
[49]  upag[3+1↑ρresu;]←(1↓ρupag)↑'⍀end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[52]  lixonol←aaa ⎕FM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[54] terminando:
[55]  upag[1↑ρupag;]←(1↓ρupag)↑'⍀end{document}'
[56]  relat[1↑ρrelat;;]←upag
[57]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[58]  lixonol←lixonol ⎕FM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo147

```
[ 0]  AVISO
[ 1]  'Aqui dentro tem a funcao crarvore que cria o esqueleto'
[ 2]  'para o desenho... com ⎕io←1'
[ 3]  ' e a funcao g145f03 que cria supostamente a mesma coisa'
[ 4]  ' para ser chamada com a largura e ⎕IO←0'
[ 5]  ''
[ 6]  '  emagrece 3 1 2 dearvore crarvore a  ← 10?99'
[ 7]  ''
[ 8]  ' para ver a ultima folha dearvore crarvore AR1 (10 elementos)'
[ 9]  '                         dearvore crarvore AR2 (17 elementos)'
[10]  '                         dearvore crarvore AR3 (5 elementos)'
-------------------------------------------------------------
```

```
[ 0]  r←acertabrancos a;b;i
[ 1]  b←,a
[ 2]  i←1
[ 3] t1:→(i>¯1+⍴b)/fim
[ 4]  →((b[i]='<')∧(b[i+1]=' '))/troca
[ 5]  →((b[i]=' ')∧(b[i+1]='>'))/troca2
[ 6]  →((b[i]='(')∧(b[i+1]=' '))/troca3
[ 7]  →((b[i]=' ')∧(b[i+1]=')'))/troca4
[ 8]  i←i+1
[ 9]  →t1
[10] troca:b[i]←' '
[11]  b[i+1]←'<'
[12]  i←i+2
[13]  →t1
[14] troca2:b[i]←'>'
[15]  b[i+1]←' '
[16]  i←i+2
[17]  →t1
[18] troca3:b[i]←' '
[19]  b[i+1]←'('
[20]  i←i+2
[21]  →t1
[22] troca4:b[i]←')'
[23]  b[i+1]←' '
[24]  i←i+2
[25]  →t1
[26] fim:r←(⍴a)⍴b
------------------------------------------------------------
[0]  r←a ambos b;x
[1]  x←a mmc b
[2]  r←x,(a×b)÷x
------------------------------------------------------------
[0]  r←a ate b
[1]  r←a,a+⍳b-a
------------------------------------------------------------
[ 0]  r←crarvore elems;aspa;i;ealfa
[ 1] ⍝ cria uma arvore para desenho com elems / p.kantek / v2.1
[ 2] ⍝ col [1] = &fe
[ 3] ⍝ col [2] = &fd
[ 4] ⍝ col [3] = conteudo
[ 5] ⍝ col [4] = profundidade
[ 6] ⍝ col [5] = &pai
[ 7] ⍝ col [6] = largura do bloco grafico
[ 8] ⍝ col [7] = 0  ≠se bloco grafico ja foi criado (1=significa que ele e o
[ 9] ⍝           raiz do bloco. 2=ja foi usado para construir outro mais
[10] ⍝           acima
[11]  r←((⍴elems),7)⍴0 ⋄ ealfa←1 ⋄ aspa←''''
[12]  →(isnum elems)/nume
[13]  ealfa←¯1
[14]  elems←1000+⎕AV⍳elems
[15] nume:i←2 ⋄ r[1;1 2 3]←¯1,¯1,elems[1]
[16] inica:→(i>⍴elems)/acabou
[17]  r←r inarvore elems[i]
[18]  →(i=i←i+1)/inica
[19] acabou:
[20]  i←1
[21] conta:→(i>⍴elems)/mesmo
[22]  →((r[i;1]≠¯1)∨(r[i;2]≠¯1))/pula
[23]  →(ealfa=¯1)/letra
[24]  ⍎'A',('05'⍕i),'←',aspa,'<',(formata elems[i]),'>',aspa
[25]  →indo
[26] letra:⍎'A',('05'⍕i),'←',aspa,'(⊃',⎕AV[elems[i]-1000],'⊂)',aspa
[27] indo:r[i;7]←1
```

```
[28]  r[i;6]←3
[29] pula:→(i=i←i+1)/conta
[30] mesmo:
------------------------------------------------------------
[ 0]  r←e de2f d;lin;col
[ 1]  →(2=ρρe)/ee
[ 2]  e←(1,ρe)ρe
[ 3] ee:→(2=ρρd)/dd
[ 4]  d←(1,ρd)ρd
[ 5] dd:lin←(1↑ρe)⌈1↑ρd
[ 6] ⍝ col  ←(3+1  ↓  ρe)  ⌊3+1  ↓  ρd
[ 7]  col←(1↓ρe)⌈1↓ρd
[ 8]  e←(lin,col)↑e ⋄ d←(lin,col)↑d
[ 9] ⍝ e  ←(lin,(1  ↓  ρe))  ↑e   ⋄ d  ←(lin,(1  ↓  ρd))  ↑d
[10]  r←e,' ',d
[11]  r←((⍴,1↓ρr)ρ' '),[1]r
[12]  r[1;((meio 1↓ρr)-3)+⍳5]←PAI
[13]  r[2;((meio 1↓ρr)-2)+⍳3]←'_&_'
[14]  r[3;(ONDE1)ate ¯1+meio 1↓ρr]←'_'
[15]  r[3;(1+meio 1↓ρr)ate(1+ONDE2+1↓ρe)-1]←'_'
[16]  r[3;meio 1↓ρr]←'#'
[17]  r[3;ONDE1]←'%'
[18]  r[3;(1↓ρe)+1+ONDE2]←'!'
[19]  r[4;ONDE1+¯1 0 1]←r[4;1+(1↓ρe)+ONDE2+¯1 0 1]←'_#_'
------------------------------------------------------------
[ 0]  r←a dearvore b;prim;paiprim;filhos;fe;fd;X;x;aspa;ois;carac;nivel;larg
[ 1]  →(0≠⎕NC'a')/veio
[ 2]  a←3 1 2
[ 3] ⍝ 'carac=1/ascii/2=apld/3=apls/4=hdup/5=vdup   niveis=1/2/3/4' v.2.1
[ 4] veio:r←b
[ 5]  carac←a[1] ⋄ nivel←a[2] ⋄ larg←a[3]
[ 6]  aspa←''''
[ 7] inicio:→(1=r[1;7])/acabou
[ 8]  ois←(r[;7]=1)/⍳1↑ρr
[ 9]  →(1=ρois)/sotem1
[10]  prim←1↑(r[ois;4]=⌈/r[ois;4])/ois
[11]  →voltaj
[12] sotem1:prim←ois
[13] voltaj:paiprim←r[prim;5]
[14]  →(r[paiprim;3]>1000)/le
[15]  ⍎'PAI  ←',aspa,'<',(formata r[paiprim;3]),'>',aspa
[16]  →indo
[17] le:⍎'PAI  ←',aspa,'(⊃',⎕AV[r[paiprim;3]-1000],'⊂)',aspa
[18] indo:→(2=ρfilhos←((r[;5]=paiprim)∧(r[;7]=1))/⍳1↑ρr)/tem2
[19] tem1:→(r[paiprim;1]=prim)/efe
[20] efd:fd←⍎'A','05'⍕prim
[21]  ONDE←r[prim;6]
[22]  ⍎'A',('05'⍕paiprim),'  ←defd fd'
[23]  r[paiprim;7]←1 ⋄ r[prim;7]←2 ⋄ r[paiprim;6]←3
[24]  →inicio
[25] efe:
[26]  fe←⍎'A','05'⍕prim
[27]  ONDE←r[prim;6]
[28]  ⍎'X  ←1  ↓  ρA',('05'⍕paiprim),'  ←defe fe'
[29]  r[paiprim;7]←1 ⋄ r[prim;7]←2 ⋄ r[paiprim;6]←X-2
[30]  →inicio
[31] tem2:
[32]  →(r[filhos[1];3]>r[filhos[2];3])/ummaior
[33]  x←filhos[1] ⋄ filhos[1]←filhos[2] ⋄ filhos[2]←x
[34] ummaior:
[35]  ONDE1←r[filhos[2];6] ⋄ ONDE2←r[filhos[1];6]
[36]  fe←⍎'A','05'⍕filhos[2]   ⍝1
[37]  fd←⍎'A','05'⍕filhos[1]   ⍝2
```

```
[38]  ⍎'X  ←1  ↓  ⍴A',('05'⍕paiprim),'  ←fe de2f fd'
[39]  r[paiprim;7]←1 ⋄ r[filhos[1];7]←r[filhos[2];7]←2 ⋄ r[paiprim;6]←meio X
[40]  →inicio
[41] acabou:MAT←r   ⍝ aqui esta a matriz de entrada devidamente ja processada
[42]  →(larg=1)/jump
[43]  A01←(~∧/[1]((A01=' ')∨(A01='_')))/[2]A01
[44] jump:A01←'⍤ 'edit A01
[45]  A01←'⊃ 'edit A01
[46]  A01←'⊂ 'edit A01
[47]  r←carac edita A01
[48]  x←limpa
[49]  →(nivel=4)/0
[50]  →(nivel=3)/tres
[51]  →(nivel=2)/dois
[52]  →(nivel=1)/um
[53]  'erro de nivel'
[54]  →fin
[55] um:r←((1↑⍴r)⍴1 0)/[1]r
[56]  →fin
[57] dois:r←((1↑⍴r)⍴1 1 1 0)/[1]r
[58]  →fin
[59] tres:r←((1↑⍴r)⍴1 0 1 1)/[1]r
[60]  →fin
[61] fin:r←acertabrancos r
------------------------------------------------------------
[0]  r←decimo mat;zz
[1]  zz←largura mat
[2]  r←zz[10]
------------------------------------------------------------
[ 0]  r←defd x
[ 1]  →(2=⍴⍴x)/esim
[ 2]  x←(1,⍴x)⍴x
[ 3] esim:r←((1↑⍴x),-(1↓⍴x)+4)↑x
[ 4]  r←((4,1↓⍴r)⍴' '),[1]r
[ 5]  r[1;⍳5]←PAI
[ 6]  r[2;2 3 4]←'_&_'
[ 7]  r[3;3]←'$'
[ 8]  r[3;4+ONDE]←'!'
[ 9]  r[3;4 ate 3+ONDE]←'_'
[10]  r[4;4+ONDE+¯1 0 1]←'_#_'
------------------------------------------------------------
[ 0]  r←defe x
[ 1]  →(2=⍴⍴x)/esim
[ 2]  x←(1,⍴x)⍴x
[ 3] esim:r←((1↑⍴x),(1↓⍴x)+4)↑x
[ 4]  r←((4,1↓⍴r)⍴' '),[1]r
[ 5]  r[1;((1↓⍴r)-5)+⍳5]←PAI
[ 6]  r[2;((1↓⍴r)-4)+⍳3]←'_&_'
[ 7]  r[3;(1↓⍴r)-2]←'@'
[ 8]  r[3;(ONDE)ate((1↓⍴r)-3)]←'_'
[ 9]  r[3;ONDE]←'%'
[10]  r[4;ONDE+¯1 0 1]←'_#_'
------------------------------------------------------------
[ 0]  r←qual edita tudo
[ 1]  →(qual=1)/ascii
[ 2]  →(qual=2)/apldu
[ 3]  →(qual=3)/aplsi
[ 4]  →(qual=4)/aplds
[ 5]  →(qual=5)/aplsd
[ 6]  'erro'
[ 7]  →0
[ 8] ⍝             |                       |         |
[ 9] ⍝ %=+--   #=--+--   _=---   !=--+   $=+--   @=--+   &=--+--
```

```
[10] ⍝   |                          |                       |
[11] ascii:
[12]  r←'%+'edit tudo
[13]  r←'#+'edit r
[14]  r←'_-'edit r
[15]  r←'!+'edit r
[16]  r←'$+'edit r
[17]  r←'@+'edit r
[18]  r←'&+'edit r
[19]  →0
[20] apldu:
[21]  r←('%',⎕AV[202])edit tudo
[22]  r←('#',⎕AV[203])edit r
[23]  r←('_',⎕AV[206])edit r
[24]  r←('!',⎕AV[188])edit r
[25]  r←('$',⎕AV[201])edit r
[26]  r←('@',⎕AV[189])edit r
[27]  r←('&',⎕AV[204])edit r
[28]  →0
[29] aplsi:
[30]  r←('%',⎕AV[219])edit tudo
[31]  r←('#',⎕AV[194])edit r
[32]  r←('_',⎕AV[197])edit r
[33]  r←('!',⎕AV[192])edit r
[34]  r←('$',⎕AV[193])edit r
[35]  r←('@',⎕AV[218])edit r
[36]  r←('&',⎕AV[195])edit r
[37]  →0
[38] aplds:
[39]  r←('%',⎕AV[219])edit tudo
[40]  r←('#',⎕AV[194])edit r
[41]  r←('_',⎕AV[197])edit r
[42]  r←('!',⎕AV[192])edit r
[43]  r←('$',⎕AV[193])edit r
[44]  r←('@',⎕AV[218])edit r
[45]  r←('&',⎕AV[195])edit r
[46]  →0
[47] aplsd:
[48]  r←('%',⎕AV[215])edit tudo
[49]  r←('#',⎕AV[209])edit r
[50]  r←('_',⎕AV[197])edit r
[51]  r←('!',⎕AV[184])edit r
[52]  r←('$',⎕AV[212])edit r
[53]  r←('@',⎕AV[190])edit r
[54]  r←('&',⎕AV[211])edit r
[55]  →0
-------------------------------------------------------------
[ 0]  r←emagrece arv;vv;lin;i;zz;pp;cc;aa
[ 1] ⍝ qual o caractere a matar ???
[ 2]  zz←(,arv)
[ 3]  zz←(zz≠' ')/zz
[ 4]  pp←((zz⍳zz)=⍳⍴zz)/zz
[ 5]  cc←(⍴pp)⍴0
[ 6]  i←1
[ 7] t0:→(i>⍴zz)/oba
[ 8]  cc[aa]←cc[aa←pp⍳zz[i]]+1
[ 9]  i←i+1
[10]  →t0
[11] oba:
[12]  pp←pp[⍒cc]
[13]  i←1
[14]  vv←⍳0
[15] t1:→(i>1↓⍴arv)/fim
```

```
[16]  lin←arv[;i]
[17]  lin←(lin≠' ')/lin
[18]  →((⍴lin)=+/pp[1]=lin)/tira
[19]  vv←vv,1
[20]  →soma
[21] tira:vv←vv,0
[22] soma:
[23]  i←i+1
[24]  →t1
[25] fim:r←vv/[2]arv
------------------------------------------------------------
[ 0]  r←raiz excluiabp valor;aaux;esqdir;pai;elemx;onde;save;tempo;⎕IO
[ 1]  ⎕IO←1
[ 2] ⍝ 'entrando com ',(  ⍕raiz),  ⍕valor
[ 3] ⍝ OBSERVACAO IMPORTANTE: por questoes de simplicidade (nao ha descritor
[ 4] ⍝ na arvore) NAO E POSSIVEL escluir o raiz usando esta funcao.
[ 5] ⍝ 'excluindo ',(  ⍕valor),' em ',  ⍕raiz
[ 6]  aaux←pai←raiz
[ 7]  esqdir←0
[ 8] inica:→(TABARV[aaux;3]=valor)/achou
[ 9]  →(valor<TABARV[aaux;3])/menor
[10] maior:esqdir←1
[11]  pai←aaux
[12]  aaux←TABARV[aaux;2]
[13]  →inica
[14] menor:esqdir←0
[15]  pai←aaux
[16]  aaux←TABARV[aaux;1]
[17]  →inica
[18] achou:elemx←aaux
[19]  →(2=+/TABARV[elemx;1 2]=¯1 ¯1)/temnenhum
[20]  →(TABARV[elemx;1]=¯1)/temdireito
[21]  →(TABARV[elemx;2]=¯1)/temesquerdo
[22] temos2:save←elemx
[23]  elemx←TABARV[elemx;2]
[24] truta:→(TABARV[elemx;1]=¯1)/achou8
[25]  elemx←TABARV[elemx;1]
[26]  →truta
[27] achou8:
[28]  tempo←raiz excluiabp TABARV[elemx;3]
[29] ⍝ 'aux=',  ⍕aaux
[30] ⍝ 'tempo=',  ⍕tempo
[31]  TABARV[aaux;3]←TABARV[tempo;3]
[32]  r←aaux
[33]  →fimdetudo
[34] temesquerdo:
[35]  TABARV[pai;1+esqdir]←TABARV[elemx;1]
[36]  r←elemx
[37]  →fimdetudo
[38] temdireito:
[39]  TABARV[pai;1+esqdir]←TABARV[elemx;2]
[40]  r←elemx
[41]  →fimdetudo
[42] temnenhum:
[43]  TABARV[pai;1+esqdir]←¯1
[44]  r←elemx
[45] fimdetudo:
------------------------------------------------------------
[ 0]  r←formata x
[ 1]  →(x>1000)/t4
[ 2]  →(x>99)/t3
[ 3]  →(x>9)/t2
[ 4] t1:r←'∘',(1 0⍕x),'∘'
```

```
[ 5]  →0
[ 6] t2:r←'∘',2 0⍕x
[ 7]  →0
[ 8] t3:r←3 0⍕x
[ 9]  →0
[10] t4:r←'∘',⎕AV[x-1000],'∘'
[11]  →0
-------------------------------------------------------------
[ 0]  r←g147x03 x;⎕IO;i;ult;onde;pai;esqdir
[ 1]  ⎕IO←0
[ 2]  r←((⍴x),3)⍴0
[ 3]  r[0;]←¯1 ¯1,x[0]
[ 4]  i←1
[ 5]  ult←0
[ 6] ufa:→(i≥⍴x)/acabou
[ 7]  ult←ult+1
[ 8]  r[ult;]←¯1,¯1,x[i]
[ 9]  onde←0
[10] testa:→(onde=¯1)/oba
[11]  pai←onde
[12]  →(x[i]>r[onde;2])/maior
[13]  esqdir←0
[14]  onde←r[onde;0]
[15]  →junta
[16] maior:
[17]  esqdir←1
[18]  onde←r[onde;1]
[19] junta:
[20]  →testa
[21] oba:
[22]  r[pai;esqdir]←ult
[23]  i←i+1
[24]  →ufa
[25] acabou:
-------------------------------------------------------------
[ 0]  r←g147x031 x;i;ult;onde;pai;esqdir
[ 1]  r←((⍴x),3)⍴0
[ 2]  r[1;]←¯1 ¯1,x[1]
[ 3]  i←2
[ 4]  ult←1
[ 5] ufa:→(i>⍴x)/acabou
[ 6]  ult←ult+1
[ 7]  r[ult;]←¯1,¯1,x[i]
[ 8]  onde←1
[ 9] testa:→(onde=¯1)/oba
[10]  pai←onde
[11]  →(x[i]>r[onde;3])/maior
[12]  esqdir←0
[13]  onde←r[onde;1]
[14]  →junta
[15] maior:
[16]  esqdir←1
[17]  onde←r[onde;2]
[18] junta:
[19]  →testa
[20] oba:
[21]  r[pai;esqdir+1]←ult
[22]  i←i+1
[23]  →ufa
[24] acabou:
-------------------------------------------------------------
[ 0]  r←gera147;aa;arvore;bb;bran;c1;cc;dd;i;lixo;re;rp;rs;yy;zz
[ 1]  r←3⍴0
```

```
[ 2]  re←96 80ρ' '
[ 3]  re[⍳13;]←13 80↑g147f01 gerac 2
[ 4]  re[13+⍳38;]←38 80↑g147f02 gerac 2
[ 5]  re[51+⍳15;]←15 80↑g147f03 gerac 2
[ 6]  re[66+⍳30;]←30 80↑g147f04 gerac 2
[ 7]  rp←12 80ρ' '
[ 8]  rs←5ρ0
[ 9]  c1←1000+2?10000
[10]  c1←c1×2 6
[11]  rp[1;]←1 80ρ80↑(⍕c1[1]),' , ',⍕c1[2]
[12]  rs[1 2]←c1[1]ambos c1[2]
[13]  bran←8 1ρ'|'
[14]  rp[1+⍳8;]←8 80↑(⍕aa←8 8ρ64?70),bran,' ',⍕bb←8 8ρ64?70
[15]  rs[3]←+/,aa+.×bb
[16]  AR2←cc←17?99
[17]  rp[10;]←1 80ρ80↑⍕AR1←cc[⍳10]
[18]  arvore←g147x031 cc
[19]  rp[11;]←1 80ρ80↑⍕cc[10+⍳7]
[20]  yy←largura1 arvore
[21]  rs[4]←yy[10]
[22]  arvore←g147x031 cc[⍳10]
[23]  AR3←⍳0 ⋄ i←1
[24]  dd←cc[1+5?9]
[25] t0:→(i>ρAR1)/ufag
[26]  →(AR1[i]∈dd)/poe
[27]  AR3←AR3,AR1[i]
[28] poe:i←i+1
[29]  →t0
[30] ufag:
[31]  TABARV←arvore
[32]  rp[12;]←1 80ρ80↑⍕dd
[33]  i←1
[34] t2:→(i>ρdd)/fifa
[35]  lixo←1 excluiabp dd[i]
[36]  i←i+1
[37]  →t2
[38] fifa:
[39]  zz←largura1 TABARV
[40]  rs[5]←zz[4]
[41]  r[1]←⊂re
[42]  r[2]←⊂rp
[43]  r[3]←⊂rs
-------------------------------------------------------------
[ 0]  r←quem gerac qtos;cand;fix;quais;tam;z
[ 1]  z←quem
[ 2]  cand←(z[;1]='*')/⍳1↑ρz
[ 3]  fix←(z[;1]='Y')/⍳1↑ρz
[ 4]  →(qtos>(ρcand)+ρ,fix)/erro
[ 5]  quais←(,fix),cand[qtos?ρcand]
[ 6]  tam←1↓ρquem
[ 7]  z[quais;⍳tam]←((ρquais),tam)ρ'_'
[ 8]  r←0 1↓z
[ 9]  →0
[10] erro:'nao tem tantos candidatos a branco...'
-------------------------------------------------------------
[ 0]  r←a inarvore elem;li;ipivot;prof
[ 1]  r←a
[ 2]  li←1↑(r[;1]=0)/⍳1↑ρr
[ 3]  r[li;]←¯1 ¯1,elem,0,0,0,0
[ 4]  ipivot←1 ⋄ prof←1
[ 5] testa:→(elem>r[ipivot;3])/maior
[ 6] menor:→(¯1=r[ipivot;1])/meok
[ 7]  prof←prof+1
```

```
[ 8]  →(ipivot=ipivot←r[ipivot;1])/testa
[ 9] meok:r[ipivot;1]←li
[10]  →fim
[11] maior:→(¯1=r[ipivot;2])/maok
[12]  prof←prof+1
[13]  →(ipivot=ipivot←r[ipivot;2])/testa
[14] maok:r[ipivot;2]←li
[15] fim:r[li;5]←ipivot
[16]  r[li;4]←prof
-------------------------------------------------------------
[ 0]  r←largura x;fila;⎕IO
[ 1]  ⎕IO←0
[ 2]  x[;0]←x[;0]-x[;0]>0
[ 3]  x[;1]←x[;1]-x[;1]>0
[ 4]  fila←,⎕IO
[ 5]  r←⍳0
[ 6] t1:→(0=⍴fila)/fim
[ 7]  r←r,x[1↑fila;2]
[ 8]  →(x[1↑fila;0]=¯1)/oba
[ 9]  fila←fila,x[1↑fila;0]
[10] oba:
[11]  →(x[1↑fila;1]=¯1)/oha
[12]  fila←fila,x[1↑fila;1]
[13] oha:fila←1↓fila
[14]  →t1
[15] fim:
-------------------------------------------------------------
[ 0]  r←largura1 x;fila
[ 1]  fila←,1
[ 2]  r←⍳0
[ 3] t1:→(0=⍴fila)/fim
[ 4]  r←r,x[1↑fila;3]
[ 5]  →(x[1↑fila;1]=¯1)/oba
[ 6]  fila←fila,x[1↑fila;1]
[ 7] oba:
[ 8]  →(x[1↑fila;2]=¯1)/oha
[ 9]  fila←fila,x[1↑fila;2]
[10] oha:fila←1↓fila
[11]  →t1
[12] fim:
-------------------------------------------------------------
[0]  r←limpa
[1]  r←⎕EX 20 3⍴'A01A02A03A04A05A06A07A08A09A10A11A12A13A14A15A16A17A18A19A20'
[2]  r←⎕EX 20 3⍴'A21A22A23A24A25A26A27A28A29A30A31A32A33A34A35A36A37A38A39A40'
[3]  r←⎕EX 20 3⍴'A41A42A43A44A45A46A47A48A49A50A51A52A53A54A55A56A57A58A59A60'
[4]  r←⎕EX 10 5⍴'ONDE ONDE1PAI  ONDE2'
[5]  r←⎕EX 2 10⍴'PPL       PPVELHO   '
-------------------------------------------------------------
[0]  r←meio x
[1]  r←⌈x÷2
-------------------------------------------------------------
[0]  r←a mmc b
[1]  →(b=0)/ea
[2]  r←b mmc b|a
[3]  →0
[4] ea:r←a
-------------------------------------------------------------
[ 0]  opesq vivo147a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
```

```
[ 5]  EVENTO←'PL147   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA147←ajusta80 FOLHALA147
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA147)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 6⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←117 80⍴' '
[16]  f←FOLHALA147
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[116;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[117;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera147
[35]  esse[7+⍳96;]←96 80↑⊃xx[1]
[36]  esse[103+⍳12;]←12 80↑⊃xx[2]
[37]  resp←resp,,(⊃xx[3])
[38]  resu←resu,[1]1 6⍴resp
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4 5],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[42]  ⍞←(⍎xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 4 0 10 0 10 0 3 0 3 0)⍎resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←ylu[;⍳36],4 0 10 0 10 0 3 0 3 0⍎0 1↓resu
[52]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo148

```
[ 0]  r←ba convbase val;z1;z2;z3;z4;z5
```

```
[ 1]  z1←ba|val
[ 2]  val←⌊val÷ba
[ 3]  z2←ba|val
[ 4]  val←⌊val÷ba
[ 5]  z3←ba|val
[ 6]  val←⌊val÷ba
[ 7]  z4←ba|val
[ 8]  val←⌊val÷ba
[ 9]  z5←ba|val
[10]  r←z5,z4,z3,z2,z1
-------------------------------------------------------------
[0]  r←expan55 x
[1]  r←x[⍳8],', ',x[8+⍳8],', ',x[16+⍳8],', ',x[24+⍳8],', ',x[32+⍳8],', ',x[40+⍳8]
-------------------------------------------------------------
[ 0]  r←quem gerac qtos;cand;fix;quais;tam;z
[ 1]  z←quem
[ 2]  cand←(z[;1]='*')/⍳1↑⍴z
[ 3]  fix←(z[;1]='Y')/⍳1↑⍴z
[ 4]  →(qtos>(⍴cand)+⍴,fix)/erro
[ 5]  quais←(,fix),cand[qtos?⍴cand]
[ 6]  tam←1↓⍴quem
[ 7]  z[quais;⍳tam-10]←((⍴quais),tam-10)⍴'_'
[ 8]  r←0 1↓z
[ 9]  →0
[10] erro:'nao tem tantos candidatos a branco...'
-------------------------------------------------------------
[ 0]  r←geracaso148;arv;i;ix;tab1;aa;rr;c;g;ca;xi;caca
[ 1]  ix←34?1↑⍴LUSI
[ 2]  tab1←LUSI[ix;]
[ 3]  arv←63 9⍴' '
[ 4]  arv[;⍳2]←63 2⍴'020406081012141618202224262830323436384042444648505254565860621
      ',200⍴'-1'
[ 5]  arv[;2+⍳2]←63 2⍴'030507091113151719212325272931333537394143454749515355575961631
      ',200⍴'-1'
[ 6]  i←1
[ 7] t1:→(i>32)/ufa1
[ 8]  arv[31+i;4+⍳5]←hashsim trim tab1[i;]
[ 9]  i←i+1
[10]  →t1
[11] ufa1:
[12]  i←31
[13] t3:→(i<1)/ufa2
[14]  arv[i;4+⍳5]←hashsim arv[(±arv[i;⍳2]);4+⍳5],arv[(±arv[i;2+⍳2]);4+⍳5]
[15]  i←i-1
[16]  →t3
[17] ufa2:
[18]  aa←32 7⍴0
[19]  aa[1;]←32 33 17 9 5 3 1
[20]  aa[2;]←33 32 17 9 5 3 1
[21]  aa[3;]←34 35 16 9 5 3 1
[22]  aa[4;]←35 34 16 9 5 3 1
[23]  aa[5;]←36 37 19 8 5 3 1
[24]  aa[6;]←37 36 19 8 5 3 1
[25]  aa[7;]←38 39 18 8 5 3 1
[26]  aa[8;]←39 38 18 8 5 3 1
[27]  aa[9;]←40 41 21 11 4 3 1
[28]  aa[10;]←41 40 21 11 4 3 1
[29]  aa[11;]←42 43 20 11 4 3 1
[30]  aa[12;]←43 42 20 11 4 3 1
[31]  aa[13;]←44 45 23 10 4 3 1
[32]  aa[14;]←45 44 23 10 4 3 1
[33]  aa[15;]←46 47 22 10 4 3 1
[34]  aa[16;]←47 46 22 10 4 3 1
```

```
[35]  aa[17;]←48 49 25 13 7 2 1
[36]  aa[18;]←49 48 25 13 7 2 1
[37]  aa[19;]←50 51 24 13 7 2 1
[38]  aa[20;]←51 50 24 13 7 2 1
[39]  aa[21;]←52 53 27 12 7 2 1
[40]  aa[22;]←53 52 27 12 7 2 1
[41]  aa[23;]←54 55 26 12 7 2 1
[42]  aa[24;]←55 54 26 12 7 2 1
[43]  aa[25;]←56 57 29 15 6 2 1
[44]  aa[26;]←57 56 29 15 6 2 1
[45]  aa[27;]←58 59 28 15 6 2 1
[46]  aa[28;]←59 58 28 15 6 2 1
[47]  aa[29;]←60 61 31 14 6 2 1
[48]  aa[30;]←61 60 31 14 6 2 1
[49]  aa[31;]←62 63 30 14 6 2 1
[50]  aa[32;]←63 62 30 14 6 2 1
[51]  rr←(4,97)⍴' '
[52]  xi←4?32
[53]  c←1
[54] h1:→(c>4)/fi
[55]  ca←xi[c]
[56]  g←1
[57]  caca←''
[58] j1:→(g>7)/lo
[59]  caca←caca,(2 0⍕aa[ca;g]),'=',arv[aa[ca;g];4+⍳5]
[60]  g←g+1
[61]  →j1
[62] lo:
[63]  rr[c;]←'1',tab1[ca;],,caca
[64]  c←c+1
[65]  →h1
[66] fi:rr[3;⍳41]←'0',tab1[33;]
[67]  rr[3;44+⍳5]←'*'
[68]  rr[4;⍳41]←'0',tab1[34;]
[69]  rr[4;44+⍳5]←'*'
[70]  r←rr[4?4;]
------------------------------------------------------------
[ 0]  r←hashsim x;k;i;z;a;z1;z2;z3;z4;z5;⎕IO
[ 1]  ⎕IO←0
[ 2]  →(isnum x)/erro1
[ 3]  k←⍴x
[ 4]  i←0
[ 5]  a←656356701
[ 6] t1:→(i≥⍴x)/acabou
[ 7]  z←(⎕AV⍳x[i])×(i+1)
[ 8]  k←k+z+a
[ 9]  k←656356767|k
[10]  a←k
[11]  i←i+1
[12]  →t1
[13] acabou:r←0
[14]  r←B58[58 convbase k]
[15]  →0
[16] erro1:'operando tem que ser alfa'
------------------------------------------------------------
[ 0]  r←a ondeta b;i;j;k;⎕PW;⎕IO
[ 1]  ⎕IO←1
[ 2]  ⎕PW←120
[ 3]  b←,b
[ 4]  i←1
[ 5] t1:→(i>1↑⍴a)/fim
[ 6]  j←1
[ 7] t2:→(j>1↓⍴a)/upa
```

```
[ 8]  →(a[i;j]≠b[1])/soma
[ 9]  k←1
[10] t3:→(k>ρb)/achou
[11]  →(a[i;j+k-1]=b[k])/ainda
[12]  →soma
[13] ainda:k←k+1
[14]  →t3
[15] achou:'=',(⍕i),' ',(⍕j),a[i;]
[16]  j←j+ρb
[17]  →t2
[18] soma:j←j+1
[19]  →t2
[20] upa:i←i+1
[21]  →t1
[22] fim:
------------------------------------------------------------
[0]  testalusi;i
[1]  i←1
[2] t1:→(i>80)/fim
[3]  LUSI[i;],hashsim,LUSI[i;]
[4]  i←i+1
[5]  →t1
[6] fim:
------------------------------------------------------------
[0]  r←tirabarras x;i
[1]  i←0
[2]  r←(ρx)ρ' '
[3] t1:→(i≥1↑ρx)/fim
[4]  r[i;]←(1↓ρr)↑(x[i;]≠'/')/x[i;]
[5]  i←i+1
[6]  →t1
[7] fim:
------------------------------------------------------------
[ 0]  opesq vivo148a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz;⎕IO
[ 1]  ⎕IO←1
[ 2]  →(0≠⎕NC'opesq')/qveio
[ 3]  opesq←10ρ' '
[ 4] qveio:
[ 5]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 6]  EVENTO←'PL148   '
[ 7]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕⍳n
[10]  ylu←n grupo ylu
[11]  FOLHALA148←ajusta80 FOLHALA148
[12]  relat←((2+1↑ρylu),1 0+ρFOLHALA148)ρ' '
[13]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLO1'
[14]  xk←1 ⋄ resu←0 5ρ0
[15] testa:→(xk>1↑ρylu)/fim
[16]  esse←33 80ρ' '
[17]  f←FOLHALA148
[18]  esse[1;]←80↑dhx[1;]
[19]  esse[2;]←80↑dhx[2;]
[20]  esse[3;]←80↑4 2⍕VERSAOa←1.21
[21]  esse[4;]←80↑ylu[xk;⍳6]
[22]  →(36=1↓ρylu)/zebra
[23]  qlinha←(1=∧/[2]f[;⍳4]=((1↑ρf),4)ρ'\#05')/⍳1↑ρf
[24]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[25]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[26]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[27]  →maiszebra
```

```
[28] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[32]  esse[32;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[33;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] inica:
[35]  xx←geracaso148
[36]  esse[8;]←80↑xx[1;1+⍳40]
[37]  esse[9;]←80↑xx[1;41+⍳2]
[38]  esse[10;]←80↑expan55 xx[1;49+⍳48]
[39]  esse[11;]←80↑xx[2;1+⍳40]
[40]  esse[12;]←80↑xx[2;41+⍳2]
[41]  esse[13;]←80↑expan55 xx[2;49+⍳48]
[42]  esse[14;]←80↑xx[3;1+⍳40]
[43]  esse[15;]←80↑xx[3;41+⍳2]
[44]  esse[16;]←80↑expan55 xx[3;49+⍳48]
[45]  esse[17;]←80↑xx[4;1+⍳40]
[46]  esse[18;]←80↑xx[4;41+⍳2]
[47]  esse[19;]←80↑expan55 xx[4;49+⍳48]
[48]  esse[19+⍳12;]←12 80↑g148 gerac 2
[49]  resu←resu,[1]1 5⍴resp,⍪xx[1;1],' ',xx[2;1],' ',xx[3;1],' ',xx[4;1]
[50]  acuja←(f[;2]='#')/⍳1↑⍴f
[51]  f[acuja;⍳80]←esse[⍪,f[acuja;3 4],' ';]
[52]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[53]  ⍞←(⍕xk←xk+1),'-'
[54]  →testa
[55] fim:upag←(1 0+⍴f)⍴' '
[56]  →(1=≡n)/elafa
[57]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[58]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[59]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 8 0 2 0 2 0 2 0)⍕resu
[60]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[61]  →terminando
[62] elafa:aaa←(ylu[;⍳36],4 0⍕0 1↓resu)
[63]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[64]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[65] terminando:
[66]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[67]  relat[1↑⍴relat;;]←upag
[68]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[69]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[70]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[71]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo149

```
[ 0]  D←S DISPLAY A;⎕IO;R;C;HL;HC;HT;HB;VL;VB;V;W;N;B
[ 1] ⍝ Display a general array in pictorial form
[ 2] ⍝  Normal call is monadic.  Dyadic call used only in
[ 3] ⍝    recursion to specify display rank, shape, and depth.
[ 4]  ⎕IO←0
[ 5]  ⍪(0=⎕NC'S')/'S←⍴A'
[ 6]  R←↑⍴,S                    ⍝ Pseudo rank
[ 7]  C←'┐┌└┘'                  ⍝ UR, UL, LL, and LR corners
[ 8]  HL←'─'                    ⍝ Horizontal line
[ 9]  HC←HL,'⍮',HL,'~+⍷'        ⍝ Horizontal borders
[10]  HT←HC[(0<R)×1+0<↑¯1↑,S]
[11] ⍝W←,0≡¨↑0⍴⊂(1⌈⍴A)↑A
[12]  HB←HC[3+3⌊('2×~A≡⍕A'⎕EA'1+↑⍷0×(1⌈×/⍴A)↑,A')+3×1<⍴⍴S]
[13]  VL←'│'                    ⍝ Vertical line
```

```
[14]  VB←VL,'⍞↓'                ⍝ Vertical border
[15]  V←VB[(1<R)×1+0<¯1↑¯1↓,S]
[16]  ⍎(0∊⍴A)/'A←(1⌈⍴A)⍴⊂↑A'   ⍝ Show prototype of empties
[17]  →(1<≡A)/GEN
[18]  →(2<⍴⍴A)/D3
[19]  D←⍕A                      ⍝ Simple arrays
[20]  W←1↑⍴D←(¯2↑1 1,⍴D)⍴D
[21]  N←¯1+1↓⍴D
[22]  →(0=⍴⍴A)/SS
[23]  D←(C[1],V,((W-1)⍴VL),C[2]),((HT,N⍴HL),[0]D,[0]HB,N⍴HL),C[0],(W⍴VL),C[3]
[24]  →0
[25] SS:HB←((0 ' ')=↑0⍴⊂A)/' -'
[26]  D←' ',(' ',[0]D,[0]HB,N⍴' '),' '
[27]  →0
[28] GEN:D←⍕⍕DISPLAY¨A          ⍝ Enclosed arrays
[29]  N←D∨.≠' '
[30]  D←(N∨~1⌽N)⌿D
[31]  D←(∨⌿~'  '⍷D)/D
[32]  D←((1,⍴S)⍴S)DISPLAY D
[33]  →(2≥⍴,S)↓D3E,0
[34] D3:D←0 ¯1↓0 1↓⍕⊂A          ⍝ Multi-dimensional arrays
[35]  W←1↑⍴D
[36]  N←¯1+1↓⍴D
[37]  D←(C[1],V,((W-1)⍴VL),C[2]),((HT,N⍴HL),[0]D,[0]HB,N⍴HL),C[0],(W⍴VL),C[3]
[38] D3E:N←¯2+⍴,S
[39]  V←C[N⍴1],[0]VB[1+0<¯2↓,S],[0](((¯3+↑⍴D),N)⍴VL),[0]C[N⍴2]
[40]  D←V,D
[41] ⍝¶⍝ APL2/6000 FKEY verification tag - DO NOT REMOVE, MUST BE LAST LINE
-------------------------------------------------------------
[0]  r←a distancia b
[1]  r←(((a[1]-b[1])*2)+((a[2]-b[2])*2))*0.5
-------------------------------------------------------------
[0]  r←a excluivv v;b;c
[1]  b←1↓(v[1]+1)↑v
[2]  c←a≠b
[3]  b←c/b
[4]  r←21↑(v[1]-1),b
-------------------------------------------------------------
[ 0]  r←quem gerac qtos;cand;fix;quais;tam;z
[ 1]  z←quem
[ 2]  cand←(z[;1]='*')/⍳1↑⍴z
[ 3]  fix←(z[;1]='Y')/⍳1↑⍴z
[ 4]  →(qtos>(⍴cand)+⍴,fix)/erro
[ 5]  quais←(,fix),cand[qtos?⍴cand]
[ 6]  tam←1↓⍴quem
[ 7]  z[quais;⍳tam]←((⍴quais),tam)⍴'_'
[ 8]  r←0 1↓z
[ 9]  →0
[10] erro:'nao tem tantos candidatos a branco...'
-------------------------------------------------------------
[ 0]  r←geracaso n;x;i;z;mat
[ 1]  x←n?23
[ 2]  x←x[⍋x]
[ 3]  i←?n
[ 4]  z←MATPR[x;]
[ 5]  mat←montadist z
[ 6]  zera
[ 7]  mat tsp 0,(21↑(n-1),(i≠⍳n)/⍳n),21↑1,i
[ 8]  r←5⍴0
[ 9]  r[1]←⊂'¯'-'edit 1 numera z     ⍝ matriz de cidades participantes deste exercicio
[10]  r[2]←⊂z[i;⍳20]                 ⍝ cidade inicial e terminal (a mesma)
[11]  r[3]←⊂⍎10 2⍕MENOR              ⍝ comprimento do menor caminho (a resposta)
[12]  r[4]←⊂z[CMENOR[3,1+n];⍳20]     ⍝ a segunda e a penultima cidades percorridas
```

```
[13]  r[5]←⊂CMENOR                    ⍝ r[1]=quantidade de numeros validos no vetor
[14] ⍝ r[2..n]=sequencia de visitas no tsp
-------------------------------------------------------------
[0]  r←gexe1 n;a;b;v;w
[1]  a←(n,n)⍴¯30+?(n×2)⍴99
[2]  b←¯5+?n⍴20
[3]  v←(n,n)⍴b
[4]  w←+/[2]a×v
[5]  r←2⍴0
[6]  r[1]←⊂a,[2](n,1)⍴w
[7]  r[2]←⊂b[1],b[n]
-------------------------------------------------------------
[ 0]  r←gexe2
[ 1] mais:
[ 2]  x←geracaso 7
[ 3]  y←guloso x
[ 4]  →(x[3]≠y)/ok
[ 5]  ⍞←'0'
[ 6]  →mais
[ 7] ok:
[ 8]  r←4⍴0
[ 9]  r[1]←x[1]
[10]  r[2]←x[2]
[11]  r[3]←x[3]
[12]  r[4]←⊂y
-------------------------------------------------------------
[ 0]  r←guloso x;a;b;d;i;j;ultim;faltam;QUANTO;QUAL;ds;distt
[ 1] ⍝ x e um ⍴5, gerado pela funcao "geracaso"
[ 2]  QUANTO←0 ⋄ QUAL←⍳0
[ 3]  b←0 4⍎'-¯'edit⊃x[1]
[ 4]  d←(a,a←1↑⍴b)⍴0
[ 5]  i←1
[ 6] t1:→(i>a)/fim
[ 7]  j←1
[ 8] t2:→(j>a)/soma
[ 9]  d[i;j]←d[j;i]←((((⍎b[i;20+⍳4])-⍎b[j;20+⍳4])*2)+((⍎b[i;24+⍳4])-⍎b[j;24+⍳4])*2)*0.5
[10]  →(i≠j)/ufa
[11]  d[i;j]←999999
[12] ufa:
[13]  j←j+1
[14]  →t2
[15] soma:i←i+1
[16]  →t1
[17] fim:dd←d
[18]  QUAL←ultim←(⊃x[5])[2]
[19]  distt←d[;ultim]
[20] novo:
[21]  d[;ultim]←999999
[22]  ds←(,d[ultim;]=⌊/d[ultim;])/⍳1↑⍴d
[23]  →(999999=⌊/d[ultim;])/acabou
[24]  QUAL←QUAL,ds
[25]  QUANTO←QUANTO+,d[ultim;ds]
[26]  ultim←ds
[27]  →novo
[28] acabou:QUANTO←QUANTO+distt[QUAL[⍴QUAL]]
[29]  r←QUANTO,QUAL,QUAL[1]
-------------------------------------------------------------
[ 0]  r←montadist mat;li;i;j
[ 1]  r←(2⍴(li←1↑⍴mat))⍴0
[ 2]  i←1
[ 3] t1:→(i>li)/fim
[ 4]  j←1
[ 5] t2:→(j>li)/soma
```

```
[ 6]  r[i;j]←(⍪mat[i;20+⍳4],' ',mat[i;24+⍳4])distancia⍪mat[j;20+⍳4],' ',mat[j;24+⍳4]
[ 7]  j←j+1
[ 8]  →t2
[ 9] soma:i←i+1
[10]  →t1
[11] fim:
------------------------------------------------------------
[ 0]  r←primo x;rr;f
[ 1]  →(x=1)/co
[ 2]  →(x<4)/pr
[ 3]  →(0=2|x)/co
[ 4]  →(x<9)/pr
[ 5]  →(0=3|x)/co
[ 6]  rr←⌊x*0.5
[ 7]  f←5
[ 8] t1:→(f>rr)/fim
[ 9]  →(0=f|x)/co
[10]  →(0=(f+2)|x)/co
[11]  f←f+6
[12]  →t1
[13] fim:
[14] pr:
[15]  r←1
[16]  →0
[17] co:
[18]  r←0
[19]  →0
------------------------------------------------------------
[ 0]  testa;i;j
[ 1]  i←1
[ 2] t1:→(i>400)/fim
[ 3]  j←primo PRIS[i]
[ 4]  →(j≠1)/xabu
[ 5]  i←i+1
[ 6]  →t1
[ 7] fim:
[ 8]  →0
[ 9] xabu:'deu xabu em ',⍕i
------------------------------------------------------------
[0]  r←tirabarras x;i
[1]  i←0
[2]  r←(⍴x)⍴' '
[3] t1:→(i≥1↑⍴x)/fim
[4]  r[i;]←(1↓⍴r)↑(x[i;]≠'/')/x[i;]
[5]  i←i+1
[6]  →t1
[7] fim:
------------------------------------------------------------
[0]  r←trim4 x;z
[1] ⍝f corta as colunas direitas que sao brancos
[2]  →(2≠⍴⍴x)/erro
[3]  z←+/[1]x=' '
[4]  r←(z≠1↑⍴x)/[2]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
------------------------------------------------------------
[ 0]  matdist tsp vv;d1;dc;j;novojav;novovis;vvfutu;vvdist;vvpass
[ 1]  vvdist←vv[1]
[ 2]  vvfutu←vv[1+⍳21]
[ 3]  vvpass←vv[22+⍳21]
[ 4]  →(vvfutu[1]=1)/souma
[ 5]  j←1
[ 6] t1:→(j>vvfutu[1])/terminou
```

```
[ 7]  d1←vvdist+matdist[vvpass[1+vvpass[1]];vvfutu[1+j]]
[ 8]  novovis←vvfutu[j+1]excluivv vvfutu
[ 9]  novojav←vvpass
[10]  novojav[1]←novojav[1]+1
[11]  novojav[1+novojav[1]]←vvfutu[j+1]
[12]  matdist tsp d1,novovis,novojav
[13]  j←j+1
[14]  →t1
[15] terminou:→0
[16] souma:dc←vvdist+matdist[vvpass[1+vvpass[1]];vvfutu[2]]
[17]  dc←dc+matdist[vvfutu[2];vvpass[2]]
[18]  vvpass[vvpass[1]+2]←vvfutu[2]
[19]  vvpass[vvpass[1]+3]←vvpass[2]
[20]  vvpass[1]←vvpass[1]+2
[21] ⍝ mostratsp vvpass
[22]  →(dc≥MENOR)/0
[23]  MENOR←dc
[24]  CMENOR←vvpass
-------------------------------------------------------------
[ 0]  opesq vivo149a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz;⎕IO
[ 1]  ⎕IO←1
[ 2]  →(0≠⎕NC'opesq')/qveio
[ 3]  opesq←10⍴' '
[ 4] qveio:
[ 5]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 6]  EVENTO←'PL149   '
[ 7]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[10]  ylu←n grupo ylu
[11]  FOLHALA149←ajusta80 FOLHALA149
[12]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA149)⍴' '
[13]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[14]  xk←1 ⋄ resu←0 5⍴0
[15] testa:→(xk>1↑⍴ylu)/fim
[16]  esse←125 80⍴' '
[17]  f←FOLHALA149
[18]  esse[1;]←80↑dhx[1;]
[19]  esse[2;]←80↑dhx[2;]
[20]  esse[3;]←80↑4 2⍎VERSAOa←1.2
[21]  esse[4;]←80↑ylu[xk;⍳6]
[22]  →(36=1↓⍴ylu)/zebra
[23]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[24]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[25]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[26]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[27]  →maiszebra
[28] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[32]  esse[124;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[125;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] inica:
[35]  esse[7+⍳32;]←32 80↑g149a gerac 2
[36]  esse[39+⍳36;]←36 80↑g149b gerac 2
[37]  esse[75+⍳30;]←30 80↑g149c gerac 2
[38]  xx←gexe1 10
[39]  esse[105+⍳10;]←10 80↑'¯-'edit((20⍴4 0),6 0)⍎⊃xx[1]
[40]  resp←resp,⊃xx[2]
[41]  xx←gexe2
```

```
[42]  esse[115+⍳7;]←7 80↑⊃xx[1]
[43]  esse[123;]←1 80⍴80↑⊃xx[2]
[44]  resp←resp,(⊃xx[3]),⊃xx[4]
[45]  resu←resu,[1]1 5⍴resp
[46]  acuja←(f[;2]='#')/⍳1↑⍴f
[47]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4 5],' ';]
[48]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[49]  ⎕←(⍕xk←xk+1),'-'
[50]  →testa
[51] fim:upag←(1 0+⍴f)⍴' '
[52]  →(1=≡n)/elafa
[53]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[54]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[55]  upag[2+⍳1↑⍴presu;⍳+/lixo1]←'¯-'edit(lixo1←5 0 8 0 2 0 8 0 6 0)⍕resu
[56]  upag[3+1↑⍴presu;]←(1↓⍴upag)↑'\end{verbatim}'
[57]  →terminando
[58] elafa:aaa←(ylu[;⍳36],3 0 3 0 8 0 6 0⍕0 1↓resu)
[59]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[60]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[61] terminando:
[62]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[63]  relat[1↑⍴relat;;]←upag
[64]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[65]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[66]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[67]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[0]  zera
[1]  MENOR←999999999
[2]  CMENOR←''
[3]  MUN←0
-------------------------------------------------------------
```

vivo150

```
[ 0]  r←acertabrancos a;b;i
[ 1]  b←,a
[ 2]  i←1
[ 3] t1:→(i>¯1+⍴b)/fim
[ 4]  →((b[i]='<')∧(b[i+1]=' '))/troca
[ 5]  →((b[i]=' ')∧(b[i+1]='>'))/troca2
[ 6]  →((b[i]='(')∧(b[i+1]=' '))/troca3
[ 7]  →((b[i]=' ')∧(b[i+1]=')'))/troca4
[ 8]  i←i+1
[ 9]  →t1
[10] troca:b[i]←' '
[11]  b[i+1]←'<'
[12]  i←i+2
[13]  →t1
[14] troca2:b[i]←'>'
[15]  b[i+1]←' '
[16]  i←i+2
[17]  →t1
[18] troca3:b[i]←' '
[19]  b[i+1]←'('
[20]  i←i+2
[21]  →t1
[22] troca4:b[i]←')'
[23]  b[i+1]←' '
[24]  i←i+2
[25]  →t1
[26] fim:r←(⍴a)⍴b
```

```
------------------------------------------------------------
[0]  r←a ate b
[1]  r←a,a+⍳b-a
------------------------------------------------------------
[ 0]  r←baixo m;lin;col
[ 1]  lin←2
[ 2]  r←m
[ 3] t1:→(lin>⍴m)/acabou
[ 4]  col←lin
[ 5] t2:→(col>1↑⍴m)/subt
[ 6]  →(r[lin-1;col]<1)/somac
[ 7]  r[lin;col]←r[lin-1;col]-1
[ 8] somac:
[ 9]  col←col+1
[10]  →t2
[11] subt:
[12]  lin←lin+1
[13]  →t1
[14] acabou:
------------------------------------------------------------
[0]  r←corta x
[1]  r←(x≠' ')/x
------------------------------------------------------------
[ 0]  r←crarvore elems;aspa;i;ealfa
[ 1] ⍝ cria uma arvore para desenho com elems / p.kantek / v2.1
[ 2] ⍝ col [1] = &fe
[ 3] ⍝ col [2] = &fd
[ 4] ⍝ col [3] = conteudo
[ 5] ⍝ col [4] = profundidade
[ 6] ⍝ col [5] = &pai
[ 7] ⍝ col [6] = largura do bloco grafico
[ 8] ⍝ col [7] = 0  ≠se bloco grafico ja foi criado (1=significa que ele e o
[ 9] ⍝           raiz do bloco. 2=ja foi usado para construir outro mais
[10] ⍝           acima
[11]  r←((⍴elems),7)⍴0 ⋄ ealfa←1 ⋄ aspa←''''
[12]  →(isnum elems)/nume
[13]  ealfa←¯1
[14]  elems←1000+⎕AV⍳elems
[15] nume:i←2 ⋄ r[1;1 2 3]←¯1,¯1,elems[1]
[16] inica:→(i>⍴elems)/acabou
[17]  r←r inarvore elems[i]
[18]  →(i=i←i+1)/inica
[19] acabou:
[20]  i←1
[21] conta:→(i>⍴elems)/mesmo
[22]  →((r[i;1]≠¯1)∨(r[i;2]≠¯1))/pula
[23]  →(ealfa=¯1)/letra
[24]  ⍞'A',('05'⍕i),'  ←',aspa,'<',(formata elems[i]),'>',aspa
[25]  →indo
[26] letra:⍞'A',('05'⍕i),'  ←',aspa,'(  ⊃',⎕AV[elems[i]-1000],'  ⊂)',aspa
[27] indo:r[i;7]←1
[28]  r[i;6]←3
[29] pula:→(i=i←i+1)/conta
[30] mesmo:
------------------------------------------------------------
[ 0]  r←criamat a1rrniv;a1;rr;niv;col;lin;coma
[ 1]  a1←a1rrniv[1]  ⍝ valor inicial
[ 2]  rr←a1rrniv[2]  ⍝ razao
[ 3]  niv←a1rrniv[3] ⍝ tamanho da matriz
[ 4]  r←(niv,niv)⍴0
[ 5]  coma←1
[ 6]  lin←col←⌈niv÷2
[ 7] t1:→(lin<1)/ufa
```

```
[ 8]  r[lin;col]←coma*2
[ 9]  coma←coma+2
[10]  col←col+1
[11]  lin←lin-1
[12]  →t1
[13] ufa:
------------------------------------------------------------
[ 0]  r←obj crima x;i;j;a1;ra;ce;nx
[ 1] ⍝ x=razao
[ 2]  ra←x
[ 3]  ce←⌈/,obj
[ 4]  nx←0,((0,[1]obj),[1]0),0
[ 5]  j←1↓⍴nx
[ 6] t1:→(j<1)/fim1
[ 7]  nx[1;j]←ce←ce+ra
[ 8]  j←j-1
[ 9]  →t1
[10] fim1:i←1 ⋄ ce←ce-ra
[11] t2:→(i>1↑⍴nx)/fim2
[12]  nx[i;1]←ce←ce+ra
[13]  i←i+1
[14]  →t2
[15] fim2:j←1 ⋄ ce←ce-ra
[16] t3:→(j>1↓⍴nx)/fim3
[17]  nx[i-1;j]←ce←ce+ra
[18]  j←j+1
[19]  →t3
[20] fim3:i←1↑⍴nx ⋄ ce←ce-ra
[21] t4:→(i<2)/fim4
[22]  nx[i;1↓⍴nx]←ce←ce+ra
[23]  i←i-1
[24]  →t4
[25] fim4:r←nx
------------------------------------------------------------
[ 0]  r←e de2f d;lin;col
[ 1]  →(2=⍴⍴e)/ee
[ 2]  e←(1,⍴e)⍴e
[ 3] ee:→(2=⍴⍴d)/dd
[ 4]  d←(1,⍴d)⍴d
[ 5] dd:lin←(1↑⍴e)⌈1↑⍴d
[ 6] ⍝ col  ←(3+1  ↓  ⍴e)  ⌊3+1  ↓  ⍴d
[ 7]  col←(1↓⍴e)⌈1↓⍴d
[ 8]  e←(lin,col)↑e ⋄ d←(lin,col)↑d
[ 9] ⍝ e  ←(lin,(1  ↓  ⍴e))  ↑e   ⋄ d  ←(lin,(1  ↓  ⍴d))  ↑d
[10]  r←e,' ',d
[11]  r←((4,1↓⍴r)⍴' '),[1]r
[12]  r[1;((meio 1↓⍴r)-3)+⍳5]←PAI
[13]  r[2;((meio 1↓⍴r)-2)+⍳3]←'_&_'
[14]  r[3;(ONDE1)ate ¯1+meio 1↓⍴r]←'_'
[15]  r[3;(1+meio 1↓⍴r)ate(1+ONDE2+1↓⍴e)-1]←'_'
[16]  r[3;meio 1↓⍴r]←'#'
[17]  r[3;ONDE1]←'%'
[18]  r[3;(1↓⍴e)+1+ONDE2]←'!'
[19]  r[4;ONDE1+¯1 0 1]←r[4;1+(1↓⍴e)+ONDE2+¯1 0 1]←'_#_'
------------------------------------------------------------
[ 0]  r←a dearvore b;prim;paiprim;filhos;fe;fd;X;x;aspa;ois;carac;nivel;larg
[ 1]  →(0≠⎕NC'a')/veio
[ 2]  a←3 1 2
[ 3] ⍝ 'carac=1/ascii/2=apld/3=apls/4=hdup/5=vdup   niveis=1/2/3/4' v.2.1
[ 4] veio:r←b
[ 5]  carac←a[1] ⋄ nivel←a[2] ⋄ larg←a[3]
[ 6]  aspa←''''
[ 7] inicio:→(1=r[1;7])/acabou
```

```
[ 8]  ois←(r[;7]=1)/⍳1↑⍴r
[ 9]  →(1=⍴ois)/sotem1
[10]  prim←1↑(r[ois;4]=⌈/r[ois;4])/ois
[11]  →voltaj
[12] sotem1:prim←ois
[13] voltaj:paiprim←r[prim;5]
[14]  →(r[paiprim;3]>1000)/le
[15]  ⍞'PAI  ←',aspa,'<',(formata r[paiprim;3]),'>',aspa
[16]  →indo
[17] le:⍞'PAI  ←',aspa,'(⊃',⎕AV[r[paiprim;3]-1000],'⊂)',aspa
[18] indo:→(2=⍴filhos←((r[;5]=paiprim)∧(r[;7]=1))/⍳1↑⍴r)/tem2
[19] tem1:→(r[paiprim;1]=prim)/efe
[20] efd:fd←⍞'A','05'⍕prim
[21]  ONDE←r[prim;6]
[22]  ⍞'A',('05'⍕paiprim),'  ←defd fd'
[23]  r[paiprim;7]←1 ⋄ r[prim;7]←2 ⋄ r[paiprim;6]←3
[24]  →inicio
[25] efe:
[26]  fe←⍞'A','05'⍕prim
[27]  ONDE←r[prim;6]
[28]  ⍞'X  ←1  ↓  ⍴A',('05'⍕paiprim),'  ←defe fe'
[29]  r[paiprim;7]←1 ⋄ r[prim;7]←2 ⋄ r[paiprim;6]←X-2
[30]  →inicio
[31] tem2:
[32]  →(r[filhos[1];3]>r[filhos[2];3])/ummaior
[33]  x←filhos[1] ⋄ filhos[1]←filhos[2] ⋄ filhos[2]←x
[34] ummaior:
[35]  ONDE1←r[filhos[2];6] ⋄ ONDE2←r[filhos[1];6]
[36]  fe←⍞'A','05'⍕filhos[2]   ⍝1
[37]  fd←⍞'A','05'⍕filhos[1]   ⍝2
[38]  ⍞'X  ←1  ↓  ⍴A',('05'⍕paiprim),'  ←fe de2f fd'
[39]  r[paiprim;7]←1 ⋄ r[filhos[1];7]←r[filhos[2];7]←2 ⋄ r[paiprim;6]←meio X
[40]  →inicio
[41] acabou:MAT←r   ⍝ aqui esta a matriz de entrada devidamente ja processada
[42]  →(larg=1)/jump
[43]  A01←(~∧/[1]((A01=' ')∨(A01='_')))/[2]A01
[44] jump:A01←'∘ 'edit A01
[45]  A01←'⊃ 'edit A01
[46]  A01←'⊂ 'edit A01
[47]  r←carac edita A01
[48]  x←limpa
[49]  →(nivel=4)/0
[50]  →(nivel=3)/tres
[51]  →(nivel=2)/dois
[52]  →(nivel=1)/um
[53]  'erro de nivel'
[54]  →fin
[55] um:r←((1↑⍴r)⍴1 0)/[1]r
[56]  →fin
[57] dois:r←((1↑⍴r)⍴1 1 1 0)/[1]r
[58]  →fin
[59] tres:r←((1↑⍴r)⍴1 0 1 1)/[1]r
[60]  →fin
[61] fin:r←acertabrancos r
-------------------------------------------------------------
[ 0]  r←defd x
[ 1]  →(2=⍴⍴x)/esim
[ 2]  x←(1,⍴x)⍴x
[ 3] esim:r←((1↑⍴x),-(1↓⍴x)+4)↑x
[ 4]  r←((4,1↓⍴r)⍴' '),[1]r
[ 5]  r[1;⍳5]←PAI
[ 6]  r[2;2 3 4]←'_&_'
[ 7]  r[3;3]←'$'
```

```
[ 8]  r[3;4+ONDE]←'!'
[ 9]  r[3;4 ate 3+ONDE]←'_'
[10]  r[4;4+ONDE+¯1 0 1]←'_#_'
-------------------------------------------------------------
[ 0]  r←defe x
[ 1]  →(2=ρρx)/esim
[ 2]  x←(1,ρx)ρx
[ 3] esim:r←((1↑ρx),(1↓ρx)+4)↑x
[ 4]  r←((4,1↓ρr)ρ' '),[1]r
[ 5]  r[1;((1↓ρr)-5)+ι5]←PAI
[ 6]  r[2;((1↓ρr)-4)+ι3]←'_&_'
[ 7]  r[3;(1↓ρr)-2]←'@'
[ 8]  r[3;(ONDE)ate((1↓ρr)-3)]←'_'
[ 9]  r[3;ONDE]←'%'
[10]  r[4;ONDE+¯1 0 1]←'_#_'
-------------------------------------------------------------
[0]  r←divide x;a;m;i
[1]  a←(x='(')/ιρx
[2]  m←⌊(ρx)×0.5
[3]  i←1
[4] t1:→(a[i]>m)/fim
[5]  i←i+1
[6]  →t1
[7] fim:r←(2,a[i])ρ(a[i]↑x),(a[i]↓x),100ρ' '
-------------------------------------------------------------
[0]  r←divide3 x;a;m;i
[1]  a←(x='(')/ι80
-------------------------------------------------------------
[ 0]  r←qual edita tudo
[ 1]  →(qual=1)/ascii
[ 2]  →(qual=2)/apldu
[ 3]  →(qual=3)/aplsi
[ 4]  →(qual=4)/aplds
[ 5]  →(qual=5)/aplsd
[ 6]  'erro'
[ 7]  →0
[ 8] ⍝              |                          |          |
[ 9] ⍝ %=+--   #=--+--   _=---   !=--+   $=+--   @=--+   &=--+--
[10] ⍝   |                              |                        |
[11] ascii:
[12]  r←'%+'edit tudo
[13]  r←'#+'edit r
[14]  r←'_-'edit r
[15]  r←'!+'edit r
[16]  r←'$+'edit r
[17]  r←'@+'edit r
[18]  r←'&+'edit r
[19]  →0
[20] apldu:
[21]  r←('%',⎕AV[202])edit tudo
[22]  r←('#',⎕AV[203])edit r
[23]  r←('_',⎕AV[206])edit r
[24]  r←('!',⎕AV[188])edit r
[25]  r←('$',⎕AV[201])edit r
[26]  r←('@',⎕AV[189])edit r
[27]  r←('&',⎕AV[204])edit r
[28]  →0
[29] aplsi:
[30]  r←('%',⎕AV[219])edit tudo
[31]  r←('#',⎕AV[194])edit r
[32]  r←('_',⎕AV[197])edit r
[33]  r←('!',⎕AV[192])edit r
[34]  r←('$',⎕AV[193])edit r
```

```
[35]  r←('@',⎕AV[218])edit r
[36]  r←('&',⎕AV[195])edit r
[37]  →0
[38] aplds:
[39]  r←('%',⎕AV[219])edit tudo
[40]  r←('#',⎕AV[194])edit r
[41]  r←('_',⎕AV[197])edit r
[42]  r←('!',⎕AV[192])edit r
[43]  r←('$',⎕AV[193])edit r
[44]  r←('@',⎕AV[218])edit r
[45]  r←('&',⎕AV[195])edit r
[46]  →0
[47] aplsd:
[48]  r←('%',⎕AV[215])edit tudo
[49]  r←('#',⎕AV[209])edit r
[50]  r←('_',⎕AV[197])edit r
[51]  r←('!',⎕AV[184])edit r
[52]  r←('$',⎕AV[212])edit r
[53]  r←('@',⎕AV[190])edit r
[54]  r←('&',⎕AV[211])edit r
[55]  →0
-------------------------------------------------------------
[ 0]  r←emagrece arv;vv;lin;i;zz;pp;cc;aa
[ 1] ⍝ qual o caractere a matar ???
[ 2]  zz←(,arv)
[ 3]  zz←(zz≠' ')/zz
[ 4]  pp←((zz⍳zz)=⍳⍴zz)/zz
[ 5]  cc←(⍴pp)⍴0
[ 6]  i←1
[ 7] t0:→(i>⍴zz)/oba
[ 8]  cc[aa]←cc[aa←pp⍳zz[i]]+1
[ 9]  i←i+1
[10]  →t0
[11] oba:
[12]  pp←pp[⍒cc]
[13]  i←1
[14]  vv←⍳0
[15] t1:→(i>1↓⍴arv)/fim
[16]  lin←arv[;i]
[17]  lin←(lin≠' ')/lin
[18]  →((⍴lin)=+/pp[1]=lin)/tira
[19]  vv←vv,1
[20]  →soma
[21] tira:vv←vv,0
[22] soma:
[23]  i←i+1
[24]  →t1
[25] fim:r←vv/[2]arv
-------------------------------------------------------------
[ 0]  r←esq m;lin;col
[ 1]  r←m
[ 2]  lin←⌈0.5×(⍴m)[1]
[ 3] t1:→(lin>1↑⍴m)/fim
[ 4]  col←(⍴m)[1]
[ 5] t2:→(col<2)/oba
[ 6]  →((r[lin;col-1]<1)∧(r[lin;col]≠0))/ok
[ 7]  →pula
[ 8] ok:
[ 9]  r[lin;col-1]←r[lin;col]-1
[10] pula:
[11]  col←col-1
[12]  →t2
[13] oba:
```

```
[14]  lin←lin+1
[15]  →t1
[16] fim:
------------------------------------------------------------
[ 0]  r←formata x
[ 1]  →(x>1000)/t4
[ 2]  →(x>99)/t3
[ 3]  →(x>9)/t2
[ 4] t1:r←'∘',(1 0⍕x),'∘'
[ 5]  →0
[ 6] t2:r←'∘',2 0⍕x
[ 7]  →0
[ 8] t3:r←3 0⍕x
[ 9]  →0
[10] t4:r←'∘',⎕AV[x-1000],'∘'
[11]  →0
------------------------------------------------------------
[ 0]  r←quem gerac qtos;cand;fix;quais;tam;z
[ 1]  z←quem
[ 2]  cand←(z[;1]='*')/⍳1↑⍴z
[ 3]  fix←(z[;1]='Y')/⍳1↑⍴z
[ 4]  →(qtos>(⍴cand)+⍴,fix)/erro
[ 5]  quais←(,fix),cand[qtos?⍴cand]
[ 6]  tam←1↓⍴quem
[ 7]  z[quais;⍳tam]←((⍴quais),tam)⍴'_'
[ 8]  r←0 1↓z
[ 9]  →0
[10] erro:'nao tem tantos candidatos a branco...'
------------------------------------------------------------
[ 0]  r←geramp;a1;cols;inds;lins;ordem;qual;ra;resp
[ 1]  ordem←(15,17,19,21)[?4]
[ 2]  a1←7+?11
[ 3]  ra←1+?7
[ 4]  lins←?4⍴ordem
[ 5]  cols←?4⍴ordem
[ 6]  qual←4⍴0
[ 7]  qual[1]←MATPRIM[lins[1];cols[1]]
[ 8]  qual[2]←MATPRIM[lins[2];cols[2]]
[ 9]  qual[3]←MATPRIM[lins[3];cols[3]]
[10]  qual[4]←MATPRIM[lins[4];cols[4]]
[11]  resp←4⍴0
[12]  resp[1]←a1+(qual[1]-1)×ra
[13]  resp[2]←a1+(qual[2]-1)×ra
[14]  resp[3]←a1+(qual[3]-1)×ra
[15]  resp[4]←a1+(qual[4]-1)×ra
[16]  inds←⍋resp
[17]  r←ordem,a1,ra,lins[inds[4]],cols[inds[4]],resp[inds[4]]
------------------------------------------------------------
[ 0]  r←a inarvore elem;li;ipivot;prof
[ 1]  r←a
[ 2]  li←1↑(r[;1]=0)/⍳1↑⍴r
[ 3]  r[li;]←¯1 ¯1,elem,0,0,0,0
[ 4]  ipivot←1 ⋄ prof←1
[ 5] testa:→(elem>r[ipivot;3])/maior
[ 6] menor:→(¯1=r[ipivot;1])/meok
[ 7]  prof←prof+1
[ 8]  →(ipivot=ipivot←r[ipivot;1])/testa
[ 9] meok:r[ipivot;1]←li
[10]  →fim
[11] maior:→(¯1=r[ipivot;2])/maok
[12]  prof←prof+1
[13]  →(ipivot=ipivot←r[ipivot;2])/testa
[14] maok:r[ipivot;2]←li
```

```
[15] fim:r[li;5]←ipivot
[16]  r[li;4]←prof
-------------------------------------------------------------
[0]  r←limpa
[1]  r←⎕EX 20 3⍴'A01A02A03A04A05A06A07A08A09A10A11A12A13A14A15A16A17A18A19A20'
[2]  r←⎕EX 20 3⍴'A21A22A23A24A25A26A27A28A29A30A31A32A33A34A35A36A37A38A39A40'
[3]  r←⎕EX 20 3⍴'A41A42A43A44A45A46A47A48A49A50A51A52A53A54A55A56A57A58A59A60'
[4]  r←⎕EX 10 5⍴'ONDE ONDE1PAI  ONDE2'
[5]  r←⎕EX 2 10⍴'PPL       PPVELHO   '
-------------------------------------------------------------
[ 0]  r←lombada ordem;z;lin;col;j;i;lomb;cand;lim
[ 1]  z←ordem⍴0
[ 2]  lin←?ordem[1]
[ 3]  col←?ordem[2]
[ 4]  z[lin;col]←lomb←90+?90
[ 5]  j←1
[ 6] t1:→(j>ordem[2])/fim
[ 7]  →(j=col)/soma1
[ 8]  z[lin;j]←lomb+?lomb-2
[ 9] soma1:
[10]  j←j+1
[11]  →t1
[12] fim:i←1
[13] t2:→(i>ordem[1])/mesmo
[14]  →(i=lin)/soma2
[15]  z[i;col]←¯1+?lomb-2
[16] soma2:
[17]  i←i+1
[18]  →t2
[19] mesmo:
[20]  lim←⌈/,z
[21]  i←1
[22] t11:→(i>ordem[1])/ufa1
[23]  j←1
[24] t12:→(j>ordem[2])/ufa2
[25]  →(z[i;j]≠0)/soma6
[26] denovo:
[27]  cand←?lim
[28]  →(cand∈z)/denovo
[29]  z[i;j]←cand
[30] soma6:
[31]  j←j+1
[32]  →t12
[33] ufa2:
[34]  i←i+1
[35]  →t11
[36] ufa1:r←z
[37]  r←2⍴0
[38]  r[1]←⊂z
[39]  r[2]←⊂lin,col
-------------------------------------------------------------
[0]  r←meio x
[1]  r←⌈x÷2
-------------------------------------------------------------
[ 0]  r←paarvore x;g;t;i;lixo
[ 1] ⍝ x e a saida de crarvore; r e a arvore parentizada. * e' ausencia
[ 2]  g←300
[ 3]  r←((t←1↑⍴x),g)⍴' '
[ 4]  i←1
[ 5] l1:→(i>t)/fimf1
[ 6]  →((x[i;1]≠¯1)∨(x[i;2]≠¯1))/soma
[ 7]  r[i;]←g↑'(',(3 0⍕x[i;3]),')'
[ 8] soma:→(i=i←i+1)/l1
```

```
[ 9] fimf1:i←t
[10] l2:→(i<1)/fim
[11]  →((x[i;1]=¯1)∧(x[i;2]=¯1))/pula
[12]  →(x[i;2]=¯1)/esq
[13]  →(x[i;1]=¯1)/dir
[14] amb:r[i;]←gtcorta'(',(3 0⍕x[i;3]),(,r[x[i;1];]),,r[x[i;2];],')'
[15]  →pula
[16] dir:r[i;]←gtcorta'(',(3 0⍕x[i;3]),'()',(,r[x[i;2];]),')'
[17]  →pula
[18] esq:r[i;]←gtcorta'(',(3 0⍕x[i;3]),(,r[x[i;1];]),'())'
[19] pula:→(i=i←i-1)/l2
[20] fim:r←corta r[1;]
[21]  lixo←limpa
-------------------------------------------------------------
[ 0]  opesq vivo150a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz;⎕IO;aa;bb
[ 1]  ⎕IO←1
[ 2]  →(0≠⎕NC'opesq')/qveio
[ 3]  opesq←10⍴' '
[ 4] qveio:
[ 5]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 6]  EVENTO←'PL150   '
[ 7]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[10]  ylu←n grupo ylu
[11]  FOLHALA150←ajusta80 FOLHALA150
[12]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA150)⍴' '
[13]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[14]  xk←1 ⋄ resu←0 5⍴0
[15] testa:→(xk>1↑⍴ylu)/fim
[16]  esse←26 80⍴' '
[17]  f←FOLHALA150
[18]  esse[1;]←80↑dhx[1;]
[19]  esse[2;]←80↑dhx[2;]
[20]  esse[3;]←80↑4 2⍕VERSAOa←1.2
[21]  esse[4;]←80↑ylu[xk;⍳6]
[22]  →(36=1↓⍴ylu)/zebra
[23]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[24]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[25]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[26]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[27]  →maiszebra
[28] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[32]  esse[25;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[26;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] inica:
[35]  bb←paarvore aa←crarvore 18?99
[36]  esse[8 9;]←2 80↑divide bb
[37]  resp←resp,+/aa[;4]=⌈/,aa[;4]
[38]  xx←geramp
[39]  esse[10;]←1 80⍴80↑⍕xx[1]
[40]  esse[11;]←1 80⍴80↑⍕xx[2]
[41]  esse[12;]←1 80⍴80↑⍕xx[3]
[42]  esse[13;]←1 80⍴80↑⍕xx[4]
[43]  esse[14;]←1 80⍴80↑⍕xx[5]
[44]  resp←resp,xx[6]
[45]  xx←lombada(6+?4),8+?4
[46]  esse[14+⍳10;]←10 80↑⍕⊃xx[1]
```

```
[47]  resp←resp,⊃xx[2]
[48]  resu←resu,[1]1 5⍴resp
[49]  acuja←(f[;2]='#')/⍳1↑⍴f
[50]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[51]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[52]  □←(⍕xk←xk+1),'-'
[53]  →testa
[54] fim:upag←(1 0+⍴f)⍴' '
[55]  →(1=≡n)/elafa
[56]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[57]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[58]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 8 0 8 0 8 0 4 0)⍕resu
[59]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[60]  →terminando
[61] elafa:aaa←(ylu[;⍳36],4 0⍴0 1↓resu)
[62]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[63]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[64] terminando:
[65]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[66]  relat[1↑⍴relat;;]←upag
[67]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[68]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[69]  lixonol←□EX 2 10⍴'quantos   matriz    '
[70]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo157

```
[0]  AVISO
[1]  'Ha aqui 4 funcoes: 2 para C++ (b e c) e duas para Python (p e q)'
[2]  ' Na listagem oficial só aparecem as 2 de c++: b e c.'
------------------------------------------------------------
[0]  r←acerta157b x
[1]  r←(⍕x[1]),'&',(⍕x[2]),'&',(⍕x[3]),'&',(⍕x[4]),'&',(⍕x[5]),'\\ \hline'
------------------------------------------------------------
[0]  r←acerta157c x
[1]  r←(⍕x[1]),'&',(⍕x[2]),'&',(⍕x[3]),'&',(⍕x[4]),'&',(⍕x[5]),'\\ \hline'
------------------------------------------------------------
[ 0]  r←divs x
[ 1]  r←2
[ 2]  d←2
[ 3] t1:→(d>⌊x÷2)/fica
[ 4]  →(0=d|x)/sim
[ 5] nao:d←d+1
[ 6]  →t1
[ 7] sim:
[ 8]  r←r+1
[ 9]  →nao
[10] fica:
------------------------------------------------------------
[ 0]  r←geram157b;lin;col;k;t;z;m;i;j;ki;aa;bb
[ 1] novo:
[ 2]  lin←5+?4
[ 3]  col←7+?4
[ 4]  ki←k←7+?9
[ 5]  t←(7 9 11 13 14 15 17 19)[?8]
[ 6] t0:
[ 7]  z←57+?59
[ 8]  →(0=2|z)/t0
[ 9]  m←(lin,col)⍴0
[10]  i←1
[11] t1:→(i>lin)/fim
```

```
[12]  j←1
[13] t2:→(j>col)/mais
[14]  m[i;j]←k
[15]  k←z|k+t
[16]  j←j+1
[17]  →t2
[18] mais:
[19]  i←i+1
[20]  →t1
[21] fim:
[22]  aa←⌈/bb←+/[1]m
[23]  →(1≥+/aa=bb)/ok1
[24]  ⍞←'o'
[25]  →novo
[26] ok1:
[27]  aa←⌊/bb←+/[2]m
[28]  →(1≥+/aa=bb)/ok2
[29]  ⍞←'∘'
[30]  →novo
[31] ok2:
[32]  r←2ρ0
[33]  r[1]←⊂m
[34]  r[2]←⊂lin,col,ki,t,z
-------------------------------------------------------------
[ 0]  r←geram157c;x;k;t;z;m;i;j;ki;aa;bb
[ 1] novo:
[ 2]  x←6+?11
[ 3]  ki←k←7+?9
[ 4]  t←(7 9 11 13 14 15 17 19)[2?8]
[ 5] t0:
[ 6]  z←57+?59
[ 7]  →(0=2|z)/t0
[ 8]  m←(x,x)ρ0
[ 9]  i←1
[10] t1:→(i>x)/fim
[11]  j←1
[12] t2:→(j>x)/mais
[13]  m[i;j]←k
[14]  k←z|k+t[1]
[15]  j←j+1
[16]  →t2
[17] mais:
[18]  i←i+1
[19]  k←z|k+t[2]
[20]  →t1
[21] fim:
[22]  r←2ρ0
[23]  r[1]←⊂m
[24]  r[2]←⊂x,ki,t,z
-------------------------------------------------------------
[ 0]  r←martelo resolve157b x;pri;viz;i;j;aa;bb
[ 1]  pri←2 3 5 7 11 13 17 19 23 29 31 37 41
[ 2]  pri←pri,43 47 53 59 61 67 71 73 79 83 89 97
[ 3]  r←5ρ0
[ 4]  aa←⌈/bb←+/[1]x
[ 5]  r[1]←bb⍳aa
[ 6]  aa←⌊/bb←+/[2]x
[ 7]  r[2]←bb⍳aa
[ 8]  r[3]←+/(,x)∈pri
[ 9]  r[4]←+/(0=martelo|,x)∧(0≠,x)
[10]  viz←0
[11]  i←2
[12] t1:→(i>¯1+1↑ρx)/fi
```

```
[13]  j←2
[14] t2:→(j>¯1+1↓ρx)/so
[15]  →((x[i;j]≥x[i-1;j])∨(x[i;j]≥x[i+1;j])∨(x[i;j]≥x[i;j-1])∨(x[i;j]≥x[i;j+1]))/mais1
[16]  viz←viz+1
[17] mais1:
[18]  j←j+1
[19]  →t2
[20] so:
[21]  i←i+1
[22]  →t1
[23] fi:r[5]←viz
------------------------------------------------------------
[ 0]  r←martelo resolve157c x;pri;viz;i;j;dp;ds;qtd;z
[ 1]  r←5ρ0
[ 2]  i←1
[ 3]  dp←ds←ι0
[ 4] t1:→(i>1↑ρx)/fim
[ 5]  dp←dp,x[i;i]
[ 6]  ds←ds,x[i;(1↑ρx)-i-1]
[ 7]  i←i+1
[ 8]  →t1
[ 9] fim:
[10]  r[1]←⌈/dp
[11]  r[2]←⌊/ds
[12]  qtd←0
[13]  z←,x
[14]  i←1
[15] t2:→(i>ρz)/uba
[16]  →(4≥divs z[i])/soma
[17]  qtd←qtd+1
[18] soma:
[19]  i←i+1
[20]  →t2
[21] uba:r[3]←qtd
[22]  qtd←0
[23]  i←1
[24] t44:→(i>ρz)/fica
[25]  →(1<+/z∈z[i])/somaja
[26]  i←i+1
[27]  →t44
[28] somaja:
[29]  qtd←qtd+1
[30]  i←i+1
[31]  →t44
[32] fica:r[4]←qtd
[33]  qtd←0
[34]  i←2
[35] t3:→(i>¯1+1↑ρx)/fih
[36]  j←2
[37] t4:→(j>¯1+1↑ρx)/soh
[38]  →((x[i;j]>x[i-1;j-1])∧(x[i;j]>x[i;j-1])∧(x[i;j]>x[i+1;j-1]))/foimesmo
[39]  →ateaqui
[40] somaj:
[41]  j←j+1
[42]  →t4
[43] ateaqui:
[44]  →((x[i;j]<x[i-1;j+1])∧(x[i;j]>x[i;j+1])∧(x[i;j]>x[i+1;j+1]))/foimesmo
[45]  →somaj
[46] foimesmo:
[47]  qtd←qtd+1
[48]  →somaj
[49] soh:
[50]  i←i+1
```

```
[51]  →t3
[52] fih:r[5]←qtd
------------------------------------------------------------
[ 0]  opesq vivo157b n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;yy;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL157b  '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA157b←ajusta80 FOLHALA157b
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA157b)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 26⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←19 80⍴' '
[16]  f←FOLHALA157b
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOb←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[18;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[19;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geram157b
[35]  yy←2+?17
[36]  esse[8;]←80↑acerta157b⊃xx[2]
[37]  esse[9;]←80↑⍎yy
[38]  resp←resp,yy resolve157b⊃xx[1]
[39]  xx←geram157b
[40]  yy←2+?17
[41]  esse[10;]←80↑acerta157b⊃xx[2]
[42]  esse[11;]←80↑⍎yy
[43]  resp←resp,yy resolve157b⊃xx[1]
[44]  xx←geram157b
[45]  yy←2+?17
[46]  esse[12;]←80↑acerta157b⊃xx[2]
[47]  esse[13;]←80↑⍎yy
[48]  resp←resp,yy resolve157b⊃xx[1]
[49]  xx←geram157b
[50]  yy←2+?17
[51]  esse[14;]←80↑acerta157b⊃xx[2]
[52]  esse[15;]←80↑⍎yy
[53]  resp←resp,yy resolve157b⊃xx[1]
[54]  xx←geram157b
[55]  yy←2+?17
[56]  esse[16;]←80↑acerta157b⊃xx[2]
[57]  esse[17;]←80↑⍎yy
```

```
[58]  resp←resp,yy resolve157b⊃xx[1]
[59]  resu←resu,[1]1 26⍴resp
[60]  acuja←(f[;2]='#')/⍳1↑⍴f
[61]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[62]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[63]  ⎕←(⍕xk←xk+1),'-'
[64]  →testa
[65] fim:upag←(1 0+⍴f)⍴' '
[66]  →(1=≡n)/elafa
[67]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[68]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[69]  upag[2+⍳1↑⍴resu;⍳75]←(5 0,50⍴4 0 3 0 3 0 2 0 2 0)⍕resu
[70]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[71]  →terminando
[72] elafa:aaa←(ylu[;⍳36],3 0⍕0 1↓resu)
[73]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[74]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[75] terminando:
[76]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[77]  relat[1↑⍴relat;;]←upag
[78]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[79]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[80]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[81]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo157c n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;yy;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL157c  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA157c←ajusta80 FOLHALA157c
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA157c)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 21⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←13 80⍴' '
[16]  f←FOLHALA157c
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOc←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[12;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[13;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geram157c
[35]  esse[8;]←80↑acerta157c⊃xx[2]
```

```
[36]  resp←resp,resolve157c⊃xx[1]
[37]  xx←geram157c
[38]  esse[9;]←80↑acerta157c⊃xx[2]
[39]  resp←resp,resolve157c⊃xx[1]
[40]  xx←geram157c
[41]  esse[10;]←80↑acerta157c⊃xx[2]
[42]  resp←resp,resolve157c⊃xx[1]
[43]  xx←geram157c
[44]  esse[11;]←80↑acerta157c⊃xx[2]
[45]  resp←resp,resolve157c⊃xx[1]
[46]  resu←resu,[1]1 21⍴resp
[47]  acuja←(f[;2]='#')/⍳1↑⍴f
[48]  f[acuja;⍳80]←esse[≜,f[acuja;3 4],' ';]
[49]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[50]  ⍞←(⍕xk←xk+1),'-'
[51]  →testa
[52] fim:upag←(1 0+⍴f)⍴' '
[53]  →(1=≡n)/elafa
[54]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[55]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[56]  upag[2+⍳1↑⍴resu;⍳73]←(5 0,40⍴5 0 3 0 3 0 3 0 3 0)⍕resu
[57]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[58]  →terminando
[59] elafa:aaa←(ylu[;⍳36],3 0⍕0 1↓resu)
[60]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[61]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[62] terminando:
[63]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[64]  relat[1↑⍴relat;;]←upag
[65]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[66]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[67]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[68]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo157p n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;yy;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL157p  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA157p←ajusta80 FOLHALA157p
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA157p)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 26⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←19 80⍴' '
[16]  f←FOLHALA157p
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAO⍴←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
```

```
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[18;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[19;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geram157b
[35]  yy←2+?17
[36]  esse[8;]←80↑acerta157b⊃xx[2]
[37]  esse[9;]←80↑⍕yy
[38]  resp←resp,yy resolve157b⊃xx[1]
[39]  xx←geram157b
[40]  yy←2+?17
[41]  esse[10;]←80↑acerta157b⊃xx[2]
[42]  esse[11;]←80↑⍕yy
[43]  resp←resp,yy resolve157b⊃xx[1]
[44]  xx←geram157b
[45]  yy←2+?17
[46]  esse[12;]←80↑acerta157b⊃xx[2]
[47]  esse[13;]←80↑⍕yy
[48]  resp←resp,yy resolve157b⊃xx[1]
[49]  xx←geram157b
[50]  yy←2+?17
[51]  esse[14;]←80↑acerta157b⊃xx[2]
[52]  esse[15;]←80↑⍕yy
[53]  resp←resp,yy resolve157b⊃xx[1]
[54]  xx←geram157b
[55]  yy←2+?17
[56]  esse[16;]←80↑acerta157b⊃xx[2]
[57]  esse[17;]←80↑⍕yy
[58]  resp←resp,yy resolve157b⊃xx[1]
[59]  resu←resu,[1]1 26⍴resp
[60]  acuja←(f[;2]='#')/⍳1↑⍴f
[61]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[62]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[63]  ⎕←(⍕xk←xk+1),'-'
[64]  →testa
[65] fim:upag←(1 0+⍴f)⍴' '
[66]  →(1=≡n)/elafa
[67]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[68]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[69]  upag[2+⍳1↑⍴resu;⍳75]←(5 0,50⍴4 0 3 0 3 0 2 0 2 0)⍕resu
[70]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[71]  →terminando
[72] elafa:aaa←(ylu[;⍳36],3 0⍕0 1↓resu)
[73]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[74]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴paaa),' linhas e ',(⍕1↓⍴paaa),' colunas'
[75] terminando:
[76]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[77]  relat[1↑⍴relat;;]←upag
[78]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[79]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[80]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[81]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[ 0]  opesq vivo157q n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;yy;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL157q  '
```

```
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA157q←ajusta80 FOLHALA157q
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA157q)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 21⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←13 80⍴' '
[16]  f←FOLHALA157q
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOq←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[12;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[13;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geram157c
[35]  esse[8;]←80↑acerta157c⊃xx[2]
[36]  resp←resp,resolve157c⊃xx[1]
[37]  xx←geram157c
[38]  esse[9;]←80↑acerta157c⊃xx[2]
[39]  resp←resp,resolve157c⊃xx[1]
[40]  xx←geram157c
[41]  esse[10;]←80↑acerta157c⊃xx[2]
[42]  resp←resp,resolve157c⊃xx[1]
[43]  xx←geram157c
[44]  esse[11;]←80↑acerta157c⊃xx[2]
[45]  resp←resp,resolve157c⊃xx[1]
[46]  resu←resu,[1]1 21⍴resp
[47]  acuja←(f[;2]='#')/⍳1↑⍴f
[48]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[49]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[50]  ⍞←(⍎xk←xk+1),'-'
[51]  →testa
[52] fim:upag←(1 0+⍴f)⍴' '
[53]  →(1=≡n)/elafa
[54]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[55]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[56]  upag[2+⍳1↑⍴resu;⍳73]←(5 0,40⍴5 0 3 0 3 0 3 0 3 0)⍎resu
[57]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[58]  →terminando
[59] elafa:aaa←(ylu[;⍳36],3 0⍎0 1↓resu)
[60]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[61]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[62] terminando:
[63]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[64]  relat[1↑⍴relat;;]←upag
[65]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[66]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[67]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
```

```
[68]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
```

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vivo158

```
[ 0]  r←cami x;y;i;j;pivot
[ 1]  y←((1↑⍴x),(1↑⍴x))⍴0
[ 2]  i←1
[ 3] t1:→(i>↑⍴x)/fi
[ 4]  y[i;i]←1
[ 5]  i←i+1
[ 6]  →t1
[ 7] fi:
[ 8]  i←1
[ 9] t2:→(i>1↑⍴x)/fi8
[10]  j←1
[11] t3:→(j>1↑⍴x)/fi9
[12]  →(j=i)/somaj
[13]  pivot←x[j;i]÷x[i;i]
[14]  x[j;]←x[j;]+x[i;]×-pivot
[15]  y[j;]←y[j;]+y[i;]×-pivot
[16] somaj:j←j+1
[17]  →t3
[18] fi9:
[19]  y[i;]←y[i;]÷x[i;i]
[20]  x[i;]←x[i;]÷x[i;i]
[21]  i←i+1
[22]  →t2
[23] fi8:r←y
```

```
[ 0]  r←cami2 x;y;i;j;pivot;⎕IO
[ 1]  ⎕IO←0
[ 2]  y←((1↑⍴x),(1↑⍴x))⍴0
[ 3]  i←0
[ 4] t1:→(i≥↑⍴x)/fi
[ 5]  y[i;i]←1
[ 6]  i←i+1
[ 7]  →t1
[ 8] fi:
[ 9]  i←0
[10] t2:→(i≥1↑⍴x)/fi8
[11]  j←0
[12] t3:→(j≥1↑⍴x)/fi9
[13]  →(j=i)/somaj
[14]  pivot←x[j;i]÷x[i;i]
[15]  x[j;]←x[j;]+x[i;]×-pivot
[16]  y[j;]←y[j;]+y[i;]×-pivot
[17] somaj:j←j+1
[18]  →t3
[19] fi9:
[20]  y[i;]←y[i;]÷x[i;i]
[21]  x[i;]←x[i;]÷x[i;i]
[22]  i←i+1
[23]  →t2
[24] fi8:r←y
```

```
[0]  r←gera158;a;x
[1]  a←?10 10⍴100⍴99
[2]  x←⌹a
[3]  r←2⍴0
[4]  r[1]←⊂3 0⍉a
[5]  r[2]←⊂x[6;7]×1000
```

```
------------------------------------------------------------
[ 0]  opesq vivo158c n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL158c  '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA158c←ajusta80 FOLHALA158c
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA158c)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 2⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←19 80⍴' '
[16]  f←FOLHALA158c
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOc←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[18;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[19;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera158
[35]  esse[7+⍳10;]←10 80↑⊃xx[1]
[36]  resp←resp,,⊃xx[2]
[37]  resu←resu,[1]1 2⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⍞←(⍎xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳15]←'¯-'edit 5 0 10 3⍎resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],'¯-'edit 10 3⍎0 1↓resu)
[51]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
```

```
------------------------------------------------------------
[ 0]  opesq vivo158p n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL158p  '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA158p←ajusta80 FOLHALA158p
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA158p)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 2⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←19 80⍴' '
[16]  f←FOLHALA158p
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOp←1.03
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[18;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[19;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera158
[35]  esse[7+⍳10;]←10 80↑⊃xx[1]
[36]  resp←resp,,⊃xx[2]
[37]  resu←resu,[1]1 2⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⍞←(⍎xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳15]←'¯-'edit 5 0 10 3⍎resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],'¯-'edit 10 3⍎0 1↓resu)
[51]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
```

```
------------------------------------------------------------
```

vivo159

```
[ 0]  r←gera159;a;aux;aux1;aux2;aux3;aux4;b;c;d;e;f;g;h;resp
[ 1]  r←2ρ0
[ 2]  a←4 4ρ?100ρ100
[ 3]  b←⍕a
[ 4]  →(1=?2)/coroa
[ 5] cara:
[ 6]  resp←1
[ 7]  aux←6 0⍒a
[ 8]  aux1←' -119.99999'⍒b
[ 9]  →junta
[10] coroa:
[11]  resp←0
[12]  aux←6 0⍒a
[13]  aux1←' -119.99999'⍒b[;1 3 2 4]
[14] junta:
[15]  aux2←6 0⍒c←4 4ρ?100ρ100
[16]  d←⍕c
[17]  resp←resp,⍎10 3⍒d[3;3]×1000
[18]  e←4 4ρ?100ρ100
[19]  f←⍕e
[20]  aux3←' -119.99999'⍒f
[21]  g←?4ρ200
[22]  h←e+.×4 1ρg
[23]  aux4←6 0⍒,h
[24]  resp←resp,g
[25]  r[1]←⊂resp
[26]  r[2]←⊂(4 80↑aux),[1](4 80↑aux1),[1](4 80↑aux2),[1](4 80↑aux3),[1]1 80ρ80↑aux4
------------------------------------------------------------
[ 0]  r←geramatrizprova1;x;y;xalfa;lin;col
[ 1]  x←3 3ρ9?20
[ 2]  lin←?3
[ 3]  col←?3
[ 4]  x←x÷10
[ 5]  y←⍕x
[ 6]  r←3ρ0
[ 7]  xalfa←' -5551.500 '⍒x
[ 8]  xalfa[lin;(11×col-1)+⍳11]←'      x    '
[ 9]  r[1]←⊂xalfa
[10]  r[2]←⊂' -5551.500 '⍒y
[11]  r[3]←⊂x[lin;col]
------------------------------------------------------------
[ 0]  r←geraquestaoprova1;zz;u;i;kk;xx;aa
[ 1]  zz←0 78ρ' '
[ 2]  u←3180
[ 3]  i←1
[ 4] t1:→(i>50)/fim
[ 5]  zz←zz,[1]1 78ρ78↑'$QE',(5 0⍒u),'560      1Matriz inversa'
[ 6]  zz←zz,[1]1 78ρ78↑'A seguir, duas matrizes ($3 \times 3$), sendo que uma '
[ 7]  zz←zz,[1]1 78ρ78↑'é a inversa da outra.'
[ 8]  zz←zz,[1]1 78ρ78↑'\begin{verbatim}'
[ 9]  xx←geramatrizprova1
[10]  zz←zz,[1]3 78↑⊃xx[1]
[11]  zz←zz,[1]1 78ρ78↑'    ---------------- e --------------- '
[12]  zz←zz,[1]3 78↑⊃xx[2]
[13]  zz←zz,[1]1 78ρ78↑'\end{verbatim}'
[14]  zz←zz,[1]1 78ρ78↑'Descubra o valor de $x$.'
[15]  zz←zz,[1]1 78ρ78↑'$QR',(5 0⍒u)
[16]  zz←zz,[1]1 78ρ78↑⍒⊃xx[3]
```

```
[17]  u←u+1
[18]  i←i+1
[19]  →t1
[20] fim:r←zz
-------------------------------------------------------------
[ 0]  opesq vivo159a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL159   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA159←ajusta80 FOLHALA159
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA159)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 7⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←26 80⍴' '
[16]  f←FOLHALA159
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[25;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[26;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera159
[35]  esse[7+⍳17;]←17 80↑⊃xx[2]
[36]  resp←resp,,⊃xx[1]
[37]  resu←resu,[1]1 7⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⍞←(⍎xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳¯3++/lixo1]←'¯-'edit(lixo1←5 0 3 0 9 3 5 0 5 0 5 0 5 0)⍎resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:aaa←'¯-'edit(ylu[;⍳36],3 0 9 3 5 0 5 0 5 0 5 0⍎0 1↓resu)
[51]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
```

```
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo160

```
[ 0]  r←contadp160 x;ct;d
[ 1]  ct←2
[ 2]  d←2
[ 3] testa:
[ 4]  →(d≥x)/fim
[ 5]  →(0=d|x)/esim
[ 6]  d←d+1
[ 7]  →testa
[ 8] esim:ct←ct+1
[ 9]  d←d+1
[10]  →testa
[11] fim:r←ct
-------------------------------------------------------------
[ 0]  r←difp160 x;i
[ 1]  r←0⍴0
[ 2]  →(x∊PRIMO)/eprimo
[ 3]  i←1
[ 4] testa:
[ 5]  →(0=PRIMO[i]|x)/achei
[ 6]  i←i+1
[ 7]  →testa
[ 8] achei:r←r,PRIMO[i]
[ 9]  x←x÷PRIMO[i]
[10]  →(x=1)/fim
[11]  →testa
[12] fim:
[13]  →0
[14] eprimo:r←r,x
-------------------------------------------------------------
[ 0]  r←divsp160 x;ct;d
[ 1]  ct←1
[ 2]  d←2
[ 3] testa:
[ 4]  →(d≥x)/fim
[ 5]  →(0=d|x)/esim
[ 6]  d←d+1
[ 7]  →testa
[ 8] esim:ct←ct,d
[ 9]  d←d+1
[10]  →testa
[11] fim:ct←ct,x
[12]  r←ct
-------------------------------------------------------------
[ 0]  r←geracaso160;x;e;can;can2
[ 1]  ⎕FC[1 2]←',.'
[ 2]  r←2⍴0
[ 3]  x←9⍴0  ⍝ era x←10⍴0
[ 4]  e←9 79⍴' ' ⍝ era e←10 79⍴' '
[ 5] novo:
[ 6]  can←1500000+?500000
[ 7]  →(can∊PRIMO)/novo
[ 8]  x[1]←can
[ 9]  e[1;]←79↑'1. Ache o maior fator primo de ','555,555,555'⍕can
[10]  can←100000+?48993
```

```
[11]  x[2]←can
[12]  e[2;]←79↑'2. Ache o k-ésimo número primo. k=','5,555,555'⍕can
[13]  can←1500000+?499999
[14]  x[3]←can
[15]  e[3;]←79↑'3. Ache o primo anterior a ','555,555,555'⍕can
[16] ⍝ can←1500000+?499999
[17] ⍝ x[4]←can
[18] ⍝ e[4;]←79↑'⍀item Ache o primo posterior a ',⍕can
[19] novo2:
[20]  can←100000+?48000
[21]  can2←PRIMO[can]+2×¯1+?2
[22]  x[4]←can2
[23]  e[4;]←79↑'4. Teste de primalidade: Informe 0=n↑o e 1=sim se ',('555,555,555'⍕can2),'
       for primo'
[24]  can←70000+?70000
[25]  can2←PRIMO[can]+2
[26]  x[5]←can2
[27]  e[5;]←79↑'5. Quantos primos $p$ há, tal que $p⍀le',('555,555,555'⍕can2),'$ ?'
[28]  can←10000+?10000
[29]  x[6]←can
[30]  e[6;]←79↑'6. Ache a funç↑o contador de divisores de ','555,555,555'⍕can
[31]  can←5000+?10000
[32]  x[7]←can
[33]  e[7;]←79↑'7. Ache a funç↑o soma de divisores de ','555,555,555'⍕can
[34]  can←10000+?10000
[35]  x[8]←can
[36]  e[8;]←79↑'8. Ache a funç↑o de M⍀"{o}ebius de ','555,555,555'⍕can
[37]  can←5000+?10000
[38]  x[9]←can
[39]  e[9;]←79↑'9. Ache a funç↑o totiente de Euler de ','555,555,555'⍕can
[40]  r[1]←⊂e
[41]  r[2]←⊂resolve160 x
-------------------------------------------------------------
[0]  r←a mdc b
[1]  →(0=b)/achei
[2]  r←b mdc(b|a)
[3]  →0
[4] achei:r←a
-------------------------------------------------------------
[ 0]  r←mfp160 x;i
[ 1]  →(x∊PRIMO)/eprimo
[ 2]  i←1
[ 3] testa:
[ 4]  →(0=PRIMO[i]|x)/achei
[ 5]  i←i+1
[ 6]  →testa
[ 7] achei:x←x÷PRIMO[i]
[ 8]  →(x=1)/fim
[ 9]  →testa
[10] fim:r←PRIMO[i]
[11]  →0
[12] eprimo:r←x
-------------------------------------------------------------
[ 0]  r←moebius x;y;z
[ 1]  z←difp160 x
[ 2]  y←redup z
[ 3]  →((⍴y)=⍴z)/naotem
[ 4] tem:r←0
[ 5]  →0
[ 6] naotem:→(1=2|⍴z)/impar
[ 7] par:r←1
[ 8]  →0
[ 9] impar:r←¯1
```

```
[10]  →0
------------------------------------------------------------
[0]  r←redup x
[1]  r←((x⍳x)=⍳⍴x)/x
------------------------------------------------------------
[ 0]  r←resolve160 x
[ 1]  r←9⍴0 ⍝ era 10⍴0
[ 2]  r[1]←mfp160 x[1]
[ 3]  r[2]←PRIMO[x[2]]
[ 4]  r[3]←¯1↑(PRIMO<x[3])/PRIMO
[ 5] ⍝ r[4]←1↑(PRIMO>x[4])/PRIMO
[ 6]  r[4]←x[4]∈PRIMO
[ 7]  r[5]←+/PRIMO≤x[5]
[ 8]  r[6]←contadp160 x[6]
[ 9]  r[7]←somadp160 x[7]
[10]  r[8]←moebius x[8]
[11]  r[9]←totiente x[9]
------------------------------------------------------------
[ 0]  r←somadp160 x;ct;d
[ 1]  ct←x+1
[ 2]  d←2
[ 3] testa:
[ 4]  →(d≥x)/fim
[ 5]  →(0=d|x)/esim
[ 6]  d←d+1
[ 7]  →testa
[ 8] esim:ct←ct+d
[ 9]  d←d+1
[10]  →testa
[11] fim:r←ct
------------------------------------------------------------
[ 0]  r←totiente x;ct;d
[ 1]  ct←1
[ 2]  d←2
[ 3] t1:→(d>x)/acabou
[ 4]  →(1=d mdc x)/soma
[ 5]  d←d+1
[ 6]  →t1
[ 7] soma:ct←ct+1
[ 8]  d←d+1
[ 9]  →t1
[10] acabou:r←ct
------------------------------------------------------------
[ 0]  opesq vivo160a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL160   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA160←ajusta80 FOLHALA160
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA160)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 10⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←18 80⍴' '
[16]  f←FOLHALA160
[17]  esse[1;]←80↑dhx[1;]
```

```
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[17;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[18;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracaso160
[35]  esse[7+⍳9;]←9 80↑⊃xx[1]
[36]  resp←resp,,⊃xx[2]
[37]  resu←resu,[1]1 10⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[±,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[41]  ⎕←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←4 0 8 0 8 0 8 0 3 0 7 0 7 0 9 0 3 0 7 0)⍕re
      su
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],'¯-'edit 9 0⍕0 1↓resu)
[51]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[58]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo162

```
[0]  r←gera162;z
[1]  →(3=?3)/coroa
[2]  z←?¯1+1↑⍴CAN
[3]  r←CAN[z;1]+?CAN[z+1;1]-CAN[z;1]
[4]  →0
[5] coroa:
[6]  r←299+?200
------------------------------------------------------------
[ 0]  r←paratestar;i;z;y
[ 1]  i←1
[ 2]  r←0 2⍴0
[ 3]  y←50
[ 4] t1:→(y>100)/fim
[ 5]  z←resolve162 y
```

```
[ 6]  y,z
[ 7]  →(z∈r)/nao
[ 8]  r←r,[1]1 2ρy,z
[ 9]  y←y+1
[10]  →t1
[11] nao:
[12]  y←y+1
[13]  →t1
[14] fim:
------------------------------------------------------------
[ 0]  r←resolve162 x;n;Dn;Dn1;cnt;i;n1;exponent
[ 1]  n←3
[ 2]  Dn←2
[ 3]  cnt←0
[ 4] t1:→(cnt≥x)/fim
[ 5]  n←n+1
[ 6]  n1←n
[ 7]  →(0≠2|n1)/imp3
[ 8]  n1←n1÷2
[ 9] imp3:Dn1←1
[10]  i←1
[11] t2:→(i≥ρPRI)/viva
[12]  →((PRI[i]*2)>n1)/brequeia
[13]  exponent←1
[14] t3:
[15]  →(0≠PRI[i]|n1)/uca
[16]  exponent←exponent+1
[17]  n1←n1÷PRI[i]
[18]  →t3
[19] uca:
[20]  →(exponent≤1)/ija
[21]  Dn1←Dn1×exponent
[22] ija:
[23]  →(n1=1)/viva
[24]  i←i+1
[25]  →t2
[26] brequeia:
[27]  Dn1←Dn1×2
[28]  →viva
[29] viva:
[30]  cnt←Dn×Dn1
[31]  Dn←Dn1
[32]  →t1
[33] fim:r←(n×(n-1))÷2
------------------------------------------------------------
[ 0]  opesq vivo162c n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL162c  '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA162c←ajusta80 FOLHALA162c
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALA162c)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 2ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←10 80ρ' '
```

```
[16]  f←FOLHALA162c
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍴VERSAOc←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍴resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera162
[35]  esse[8;]←1 80⍴80↑⍴xx
[36]  resp←resp,resolve162 xx
[37]  resu←resu,[1]1 2⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[41]  ⍞←(⍴xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 20 0)⍴resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],9 0⍴0 1↓resu)
[51]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍴1↑⍴aaa),' linhas e ',(⍴1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo162p n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL162p  '
[ 6]  dhx←2 10⍴('05/05/0005'⍴+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍴+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍴⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA162p←ajusta80 FOLHALA162p
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA162p)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 2⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
```

```
[16]  f←FOLHALA162p
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOp←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera162
[35]  esse[8;]←1 80⍴80↑⍕xx
[36]  resp←resp,resolve162 xx
[37]  resu←resu,[1]1 2⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[41]  ⍞←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 20 0)⍕resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[51]  lixonol←aaa ⎕FM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ⎕FM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo170

```
[0]  AVISO
[1]  'Se comecar a dar muito ⊛, deixar a ultima chamada em geratripa com 1'
[2]  '  (deve estar com 2)'
-------------------------------------------------------------
[ 0]  r←n cortacom x;ini;fim;i;ct
[ 1]  ct←0 ⋄ i←1 ⋄ ini←fim←⍳0
[ 2] t1:→(i>⍴x)/fica
[ 3]  →(x[i]≠'{')/soma
[ 4]  →(ct≠0)/pula1
[ 5]  ini←ini,i
[ 6] pula1:
[ 7]  ct←ct+1
[ 8] soma:
[ 9]  →(x[i]≠'}')/ufa
```

```
[10]  ct←ct-1
[11]  →(ct≠0)/pula2
[12]  fim←fim,i
[13] pula2:
[14] ufa:
[15]  i←i+1
[16]  →t1
[17] fica:
[18]  r←x[ini[n]+⍳fim[n]-ini[n]+1]
------------------------------------------------------------
[0]  r←n cortacomc x;i;f
[1]  i←1↑(x='[')/⍳⍴x
[2]  f←1↑(x=']')/⍳⍴x
[3]  r←x[i[n]+⍳f[n]-i[n]+1]
------------------------------------------------------------
[0]  r←cortadbb x
[1]  r←(-(+/∧⍀⍵∧/[1]x=' '),(+/∧⍀⍵,∧/[2]x=' '))↓x
------------------------------------------------------------
[ 0]  r←detona z;b1;b2;b3;g;h;ind;tb
[ 1]  tb←6 2⍴'>≤<≥=≠≠=≥<≤>'
[ 2]  →(1=?2)/coroa
[ 3] cara:
[ 4]  g←(z∈tb[;1])/⍳⍴z
[ 5]  h←g[?⍴g]
[ 6]  ind←(,tb[;1]=z[h])/⍳6
[ 7]  z[h]←tb[ind;2]
[ 8]  r←z
[ 9]  →0
[10] coroa:
[11]  b1←1 cortacomc z
[12]  b2←1 cortacom z
[13]  b3←2 cortacom z
[14]  r←'[',b1,']{',b3,'}{',b2,'}'
------------------------------------------------------------
[ 0]  r←geracaso170c xixo;z;z1;sem;rz;rz1;tam
[ 1] ⍝ gera uma tripa de geracon1, 2 e 3
[ 2]  →(xixo=1)/v1
[ 3]  →(xixo=2)/v2
[ 4] v3:
[ 5]  z←geracond3
[ 6]  →ki
[ 7] v2:
[ 8]  z←geracond2
[ 9]  →ki
[10] v1:
[11]  z←geracond1
[12] ki:
[13]  z1←negacond z
[14]  ZAR←0 70⍴' '
[15]  MAR←''
[16]  traduzc z
[17]  rz←tirapl ZAR
[18]  ZAR←0 70⍴' '
[19]  MAR←''
[20]  sem←?2
[21]  →(sem=1)/coroa
[22]  traduzc z1
[23]  rz1←tirapl ZAR
[24]  →junta
[25] coroa:
[26]  z1←detona z1
[27]  traduzc z1
[28]  rz1←tirapl ZAR
```

```
[29] junta:tam←(ρrz)⌈ρrz1
[30]  r←2ρ0
[31]  r[1]←⊂(tam↑rz),' ','|',' ',tam↑rz1
[32]  r[2]←sem=2
-------------------------------------------------------------
[ 0]  r←geracaso170p xixo;z;z1;sem;rz;rz1;tam
[ 1] ⍝ gera uma tripa de geracon1, 2 e 3
[ 2]  →(xixo=1)/v1
[ 3]  →(xixo=2)/v2
[ 4] v3:
[ 5]  z←geracond3
[ 6]  →ki
[ 7] v2:
[ 8]  z←geracond2
[ 9]  →ki
[10] v1:
[11]  z←geracond1
[12] ki:
[13]  z1←negacond z
[14]  ZAR←0 70ρ' '
[15]  MAR←''
[16]  traduzp z
[17]  rz←tirapl matabran ZAR
[18]  ZAR←0 70ρ' '
[19]  MAR←''
[20]  sem←?2
[21]  →(sem=1)/coroa
[22]  traduzp z1
[23]  rz1←tirapl matabran ZAR
[24]  →junta
[25] coroa:
[26]  z1←detona z1
[27]  traduzp z1
[28]  rz1←tirapl matabran ZAR
[29] junta:tam←(ρrz)⌈ρrz1
[30]  r←2ρ0
[31]  r[1]←⊂(tam↑rz),' ','|',' ',tam↑rz1
[32]  r[2]←sem=2
-------------------------------------------------------------
[0]  r←geracoma;va;op;du
[1]  va←'IJKLMNPQRS'
[2]  op←'+-×÷'
[3]  du←2?ρva
[4]  r←va[du[1]],'←',va[du[2]],op[?ρop],⍕1+?7
-------------------------------------------------------------
[0]  r←geracond1;vc;co;cd
[1]  vc←'ABCDF'
[2]  co←'><=≠≤≥'
[3]  cd←vc[?ρvc],co[?ρco],⍕?7
[4]  →(1=?2)/coroa
[5] cara:r←'[',cd,']{',geracoma,'}{Ñ}'
[6]  →0
[7] coroa:
[8]  r←'[',cd,']{',geracoma,'}{',geracoma,'}'
-------------------------------------------------------------
[ 0]  r←geracond2;vc;co;cd;rr;cd2
[ 1]  vc←'ABCDF'
[ 2]  co←'><=≠≤≥'
[ 3]  cd←vc[?ρvc],co[?ρco],⍕?7
[ 4]  →(1=?2)/coroa
[ 5] cara:rr←'{[',cd,']{',geracoma,'}{Ñ}}'
[ 6]  →mm
[ 7] coroa:
```

```
[ 8]  rr←'{[',cd,']{',geracoma,'}{',geracoma,'}}'
[ 9] mm:
[10]  cd2←vc[?⍴vc],co[?⍴co],⍕?7
[11]  →(1=?2)/coroa2
[12] cara2:
[13]  r←'[',cd2,']{',geracoma,'}',rr
[14]  →0
[15] coroa2:
[16]  r←'[',cd2,']',rr,'{',geracoma,'}'
-------------------------------------------------------------
[ 0]  r←geracond3;cd;cd2;cd3;co;rr;vc;rs
[ 1]  vc←'ABCDF'
[ 2]  co←'><=≠≤≥'
[ 3]  cd←vc[?⍴vc],co[?⍴co],⍕?7
[ 4]  →(1=?2)/coroa
[ 5] cara:rr←'{[',cd,']{',geracoma,'}{Ñ}}'
[ 6]  →mm
[ 7] coroa:
[ 8]  rr←'{[',cd,']{',geracoma,'}{',geracoma,'}}'
[ 9] mm:
[10]  cd2←vc[?⍴vc],co[?⍴co],⍕?7
[11]  →(1=?2)/coroa2
[12] cara2:
[13]  rs←'[',cd2,']{',geracoma,'}',rr
[14]  →nn
[15] coroa2:
[16]  rs←'[',cd2,']',rr,'{',geracoma,'}'
[17] nn:
[18]  cd3←vc[?⍴vc],co[?⍴co],⍕?7
[19]  →(1=?2)/coroa3
[20] cara3:
[21]  r←'[',cd3,']{',rs,'}{',geracoma,'}'
[22]  →0
[23] coroa3:
[24]  r←'[',cd3,']{',geracoma,'}{',rs,'}'
-------------------------------------------------------------
[ 0]  r←geratripa170c cc;rx;res;caso
[ 1]  rx←0 50⍴' '
[ 2]  res←10⍴0
[ 3]  caso←geracaso170c 1
[ 4]  rx←rx,[1]3 50⍴(50⍴' '),(50↑(⍕cc+1),'.',45⍴'-'),50⍴' '
[ 5]  rx←rx,[1]((1↑⍴⊃caso[1]),50)↑⊃caso[1]
[ 6]  res[1]←⊃caso[2]
[ 7]  caso←geracaso170c 2
[ 8]  rx←rx,[1]3 50⍴(50⍴' '),(50↑(⍕cc+2),'.',45⍴'-'),50⍴' '
[ 9]  rx←rx,[1]((1↑⍴⊃caso[1]),50)↑⊃caso[1]
[10]  res[2]←⊃caso[2]
[11]  caso←geracaso170c 3
[12]  rx←rx,[1]3 50⍴(50⍴' '),(50↑(⍕cc+3),'.',45⍴'-'),50⍴' '
[13]  rx←rx,[1]((1↑⍴⊃caso[1]),50)↑⊃caso[1]
[14]  res[3]←⊃caso[2]
[15]  caso←geracaso170c 1
[16]  rx←rx,[1]3 50⍴(50⍴' '),(50↑(⍕cc+4),'.',45⍴'-'),50⍴' '
[17]  rx←rx,[1]((1↑⍴⊃caso[1]),50)↑⊃caso[1]
[18]  res[4]←⊃caso[2]
[19]  caso←geracaso170c 2
[20]  rx←rx,[1]3 50⍴(50⍴' '),(50↑(⍕cc+5),'.',45⍴'-'),50⍴' '
[21]  rx←rx,[1]((1↑⍴⊃caso[1]),50)↑⊃caso[1]
[22]  res[5]←⊃caso[2]
[23]  caso←geracaso170c 3
[24]  rx←rx,[1]3 50⍴(50⍴' '),(50↑(⍕cc+6),'.',45⍴'-'),50⍴' '
[25]  rx←rx,[1]((1↑⍴⊃caso[1]),50)↑⊃caso[1]
[26]  res[6]←⊃caso[2]
```

```
[27]  caso←geracaso170c 1
[28]  rx←rx,[1]3 50ρ(50ρ' '),(50↑(⍕cc+7),'.',45ρ'-'),50ρ' '
[29]  rx←rx,[1]((1↑ρ⊃caso[1]),50)↑⊃caso[1]
[30]  res[7]←⊃caso[2]
[31]  caso←geracaso170c 2
[32]  rx←rx,[1]3 50ρ(50ρ' '),(50↑(⍕cc+8),'.',45ρ'-'),50ρ' '
[33]  rx←rx,[1]((1↑ρ⊃caso[1]),50)↑⊃caso[1]
[34]  res[8]←⊃caso[2]
[35]  caso←geracaso170c 3
[36]  rx←rx,[1]3 50ρ(50ρ' '),(50↑(⍕cc+9),'.',45ρ'-'),50ρ' '
[37]  rx←rx,[1]((1↑ρ⊃caso[1]),50)↑⊃caso[1]
[38]  res[9]←⊃caso[2]
[39]  caso←geracaso170c 2
[40]  rx←rx,[1]3 50ρ(50ρ' '),(50↑(⍕cc+10),'.',45ρ'-'),50ρ' '
[41]  rx←rx,[1]((1↑ρ⊃caso[1]),50)↑⊃caso[1]
[42]  res[10]←⊃caso[2]
[43]  r←2ρ0
[44]  r[1]←⊂rx
[45]  r[2]←⊂res
-------------------------------------------------------------
[ 0]  r←geratripa170p cc;rx;res;caso
[ 1]  rx←0 50ρ' '
[ 2]  res←10ρ0
[ 3]  caso←geracaso170p 1
[ 4]  rx←rx,[1]3 50ρ(50ρ' '),(50↑(⍕cc+1),'.',45ρ'-'),50ρ' '
[ 5]  rx←rx,[1]((1↑ρ⊃caso[1]),50)↑⊃caso[1]
[ 6]  res[1]←⊃caso[2]
[ 7]  caso←geracaso170p 2
[ 8]  rx←rx,[1]3 50ρ(50ρ' '),(50↑(⍕cc+2),'.',45ρ'-'),50ρ' '
[ 9]  rx←rx,[1]((1↑ρ⊃caso[1]),50)↑⊃caso[1]
[10]  res[2]←⊃caso[2]
[11]  caso←geracaso170p 3
[12]  rx←rx,[1]3 50ρ(50ρ' '),(50↑(⍕cc+3),'.',45ρ'-'),50ρ' '
[13]  rx←rx,[1]((1↑ρ⊃caso[1]),50)↑⊃caso[1]
[14]  res[3]←⊃caso[2]
[15]  caso←geracaso170p 1
[16]  rx←rx,[1]3 50ρ(50ρ' '),(50↑(⍕cc+4),'.',45ρ'-'),50ρ' '
[17]  rx←rx,[1]((1↑ρ⊃caso[1]),50)↑⊃caso[1]
[18]  res[4]←⊃caso[2]
[19]  caso←geracaso170p 2
[20]  rx←rx,[1]3 50ρ(50ρ' '),(50↑(⍕cc+5),'.',45ρ'-'),50ρ' '
[21]  rx←rx,[1]((1↑ρ⊃caso[1]),50)↑⊃caso[1]
[22]  res[5]←⊃caso[2]
[23]  caso←geracaso170p 3
[24]  rx←rx,[1]3 50ρ(50ρ' '),(50↑(⍕cc+6),'.',45ρ'-'),50ρ' '
[25]  rx←rx,[1]((1↑ρ⊃caso[1]),50)↑⊃caso[1]
[26]  res[6]←⊃caso[2]
[27]  caso←geracaso170p 1
[28]  rx←rx,[1]3 50ρ(50ρ' '),(50↑(⍕cc+7),'.',45ρ'-'),50ρ' '
[29]  rx←rx,[1]((1↑ρ⊃caso[1]),50)↑⊃caso[1]
[30]  res[7]←⊃caso[2]
[31]  caso←geracaso170p 2
[32]  rx←rx,[1]3 50ρ(50ρ' '),(50↑(⍕cc+8),'.',45ρ'-'),50ρ' '
[33]  rx←rx,[1]((1↑ρ⊃caso[1]),50)↑⊃caso[1]
[34]  res[8]←⊃caso[2]
[35]  caso←geracaso170p 3
[36]  rx←rx,[1]3 50ρ(50ρ' '),(50↑(⍕cc+9),'.',45ρ'-'),50ρ' '
[37]  rx←rx,[1]((1↑ρ⊃caso[1]),50)↑⊃caso[1]
[38]  res[9]←⊃caso[2]
[39]  caso←geracaso170p 2
[40]  rx←rx,[1]3 50ρ(50ρ' '),(50↑(⍕cc+10),'.',45ρ'-'),50ρ' '
[41]  rx←rx,[1]((1↑ρ⊃caso[1]),50)↑⊃caso[1]
[42]  res[10]←⊃caso[2]
```

```
[43]  r←2⍴0
[44]  r[1]←⊂rx
[45]  r[2]←⊂res
------------------------------------------------------------
[0]  r←matabran x
[1]  r←(~(1↓⍴x)=+/[2]x=' ')/[1]x
------------------------------------------------------------
[ 0]  r←negacond x;tn;b1;b1v;b2;b3;ii;jj
[ 1]  →(~'['∈x)/zero
[ 2]  →((1=?2)∧(1=+/'['=x))/zero
[ 3]  tn←6 2⍴'>≤<≥=≠≠=≤>≥<'
[ 4]  b1v←b1←1 cortacomc x
[ 5]  b2←1 cortacom x
[ 6]  b3←2 cortacom x
[ 7]  →(5>?10)/cara2
[ 8] coroa2:
[ 9]  ii←(,tn[;1])⍳b1[jj←(b1∊tn)/⍳⍴b1]
[10]  b1[jj]←tn[ii;2]
[11]  →(1=?4)/zuka
[12]  r←'[',b1,']{',(negacond b3),'}{',(negacond b2),'}'
[13]  →0
[14] zuka:
[15]  r←'[~',b1,']{',(negacond b2),'}{',(negacond b3),'}'
[16]  →0
[17] cara2:
[18]  r←'[~',b1v,']{',(negacond b3),'}{',(negacond b2),'}'
[19]  →0
[20] zero:r←x
------------------------------------------------------------
[ 0]  r←quem replace depara;de;i;j;k;onde;para
[ 1] ⍝ forma de usar: texto replace 'strin-de' 'string para'
[ 2] ⍝ obviamente eles nao precisam ter o mesmo tamanho
[ 3]  de←,⊃depara[1] ⋄ para←,⊃depara[2]
[ 4]  i←1 ⋄ r←((1↑⍴quem),200)⍴' '
[ 5] t1:→(i>1↑⍴quem)/fim
[ 6]  →(0=∨/onde←de⍷quem[i;])/naotem
[ 7]  j←1 ⋄ k←1
[ 8] t2:→(k>⍴quem[i;])/acabou
[ 9]  →(onde[k]=0)/soma
[10]  r[i;(j-1)+⍳⍴para]←para
[11]  j←j+⍴para
[12]  k←k+⍴de
[13]  →t2
[14] soma:r[i;j]←quem[i;k]
[15]  k←k+1
[16]  →(j=j←j+1)/t2
[17] naotem:r[i;]←200↑quem[i;]
[18] acabou:→(i=i←i+1)/t1
[19] fim:r←trim4 r
------------------------------------------------------------
[ 0]  r←tirapl x;ra
[ 1]  ra←x
[ 2]  ra←ra replace'=' '=='
[ 3]  ra←'←='edit ra
[ 4]  ra←'××'edit ra
[ 5]  ra←'÷/'edit ra
[ 6]  ra←ra replace'≤' '<='
[ 7]  ra←ra replace'≥' '>='
[ 8]  ra←ra replace'≠' '!='
[ 9]  ra←ra replace'~' ' not '
[10]  r←ra
------------------------------------------------------------
[ 0]  traduzc x;b1;b2;b3
```

```
[ 1] ⍝ traduz de geracond? para a linguagem C em verbatim
[ 2]  b1←1 cortacomc x
[ 3]  b2←1 cortacom x
[ 4]  b3←2 cortacom x
[ 5]  ZAR←ZAR,[1]1 70⍴70↑MAR,'if (',b1,') {'
[ 6]  →(~'['∈b2)/naotemabre
[ 7]  MAR←MAR,'   '
[ 8]  traduzc b2
[ 9]  ZAR←ZAR,[1]1 70⍴70↑MAR,'}'
[10]  MAR←¯2↓MAR
[11]  →pula1
[12] naotemabre:
[13]  →(~'Ñ'=b2)/kik
[14]  ZAR←ZAR,[1]1 70⍴70↑'  ',MAR,'{}}'
[15]  →pula1
[16] kik:
[17]  ZAR←ZAR,[1]1 70⍴70↑'  ',MAR,b2,';}'
[18] pula1:
[19]  →(1↑'Ñ'=b3)/pula2
[20]  ZAR←ZAR,[1]1 70⍴70↑MAR,'else {'
[21]  →(~'['∈b3)/naotema2
[22]  MAR←MAR,'  '
[23]  traduzc b3
[24]  ZAR←ZAR,[1]1 70⍴70↑MAR,'}'
[25]  MAR←¯2↓MAR
[26]  →pula2
[27] naotema2:
[28]  ZAR←ZAR,[1]1 70⍴70↑'  ',MAR,b3,';}'
[29] pula2:
[30] ⍝ zar←cortadb zar
------------------------------------------------------------
[ 0]  traduzp x;b1;b2;b3
[ 1] ⍝ traduz de geracond? para a linguagem C em verbatim
[ 2]  b1←1 cortacomc x
[ 3]  b2←1 cortacom x
[ 4]  b3←2 cortacom x
[ 5]  ZAR←ZAR,[1]1 70⍴70↑MAR,'if ',b1,':'
[ 6]  →(~'['∈b2)/naotemabre
[ 7]  MAR←MAR,'  '
[ 8]  traduzp b2
[ 9]  ZAR←ZAR,[1]1 70⍴70↑MAR
[10]  MAR←¯2↓MAR
[11]  →pula1
[12] naotemabre:
[13]  →(~'Ñ'=b2)/kik
[14]  ZAR←ZAR,[1]1 70⍴70↑'  ',MAR,'pass'
[15]  →pula1
[16] kik:
[17]  ZAR←ZAR,[1]1 70⍴70↑'  ',MAR,b2
[18] pula1:
[19]  →(1↑'Ñ'=b3)/pula2
[20]  ZAR←ZAR,[1]1 70⍴70↑MAR,'else:'
[21]  →(~'['∈b3)/naotema2
[22]  MAR←MAR,'  '
[23]  traduzp b3
[24]  ZAR←ZAR,[1]1 70⍴70↑MAR
[25]  MAR←¯2↓MAR
[26]  →pula2
[27] naotema2:
[28]  ZAR←ZAR,[1]1 70⍴70↑'  ',MAR,b3
[29] pula2:
[30] ⍝ zar←cortadb zar
------------------------------------------------------------
```

```
[0]  r←trim4 x;z
[1] ⍝f corta as colunas direitas que sao brancos
[2]  →(2≠⍴⍴x)/erro
[3]  z←+/[1]x=' '
[4]  r←(z≠1↑⍴x)/[2]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
------------------------------------------------------------
[ 0]  opesq vivo170c n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL170c  '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA170c←ajusta80 FOLHALA170c
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA170c)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 21⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←211 80⍴' '
[16]  f←FOLHALA170c
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOc←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[210;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[211;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geratripa170c 0
[35]  →(101≥1↑⍴⊃xx[1])/blzok
[36]  ⍞←'⊗'
[37]  →inica
[38] blzok:
[39]  esse[7+⍳101;]←101 80↑⊃xx[1]
[40]  resp←resp,,⊃xx[2]
[41] inica2:
[42]  xx←geratripa170c 10
[43]  →(101≥1↑⍴⊃xx[1])/blzok2
[44]  ⍞←'⊗'
[45]  →inica2
[46] blzok2:
[47]  esse[108+⍳101;]←101 80↑⊃xx[1]
[48]  resp←resp,,⊃xx[2]
[49]  resu←resu,[1]1 21⍴resp
[50]  acuja←(f[;2]='#')/⍳1↑⍴f
[51]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4 5],' ';]
[52]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
```

```
[53]  ⍞←(⍕xk←xk+1),'-'
[54]  →testa
[55] fim:upag←(1 0+⍴f)⍴' '
[56]  →(1=≡n)/elafa
[57]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[58]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[59]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0,(18⍴3 0),10 0,18⍴3 0)⍕resu
[60]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[61]  →terminando
[62] elafa:aaa←(ylu[;⍳36],3 0⍕0 1↓resu)
[63]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[64]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[65] terminando:
[66]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[67]  relat[1↑⍴relat;;]←upag
[68]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[69]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[70]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[71]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo170p n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL170p  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA170p←ajusta80 FOLHALA170p
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA170p)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 21⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←211 80⍴' '
[16]  f←FOLHALA170p
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOp←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[210;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[211;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geratripa170p 0
[35]  →(101≥1↑⍴⊃xx[1])/blzok
[36]  ⍞←'⊗'
[37]  →inica
[38] blzok:
[39]  esse[7+⍳101;]←101 80↑⊃xx[1]
[40]  resp←resp,,⊃xx[2]
```

```
[41] inica2:
[42]  xx←geratripa170ρ 10
[43]  →(101≥1↑ρ⊃xx[1])/blzok2
[44]  ⍞←'⊗'
[45]  →inica2
[46] blzok2:
[47]  esse[108+ι101;]←101 80↑⊃xx[1]
[48]  resp←resp,,⊃xx[2]
[49]  resu←resu,[1]1 21ρresp
[50]  acuja←(f[;2]='#')/ι1↑ρf
[51]  f[acuja;ι80]←esse[⍋,f[acuja;3 4 5],' ';]
[52]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\clearpage'
[53]  ⍞←(⍕xk←xk+1),'-'
[54]  →testa
[55] fim:upag←(1 0+ρf)ρ' '
[56]  →(1=≡n)/elafa
[57]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[58]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[59]  upag[2+ι1↑ρresu;ι+/lixo1]←(lixo1←5 0 10 0,(18ρ3 0),10 0,18ρ3 0)⍕resu
[60]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[61]  →terminando
[62] elafa:aaa←(ylu[;ι36],3 0⍕0 1↓resu)
[63]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[64]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[65] terminando:
[66]  upag[1↑ρupag;]←(1↓ρupag)↑'\end{document}'
[67]  relat[1↑ρrelat;;]←upag
[68]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[69]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[70]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[71]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo175

```
[ 0]  opesq vivo175a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL175   '
[ 6]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕ιn
[ 9]  ylu←n grupo ylu
[10]  FOLHALA175←ajusta80 FOLHALA175
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALA175)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←12 80ρ' '
[16]  f←FOLHALA175
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;ι6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;ι4]=((1↑ρf),4)ρ'\#05')/ι1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
```

```
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34] ⍝ xx←geracaso
[35] ⍝ esse[7+⍳3;]←3 80↑acertaca xx
[36] ⍝ resp←resp,,xx[2 3;5]
[37]  resu←resu,[1]1 3⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍬,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⎕←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍕resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[51]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo183

```
[ 0]  r←baralho x;c;n;i;ctna;ctqu;ctfh;ctse;cttr;indices
[ 1] ⍝ x sao 1000 maos de poker. Deve-se naipe, quadra, fullhand, sequencia e trinca
[ 2]  i←1
[ 3]  ctna←ctqu←ctfh←ctse←cttr←0
[ 4] t1:→(i>1000)/fim
[ 5]  c←100|x[i;]  ⍝ carta
[ 6]  n←⌊x[i;]÷100 ⍝ naipe
[ 7]  indices←⍋c
[ 8]  c←c[indices]
[ 9]  n←n[indices]
[10]  ctna←ctna ponaipe c,n
[11]  ctqu←ctqu poquadr c,n
[12]  ctfh←ctfh pofullh c,n
[13]  ctse←ctse poseque c,n
[14]  cttr←cttr potrinc c,n
[15]  i←i+1
[16]  →t1
[17] fim:
[18]  r←ctna,ctqu,ctfh,ctse,cttr
-------------------------------------------------------------
[0]  r←fazbaralho;i
[1]  r←1000 5⍴0
[2]  i←1
```

```
[3] t1:→(i>1000)/fim
[4]  r[i;]←geraba
[5]  i←i+1
[6]  →t1
[7] fim:
-------------------------------------------------------------
[ 0]  r←gera183;bloco;lixo;r1;rr;x;y;z1;z2;z3
[ 1]  bloco←388 100⍴' '
[ 2] ⍝ gera 100 trens (N=20) e 100 limites  e examina QUANTOS podem passar
[ 3]  x←100 20⍴?2000⍴100
[ 4]  x[;19 20]←x[;19 20]+x[;1 10]
[ 5]  y←200+100?500
[ 6]  rr←+/y trem x
[ 7]  bloco[⍳100;]←100 100↑4 0⍉x,100 1⍴y
[ 8] ⍝ agora sao 4 patios de 22 x 22 cargas
[ 9]  z1←22 22⍴484?999
[10]  r1←porto z1
[11]  rr←rr,⍪10 1⍉r1[5]
[12]  bloco[100+⍳22;]←22 100↑4 0⍉z1
[13]  z1←22 22⍴484?999
[14]  r1←porto z1
[15]  rr←rr,⍪10 1⍉r1[5]
[16]  bloco[122+⍳22;]←22 100↑4 0⍉z1
[17]  z1←22 22⍴484?999
[18]  r1←porto z1
[19]  rr←rr,⍪10 1⍉r1[5]
[20]  bloco[144+⍳22;]←22 100↑4 0⍉z1
[21]  z1←22 22⍴484?999
[22]  r1←porto z1
[23]  rr←rr,⍪10 1⍉r1[5]
[24]  bloco[166+⍳22;]←22 100↑4 0⍉z1
[25] ⍝ agora sao 200 rodadas de 5 maos cada (200×5×5 cartas)
[26]  x←fazbaralho
[27]  rr←rr,baralho x
[28]  bloco[188+⍳200;]←200 100↑4 0⍉200 25⍴x
[29]  r←2⍴0
[30]  r[1]←⊂bloco
[31]  r[2]←⊂rr
-------------------------------------------------------------
[0]  r←geraba;c;n
[1]  c←52⍴⍳13 ⋄ n←52⍴⍳4
[2]  c←c[52?52]
[3]  n←n[52?52]
[4]  r←5↑c+n×100
-------------------------------------------------------------
[0]  r←ct pofullh x;c;n
[1]  c←x[⍳5] ⋄ n←x[5+⍳5]
[2]  →((c[1]=c[2])∧(c[2]=c[3])∧(c[4]=c[5])∧(c[1]≠c[5]))/sim
[3]  →((c[1]=c[2])∧(c[3]=c[4])∧(c[4]=c[5])∧(c[1]≠c[5]))/sim
[4] nao:
[5]  r←ct
[6]  →0
[7] sim:r←ct+1
-------------------------------------------------------------
[0]  r←ct ponaipe x;c;n;v
[1]  c←x[⍳5] ⋄ n←x[5+⍳5]
[2]  →(1=⍴((v⍳v)=⍳⍴v)/v←n)/sim
[3] nao:r←ct
[4]  →0
[5] sim:r←ct+1
-------------------------------------------------------------
[0]  r←ct poquadr x;n;c
[1]  c←x[⍳5] ⋄ n←x[5+⍳5]
```

```
[2]  →(((c[1]=c[2])∧(c[2]=c[3])∧(c[3]=c[4]))∨((c[2]=c[3])∧(c[3]=c[4])∧(c[4]=c[5])))/sim
[3] nao:r←ct
[4]  →0
[5] sim:r←ct+1
-------------------------------------------------------------
[ 0]  r←porto x;ma;me;i;j;d;ime;ima;jme;jma
[ 1] A responde a porto, de 30 x 30 containers
[ 2]  ma←-999999999 ⋄ me←999999999
[ 3]  i←1
[ 4] t1:→(i>1↑⍴x)/fi
[ 5]  j←1
[ 6] t2:→(j>1↑⍴x)/fk
[ 7]  →(ma>x[i;j])/ok1
[ 8]  ma←x[i;j] ⋄ ima←i ⋄ jma←j
[ 9] ok1:
[10]  →(me<x[i;j])/ok2
[11]  me←x[i;j] ⋄ ime←i ⋄ jme←j
[12] ok2:j←j+1
[13]  →t2
[14] fk:i←i+1
[15]  →t1
[16] fi:
[17]  d←(((ima-ime)*2)+((jma-jme)*2))*0.5
[18]  r←ima,jma,ime,jme,d
-------------------------------------------------------------
[ 0]  r←ct poseque x;n;c;mini
[ 1]  c←x[⍳5] ⋄ n←x[5+⍳5]
[ 2]  mini←c[1]
[ 3]  c←c-mini
[ 4]  →((c[1]=0)∧(c[2]=1)∧(c[3]=2)∧(c[4]=3)∧(c[5]=4))/sim
[ 5] nao:
[ 6]  r←ct
[ 7]  →0
[ 8] sim:r←ct+1
-------------------------------------------------------------
[0]  r←ct potrinc x;n;c
[1]  c←x[⍳5] ⋄ n←x[5+⍳5]
[2]  →((c[1]=c[2])∧(c[2]=c[3])∧(c[3]≠c[4])∧(c[3]≠c[5])∧(c[4]≠c[5]))/sim
[3]  →((c[2]=c[3])∧(c[3]=c[4])∧(c[1]≠c[2])∧(c[5]≠c[2])∧(c[1]≠c[5]))/sim
[4]  →((c[3]=c[4])∧(c[4]=c[5])∧(c[1]≠c[3])∧(c[2]≠c[3])∧(c[1]≠c[2]))/sim
[5] nao:r←ct
[6]  →0
[7] sim:r←ct+1
-------------------------------------------------------------
[ 0]  r←a trem b;c;i;j;ct;simnao
[ 1]  c←(100 2⍴0),b,100 2⍴0
[ 2]  i←1
[ 3]  ct←0
[ 4] l1:→(i>100)/fi
[ 5]  j←3
[ 6]  simnao←0
[ 7] l2:→(j>22)/fk
[ 8]  →((c[i;j-2]+c[i;j-1]+c[i;j]+c[i;j+1]+c[i;j+2])>a[i])/nao
[ 9] sim:j←j+1
[10]  →l2
[11] nao:simnao←1
[12]  →sim
[13] fk:
[14]  →(simnao=0)/soma
[15]  i←i+1
[16]  →l1
[17] soma:ct←ct+1
[18]  i←i+1
```

```
[19]  →l1
[20] fi:r←ct
-------------------------------------------------------------
[ 0]  opesq vivo183c n;CORRECAO;EVENTO;S;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qli
      nha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL183c  '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ S←⍎n[5]
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n ⋄ S←'0'
[ 9]  ylu←n grupo ylu
[10]  FOLHALA183c←ajusta80 FOLHALA183c
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALA183c)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 11ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←10 80ρ' '
[16]  f←FOLHALA183c
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOc←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑ρf),4)ρ'\#05')/⍳1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera183
[35]  lixo1←(⊃xx[1])ΔFM'c:\apl2\F183',S,('00'⍎xk),'.myd'
[36]  esse[8;]←80↑'F183',S,('00'⍎xk),'.myd'
[37]  resp←resp,,⊃xx[2]
[38]  resu←resu,[1]1 11ρresp
[39]  acuja←(f[;2]='#')/⍳1↑ρf
[40]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\clearpage'
[42]  ⍞←(⍎xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+ρf)ρ' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[48]  upag[2+⍳1↑ρresu;⍳¯4++/lixo1]←(lixo1←5 0 5 0 8 1 5 1 5 1 5 1 6 0 3 0 3 0 3 0 3 0)⍎res
      u
[49]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],5 0 8 1 5 1 5 1 5 1 6 0 3 0 3 0 3 0 3 0⍎0 1↓resu)
[52]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍎1↑ρaaa),' linhas e ',(⍎1↓ρaaa),' colunas'
[54] terminando:
[55]  upag[1↑ρupag;]←(1↓ρupag)↑'\end{document}'
[56]  relat[1↑ρrelat;;]←upag
```

```
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol ΔFM'c:\apl2\',((~⊖∧\⊖EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo183p n;CORRECAO;EVENTO;S;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qli
      nha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL183p  '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ S←⍎n[5]
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n ⋄ S←'0'
[ 9]  ylu←n grupo ylu
[10]  FOLHALA183p←ajusta80 FOLHALA183p
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA183p)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 11⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALA183p
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAO⍴←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera183
[35]  lixo1←(⊃xx[1])ΔFM'c:\apl2\F183',S,('00'⍎xk),'.myd'
[36]  esse[8;]←80↑'F183',S,('00'⍎xk),'.myd'
[37]  resp←resp,,⊃xx[2]
[38]  resu←resu,[1]1 11⍴resp
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[42]  ⍞←(⍎xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳¯4++/lixo1]←(lixo1←5 0 5 0 8 1 5 1 5 1 5 1 6 0 3 0 3 0 3 0 3 0)⍎res
      u
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],5 0 8 1 5 1 5 1 5 1 6 0 3 0 3 0 3 0 3 0⍎0 1↓resu)
[52]  lixonol←aaa ΔFM('c:\apl2\',((~⊖∧\⊖EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[54] terminando:
```

```
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo184

```
[ 0]  r←gera184;a1;a2;a3;r1;x
[ 1]  r←2⍴0
[ 2]  x←2000 16⍴' '
[ 3]  a1←500 2⍴100+?1000⍴190
[ 4]  x[⍳500;]←8 0⍕a1
[ 5]  r1←resolvesimi a1
[ 6]  a2←?1000⍴30
[ 7]  r1←r1,resolvekind a2
[ 8]  x[500+⍳500;]←8 0⍕500 2⍴a2
[ 9]  a3←1000 4⍴¯40+?4000⍴99
[10]  r1←r1,resolvecart a3
[11]  x[1000+⍳1000;]←'¯-'edit 4 0⍕a3
[12]  r1←≠3 0 4 0 4 0 4 0 4 0 8 1 8 1⍕r1
[13]  r[1]←⊂r1
[14]  r[2]←⊂x
-------------------------------------------------------------
[ 0]  r←resolvecart x;i;sodm;so3p;di;d0a;d0b
[ 1]  i←1 ⋄ sodm←so3p←0
[ 2] t1:→(i>1↑⍴x)/fim
[ 3]  di←(((x[i;1]-x[i;3])*2)+((x[i;2]-x[i;4])*2))*0.5
[ 4]  d0a←(((x[i;1]-0)*2)+((x[i;2]-0)*2))*0.5
[ 5]  d0b←(((0-x[i;3])*2)+((0-x[i;4])*2))*0.5
[ 6]  sodm←sodm+di
[ 7]  so3p←so3p+d0a+d0b
[ 8]  i←i+1
[ 9]  →t1
[10] fim:r←sodm,so3p
-------------------------------------------------------------
[ 0]  r←resolvekind x;i;dia;ct10;ct20;ct30;ctm3
[ 1]  i←1 ⋄ ct10←ct20←ct30←ctm3←0
[ 2] t1:→(i>1↑⍴x)/fim
[ 3]  dia←x[i]×3*0.5
[ 4]  →(dia≤10)/e10
[ 5]  →((dia>10)∧(dia≤20))/e20
[ 6]  →((dia>20)∧(dia≤30))/e30
[ 7]  →(dia>30)/em3
[ 8] furo:
[ 9]  'deu xabu'
[10]  →0
[11] e10:ct10←ct10+1
[12]  →soma
[13] e20:ct20←ct20+1
[14]  →soma
[15] e30:ct30←ct30+1
[16]  →soma
[17] em3:ctm3←ctm3+1
[18]  →soma
[19] soma:
[20]  i←i+1
[21]  →t1
[22] fim:r←ct10,ct20,ct30,ctm3
-------------------------------------------------------------
```

```
[ 0]  r←resolvesimi x;i;a;b;ct
[ 1]  i←1 ⋄ ct←0
[ 2] t1:→(i>1↑⍴x)/fim
[ 3]  a←10 10 10⍉x[i;1]
[ 4]  b←10 10 10⍉x[i;2]
[ 5]  →((a[1]∈b)∧(a[2]∈b)∧(a[3]∈b)∧(b[1]∈a)∧(b[2]∈a)∧(b[3]∈a))/sim
[ 6] nao:
[ 7]  →soma
[ 8] sim:
[ 9]  ct←ct+1
[10] soma:
[11]  i←i+1
[12]  →t1
[13] fim:
[14]  r←ct
------------------------------------------------------------
[ 0]  opesq vivo184c n;CORRECAO;EVENTO;S;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qli
      nha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL184c  '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ S←⍎n[5]
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n ⋄ S←'0'
[ 9]  ylu←n grupo ylu
[10]  FOLHALA184c←ajusta80 FOLHALA184c
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA184c)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 8⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALA184c
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOc←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera184
[35]  lixo1←(⊃xx[2])ΔFM'c:⍀apl2⍀F184',S,('00'⍎xk),'.myd'
[36]  esse[8;]←80↑'F184',S,('00'⍎xk),'.myd'
[37]  resp←resp,,⊃xx[1]
[38]  resu←resu,[1]1 8⍴resp
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[42]  ⍞←(⍎xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+⍴f)⍴' '
```

```
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳¯2++/lixo1]←(lixo1←5 0 5 0 8 0 5 0 5 0 5 0 12 1 10 1)⍕resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],5 0 8 0 5 0 5 0 5 0 12 1 10 1⍕0 1↓resu)
[52]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
----------------------------------------------------------------
[ 0]  opesq vivo184p n;CORRECAO;EVENTO;S;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qli
      nha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL184p  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ S←⍕n[5]
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n ⋄ S←'0'
[ 9]  ylu←n grupo ylu
[10]  FOLHALA184p←ajusta80 FOLHALA184p
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA184p)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 8⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALA184p
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAO⍴←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera184
[35]  lixo1←(⊃xx[2])ΔFM'c:\apl2\F184',S,('00'⍕xk),'.myd'
[36]  esse[8;]←80↑'F184',S,('00'⍕xk),'.myd'
[37]  resp←resp,,⊃xx[1]
[38]  resu←resu,[1]1 8⍴resp
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[42]  ⍞←(⍕xk←xk+1),'-'
[43]  →testa
```

```
[44] fim:upag←(1 0+ρf)ρ' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓ρupag)↑'⍀begin{verbatim}'
[47]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[48]  upag[2+⍳1↑ρresu;⍳¯2++/lixo1]←(lixo1←5 0 5 0 8 0 5 0 5 0 5 0 12 1 10 1)⍣resu
[49]  upag[3+1↑ρresu;]←(1↓ρupag)↑'⍀end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],5 0 8 0 5 0 5 0 5 0 12 1 10 1⍣0 1↓resu)
[52]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍣1↑ρaaa),' linhas e ',(⍣1↓ρaaa),' colunas'
[54] terminando:
[55]  upag[1↑ρupag;]←(1↓ρupag)↑'⍀end{document}'
[56]  relat[1↑ρrelat;;]←upag
[57]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[58]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo185

```
[ 0]  r←achadivs x;i;s
[ 1]  i←1 ⋄ s←0
[ 2] testa:→(i>x÷2)/fim
[ 3]  →(0=i|x)/sim
[ 4] nao:i←i+1
[ 5]  →testa
[ 6] sim:s←s+i
[ 7]  →nao
[ 8] fim:r←s
------------------------------------------------------------
[ 0]  acharnums;i;n
[ 1]  DEFIC←⍳0
[ 2]  ABUND←⍳0
[ 3]  i←2
[ 4] t1:→(i>10000)/fim
[ 5]  →(i∈6 28 496 8128)/soma
[ 6]  n←achadivs i
[ 7]  →(n>i)/abu
[ 8]  DEFIC←DEFIC,i
[ 9]  →soma
[10] abu:
[11]  ABUND←ABUND,i
[12] soma:
[13]  i←i+1
[14]  →t1
[15] fim:
------------------------------------------------------------
[ 0]  r←gera185;a1;a2;a3;r1;x;z;i;a3c;zica
[ 1]  r←2ρ0
[ 2]  x←650 100ρ' '
[ 3]  zica←550?99999
[ 4]  zica←(~zica∈1 2 3 4 5 6 7 8 9 10 100 1000 10000)/zica
[ 5]  a1←50 10ρzica
[ 6]  x[⍳50;]←50 100↑8 0⍣a1
[ 7]  r1←resolvecres a1
[ 8]  a2←(20ρPERFE),ABUND[300?ρABUND],DEFIC[400?ρDEFIC]
[ 9]  a2←a2[500?720]
[10]  r1←r1,resolvenums a2
[11]  x[50+⍳50;]←50 100↑7 0⍣50 10ρa2
[12]  a3←50 10 10ρ?5000ρ999
[13]  a3c←⍉3 50ρ(3+?50ρ4),(3+?50ρ4),(3 3 3 3 5 5 5 7 7)[?50ρ9]
```

```
[14]  r1←r1,a3c resolvesupe a3
[15]  z←0 100⍴' '
[16]  i←1
[17] t1:→(i>50)/fim
[18]  z←z,[1]10 0⍕a3[i;;]
[19]  z←z,[1]1 100⍴100↑5 0⍕a3c[i;]+¯1 ¯1 0
[20]  i←i+1
[21]  →t1
[22] fim:
[23]  x[100+⍳550;]←z
[24]  r[1]←⊂r1
[25]  r[2]←⊂x
-------------------------------------------------------------
[ 0]  r←resolvecres x;s;i;vet;j
[ 1]  x←,x
[ 2]  s←0
[ 3]  i←1
[ 4] t1:→(i>⍴x)/fim
[ 5]  vet←((⌈10⍟x[i])⍴10)⊤x[i]
[ 6]  j←2
[ 7] t2:→(j>⍴vet)/cres
[ 8]  →(vet[j-1]≥vet[j])/soma
[ 9]  j←j+1
[10]  →t2
[11] cres:
[12]  s←s+1
[13] soma:
[14]  i←i+1
[15]  →t1
[16] fim:
[17]  r←s
-------------------------------------------------------------
[0]  r←resolvenums x
[1]  r←(+/x∈PERFE),(+/x∈ABUND),+/x∈DEFIC
-------------------------------------------------------------
[ 0]  r←a resolvesupe x;i;sm;on;parte;s;ma
[ 1]  i←1 ⋄ r←0⍴0 ⋄ s←0 ⋄ ma←0
[ 2] t1:→(i>50)/fim
[ 3]  SU←sm←x[i;;]
[ 4]  on←a[i;]
[ 5]  PA←parte←sm[(¯1+on[1]-⌊on[3]÷2)+⍳on[3];(¯1+on[2]-⌊on[3]÷2)+⍳on[3]]
[ 6]  s←s++/,parte
[ 7]  ma←ma+⌈/,parte
[ 8]  i←i+1
[ 9]  →t1
[10] fim:r←s,ma
-------------------------------------------------------------
[ 0]  opesq vivo185c n;CORRECAO;EVENTO;S;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qli
      nha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL185c  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ S←⍕n[5]
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n ⋄ S←'0'
[ 9]  ylu←n grupo ylu
[10]  FOLHALA185c←ajusta80 FOLHALA185c
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA185c)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 7⍴0
```

```
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALA185c
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOc←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera185
[35]  lixo1←(⊃xx[2])⍙FM'c:⍀apl2⍀F185',S,('00'⍕xk),'.myd'
[36]  esse[8;]←80↑'F185',S,('00'⍕xk),'.myd'
[37]  resp←resp,,⊃xx[1]
[38]  resu←resu,[1]1 7⍴resp
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;⍳80]←esse[⍤,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[42]  ⎕←(⍕xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 8 0 8 0 5 0 5 0 12 0 8 0)⍕resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],8 0 8 0 3 0 3 0 12 0 8 0⍕0 1↓resu)
[52]  lixonol←aaa ⍙FM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol ⍙FM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo185p n;CORRECAO;EVENTO;S;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qli
      nha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL185p  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⍙FM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ S←⍕n[5]
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n ⋄ S←'0'
[ 9]  ylu←n grupo ylu
[10]  FOLHALA185p←ajusta80 FOLHALA185p
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA185p)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⍙FM'c:⍀apl2⍀VIVOBLO1'
```

```
[13]  xk←1 ⋄ resu←0 7⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALA185p
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAO⍴←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera185
[35]  lixo1←(⊃xx[2])⍙FM'c:⍀apl2⍀F185',S,('00'⍕xk),'.myd'
[36]  esse[8;]←80↑'F185',S,('00'⍕xk),'.myd'
[37]  resp←resp,,⊃xx[1]
[38]  resu←resu,[1]1 7⍴resp
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[42]  ⎕←(⍕xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 8 0 8 0 5 0 5 0 12 0 8 0)⍕resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],8 0 8 0 3 0 3 0 12 0 8 0⍕0 1↓resu)
[52]  lixonol←aaa ⍙FM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol ⍙FM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo186

```
[ 0]  r←on achavulc vu;vi;spl;sqm;i
[ 1]  vi←8 2⍴0
[ 2]  vi[1;]←(on[1]-1),on[2]-1
[ 3]  vi[2;]←(on[1]-1),on[2]
[ 4]  vi[3;]←(on[1]-1),on[2]+1
[ 5]  vi[4;]←(on[1]),on[2]-1
[ 6]  vi[5;]←(on[1]),on[2]+1
[ 7]  vi[6;]←(on[1]+1),on[2]-1
[ 8]  vi[7;]←(on[1]+1),on[2]
[ 9]  vi[8;]←(on[1]+1),on[2]+1
```

```
[10]  spl←0
[11]  sqm←+999999
[12]  i←1
[13] t1:→(i>8)/fim
[14]  →((vi[i;1]<1)∨(vi[i;1]>10)∨(vi[i;2]<1)∨(vi[i;2]>10))/soma
[15]  →(vu[vi[i;1];vi[i;2]]≥vu[on[1];on[2]])/soma22
[16]  spl←spl+1
[17] soma22:
[18]  →(vu[vi[i;1];vi[i;2]]>sqm)/soma
[19]  sqm←vu[vi[i;1];vi[i;2]]
[20] soma:i←i+1
[21]  →t1
[22] fim:
[23]  →(sqm≠999999)/foi
[24]  sqm←0
[25] foi:
[26]  r←spl,sqm
-------------------------------------------------------------
[ 0]  r←gera186;a1;x;i;s;cand;rr;a2;spl;sqm;a2c;r2;a3;r3
[ 1]  r←2⍴0
[ 2]  x←520 50⍴' '
[ 3]  a1←50 10 10⍴0 ⋄ s←0
[ 4]  i←1
[ 5] t1:→(i>10)/fi
[ 6]  cand←quasesim s
[ 7]  s←⊃cand[1]
[ 8]  x[(10×i-1)+⍳10;]←10 50↑5 0⍕a1←⊃cand[2]
[ 9]  i←i+1
[10]  →t1
[11] fi:rr←s
[12]  a2←20 10 10⍴20
[13]  a2←?a2 ⋄ r2←0 50⍴' '
[14]  spl←sqm←0
[15]  a2c←?20 2⍴10
[16]  i←1
[17] t3:→(i>20)/fi3
[18]  cand←a2c[i;]achavulc a2[i;;]
[19]  spl←spl+cand[1]
[20]  sqm←sqm+cand[2]
[21]  r2←r2,[1]10 50↑5 0⍕a2[i;;]
[22]  r2←r2,[1]1 50⍴50↑4 0⍕a2c[i;]
[23]  i←i+1
[24]  →t3
[25] fi3:rr←rr,spl,sqm
[26]  x[100+⍳220;]←r2
[27]  a3←⍉3 200⍴(10+?200⍴99),(10+?200⍴99),(5+?200⍴10)
[28]  r3←resolvefib a3
[29]  rr←rr,r3
[30]  x[320+⍳200;]←200 50↑8 0⍕a3
[31]  r[1]←⊂rr
[32]  r[2]←⊂x
-------------------------------------------------------------
[ 0]  r←quasesim ct;a;i;j;il;ic;novo
[ 1]  a←10 10⍴0
[ 2]  i←1
[ 3]  r←2⍴0
[ 4] t1:→(i>10)/fim
[ 5]  j←i
[ 6] t2:→(j>10)/ufa
[ 7]  a[i;j]←a[j;i]←?999
[ 8]  j←j+1
[ 9]  →t2
[10] ufa:
```

```
[11]  i←i+1
[12]  →t1
[13] fim:→(1=?2)/cara
[14] coroa:
[15]  il←?10 ⋄ ic←?10
[16]  →(il=ic)/coroa
[17]  novo←?999
[18]  →(novo=a[il;ic])/coroa
[19]  a[il;ic]←novo
[20]  r[1]←⊂ct
[21]  →junta
[22] cara:
[23]  r[1]←⊂ct+1
[24] junta:
[25]  r[2]←⊂a
------------------------------------------------------------
[ 0]  r←resolvefib x;sq;sqm1;a;b;c;ct;i
[ 1]  sqm1←sq←0
[ 2]  i←1
[ 3] t1:→(i>1↑⍴x)/fim
[ 4]  a←x[i;1]
[ 5]  b←x[i;2]
[ 6]  c←a+b
[ 7]  ct←3
[ 8] t4:
[ 9]  →(ct≥x[i;3])/ufa
[10]  a←b
[11]  b←c
[12]  c←a+b
[13]  ct←ct+1
[14]  →t4
[15] ufa:sq←sq+c
[16]  sqm1←sqm1+b
[17]  i←i+1
[18]  →t1
[19] fim:r←sqm1,sq
------------------------------------------------------------
[ 0]  opesq vivo186c n;CORRECAO;EVENTO;S;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qli
      nha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL186c  '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ S←⍎n[5]
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n ⋄ S←'0'
[ 9]  ylu←n grupo ylu
[10]  FOLHALA186c←ajusta80 FOLHALA186c
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA186c)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 6⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALA186c
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOc←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
```

```
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera186
[35]  lixo1←(⊃xx[2])⎕FM'c:\apl2\F186',S,('00'⍕xk),'.myd'
[36]  esse[8;]←80↑'F186',S,('00'⍕xk),'.myd'
[37]  resp←resp,,⊃xx[1]
[38]  resu←resu,[1]1 6⍴resp
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[42]  ⍞←(⍕xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 8 0 5 0 5 0 12 0 12 0)⍕resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],8 0 5 0 5 0 12 0 12 0⍕0 1↓resu)
[52]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo186p n;CORRECAO;EVENTO;S;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qli
      nha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL186p  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ S←⍕n[5]
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n ⋄ S←'0'
[ 9]  ylu←n grupo ylu
[10]  FOLHALA186p←ajusta80 FOLHALA186p
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA186p)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 6⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALA186p
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAO⍴←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
```

```
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera186
[35]  lixo1←(⊃xx[2])⎕FM'c:\apl2\F186',S,('00'⍕xk),'.myd'
[36]  esse[8;]←80↑'F186',S,('00'⍕xk),'.myd'
[37]  resp←resp,,⊃xx[1]
[38]  resu←resu,[1]1 6⍴resp
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[42]  ⎕←(⍕xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 8 0 5 0 5 0 12 0 12 0)⍕resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],8 0 5 0 5 0 12 0 12 0⍕0 1↓resu)
[52]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo187

```
[ 0]  r←on achavulc vu;vi;spl;sqm;i
[ 1]  vi←8 2⍴0
[ 2]  vi[1;]←(on[1]-1),on[2]-1
[ 3]  vi[2;]←(on[1]-1),on[2]
[ 4]  vi[3;]←(on[1]-1),on[2]+1
[ 5]  vi[4;]←(on[1]),on[2]-1
[ 6]  vi[5;]←(on[1]),on[2]+1
[ 7]  vi[6;]←(on[1]+1),on[2]-1
[ 8]  vi[7;]←(on[1]+1),on[2]
[ 9]  vi[8;]←(on[1]+1),on[2]+1
[10]  spl←0
[11]  sqm←+999999
[12]  i←1
[13] t1:→(i>8)/fim
[14]  →((vi[i;1]<1)∨(vi[i;1]>10)∨(vi[i;2]<1)∨(vi[i;2]>10))/soma
[15]  →(vu[vi[i;1];vi[i;2]]≥vu[on[1];on[2]])/soma22
[16]  spl←spl+1
[17] soma22:
[18]  →(vu[vi[i;1];vi[i;2]]>sqm)/soma
[19]  sqm←vu[vi[i;1];vi[i;2]]
```

```
[20] soma:i←i+1
[21]  →t1
[22] fim:
[23]  →(sqm≠999999)/foi
[24]  sqm←0
[25] foi:
[26]  r←spl,sqm
-------------------------------------------------------------
[ 0]  r←det x;i
[ 1]  →(1=ρ,x)/eum
[ 2]  →(2=1↑ρx)/edois
[ 3]  →(3=1↑ρx)/etres
[ 4] mais3:
[ 5]  i←1 ⋄ r←0
[ 6] t1:→(i>1↑ρx)/fim
[ 7]  r←r+x[i;1]×((-1)*i+1)×det(i≠⍳1↑ρx)/[1]0 1↓x
[ 8]  i←i+1
[ 9]  →t1
[10] fim:
[11]  →0
[12] eum:r←x
[13]  →0
[14] edois:r←(x[1;1]×x[2;2])-x[1;2]+x[2;1]
[15]  →0
[16] etres:r←(x[1;1]×x[2;2]×x[3;3])+(x[1;2]×x[2;3]×x[3;1])+(x[2;1]×x[3;2]×x[1;3])
[17]  r←r-(x[3;1]×x[2;2]×x[1;3])+(x[2;1]×x[1;2]×x[3;3])+x[3;2]×x[2;3]×x[1;1]
-------------------------------------------------------------
[ 0]  r←gera186;a1;x;i;s;cand;rr;a2;spl;sqm;a2c;r2;a3;r3
[ 1]  r←2ρ0
[ 2]  x←520 50ρ' '
[ 3]  a1←50 10 10ρ0 ⋄ s←0
[ 4]  i←1
[ 5] t1:→(i>10)/fi
[ 6]  cand←quasesim s
[ 7]  s←⊃cand[1]
[ 8]  x[(10×i-1)+⍳10;]←10 50↑5 0⍕a1←⊃cand[2]
[ 9]  i←i+1
[10]  →t1
[11] fi:rr←s
[12]  a2←20 10 10ρ20
[13]  a2←?a2 ⋄ r2←0 50ρ' '
[14]  spl←sqm←0
[15]  a2c←?20 2ρ10
[16]  i←1
[17] t3:→(i>20)/fi3
[18]  cand←a2c[i;]achavulc a2[i;;]
[19]  spl←spl+cand[1]
[20]  sqm←sqm+cand[2]
[21]  r2←r2,[1]10 50↑5 0⍕a2[i;;]
[22]  r2←r2,[1]1 50ρ50↑4 0⍕a2c[i;]
[23]  i←i+1
[24]  →t3
[25] fi3:rr←rr,spl,sqm
[26]  x[100+⍳220;]←r2
[27]  a3←⍉3 200ρ(10+?200ρ99),(10+?200ρ99),(5+?200ρ10)
[28]  r3←resolvefib a3
[29]  rr←rr,r3
[30]  x[320+⍳200;]←200 50↑8 0⍕a3
[31]  r[1]←⊂rr
[32]  r[2]←⊂x
-------------------------------------------------------------
[ 0]  r←gera187;a1;i;x;rr;a2;s;a3;a3x;p;zz;valor
[ 1]  r←2ρ0
```

```
[ 2]  x←680 100⍴' '
[ 3]  a1←40 6 13⍴0
[ 4]  i←1
[ 5] t1:→(i>40)/t2
[ 6]  a1[i;;]←geracon
[ 7]  i←i+1
[ 8]  →t1
[ 9] t2:
[10]  rr←(+/a1[;4;1]),(+/a1[;5;1]),+/a1[;6;1]
[11] ⍝ A1←a1
[12]  a1[;4 5 6;]←0
[13]  x[⍳240;]←240 100↑4 0⍪240 13⍴a1
[14]  a2←40 6 6⍴¯17+?2000⍴49
[15]  i←1 ⋄ s←0
[16] t3:→(i>40)/t4
[17]  →(1=?2)/zica
[18]  a2[i;1+?5;]←a2[i;1;]×2
[19] zica:
[20]  valor←det a2[i;;]
[21]  →(0=valor)/deuz
[22]  s←s+1
[23]  i←i+1
[24]  →t3
[25] deuz:
[26]  i←i+1
[27]  →t3
[28] t4:rr←rr,s
[29]  x[240+⍳240;]←240 100↑'¯'-'edit 5 0⍪240 6⍴a2
[30]  a3←10 10 10⍴0.01×¯48+?1000⍴99
[31]  i←1 ⋄ a3x←10 10 10⍴0
[32] t5:→(i>10)/fim
[33]  a3x[i;;]←⌹a3[i;;]
[34]  i←i+1
[35]  →t5
[36] fim:
[37]  i←1 ⋄ zz←0 100⍴' ' ⋄ p←0
[38] t6:→(i>10)/t7
[39]  →(1=?2)/coroa
[40]  zz←zz,[1]10 100↑'¯'-'edit 9 3⍪a3[i;;]
[41]  zz←zz,[1]10 100↑'¯'-'edit 9 3⍪a3x[i;;]
[42]  p←p+1
[43]  →soma
[44] coroa:
[45]  a3x[i;?10;?10]←a3[i;?10;?10]
[46]  a3x[i;?10;?10]←a3[i;?10;?10]
[47]  a3x[i;?10;?10]←a3[i;?10;?10]
[48]  zz←zz,[1]10 100↑'¯'-'edit 9 3⍪a3[i;;]
[49]  zz←zz,[1]10 100↑'¯'-'edit 9 3⍪a3x[i;;]
[50] soma:
[51]  i←i+1
[52]  →t6
[53] t7:rr←rr,p
[54]  x[480+⍳200;]←zz
[55]  r[1]←⊂rr
[56]  r[2]←⊂x
-------------------------------------------------------------
[ 0]  r←geracon;a;b;c;d;e;f;tams
[ 1]  r←6 13⍴0
[ 2] novo:
[ 3]  a←(5+?5)?13
[ 4]  b←(5+?5)?13
[ 5]  c←(5+?5)?13
[ 6]  d←a inter b
```

```
[ 7]  e←d uniao c
[ 8]  f←b inter c
[ 9]  tams←(⍴a),(⍴b),(⍴c),(⍴d),(⍴e),(⍴f)
[10]  →(12>⌈/tams)/ok
[11] ⍺ ⍞←'*'
[12]  →novo
[13] ok:
[14]  r[1;]←(⍴a),12↑a
[15]  r[2;]←(⍴b),12↑b
[16]  r[3;]←(⍴c),12↑c
[17]  r[4;]←(⍴d),12↑d
[18]  r[5;]←(⍴e),12↑e
[19]  r[6;]←(⍴f),12↑f
------------------------------------------------------------
[ 0]  r←a inter b;i
[ 1]  i←1 ⋄ r←⍳0
[ 2] t1:→(i>⍴a)/fim
[ 3]  →(a[i]∈b)/sim
[ 4] nao:
[ 5]  i←i+1
[ 6]  →t1
[ 7] sim:
[ 8]  r←r,a[i]
[ 9]  →nao
[10] fim:
------------------------------------------------------------
[ 0]  r←quasesim ct;a;i;j;il;ic;novo
[ 1]  a←10 10⍴0
[ 2]  i←1
[ 3]  r←2⍴0
[ 4] t1:→(i>10)/fim
[ 5]  j←i
[ 6] t2:→(j>10)/ufa
[ 7]  a[i;j]←a[j;i]←?999
[ 8]  j←j+1
[ 9]  →t2
[10] ufa:
[11]  i←i+1
[12]  →t1
[13] fim:→(1=?2)/cara
[14] coroa:
[15]  il←?10 ⋄ ic←?10
[16]  →(il=ic)/coroa
[17]  novo←?999
[18]  →(novo=a[il;ic])/coroa
[19]  a[il;ic]←novo
[20]  r[1]←⊂ct
[21]  →junta
[22] cara:
[23]  r[1]←⊂ct+1
[24] junta:
[25]  r[2]←⊂a
------------------------------------------------------------
[ 0]  r←resolvefib x;sq;sqm1;a;b;c;ct;i
[ 1]  sqm1←sq←0
[ 2]  i←1
[ 3] t1:→(i>1↑⍴x)/fim
[ 4]  a←x[i;1]
[ 5]  b←x[i;2]
[ 6]  c←a+b
[ 7]  ct←3
[ 8] t4:
[ 9]  →(ct≥x[i;3])/ufa
```

```
[10]  a←b
[11]  b←c
[12]  c←a+b
[13]  ct←ct+1
[14]  →t4
[15] ufa:sq←sq+c
[16]  sqm1←sqm1+b
[17]  i←i+1
[18]  →t1
[19] fim:r←sqm1,sq
------------------------------------------------------------
[0]  r←a uniao b;v
[1]  v←a,b
[2]  r←((v⍳v)=⍳⍴v)/v
------------------------------------------------------------
[ 0]  opesq vivo186c n;CORRECAO;EVENTO;S;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qli
      nha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL186c  '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ S←⍎n[5]
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n ⋄ S←'0'
[ 9]  ylu←n grupo ylu
[10]  FOLHALA186c←ajusta80 FOLHALA186c
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA186c)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 6⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALA186c
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOc←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera186
[35]  lixo1←(⊃xx[2])ΔFM'c:\apl2\F186',S,('00'⍎xk),'.myd'
[36]  esse[8;]←80↑'F186',S,('00'⍎xk),'.myd'
[37]  resp←resp,,⊃xx[1]
[38]  resu←resu,[1]1 6⍴resp
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[42]  ⍞←(⍎xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
```

```
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 8 0 5 0 5 0 12 0 12 0)⍪resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],8 0 5 0 5 0 12 0 12 0⍪0 1↓resu)
[52]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍪1↑⍴aaa),' linhas e ',(⍪1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo186p n;CORRECAO;EVENTO;S;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qli
      nha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL186p  '
[ 6]  dhx←2 10⍴('05/05/0005'⍪+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍪+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ S←⍪n[5]
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍪⍳n ⋄ S←'0'
[ 9]  ylu←n grupo ylu
[10]  FOLHALA186p←ajusta80 FOLHALA186p
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA186p)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 6⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALA186p
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍪VERSAO⍴←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍪resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera186
[35]  lixo1←(⊃xx[2])ΔFM'c:\apl2\F186',S,('00'⍪xk),'.myd'
[36]  esse[8;]←80↑'F186',S,('00'⍪xk),'.myd'
[37]  resp←resp,,⊃xx[1]
[38]  resu←resu,[1]1 6⍴resp
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[42]  ⍞←(⍪xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+⍴f)⍴' '
```

```
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 8 0 5 0 5 0 12 0 12 0)⍕resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],8 0 5 0 5 0 12 0 12 0⍎0 1↓resu)
[52]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo187c n;CORRECAO;EVENTO;S;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qli
      nha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL187c  '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ S←⍎n[5]
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n ⋄ S←'0'
[ 9]  ylu←n grupo ylu
[10]  FOLHALA187c←ajusta80 FOLHALA187c
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA187c)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 6⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALA187c
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOc←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera187
[35]  lixo1←(⊃xx[2])ΔFM'c:\apl2\F187',S,('00'⍕xk),'.myd'
[36]  esse[8;]←80↑'F187',S,('00'⍕xk),'.myd'
[37]  resp←resp,,⊃xx[1]
[38]  resu←resu,[1]1 6⍴resp
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[42]  ⍞←(⍕xk←xk+1),'-'
[43]  →testa
```

```
[44] fim:upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 8 0 5 0 5 0 8 0 8 0)⍀resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],8 0 5 0 5 0 8 0 8 0⍀0 1↓resu)
[52]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍀1↑⍴aaa),' linhas e ',(⍀1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo187p n;CORRECAO;EVENTO;S;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qli
      nha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL187p  '
[ 6]  dhx←2 10⍴('05/05/0005'⍀+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍀+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ S←⍀n[5]
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍀⍳n ⋄ S←'0'
[ 9]  ylu←n grupo ylu
[10]  FOLHALA187p←ajusta80 FOLHALA187p
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA187p)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 6⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALA187p
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍀VERSAOp←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍀resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera187
[35]  lixo1←(⊃xx[2])ΔFM'c:\apl2\F187',S,('00'⍀xk),'.myd'
[36]  esse[8;]←80↑'F187',S,('00'⍀xk),'.myd'
[37]  resp←resp,,⊃xx[1]
[38]  resu←resu,[1]1 6⍴resp
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[42]  ⍞←(⍀xk←xk+1),'-'
```

```
[43]  →testa
[44] fim:upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 8 0 5 0 5 0 8 0 8 0)⍀resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],8 0 5 0 5 0 8 0 8 0⍀0 1↓resu)
[52]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍀1↑⍴aaa),' linhas e ',(⍀1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo188

```
[ 0]  r←contaxad x;i;j;ctp;ctb;cor;pec
[ 1]  i←1 ⋄ ctp←ctb←0
[ 2] t1:→(i>8)/fim
[ 3]  j←1
[ 4] t2:→(j>8)/t3
[ 5]  →(x[i;j]=0)/soma
[ 6]  cor←⌊x[i;j]÷10
[ 7]  pec←10|x[i;j]
[ 8]  →(0=2|(i-1)+j-1)/bra
[ 9] pre:
[10]  →(cor=1)/soma
[11]  ctp←ctp+pec
[12]  →soma
[13] bra:
[14]  →(cor=2)/soma
[15]  ctb←ctb+pec
[16] soma:
[17]  j←j+1
[18]  →t2
[19] t3:
[20]  i←i+1
[21]  →t1
[22] fim:r←ctb,ctp
-------------------------------------------------------------
[0]  r←dist x
[1]  r←(((x[1]-x[3])*2)+((x[2]-x[4])*2))*0.5
-------------------------------------------------------------
[ 0]  r←gera188;c;contad;i;rr;s;z1;z2;z3
[ 1]  r←2⍴0
[ 2]  z1←0 50⍴' '
[ 3]  s←0
[ 4]  i←1
[ 5] t1:→(i>50)/t3
[ 6]  s←s+resolvepts c←gerapts
[ 7]  z1←z1,[1]'¯'-'edit 5 0⍀⍉c
[ 8]  i←i+1
[ 9]  →t1
[10] t3:rr←s
[11]  s←0
[12]  i←1
```

```
[13]  z2←0 50ρ' '
[14] t5:→(i>50)/t7
[15]  c←gerahistο
[16]  s←s+histo c
[17]  z2←z2,[1]1 50ρ50↑4 0⍕c
[18]  i←i+1
[19]  →t5
[20] t7:rr←rr,s
[21]  contad←0 0
[22]  i←1
[23]  z3←0 50ρ' '
[24] t8:→(i>100)/fim
[25]  contad←contad+contaxad c←traduzxad geraxad
[26]  z3←z3,[1]8 50↑4 0⍕c
[27]  i←i+1
[28]  →t8
[29] fim:rr←rr,contad
[30]  r[1]←⊂rr
[31]  r[2]←⊂z1,[1]z2,[1]z3
-------------------------------------------------------------
[0]  r←gerahistο;t
[1]  t←7+?4
[2]  r←t,?tρt
-------------------------------------------------------------
[0]  r←gerapts
[1]  r←10 2ρ¯20+?20ρ40
-------------------------------------------------------------
[  0]  r←geraxad;c;cc;l;ponde;t;xx
[  1]  t←8 8ρ0
[  2]  t[1;5]←¯6 ⋄ t[8;5]←6
[  3] ⍝ alocacao de peoes
[  4]  c←1
[  5] t1:→(c>8)/f1
[  6]  ponde←(3 4 5 6)[2?4]
[  7]  ponde←ponde[⍋ponde]
[  8]  cc←?4
[  9]  →(cc=1)/peaofora
[ 10]  →(cc=2)/peaoparado
[ 11]  →(cc>2)/peaoanda
[ 12] peaofora:→pbra
[ 13] peaoparado:t[2;c]←¯1
[ 14]  →pbra
[ 15] peaoanda:t[ponde[1];c]←¯1
[ 16] pbra:
[ 17]  cc←?4
[ 18]  →(cc=1)/peabfora
[ 19]  →(cc=2)/peabparado
[ 20]  →(cc>2)/peabanda
[ 21] peabfora:→psom
[ 22] peabparado:t[7;c]←1
[ 23]  →psom
[ 24] peabanda:t[ponde[2];c]←1
[ 25] psom:
[ 26]  c←c+1
[ 27]  →t1
[ 28] f1:
[ 29] ⍝ colocacao das torres
[ 30]  cc←?4
[ 31]  →(cc=1)/torn1fora
[ 32]  →(cc=2)/torn1parado
[ 33]  →(cc>2)/torn1anda
[ 34] torn1fora:→tor2n
[ 35] torn1parado:t[1;1]←¯2
```

```
[ 36]  →tor2n
[ 37] torn1anda:xx←t[l←?8;c←?8]
[ 38]  →(xx≠0)/torn1anda
[ 39]  t[l;c]←¯2
[ 40] tor2n:
[ 41]  cc←?4
[ 42]  →(cc=1)/torn2fora
[ 43]  →(cc=2)/torn2parado
[ 44]  →(cc>2)/torn2anda
[ 45] torn2fora:→tor1b
[ 46] torn2parado:t[1;8]←¯2
[ 47]  →tor1b
[ 48] torn2anda:xx←t[l←?8;c←?8]
[ 49]  →(xx≠0)/torn2anda
[ 50]  t[l;c]←¯2
[ 51] tor1b:
[ 52]  cc←?4
[ 53]  →(cc=1)/torb1fora
[ 54]  →(cc=2)/torb1parado
[ 55]  →(cc>2)/torb1anda
[ 56] torb1fora:→tor2b
[ 57] torb1parado:t[8;1]←2
[ 58]  →tor2b
[ 59] torb1anda:xx←t[l←?8;c←?8]
[ 60]  →(xx≠0)/torb1anda
[ 61]  t[l;c]←2
[ 62] tor2b:
[ 63]  cc←?4
[ 64]  →(cc=1)/torb2fora
[ 65]  →(cc=2)/torb2parado
[ 66]  →(cc>2)/torb2anda
[ 67] torb2fora:→cav1n
[ 68] torb2parado:t[8;8]←2
[ 69]  →cav1n
[ 70] torb2anda:xx←t[l←?8;c←?8]
[ 71]  →(xx≠0)/torb2anda
[ 72]  t[l;c]←2
[ 73] cav1n:
[ 74] ⍝ colocacao dos cavalos
[ 75]  cc←?4
[ 76]  →(cc=1)/cavn1fora
[ 77]  →(cc=2)/cavn1parado
[ 78]  →(cc>2)/cavn1anda
[ 79] cavn1fora:→cav2n
[ 80] cavn1parado:t[1;2]←¯3
[ 81]  →cav2n
[ 82] cavn1anda:xx←t[l←?8;c←?8]
[ 83]  →(xx≠0)/cavn1anda
[ 84]  t[l;c]←¯3
[ 85] cav2n:
[ 86]  cc←?4
[ 87]  →(cc=1)/cavn2fora
[ 88]  →(cc=2)/cavn2parado
[ 89]  →(cc>2)/cavn2anda
[ 90] cavn2fora:→cav1b
[ 91] cavn2parado:t[1;7]←¯3
[ 92]  →cav1b
[ 93] cavn2anda:xx←t[l←?8;c←?8]
[ 94]  →(xx≠0)/cavn2anda
[ 95]  t[l;c]←¯3
[ 96] cav1b:
[ 97]  cc←?4
[ 98]  →(cc=1)/cavb1fora
```

```
[ 99]  →(cc=2)/cavb1parado
[100]  →(cc>2)/cavb1anda
[101] cavb1fora:→cav2b
[102] cavb1parado:t[8;2]←3
[103]  →cav2b
[104] cavb1anda:xx←t[l←?8;c←?8]
[105]  →(xx≠0)/cavb1anda
[106]  t[l;c]←3
[107] cav2b:
[108]  cc←?4
[109]  →(cc=1)/cavb2fora
[110]  →(cc=2)/cavb2parado
[111]  →(cc>2)/cavb2anda
[112] cavb2fora:→bis1n
[113] cavb2parado:t[8;2]←3
[114]  →bis1n
[115] cavb2anda:xx←t[l←?8;c←?8]
[116]  →(xx≠0)/cavb2anda
[117]  t[l;c]←3
[118] A colocacao dos bispos
[119] bis1n:
[120]  cc←?4
[121]  →(cc=1)/bisn1fora
[122]  →(cc=2)/bisn1parado
[123]  →(cc>2)/bisn1anda
[124] bisn1fora:→bis2n
[125] bisn1parado:t[1;3]←¯4
[126]  →bis2n
[127] bisn1anda:xx←t[l←?8;c←?8]
[128]  →((t[2;2]=¯1)∧(t[2;4]=¯1))/bisn1parado
[129]  →((xx≠0)∨(1=2|c+8×l-1))/bisn1anda
[130]  t[l;c]←¯4
[131] bis2n:
[132]  cc←?4
[133]  →(cc=1)/bisn2fora
[134]  →(cc=2)/bisn2parado
[135]  →(cc>2)/bisn2anda
[136] bisn2fora:→bis1b
[137] bisn2parado:t[1;6]←¯4
[138]  →bis1b
[139] bisn2anda:xx←t[l←?8;c←?8]
[140]  →((t[2;5]=¯1)∧(t[2;7]=¯1))/bisn2parado
[141]  →((xx≠0)∨(0=2|c+8×l-1))/bisn2anda
[142]  t[l;c]←¯4
[143] bis1b:
[144]  cc←?4
[145]  →(cc=1)/bisb1fora
[146]  →(cc=2)/bisb1parado
[147]  →(cc>2)/bisb1anda
[148] bisb1fora:→bis2b
[149] bisb1parado:t[8;3]←4
[150]  →bis2b
[151] bisb1anda:xx←t[l←?8;c←?8]
[152]  →((t[7;2]=1)∧(t[7;4]=1))/bisb1parado
[153]  →((xx≠0)∨(1=2|c+8×l-1))/bisb1anda
[154]  t[l;c]←4
[155] bis2b:
[156]  cc←?4
[157]  →(cc=1)/bisb2fora
[158]  →(cc=2)/bisb2parado
[159]  →(cc>2)/bisb2anda
[160] bisb2fora:→damn
[161] bisb2parado:t[8;6]←4
```

```
[162]  →damn
[163] bisb2anda:xx←t[l←?8;c←?8]
[164] ⍝ l,c
[165]  →((t[7;5]=1)∧(t[7;7]=1))/bisb2parado
[166]  →((xx≠0)∨(0=2|c+8×l-1))/bisb2anda
[167]  t[l;c]←4
[168] ⍝ movimento da dama
[169] damn:
[170]  cc←?4
[171]  →(cc=1)/damnfora
[172]  →(cc=2)/damnparado
[173]  →(cc>2)/damnanda
[174] damnfora:→damb
[175] damnparado:t[1;4]←¯5
[176]  →damb
[177] damnanda:xx←t[l←?8;c←?8]
[178]  →((t[2;3]=¯1)∧(t[2;4]=¯1)∧(t[2;5]=¯1))/damnparado
[179]  →(xx≠0)/damnanda
[180]  t[l;c]←¯5
[181] damb:
[182]  cc←?4
[183]  →(cc=1)/dambfora
[184]  →(cc=2)/dambparado
[185]  →(cc>2)/dambanda
[186] dambfora:→acabou
[187] dambparado:t[8;4]←5
[188]  →acabou
[189] dambanda:xx←t[l←?8;c←?8]
[190]  →((t[7;3]=1)∧(t[7;4]=1)∧(t[7;5]=1))/dambparado
[191]  →(xx≠0)/dambanda
[192]  t[l;c]←5
[193] acabou:r←t
-------------------------------------------------------------
[ 0]  r←histo x;i;t;xx;z
[ 1]  xx←x[1]↑1↓x
[ 2]  t←⍴xx
[ 3]  z←(2⍴t)⍴' '
[ 4]  i←1
[ 5] t1:→(i>t)/fim
[ 6]  z[;i]←(t,1)⍴((t-xx[i])⍴' '),xx[i]⍴'@'
[ 7]  i←i+1
[ 8]  →t1
[ 9] fim:r←+/,z=' '
-------------------------------------------------------------
[ 0]  r←resolvepts x;z;i;j;ma;mi;onde
[ 1]  z←10 10⍴0
[ 2]  i←1
[ 3] t1:→(i>10)/fim
[ 4]  j←1
[ 5] t2:→(j>10)/t3
[ 6]  z[i;j]←dist(x[i;],x[j;])
[ 7]  j←j+1
[ 8]  →t2
[ 9] t3:
[10]  i←i+1
[11]  →t1
[12] fim:⍝Z←z
[13]  ma←⌈/[2]z
[14]  mi←⌊/ma
[15]  onde←ma⍳mi
[16]  r←onde
-------------------------------------------------------------
[ 0]  r←traduzxad x;z;i;j;icor;tab;ipec
```

```
[ 1]  z←8 8ρ0
[ 2]  i←1
[ 3] t1:→(i>8)/fim
[ 4]  j←1
[ 5] t2:→(j>8)/t3
[ 6]  →(x[i;j]=0)/soma
[ 7]  icor←1+x[i;j]<0
[ 8]  tab←2 7ρ0 1 2 3 4 5 6 0 1 5 3 3 9 0
[ 9]  ipec←tab[2;tab[1;]ι|x[i;j]]
[10]  z[i;j]←ipec+icor×10
[11] soma:
[12]  j←j+1
[13]  →t2
[14] t3:
[15]  i←i+1
[16]  →t1
[17] fim:r←z
------------------------------------------------------------
[ 0]  opesq vivo188c n;CORRECAO;EVENTO;S;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qli
      nha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL188c  '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ S←⍎n[5]
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎ιn ⋄ S←'0'
[ 9]  ylu←n grupo ylu
[10]  FOLHALA188c←ajusta80 FOLHALA188c
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALA188c)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 5ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←10 80ρ' '
[16]  f←FOLHALA188c
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOc←1.05
[20]  esse[4;]←80↑ylu[xk;ι6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;ι4]=((1↑ρf),4)ρ'\#05')/ι1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+ι30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[9;ι10]←'@',esse[6;5+ι3],esse[4;1+ι5],'@'
[32]  esse[10;]←80↑esse[6;5+ι3],'-',esse[4;1+ι5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera188
[35]  lixo1←(⊃xx[2])ΔFM'c:\apl2\F188',S,('00'⍎xk),'.myd'
[36]  esse[8;]←80↑'F188',S,('00'⍎xk),'.myd'
[37]  resp←resp,,⊃xx[1]
[38]  resu←resu,[1]1 5ρresp
[39]  acuja←(f[;2]='#')/ι1↑ρf
[40]  f[acuja;ι80]←esse[⍋,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\clearpage'
[42]  ⍞←(⍎xk←xk+1),'-'
```

```
[43]  →testa
[44] fim:upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 7 0 7 0 7 0 7 0)⍉resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],7 0⍉0 1↓resu)
[52]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍉1↑⍴aaa),' linhas e ',(⍉1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo188p n;CORRECAO;EVENTO;S;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qli
      nha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL188p  '
[ 6]  dhx←2 10⍴('05/05/0005'⍉+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍉+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ S←⍉n[5]
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍉⍳n ⋄ S←'0'
[ 9]  ylu←n grupo ylu
[10]  FOLHALA188p←ajusta80 FOLHALA188p
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA188p)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 5⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALA188p
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍉VERSAOp←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍉resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera188
[35]  lixo1←(⊃xx[2])⎕FM'c:\apl2\F188',S,('00'⍉xk),'.myd'
[36]  esse[8;]←80↑'F188',S,('00'⍉xk),'.myd'
[37]  resp←resp,,⊃xx[1]
[38]  resu←resu,[1]1 5⍴resp
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;⍳80]←esse[≜,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
```

```
[42]  ⍞←(⍕xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 7 0 7 0 7 0 7 0)⍕resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],7 0⍕0 1↓resu)
[52]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo189

```
[ 0]  r←bolas x;ct;i;s;ctx;cara;⎕IO
[ 1]  ⎕IO←1
[ 2] ⍝ x contem 8 numeros entre 0..9 indicando as bolas. Deve responder
[ 3] ⍝ S se conseguir evitar bolas vizinhas com o mesmo numero e N senao.
[ 4]  ct←2 10⍴0
[ 5]  i←1
[ 6] t1:→(i>8)/fim
[ 7]  ct[1;x[i]+1]←ct[1;x[i]+1]+1
[ 8]  i←i+1
[ 9]  →t1
[10] fim:ct[2;]←¯1+⍳10
[11]  ct←ct[;⍒ct[1;]]
[12]  s←,cara←ct[2;1]
[13]  ct[1;1]←ct[1;1]-1
[14] oba:
[15]  ct←ct[;⍒ct[1;]]
[16]  →(8=⍴s)/sim
[17]  i←1
[18] t2:→(i>10)/nao
[19]  →(ct[1;i]=0)/soma
[20]  →(ct[2;i]=cara)/soma
[21]  s←s,cara←ct[2;i]
[22]  ct[1;i]←ct[1;i]-1
[23]  →oba
[24] soma:
[25]  i←i+1
[26]  →t2
[27] nao:r←'N'
[28]  →0
[29] sim:r←'S'
------------------------------------------------------------
[ 0]  r←cinco nu;n;⎕IO;i;aux
[ 1]  ⎕IO←0
[ 2]  n←⍴nu
[ 3]  i←0
[ 4] t1:→(i≥n)/f1
[ 5]  →(((nu[i]=5)∨(nu[i]=0))∧(nu[i]<nu[n-1]))/ok
[ 6]  i←i+1
[ 7]  →t1
```

```
[ 8] f1:
[ 9]  i←n-1
[10] t2:→(i<0)/f2
[11]  →((nu[i]=5)∧(nu[i]>nu[n-1]))/ok
[12]  i←i-1
[13]  →t2
[14] f2:
[15]  r←-1
[16]  →0
[17] ok:
[18]  aux←nu[n-1]
[19]  nu[n-1]←nu[i]
[20]  nu[i]←aux
[21]  r←nu
[22]  →0
-------------------------------------------------------------
[0]  r←comba uns
[1]  x←unsρ'1'
[2]  z←x
[3]  i←1
[4] t1:→(i>uns)/f1
-------------------------------------------------------------
[ 0]  r←g x;a;bole;i;y;zebra
[ 1]  r←((x*x),x)ρ0
[ 2]  i←1
[ 3]  bole←x-1
[ 4] t1:→(i>x)/fim
[ 5]  zebra←(a←(x*bole))ρx
[ 6]  y←x-1
[ 7] t2:→(y≤0)/ufa
[ 8]  zebra←(aρy),zebra
[ 9]  y←y-1
[10]  →t2
[11] ufa:
[12]  r[;i]←(x*x)ρzebra
[13]  bole←bole-1
[14]  i←i+1
[15]  →t1
[16] fim:
-------------------------------------------------------------
[ 0]  r←ger s;a;i
[ 1]  r←((s*s),s)ρ0
[ 2]  i←1
[ 3] t1:→(i>s)/t2
[ 4]  r[;i]←(s*s)ρ(aρ1),(aρ2),(aρ3),(aρ4),(aρ5),(a←s*s-1)ρs
[ 5]  i←i+1
[ 6]  →t1
[ 7] t2:
-------------------------------------------------------------
[ 0]  r←gera189;c;contad;i;rr;s;soma;x;y;z1;z2;z3;zz;⎕IO
[ 1]  ⎕IO←1
[ 2]  r←2ρ0
[ 3]  zz←gerabolas
[ 4]  rr←⊃zz[1]   ⍝ um unico numero 0 ≤ n ≤ 100
[ 5]  z1←100 50↑⊃zz[2]   ⍝ formato 100 20ρ'...'
[ 6]  z2←0 50ρ' '
[ 7]  z3←0 50ρ' '
[ 8]  i←1
[ 9]  soma←0
[10] t1:→(i>100)/t2
[11]  y←cinco x←geracinco
[12]  soma←soma+10 10 10 10 10⊥¯5↑y
[13]  z2←z2,[1]1 50ρ50↑⍕(ρx),x
```

```
[14]  i←i+1
[15]  →t1
[16] t2:rr←rr,soma
[17]  soma←0
[18]  i←1
[19] t3:→(i>10)/t5
[20]  y←?1000
[21]  soma←soma+muro y
[22]  z3←z3,[1]1 50ρ50↑⍕y
[23]  i←i+1
[24]  →t3
[25] t5:rr←rr,soma
[26]  r[1]←⊂rr
[27]  r[2]←⊂z1,[1]z2,[1]z3
-------------------------------------------------------------
[ 0]  r←gerabolas;a;b;i;q;z;h;⎕IO
[ 1]  ⎕IO←0
[ 2]  r←2ρ0
[ 3]  z←0 20ρ' '
[ 4]  i←0
[ 5]  q←0
[ 6] t1:→(i>99)/f1
[ 7]  b←?8ρ3
[ 8]  h←(⍳10)[3?10]
[ 9]  a←bolas h[b]
[10]  z←z,[0]1 20ρ20↑⍕h[b]
[11]  →(a='N')/soma
[12]  q←q+1
[13] soma:
[14]  i←i+1
[15]  →t1
[16] f1:
[17]  r[1]←⊂z
[18]  r[0]←⊂q
-------------------------------------------------------------
[ 0]  r←geracinco;⎕IO;aa;bb;i
[ 1]  ⎕IO←0
[ 2] inicio:
[ 3]  aa←4+?13
[ 4]  bb←(⍳10)[?aaρ10]
[ 5]  i←0
[ 6] t1:→(i≥ρbb)/fi
[ 7]  →(0≠?4)/soma
[ 8]  bb[i]←⍎'05'[?2]
[ 9] soma:i←i+1
[10]  →t1
[11] fi:
[12]  →(((¯1↑bb)≠0)∧((¯1↑bb)≠5))/blz
[13]  bb←¯1↓bb
[14]  →(0=ρbb)/inicio
[15]  →fi
[16] blz:
[17]  →(3>ρbb)/inicio
[18]  r←bb
-------------------------------------------------------------
[ 0]  r←muro n;⎕IO;dp;i;alfa
[ 1]  ⎕IO←0
[ 2]  dp←10101ρ0
[ 3]  dp[0]←1
[ 4]  dp[1]←1
[ 5]  dp[2]←5
[ 6]  i←3
[ 7] t1:→(i>n)/f1
```

```
[ 8]  alfa←dp[i-1]+(4×dp[i-2])+(2×dp[i-3])
[ 9]  dp[i]←((10*9)+7)|alfa
[10]  i←i+1
[11]  →t1
[12] f1:r←dp[n]
-------------------------------------------------------------
[ 0]  r←next3 x;i;z;z1;t
[ 1]  i←1
[ 2]  r←⍳0
[ 3] t1:→(i>x)/fim
[ 4]  t←⌈0.0001+3⍟i
[ 5]  z←'123'[1+(t⍴3)⍳i]
[ 6]  z
[ 7]  z1←⍎,((2×⍴z)⍴1 0)⌿z
[ 8]  →(x≠+/z1)/soma
[ 9]  r←r,z
[10] soma:
[11]  i←i+1
[12]  →t1
[13] fim:
-------------------------------------------------------------
[ 0]  r←a ondeta b;i;j;k;⎕PW;⎕IO
[ 1]  ⎕IO←1
[ 2]  ⎕PW←120
[ 3]  b←,b
[ 4]  i←1
[ 5] t1:→(i>1↑⍴a)/fim
[ 6]  j←1
[ 7] t2:→(j>1↓⍴a)/upa
[ 8]  →(a[i;j]≠b[1])/soma
[ 9]  k←1
[10] t3:→(k>⍴b)/achou
[11]  →(a[i;j+k-1]=b[k])/ainda
[12]  →soma
[13] ainda:k←k+1
[14]  →t3
[15] achou:'=',(⍕i),' ',(⍕j),a[i;]
[16]  j←j+⍴b
[17]  →t2
[18] soma:j←j+1
[19]  →t2
[20] upa:i←i+1
[21]  →t1
[22] fim:
-------------------------------------------------------------
[0]  r←recu x
[1]  on←1↑('11'⍷x)/⍳⍴x
-------------------------------------------------------------
[ 0]  r←rejeitamasp;i;j;dif;a;x;zx
[ 1]  x←46656 6⍴0
[ 2]  x[;1]←46656⍴(a⍴1),(a⍴2),(a⍴3),(a⍴4),(a⍴5),(a←7776)⍴6
[ 3]  x[;2]←46656⍴(a⍴1),(a⍴2),(a⍴3),(a⍴4),(a⍴5),(a←1296)⍴6
[ 4]  x[;3]←46656⍴(a⍴1),(a⍴2),(a⍴3),(a⍴4),(a⍴5),(a←216)⍴6
[ 5]  x[;4]←46656⍴(a⍴1),(a⍴2),(a⍴3),(a⍴4),(a⍴5),(a←36)⍴6
[ 6]  x[;5]←46656⍴(a⍴1),(a⍴2),(a⍴3),(a⍴4),(a⍴5),(a←6)⍴6
[ 7]  x[;6]←46656⍴⍳6
[ 8]  zx←0⍴0
[ 9]  i←1
[10] t1:→(i>1↑⍴x)/fim
[11]  j←2
[12] t2:→(j>6)/incr
[13]  dif←|x[i;j-1]-x[i;j]
[14]  →((dif>1)∧(dif≠5))/naopode
```

```
[15]  j←j+1
[16]  →t2
[17] incr:zx←zx,1
[18]  →soma
[19] naopode:zx←zx,0
[20]  →soma
[21] soma:i←i+1
[22]  →t1
[23] fim:r←zx/[1]x
-------------------------------------------------------------
[ 0]  opesq vivo189c n;CORRECAO;EVENTO;S;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qli
      nha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL189c  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ S←⍕n[5]
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n ⋄ S←'0'
[ 9]  ylu←n grupo ylu
[10]  FOLHALA189c←ajusta80 FOLHALA189c
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA189c)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 4⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALA189c
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOc←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera189
[35]  lixo1←(⊃xx[2])ΔFM'c:\apl2\F189',S,('00'⍕xk),'.myd'
[36]  esse[8;]←80↑'F189',S,('00'⍕xk),'.myd'
[37]  resp←resp,,⊃xx[1]
[38]  resu←resu,[1]1 4⍴resp
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[42]  ⍞←(⍕xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 7 0 11 0 15 0)⍕resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
```

```
[51] elafa:aaa←(ylu[;⍳36],13 0⍕0 1↓resu)
[52]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍬∧⍀⍬EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍬∧⍀⍬EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo190

```
[ 0]  r←tex acertaquestao nums;re;a;b;c;ri;d
[ 1]  re←tex[nums[1]+⍳nums[2];]
[ 2]  a←nums[3]+¯1+⍳5
[ 3]  c←b←tex[a;]
[ 4]  b←b[d←5?5;]
[ 5]  re[nums[3]-nums[1];]←75↑'a) ',b[1;]
[ 6]  re[nums[3]+1-nums[1];]←75↑'b) ',b[2;]
[ 7]  re[nums[3]+2-nums[1];]←75↑'c) ',b[3;]
[ 8]  re[nums[3]+3-nums[1];]←75↑'d) ',b[4;]
[ 9]  re[nums[3]+4-nums[1];]←75↑'e) ',b[5;]
[10]  ri←d⍳1
[11]  r←(ri re)
-------------------------------------------------------------
[0]  ajustatodas tam
[1]  que1←tam ajusta que1
[2]  que2←tam ajusta que2
[3]  que3←tam ajusta que3
[4]  que4←tam ajusta que4
[5]  que5←tam ajusta que5
-------------------------------------------------------------
[0]  r←compara a
[1]  →((⎕AV⍳a[1])>⎕AV⍳a[2])/ma
[2]  →((⎕AV⍳a[1])<⎕AV⍳a[2])/me
[3]  r←'='
[4]  →0
[5] ma:r←'>'
[6]  →0
[7] me:r←'<'
[8]  →0
-------------------------------------------------------------
[0]  r←num gqbibl de;d;io
[1]  d←de[1] ⋄ io←de[2]
[2]  r←0 77⍴' '
[3]  r←r,[1]1 77⍴77↑'$QE',('00000'⍕num),'OLIMPI0404olimpiada: biblioteca M'
[4]  r←r,[1]10 77↑FOLHALA170[206+⍳10;]
[5]  r←r,[1]((1↑⍴que4[d+⍳io;]),77)↑que4[d+⍳io;]
[6]  r←r,[1]1 77⍴77↑'$QR',('00000'⍕num),'04'
[7]  r←r,[1]1 77⍴77↑'---'
-------------------------------------------------------------
[0]  r←num gqcava de;d;io
[1]  d←de[1] ⋄ io←de[2]
[2]  r←0 77⍴' '
[3]  r←r,[1]1 77⍴77↑'$QE',('00000'⍕num),'OLIMPI0303olimpiada: cavalo D'
[4]  r←r,[1]44 77↑FOLHALA170[106+⍳44;]
[5]  r←r,[1]((1↑⍴que3[d+⍳io;]),77)↑que3[d+⍳io;]
[6]  r←r,[1]1 77⍴77↑'$QR',('00000'⍕num),'03'
[7]  r←r,[1]1 77⍴77↑'---'
-------------------------------------------------------------
```

```
[0]  r←num gqpali de;d;io
[1]  d←de[1] ⋄ io←de[2]
[2]  r←0 78⍴' '
[3]  r←r,[1]1 78⍴78↑'$QE',('00000'⍕num),'OLIMPI01olimpiada: palindromo M'
[4]  r←r,[1]24 78↑FOLHALA170[24+⍳24;]
[5]  r←r,[1]((1↑⍴que1[d+⍳io;]),78)↑que1[d+⍳io;]
[6]  r←r,[1]1 78⍴78↑'$QR',('00000'⍕num),'01'
[7]  r←r,[1]1 78⍴78↑'---'
------------------------------------------------------------
[0]  r←num gqrola de;d;io
[1]  d←de[1] ⋄ io←de[2]
[2]  r←0 77⍴' '
[3]  r←r,[1]1 77⍴77↑'$QE',('00000'⍕num),'OLIMPI0202olimpiada: roland F'
[4]  r←r,[1]6 77↑FOLHALA170[81+⍳6;]
[5]  r←r,[1]((1↑⍴que2[d+⍳io;]),77)↑que2[d+⍳io;]
[6]  r←r,[1]1 77⍴77↑'$QR',('00000'⍕num),'02'
[7]  r←r,[1]1 77⍴77↑'---'
------------------------------------------------------------
[0]  r←num gqsala de;d;io
[1]  d←de[1] ⋄ io←de[2]
[2]  r←0 77⍴' '
[3]  r←r,[1]1 77⍴77↑'$QE',('00000'⍕num),'OLIMPI0505olimpiada: salas D'
[4]  r←r,[1]19 77↑FOLHALA170[240+⍳19;]
[5]  r←r,[1]((1↑⍴que5[d+⍳io;]),77)↑que5[d+⍳io;]
[6]  r←r,[1]1 77⍴77↑'$QR',('00000'⍕num),'05'
[7]  r←r,[1]1 77⍴77↑'---'
------------------------------------------------------------
[ 0]  r←palq p;i;j;resp;sina
[ 1]  i←1 ⋄ j←⍴p ⋄ resp←1 ⋄ RESP←0 10⍴' '
[ 2] t1:→(i≥j)/fim
[ 3]  sina←compara p[i],p[i+1]
[ 4]  RESP←RESP,[1]1 10⍴10↑p[i],sina,p[i+1]
[ 5]  →(1=⍋(⍕⎕AV⍳p[j]),sina,⍕⎕AV⍳p[j-1])/blz
[ 6]  resp←0
[ 7]  →fim
[ 8] blz:
[ 9]  RESP[1↑⍴RESP;8 9 10]←p[j],sina,p[j-1]
[10]  i←i+1
[11]  j←j-1
[12]  →t1
[13] fim:r←resp
------------------------------------------------------------
[  0]  opesq vivo190a n;CORRECAO;EVENTO;aaa;acuja;cab;dhx;esse;f;in;lixonol;relat;resp;resp
       osta;resu;upag;xixo;xk;ylu
[  1]  →(0≠⎕NC'opesq')/qveio
[  2]  opesq←''
[  3] qveio:
[  4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[  5]  CORRECAO←6 ⋄ EVENTO←'PL190   '
[  6]  ajustatodas 75
[  7]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
       4 5],⎕TS[6]+⎕TS[7]÷1000
[  8]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[  9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 10]  FOLHALA190←ajusta80 FOLHALA190
[ 11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA190)⍴' '
[ 12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[ 13]  xk←1 ⋄ resu←0 13⍴0
[ 14] testa:→(xk>1↑⍴ylu)/fim
[ 15]  esse←307 80⍴' '
[ 16]  f←FOLHALA190
[ 17]  esse[1;]←80↑dhx[1;]
[ 18]  esse[2;]←80↑dhx[2;]
```

```
[ 19]  esse[3;]←80↑4 2⍕VERSAOa←1.02
[ 20]  esse[4;]←80↑ylu[xk;⍳6]
[ 21]  esse[5;]←80↑ylu[xk;6+⍳30]
[ 22]  cab←'{\large{',EVENTO[5+⍳3],'}}-',EVENTO[⍳2],'-{\large{',EVENTO[2+⍳3],'}}'
[ 23]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑cab
[ 24]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[ 25] inica:
[ 26]  resposta←''
[ 27]  in←2?4
[ 28]  xixo←que1 acertaquestao matq[1;in[1];]
[ 29]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[ 30]  xixo←⊃xixo[2]
[ 31]  xixo[2;⍳3]←'Q01'
[ 32]  esse[7+⍳15;]←15 80↑xixo
[ 33]  xixo←que1 acertaquestao matq[1;in[2];]
[ 34]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[ 35]  xixo←⊃xixo[2]
[ 36]  xixo[2;⍳3]←'Q02'
[ 37]  esse[22+⍳15;]←15 80↑xixo
[ 38]  in←2?4
[ 39]  xixo←que2 acertaquestao matq[2;in[1];]
[ 40]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[ 41]  xixo←⊃xixo[2]
[ 42]  xixo[2;⍳3]←'Q03'
[ 43]  esse[37+⍳8;]←8 80↑xixo
[ 44]  xixo←que2 acertaquestao matq[2;in[2];]
[ 45]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[ 46]  xixo←⊃xixo[2]
[ 47]  xixo[2;⍳3]←'Q04'
[ 48]  esse[45+⍳8;]←8 80↑xixo
[ 49]  in←2?4
[ 50]  in←3 4
[ 51]  xixo←que3 acertaquestao matq[3;in[1];]
[ 52]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[ 53]  xixo←⊃xixo[2]
[ 54]  esse[53+⍳25;]←25 80↑xixo
[ 55]  xixo←que3 acertaquestao matq[3;in[2];]
[ 56]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[ 57]  xixo←⊃xixo[2]
[ 58]  esse[78+⍳25;]←25 80↑xixo
[ 59]  in←2?4
[ 60]  xixo←que4 acertaquestao matq[4;in[1];]
[ 61]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[ 62]  xixo←⊃xixo[2]
[ 63]  xixo[2;⍳3]←'Q07'
[ 64]  esse[103+⍳10;]←10 80↑xixo
[ 65]  xixo←que4 acertaquestao matq[4;in[2];]
[ 66]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[ 67]  xixo←⊃xixo[2]
[ 68]  xixo[2;⍳3]←'Q08'
[ 69]  esse[113+⍳10;]←10 80↑xixo
[ 70]  in←2?4
[ 71]  xixo←que5 acertaquestao matq[5;in[1];]
[ 72]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[ 73]  xixo←⊃xixo[2]
[ 74]  xixo[2;⍳3]←'Q09'
[ 75]  esse[123+⍳10;]←10 80↑xixo
[ 76]  xixo←que5 acertaquestao matq[5;in[2];]
[ 77]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[ 78]  xixo←⊃xixo[2]
[ 79]  xixo[2;⍳3]←'Q10'
[ 80]  esse[133+⍳10;]←10 80↑xixo
[ 81]  resp←(3 0⍕resp),resposta
```

```
[ 82]  resu←resu,[1]1 13⍴resp
[ 83]  acuja←(f[;2]='#')/⍳1↑⍴f
[ 84]  f[acuja;]←esse[⍋,f[acuja;3 4 5],' ';]
[ 85]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[ 86]  ⎕←(⍕xk←xk+1),'-'
[ 87]  →testa
[ 88] fim:upag←(1 0+⍴f)⍴' '
[ 89]  →(1=≡n)/elafa
[ 90]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[ 91]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[ 92]  upag[2+⍳1↑⍴resu;⍳23]←(1 1 1,20⍴0 1)\[2]resu
[ 93]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[ 94]  →terminando
[ 95] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 3↓resu)
[ 96]  aaa[1;35 36]←2 0⍕CORRECAO
[ 97]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[ 98]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[ 99] terminando:
[100]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[101]  relat[1↑⍴relat;;]←upag
[102]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[103]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[104]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo191

```
[ 0]  r←tex acertaquestao nums;re;a;b;c;ri;d
[ 1]  re←tex[nums[1]+⍳nums[2];]
[ 2]  a←nums[3]+¯1+⍳5
[ 3]  c←b←tex[a;]
[ 4]  b←b[d←5?5;]
[ 5]  re[nums[3]-nums[1];]←75↑'a) ',b[1;]
[ 6]  re[nums[3]+1-nums[1];]←75↑'b) ',b[2;]
[ 7]  re[nums[3]+2-nums[1];]←75↑'c) ',b[3;]
[ 8]  re[nums[3]+3-nums[1];]←75↑'d) ',b[4;]
[ 9]  re[nums[3]+4-nums[1];]←75↑'e) ',b[5;]
[10]  ri←d⍳1
[11]  r←(ri re)
-------------------------------------------------------------
[0]  ajustatodas tam
[1]  que1←tam ajusta que1
[2]  que2←tam ajusta que2
[3]  que3←tam ajusta que3
[4]  que4←tam ajusta que4
[5]  que5←tam ajusta que5
[6]  que6←tam ajusta que6
-------------------------------------------------------------
[0]  r←num gqcllu de;d;io
[1]  d←de[1] ⋄ io←de[2]
[2]  r←0 77⍴' '
[3]  r←r,[1]1 77⍴77↑'$QE',('00000'⍕num),'OLIMPI1010olimpiada: Clara Luiz M'
[4] ⍝ r←r,[1]27 77↑FOLHALA171k[24+⍳27;]
[5]  r←r,[1]((1↑⍴que5[d+⍳io;]),77)↑que5[d+⍳io;]
[6]  r←r,[1]1 77⍴77↑'$QR',('00000'⍕num),'10'
[7]  r←r,[1]1 77⍴77↑'---'
-------------------------------------------------------------
[0]  r←num gqecon de;d;io
[1]  d←de[1] ⋄ io←de[2]
[2]  r←0 77⍴' '
[3]  r←r,[1]1 77⍴77↑'$QE',('00000'⍕num),'OLIMPI1111olimpiada: economia D'
[4]  r←r,[1]53 77↑FOLHALA171k[96+⍳53;]
```

```
[5]  r←r,[1]((1↑⍴que6[d+⍳io;]),77)↑que6[d+⍳io;]
[6]  r←r,[1]1 77⍴77↑'$QR',('00000'⍕num),'11'
[7]  r←r,[1]1 77⍴77↑'---'
-------------------------------------------------------------
[0]  r←num gqmaio de;d;io
[1]  d←de[1] ⋄ io←de[2]
[2]  r←0 77⍴' '
[3]  r←r,[1]1 77⍴77↑'$QE',('00000'⍕num),'OLIMPI0707olimpiada: maionese M'
[4]  r←r,[1]18 77↑FOLHALA171a[68+⍳18;]
[5]  r←r,[1]((1↑⍴que2[d+⍳io;]),77)↑que2[d+⍳io;]
[6]  r←r,[1]1 77⍴77↑'$QR',('00000'⍕num),'07'
[7]  r←r,[1]1 77⍴77↑'---'
-------------------------------------------------------------
[0]  r←num gqmapa de;d;io
[1]  d←de[1] ⋄ io←de[2]
[2]  r←0 77⍴' '
[3]  r←r,[1]1 77⍴77↑'$QE',('00000'⍕num),'OLIMPI0808olimpiada: mapas M'
[4]  r←r,[1]39 77↑FOLHALA171a[100+⍳39;]
[5]  r←r,[1]((1↑⍴que3[d+⍳io;]),77)↑que3[d+⍳io;]
[6]  r←r,[1]1 77⍴77↑'$QR',('00000'⍕num),'08'
[7]  r←r,[1]1 77⍴77↑'---'
-------------------------------------------------------------
[0]  r←num gqsaca de;d;io
[1]  d←de[1] ⋄ io←de[2]
[2]  r←0 77⍴' '
[3]  r←r,[1]1 77⍴77↑'$QE',('00000'⍕num),'OLIMPI0909olimpiada: SAC M'
[4]  r←r,[1]27 77↑FOLHALA171k[24+⍳27;]
[5]  r←r,[1]((1↑⍴que4[d+⍳io;]),77)↑que4[d+⍳io;]
[6]  r←r,[1]1 77⍴77↑'$QR',('00000'⍕num),'09'
[7]  r←r,[1]1 77⍴77↑'---'
-------------------------------------------------------------
[0]  r←num gqsupm de;d;io
[1]  d←de[1] ⋄ io←de[2]
[2]  r←0 77⍴' '
[3]  r←r,[1]1 77⍴77↑'$QE',('00000'⍕num),'OLIMPI0606olimpiada: supermercado D'
[4]  r←r,[1]17 77↑FOLHALA171a[24+⍳17;]
[5]  r←r,[1]((1↑⍴que1[d+⍳io;]),77)↑que1[d+⍳io;]
[6]  r←r,[1]1 77⍴77↑'$QR',('00000'⍕num),'06'
[7]  r←r,[1]1 77⍴77↑'---'
-------------------------------------------------------------
[ 0]  opesq vivo191b n;CORRECAO;EVENTO;aaa;acuja;cab;dhx;esse;f;in;lixonol;relat;resp;resp
      osta;resu;upag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←6 ⋄ EVENTO←'PL191b  '
[ 6]  ajustatodas 75
[ 7]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[10]  FOLHALA191b←ajusta80 FOLHALA191b
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA191b)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[13]  xk←1 ⋄ resu←0 8⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←76 80⍴' '
[16]  f←FOLHALA191b
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.02
[20]  esse[4;]←80↑ylu[xk;⍳6]
```

```
[21]  esse[5;]←80↑ylu[xk;6+⍳30]
[22]  cab←'{\large{',EVENTO[5+⍳3],'}}-',EVENTO[⍳2],'-{\large{',EVENTO[2+⍳3],'}}'
[23]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑cab
[24]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[25] inica:
[26]  resposta←''
[27]  in←2?4
[28]  xixo←que1 acertaquestao matq1[in[1];]
[29]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[30]  xixo←⊃xixo[2]
[31]  xixo[2;⍳3]←'Q01'
[32]  esse[7+⍳11;]←11 80↑xixo
[33]  xixo←que1 acertaquestao matq1[in[2];]
[34]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[35]  xixo←⊃xixo[2]
[36]  xixo[2;⍳3]←'Q02'
[37]  esse[18+⍳11;]←11 80↑xixo
[38]  in←1?3
[39]  xixo←que2 acertaquestao matq2[in[1];]
[40]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[41]  xixo←⊃xixo[2]
[42]  xixo[2;⍳3]←'Q03'
[43]  esse[29+⍳11;]←11 80↑xixo
[44]  in←2?3
[45]  xixo←que3 acertaquestao matq3[in[1];]
[46]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[47]  xixo←⊃xixo[2]
[48]  xixo[2;⍳3]←'Q04'
[49]  esse[40+⍳18;]←18 80↑xixo
[50]  xixo←que3 acertaquestao matq3[in[2];]
[51]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[52]  xixo←⊃xixo[2]
[53]  xixo[2;⍳3]←'Q05'
[54]  esse[58+⍳18;]←18 80↑xixo
[55]  resp←(3 0⍕resp),resposta
[56]  resu←resu,[1]1 8⍴resp
[57]  acuja←(f[;2]='#')/⍳1↑⍴f
[58]  f[acuja;]←esse[⍤,f[acuja;3 4 5],' ';]
[59]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[60]  ⍞←(⍕xk←xk+1),'-'
[61]  →testa
[62] fim:upag←(1 0+⍴f)⍴' '
[63]  →(1=≡n)/elafa
[64]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[65]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[66]  upag[2+⍳1↑⍴resu;⍳13]←(1 1 1,10⍴0 1)⍉[2]resu
[67]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[68]  →terminando
[69] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 3↓resu)
[70]  aaa[1;35 36]←2 0⍕CORRECAO
[71]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[72]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[73] terminando:
[74]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[75]  relat[1↑⍴relat;;]←upag
[76]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[77]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[78]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo191k n;CORRECAO;EVENTO;aaa;acuja;cab;dhx;esse;f;in;lixonol;relat;resp;resp
      osta;resu;upag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
```

```
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←6 ⋄ EVENTO←'PL191k  '
[ 6]  ajustatodas 75
[ 7]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5⍕n),'.ALU' ⋄ EVENTO←n
[ 9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)⍴(n,4)⍴4 0⍎⍳n
[10]  FOLHALA191k←ajusta80 FOLHALA191k
[11]  relat←((2+1⍴⍴ylu),1 0+⍴FOLHALA191k)⍴' '
[12]  relat[1;;]←(1↓⍴relat)⍴ΔFM'c:\apl2\VIVOBLOI'
[13]  xk←1 ⋄ resu←0 8⍴0
[14] testa:→(xk>1⍴⍴ylu)/fim
[15]  esse←91 80⍴' '
[16]  f←FOLHALA191k
[17]  esse[1;]←80⍴dhx[1;]
[18]  esse[2;]←80⍴dhx[2;]
[19]  esse[3;]←80⍴4 2⍎VERSAOk←1.02
[20]  esse[4;]←80⍴ylu[xk;⍳6]
[21]  esse[5;]←80⍴ylu[xk;6+⍳30]
[22]  cab←'{\large{',EVENTO[5+⍳3],'}}-',EVENTO[⍳2],'-{\large{',EVENTO[2+⍳3],'}}'
[23]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80⍴cab
[24]  esse[7;]←80⍴(3 0⍎resp←xk),' ',opesq
[25] inica:
[26]  resposta←''
[27]  in←2?5
[28]  xixo←que4 acertaquestao matq4[in[1];]
[29]  resposta←resposta,'ABCDE'[⍫xixo[1]]
[30]  xixo←⍫xixo[2]
[31]  xixo[2;⍳3]←'Q01'
[32]  esse[7+⍳10;]←10 80⍴xixo
[33]  xixo←que4 acertaquestao matq4[in[2];]
[34]  resposta←resposta,'ABCDE'[⍫xixo[1]]
[35]  xixo←⍫xixo[2]
[36]  xixo[2;⍳3]←'Q02'
[37]  esse[17+⍳10;]←10 80⍴xixo
[38]  xixo←que5 acertaquestao matq5[?2;]
[39]  resposta←resposta,'ABCDE'[⍫xixo[1]]
[40]  xixo←⍫xixo[2]
[41]  xixo[2;⍳3]←'Q03'
[42]  esse[27+⍳18;]←18 80⍴xixo
[43]  in←2?3
[44]  xixo←que6 acertaquestao matq6[in[1];]
[45]  resposta←resposta,'ABCDE'[⍫xixo[1]]
[46]  xixo←⍫xixo[2]
[47]  xixo[2;⍳3]←'Q04'
[48]  esse[45+⍳23;]←23 80⍴xixo
[49]  xixo←que6 acertaquestao matq6[in[2];]
[50]  resposta←resposta,'ABCDE'[⍫xixo[1]]
[51]  xixo←⍫xixo[2]
[52]  xixo[2;⍳3]←'Q05'
[53]  esse[68+⍳23;]←23 80⍴xixo
[54]  resp←(3 0⍎resp),resposta
[55]  resu←resu,[1]1 8⍴resp
[56]  acuja←(f[;2]='#')/⍳1⍴⍴f
[57]  f[acuja;]←esse[⍋,f[acuja;3 4 5],' ';]
[58]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200⍴'\newpage'
[59]  ⍞←(⍎xk←xk+1),'-'
[60]  →testa
[61] fim:upag←(1 0+⍴f)⍴' '
[62]  →(1=≡n)/elafa
[63]  upag[1;]←(1↓⍴upag)⍴'\begin{verbatim}'
[64]  upag[2;]←(1↓⍴upag)⍴(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
```

```
[65]  upag[2+⍳1↑⍴resu;⍳13]←(1 1 1,10⍴0 1)⍀[2]resu
[66]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[67]  →terminando
[68] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 3↓resu)
[69]  aaa[1;35 36]←2 0⍕CORRECAO
[70]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.gpa')
[71]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[72] terminando:
[73]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[74]  relat[1↑⍴relat;;]←upag
[75]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[76]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.tex'
[77]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo192

```
[ 0]  r←tex acertaquestao nums;re;a;b;c;ri;d
[ 1]  re←tex[nums[1]+⍳nums[2];]
[ 2]  a←nums[3]+¯1+⍳5
[ 3]  c←b←tex[a;]
[ 4]  b←b[d←5?5;]
[ 5]  re[nums[3]-nums[1];]←75↑'a) ',b[1;]
[ 6]  re[nums[3]+1-nums[1];]←75↑'b) ',b[2;]
[ 7]  re[nums[3]+2-nums[1];]←75↑'c) ',b[3;]
[ 8]  re[nums[3]+3-nums[1];]←75↑'d) ',b[4;]
[ 9]  re[nums[3]+4-nums[1];]←75↑'e) ',b[5;]
[10]  ri←d⍳1
[11]  r←(ri re)
-------------------------------------------------------------
[0]  ajustatodas tam
[1]  que1←tam ajusta que1
[2]  que2←tam ajusta que2
[3]  que3←tam ajusta que3
[4]  que4←tam ajusta que4
[5]  que5←tam ajusta que5
[6]  que6←tam ajusta que6
-------------------------------------------------------------
[0]  r←num gqecon de;d;io
[1]  d←de[1] ⋄ io←de[2]
[2]  r←0 77⍴' '
[3]  r←r,[1]1 77⍴77↑'$QE',('00000'⍕num),'OLIMPI1111olimpiada: economia D'
[4]  r←r,[1]53 77↑FOLHALA171k[96+⍳53;]
[5]  r←r,[1]((1↑⍴que6[d+⍳io;]),77)↑que6[d+⍳io;]
[6]  r←r,[1]1 77⍴77↑'$QR',('00000'⍕num),'11'
[7]  r←r,[1]1 77⍴77↑'---'
-------------------------------------------------------------
[0]  r←num gqflor de;d;io
[1]  d←de[1] ⋄ io←de[2]
[2]  r←0 77⍴' '
[3]  r←r,[1]1 77⍴77↑'$QE',('00000'⍕num),'OLIMPI1313olimpiada: florista M'
[4]  r←r,[1]22 77↑FOLHALA172[63+⍳22;]
[5]  r←r,[1]((1↑⍴que2[d+⍳io;]),77)↑que2[d+⍳io;]
[6]  r←r,[1]1 77⍴77↑'$QR',('00000'⍕num),'13'
[7]  r←r,[1]1 77⍴77↑'---'
-------------------------------------------------------------
[0]  r←num gqfute de;d;io
[1]  d←de[1] ⋄ io←de[2]
[2]  r←0 77⍴' '
[3]  r←r,[1]1 77⍴77↑'$QE',('00000'⍕num),'OLIMPI1717olimpiada: futebol M'
[4]  r←r,[1]12 77↑FOLHALA172[216+⍳12;]
[5]  r←r,[1]((1↑⍴que6[d+⍳io;]),77)↑que6[d+⍳io;]
```

```
[6]  r←r,[1]1 77⍴77↑'$QR',('00000'⍕num),'17'
[7]  r←r,[1]1 77⍴77↑'---'
-------------------------------------------------------------
[0]  r←num gqling de;d;io
[1]  d←de[1] ⋄ io←de[2]
[2]  r←0 77⍴' '
[3]  r←r,[1]1 77⍴77↑'$QE',('00000'⍕num),'OLIMPI1515olimpiada: linguagem M'
[4]  r←r,[1]14 77↑FOLHALA172[151+⍳14;]
[5]  r←r,[1]((1↑⍴que4[d+⍳io;]),77)↑que4[d+⍳io;]
[6]  r←r,[1]1 77⍴77↑'$QR',('00000'⍕num),'15'
[7]  r←r,[1]1 77⍴77↑'---'
-------------------------------------------------------------
[0]  r←num gqpane de;d;io
[1]  d←de[1] ⋄ io←de[2]
[2]  r←0 77⍴' '
[3]  r←r,[1]1 77⍴77↑'$QE',('00000'⍕num),'OLIMPI1414olimpiada: pane seca M'
[4]  r←r,[1]28 77↑FOLHALA172[109+⍳28;]
[5]  r←r,[1]((1↑⍴que3[d+⍳io;]),77)↑que3[d+⍳io;]
[6]  r←r,[1]1 77⍴77↑'$QR',('00000'⍕num),'14'
[7]  r←r,[1]1 77⍴77↑'---'
-------------------------------------------------------------
[0]  r←num gqproj de;d;io
[1]  d←de[1] ⋄ io←de[2]
[2]  r←0 77⍴' '
[3]  r←r,[1]1 77⍴77↑'$QE',('00000'⍕num),'OLIMPI1212olimpiada: projetos D'
[4]  r←r,[1]15 77↑FOLHALA172[24+⍳15;]
[5]  r←r,[1]((1↑⍴que1[d+⍳io;]),77)↑que1[d+⍳io;]
[6]  r←r,[1]1 77⍴77↑'$QR',('00000'⍕num),'12'
[7]  r←r,[1]1 77⍴77↑'---'
-------------------------------------------------------------
[0]  r←num gqsema de;d;io
[1]  d←de[1] ⋄ io←de[2]
[2]  r←0 77⍴' '
[3]  r←r,[1]1 77⍴77↑'$QE',('00000'⍕num),'OLIMPI1616olimpiada: semana D'
[4]  r←r,[1]14 77↑FOLHALA172[189+⍳14;]
[5]  r←r,[1]((1↑⍴que5[d+⍳io;]),77)↑que5[d+⍳io;]
[6]  r←r,[1]1 77⍴77↑'$QR',('00000'⍕num),'16'
[7]  r←r,[1]1 77⍴77↑'---'
-------------------------------------------------------------
[  0]  opesq vivo192a n;CORRECAO;EVENTO;aaa;acuja;cab;dhx;esse;f;in;lixonol;relat;resp;resp
       osta;resu;upag;xixo;xk;ylu
[  1]  →(0≠⎕NC'opesq')/qveio
[  2]  opesq←''
[  3] qveio:
[  4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[  5]  CORRECAO←6 ⋄ EVENTO←'PL192   '
[  6]  ajustatodas 75
[  7]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
       4 5],⎕TS[6]+⎕TS[7]÷1000
[  8]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[  9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 10]  FOLHALA192←ajusta80 FOLHALA192
[ 11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA192)⍴' '
[ 12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[ 13]  xk←1 ⋄ resu←0 13⍴0
[ 14] testa:→(xk>1↑⍴ylu)/fim
[ 15]  esse←107 80⍴' '
[ 16]  f←FOLHALA192
[ 17]  esse[1;]←80↑dhx[1;]
[ 18]  esse[2;]←80↑dhx[2;]
[ 19]  esse[3;]←80↑4 2⍕VERSAOa←1.02
[ 20]  esse[4;]←80↑ylu[xk;⍳6]
[ 21]  esse[5;]←80↑ylu[xk;6+⍳30]
```

```
[ 22]  cab←'{\large{',EVENTO[5+⍳3],'}}-',EVENTO[⍳2],'-{\large{',EVENTO[2+⍳3],'}}'
[ 23]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑cab
[ 24]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[ 25] inica:
[ 26]  resposta←''
[ 27]  in←2?5
[ 28]  xixo←que1 acertaquestao matq1[in[1];]
[ 29]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[ 30]  xixo←⊃xixo[2]
[ 31]  xixo[2;⍳3]←'Q01'
[ 32]  esse[7+⍳10;]←10 80↑xixo
[ 33]  xixo←que1 acertaquestao matq1[in[2];]
[ 34]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[ 35]  xixo←⊃xixo[2]
[ 36]  xixo[2;⍳3]←'Q02'
[ 37]  esse[17+⍳10;]←10 80↑xixo
[ 38]  in←2?6
[ 39]  xixo←que2 acertaquestao matq2[in[1];]
[ 40]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[ 41]  xixo←⊃xixo[2]
[ 42]  xixo[2;⍳3]←'Q03'
[ 43]  esse[27+⍳10;]←10 80↑xixo
[ 44]  xixo←que2 acertaquestao matq2[in[2];]
[ 45]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[ 46]  xixo←⊃xixo[2]
[ 47]  xixo[2;⍳3]←'Q04'
[ 48]  esse[37+⍳10;]←10 80↑xixo
[ 49]  xixo←que3 acertaquestao matq3[?2;]
[ 50]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[ 51]  xixo←⊃xixo[2]
[ 52]  xixo[2;⍳3]←'Q05'
[ 53]  esse[47+⍳11;]←11 80↑xixo
[ 54]  in←2?6
[ 55]  xixo←que4 acertaquestao matq4[in[1];]
[ 56]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[ 57]  xixo←⊃xixo[2]
[ 58]  xixo[2;⍳3]←'Q06'
[ 59]  esse[58+⍳10;]←10 80↑xixo
[ 60]  xixo←que4 acertaquestao matq4[in[2];]
[ 61]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[ 62]  xixo←⊃xixo[2]
[ 63]  xixo[2;⍳3]←'Q07'
[ 64]  esse[68+⍳10;]←10 80↑xixo
[ 65]  xixo←que5 acertaquestao matq5[?3;]
[ 66]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[ 67]  xixo←⊃xixo[2]
[ 68]  xixo[2;⍳3]←'Q08'
[ 69]  esse[78+⍳9;]←9 80↑xixo
[ 70]  in←2?6
[ 71]  xixo←que6 acertaquestao matq6[in[1];]
[ 72]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[ 73]  xixo←⊃xixo[2]
[ 74]  xixo[2;⍳3]←'Q09'
[ 75]  esse[87+⍳10;]←10 80↑xixo
[ 76]  xixo←que6 acertaquestao matq6[in[2];]
[ 77]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[ 78]  xixo←⊃xixo[2]
[ 79]  xixo[2;⍳3]←'Q10'
[ 80]  esse[97+⍳10;]←10 80↑xixo
[ 81]  resp←(3 0⍕resp),resposta
[ 82]  resu←resu,[1]1 13⍴resp
[ 83]  acuja←(f[;2]='#')/⍳1↑⍴f
[ 84]  f[acuja;]←esse[±,f[acuja;3 4 5],' ';]
```

```
[ 85]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[ 86]  ⍞←(⍕xk←xk+1),'-'
[ 87]  →testa
[ 88] fim:upag←(1 0+⍴f)⍴' '
[ 89]  →(1=≡n)/elafa
[ 90]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[ 91]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[ 92]  upag[2+⍳1↑⍴resu;⍳23]←(1 1 1,20⍴0 1)⍀[2]resu
[ 93]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[ 94]  →terminando
[ 95] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 3↓resu)
[ 96]  aaa[1;35 36]←2 0⍕CORRECAO
[ 97]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[ 98]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[ 99] terminando:
[100]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[101]  relat[1↑⍴relat;;]←upag
[102]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[103]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[104]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo193

```
[ 0]  r←tex acertaquestao nums;re;a;b;c;ri;d
[ 1]  re←tex[nums[1]+⍳nums[2];]
[ 2]  a←nums[3]+¯1+⍳5
[ 3]  c←b←tex[a;]
[ 4]  b←b[d←5?5;]
[ 5]  re[nums[3]-nums[1];]←75↑'a) ',b[1;]
[ 6]  re[nums[3]+1-nums[1];]←75↑'b) ',b[2;]
[ 7]  re[nums[3]+2-nums[1];]←75↑'c) ',b[3;]
[ 8]  re[nums[3]+3-nums[1];]←75↑'d) ',b[4;]
[ 9]  re[nums[3]+4-nums[1];]←75↑'e) ',b[5;]
[10]  ri←d⍳1
[11]  r←(ri re)
------------------------------------------------------------
[ 0]  ajustatodas tam
[ 1]  que1←tam ajusta que1
[ 2]  que2←tam ajusta que2
[ 3]  que3←tam ajusta que3
[ 4]  que4←tam ajusta que4
[ 5]  que5←tam ajusta que5
[ 6]  que6←tam ajusta que6
[ 7]  que7←tam ajusta que7
[ 8]  que8←tam ajusta que8
[ 9]  que9←tam ajusta que9
[10]  quea←tam ajusta quea
[11]  queb←tam ajusta queb
[12]  quec←tam ajusta quec
[13]  qued←tam ajusta qued
[14]  quee←tam ajusta quee
[15]  quef←tam ajusta quef
[16]  queg←tam ajusta queg
------------------------------------------------------------
[0]  r←num gqanal de;d;io
[1]  d←de[1] ⋄ io←de[2]
[2]  r←0 77⍴' '
[3]  r←r,[1]1 77⍴77↑'$QE',('00000'⍕num),'OLIMPI2727olimpiada: analistas M'
[4]  r←r,[1]14 77↑FOLHALA173c[69+⍳14;]
[5]  r←r,[1]((1↑⍴quea[d+⍳io;]),77)↑quea[d+⍳io;]
[6]  r←r,[1]1 77⍴77↑'$QR',('00000'⍕num),'27'
```

```
[7]  r←r,[1]1 77⍴77↑'---'
------------------------------------------------------------
[0]  r←num gqazzu de;d;io
[1]  d←de[1] ⋄ io←de[2]
[2]  r←0 77⍴' '
[3]  r←r,[1]1 77⍴77↑'$QE',('00000'⍕num),'OLIMPI2020olimpiada: azulejos M'
[4]  r←r,[1]13 77↑FOLHALA173a[102+⍳13;]
[5]  r←r,[1]((1↑⍴que3[d+⍳io;]),77)↑que3[d+⍳io;]
[6]  r←r,[1]1 77⍴77↑'$QR',('00000'⍕num),'20'
[7]  r←r,[1]1 77⍴77↑'---'
------------------------------------------------------------
[0]  r←num gqband de;d;io
[1]  d←de[1] ⋄ io←de[2]
[2]  r←0 77⍴' '
[3]  r←r,[1]1 77⍴77↑'$QE',('00000'⍕num),'OLIMPI2020olimpiada: azulejos M'
[4]  r←r,[1]13 77↑FOLHALA173a[102+⍳13;]
[5]  r←r,[1]((1↑⍴que3[d+⍳io;]),77)↑que3[d+⍳io;]
[6]  r←r,[1]1 77⍴77↑'$QR',('00000'⍕num),'20'
[7]  r←r,[1]1 77⍴77↑'---'
------------------------------------------------------------
[0]  r←num gqcasa de;d;io
[1]  d←de[1] ⋄ io←de[2]
[2]  r←0 77⍴' '
[3]  r←r,[1]1 77⍴77↑'$QE',('00000'⍕num),'OLIMPI2828olimpiada: casa susp M'
[4]  r←r,[1]13 77↑FOLHALA173c[104+⍳13;]
[5]  r←r,[1]((1↑⍴queb[d+⍳io;]),77)↑queb[d+⍳io;]
[6]  r←r,[1]1 77⍴77↑'$QR',('00000'⍕num),'28'
[7]  r←r,[1]1 77⍴77↑'---'
------------------------------------------------------------
[0]  r←num gqexcu de;d;io
[1]  d←de[1] ⋄ io←de[2]
[2]  r←0 77⍴' '
[3]  r←r,[1]1 77⍴77↑'$QE',('00000'⍕num),'OLIMPI1818olimpiada: excursao M'
[4]  r←r,[1]12 77↑FOLHALA173a[25+⍳12;]
[5]  r←r,[1]((1↑⍴que1[d+⍳io;]),77)↑que1[d+⍳io;]
[6]  r←r,[1]1 77⍴77↑'$QR',('00000'⍕num),'18'
[7]  r←r,[1]1 77⍴77↑'---'
------------------------------------------------------------
[0]  r←num gqfute de;d;io
[1]  d←de[1] ⋄ io←de[2]
[2]  r←0 77⍴' '
[3]  r←r,[1]1 77⍴77↑'$QE',('00000'⍕num),'OLIMPI1717olimpiada: futebol M'
[4]  r←r,[1]12 77↑FOLHALA172[216+⍳12;]
[5]  r←r,[1]((1↑⍴que6[d+⍳io;]),77)↑que6[d+⍳io;]
[6]  r←r,[1]1 77⍴77↑'$QR',('00000'⍕num),'17'
[7]  r←r,[1]1 77⍴77↑'---'
------------------------------------------------------------
[0]  r←num gqhidr de;d;io
[1]  d←de[1] ⋄ io←de[2]
[2]  r←0 77⍴' '
[3]  r←r,[1]1 77⍴77↑'$QE',('00000'⍕num),'OLIMPI2424olimpiada: hidrologia F'
[4]  r←r,[1]12 77↑FOLHALA173b[120+⍳12;]
[5]  r←r,[1]((1↑⍴que7[d+⍳io;]),77)↑que7[d+⍳io;]
[6]  r←r,[1]1 77⍴77↑'$QR',('00000'⍕num),'24'
[7]  r←r,[1]1 77⍴77↑'---'
------------------------------------------------------------
[0]  r←num gqhort de;d;io
[1]  d←de[1] ⋄ io←de[2]
[2]  r←0 77⍴' '
[3]  r←r,[1]1 77⍴77↑'$QE',('00000'⍕num),'OLIMPI3232olimpiada: horta M'
[4]  r←r,[1]15 77↑FOLHALA173d[105+⍳15;]
[5]  r←r,[1]((1↑⍴quef[d+⍳io;]),77)↑quef[d+⍳io;]
[6]  r←r,[1]1 77⍴77↑'$QR',('00000'⍕num),'32'
```

```
[7]  r←r,[1]1 77⍴77↑'---'
------------------------------------------------------------
[0]  r←num gqmapa de;d;io
[1]  d←de[1] ⋄ io←de[2]
[2]  r←0 77⍴' '
[3]  r←r,[1]1 77⍴77↑'$QE',('00000'⍕num),'OLIMPI3030olimpiada: mapas M'
[4]  r←r,[1]12 77↑FOLHALA173d[25+⍳12;]
[5]  r←r,[1]((1↑⍴queg[d+⍳io;]),77)↑queg[d+⍳io;]
[6]  r←r,[1]1 77⍴77↑'$QR',('00000'⍕num),'30'
[7]  r←r,[1]1 77⍴77↑'---'
------------------------------------------------------------
[0]  r←num gqmptr de;d;io
[1]  d←de[1] ⋄ io←de[2]
[2]  r←0 77⍴' '
[3]  r←r,[1]1 77⍴77↑'$QE',('00000'⍕num),'OLIMPI3131olimpiada: mp3 M'
[4]  r←r,[1]14 77↑FOLHALA173d[60+⍳14;]
[5]  r←r,[1]((1↑⍴quee[d+⍳io;]),77)↑quee[d+⍳io;]
[6]  r←r,[1]1 77⍴77↑'$QR',('00000'⍕num),'31'
[7]  r←r,[1]1 77⍴77↑'---'
------------------------------------------------------------
[0]  r←num gqpale de;d;io
[1]  d←de[1] ⋄ io←de[2]
[2]  r←0 77⍴' '
[3]  r←r,[1]1 77⍴77↑'$QE',('00000'⍕num),'OLIMPI2626olimpiada: palestras M'
[4]  r←r,[1]17 77↑FOLHALA173c[25+⍳17;]
[5]  r←r,[1]((1↑⍴que9[d+⍳io;]),77)↑que9[d+⍳io;]
[6]  r←r,[1]1 77⍴77↑'$QR',('00000'⍕num),'26'
[7]  r←r,[1]1 77⍴77↑'---'
------------------------------------------------------------
[0]  r←num gqpant de;d;io
[1]  d←de[1] ⋄ io←de[2]
[2]  r←0 77⍴' '
[3]  r←r,[1]1 77⍴77↑'$QE',('00000'⍕num),'OLIMPI2222olimpiada: pantanal D'
[4]  r←r,[1]8 77↑FOLHALA173b[25+⍳8;]
[5]  r←r,[1]((1↑⍴que5[d+⍳io;]),77)↑que5[d+⍳io;]
[6]  r←r,[1]1 77⍴77↑'$QR',('00000'⍕num),'22'
[7]  r←r,[1]1 77⍴77↑'---'
------------------------------------------------------------
[0]  r←num gqposf de;d;io
[1]  d←de[1] ⋄ io←de[2]
[2]  r←0 77⍴' '
[3]  r←r,[1]1 77⍴77↑'$QE',('00000'⍕num),'OLIMPI2929olimpiada: pos fixa F'
[4]  r←r,[1]20 77↑FOLHALA173c[130+⍳20;]
[5]  r←r,[1]((1↑⍴quec[d+⍳io;]),77)↑quec[d+⍳io;]
[6]  r←r,[1]1 77⍴77↑'$QR',('00000'⍕num),'29'
[7]  r←r,[1]1 77⍴77↑'---'
------------------------------------------------------------
[0]  r←num gqsand de;d;io
[1]  d←de[1] ⋄ io←de[2]
[2]  r←0 77⍴' '
[3]  r←r,[1]1 77⍴77↑'$QE',('00000'⍕num),'OLIMPI3333olimpiada: sanduiche M'
[4]  r←r,[1]16 77↑FOLHALA173d[132+⍳16;]
[5]  r←r,[1]((1↑⍴qued[d+⍳io;]),77)↑qued[d+⍳io;]
[6]  r←r,[1]1 77⍴77↑'$QR',('00000'⍕num),'33'
[7]  r←r,[1]1 77⍴77↑'---'
------------------------------------------------------------
[0]  r←num gqteni de;d;io
[1]  d←de[1] ⋄ io←de[2]
[2]  r←0 77⍴' '
[3]  r←r,[1]1 77⍴77↑'$QE',('00000'⍕num),'OLIMPI2323olimpiada: t. tenis D'
[4]  r←r,[1]15 77↑FOLHALA173b[83+⍳15;]
[5]  r←r,[1]((1↑⍴que6[d+⍳io;]),77)↑que6[d+⍳io;]
[6]  r←r,[1]1 77⍴77↑'$QR',('00000'⍕num),'23'
```

```
[7]  r←r,[1]1 77⍴77↑'---'
------------------------------------------------------------
[0]  r←num gqtesc de;d;io
[1]  d←de[1] ⋄ io←de[2]
[2]  r←0 77⍴' '
[3]  r←r,[1]1 77⍴77↑'$QE',('00000'⍕num),'OLIMPI2121olimpiada: t.escolar M'
[4]  r←r,[1]12 77↑FOLHALA173a[127+⍳12;]
[5]  r←r,[1]((1↑⍴que4[d+⍳io;]),77)↑que4[d+⍳io;]
[6]  r←r,[1]1 77⍴77↑'$QR',('00000'⍕num),'21'
[7]  r←r,[1]1 77⍴77↑'---'
------------------------------------------------------------
[0]  r←num gqtorn de;d;io
[1]  d←de[1] ⋄ io←de[2]
[2]  r←0 77⍴' '
[3]  r←r,[1]1 77⍴77↑'$QE',('00000'⍕num),'OLIMPI2525olimpiada: tornado D'
[4]  r←r,[1]49 77↑FOLHALA173b[145+⍳49;]
[5]  r←r,[1]((1↑⍴que8[d+⍳io;]),77)↑que8[d+⍳io;]
[6]  r←r,[1]1 77⍴77↑'$QR',('00000'⍕num),'25'
[7]  r←r,[1]1 77⍴77↑'---'
------------------------------------------------------------
[ 0]  opesq vivo193b n;CORRECAO;EVENTO;aaa;acuja;cab;dhx;esse;f;in;lixonol;relat;resp;resp
      osta;resu;upag;xixo;xk;ylu
[ 1] ⍝ esta funcao ja foi a 173b
[ 2]  →(0≠⎕NC'opesq')/qveio
[ 3]  opesq←''
[ 4] qveio:
[ 5]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 6]  EVENTO←'PL193b  '
[ 7]  ajustatodas 75
[ 8]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 9]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[10]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[11]  FOLHALA193b←ajusta80 FOLHALA193b
[12]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA193b)⍴' '
[13]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[14]  xk←1 ⋄ resu←0 10⍴0
[15] testa:→(xk>1↑⍴ylu)/fim
[16]  esse←107 80⍴' '
[17]  f←FOLHALA193b
[18]  esse[1;]←80↑dhx[1;]
[19]  esse[2;]←80↑dhx[2;]
[20]  esse[3;]←80↑4 2⍎VERSAOa←1.02
[21]  esse[4;]←80↑ylu[xk;⍳6]
[22]  esse[5;]←80↑ylu[xk;6+⍳30]
[23]  cab←'{\large{',EVENTO[5+⍳3],'}}-',EVENTO[⍳2],'-{\large{',EVENTO[2+⍳3],'}}'
[24]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑cab
[25]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[26] inica:
[27]  resposta←''
[28]  in←2?5
[29]  xixo←que1 acertaquestao matq1[in[1];]
[30]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[31]  xixo←⊃xixo[2]
[32]  xixo[2;⍳3]←'Q01'
[33]  esse[7+⍳9;]←9 80↑xixo
[34]  xixo←que1 acertaquestao matq1[in[2];]
[35]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[36]  xixo←⊃xixo[2]
[37]  xixo[2;⍳3]←'Q02'
[38]  esse[16+⍳9;]←9 80↑xixo
[39]  in←2?6
[40]  xixo←que2 acertaquestao matq2[in[1];]
```

```
[41]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[42]  xixo←⊃xixo[2]
[43]  xixo[2;⍳3]←'Q03'
[44]  esse[25+⍳10;]←10 80↑xixo
[45]  xixo←que2 acertaquestao matq2[in[2];]
[46]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[47]  xixo←⊃xixo[2]
[48]  xixo[2;⍳3]←'Q04'
[49]  esse[35+⍳10;]←10 80↑xixo
[50]  xixo←que3 acertaquestao matq3[?3;]
[51]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[52]  xixo←⊃xixo[2]
[53]  xixo[2;⍳3]←'Q05'
[54]  esse[45+⍳9;]←9 80↑xixo
[55]  in←2?5
[56]  xixo←que4 acertaquestao matq4[in[1];]
[57]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[58]  xixo←⊃xixo[2]
[59]  xixo[2;⍳3]←'Q06'
[60]  esse[54+⍳9;]←9 80↑xixo
[61]  xixo←que4 acertaquestao matq4[in[2];]
[62]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[63]  xixo←⊃xixo[2]
[64]  xixo[2;⍳3]←'Q07'
[65]  esse[63+⍳9;]←9 80↑xixo
[66]  resp←(3 0⍕resp),resposta
[67]  resu←resu,[1]1 10⍴resp
[68]  acuja←(f[;2]='#')/⍳1↑⍴f
[69]  f[acuja;]←esse[⍤,f[acuja;3 4 5],' ';]
[70]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[71]  ⍞←(⍕xk←xk+1),'-'
[72]  →testa
[73] fim:upag←(1 0+⍴f)⍴' '
[74]  →(1=≡n)/elafa
[75]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[76]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[77]  upag[2+⍳1↑⍴resu;⍳17]←(1 1 1,14⍴0 1)⍀[2]resu
[78]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[79]  →terminando
[80] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 3↓resu)
[81]  aaa[1;35 36]←2 0⍕CORRECAO
[82]  lixonol←aaa ⎕FM('c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.gpa')
[83]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[84] terminando:
[85]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[86]  relat[1↑⍴relat;;]←upag
[87]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[88]  lixonol←lixonol ⎕FM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.tex'
[89]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[ 0]  opesq vivo193c n;CORRECAO;EVENTO;aaa;acuja;cab;dhx;esse;f;in;lixonol;relat;resp;resp
      osta;resu;upag;xixo;xk;ylu
[ 1] ⍝ ja foi a 173c
[ 2]  →(0≠⎕NC'opesq')/qveio
[ 3]  opesq←''
[ 4] qveio:
[ 5]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 6]  EVENTO←'PL193c  '
[ 7]  ajustatodas 75
[ 8]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 9]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[10]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
```

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[11]  FOLHALA193c←ajusta80 FOLHALA193c
[12]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA193c)⍴' '
[13]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[14]  xk←1 ⋄ resu←0 9⍴0
[15] testa:→(xk>1↑⍴ylu)/fim
[16]  esse←90 80⍴' '
[17]  f←FOLHALA193c
[18]  esse[1;]←80↑dhx[1;]
[19]  esse[2;]←80↑dhx[2;]
[20]  esse[3;]←80↑4 2⍕VERSAOc←1.02
[21]  esse[4;]←80↑ylu[xk;⍳6]
[22]  esse[5;]←80↑ylu[xk;6+⍳30]
[23]  cab←'{\large{',EVENTO[5+⍳3],'}}-',EVENTO
[24]  →(~1=≡n)/1+□LC ⋄ esse[6;]←80↑cab
[25]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[26] inica:
[27]  resposta←''
[28]  in←2?6
[29]  xixo←que5 acertaquestao matq5[in[1];]
[30]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[31]  xixo←⊃xixo[2]
[32]  xixo[2;⍳3]←'Q01'
[33]  esse[7+⍳23;]←23 80↑xixo
[34]  xixo←que5 acertaquestao matq5[in[2];]
[35]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[36]  xixo←⊃xixo[2]
[37]  xixo[2;⍳3]←'Q02'
[38]  esse[30+⍳23;]←23 80↑xixo
[39]  in←2?6
[40]  xixo←que6 acertaquestao matq6[in[1];]
[41]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[42]  xixo←⊃xixo[2]
[43]  xixo[2;⍳3]←'Q03'
[44]  esse[53+⍳9;]←9 80↑xixo
[45]  xixo←que6 acertaquestao matq6[in[2];]
[46]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[47]  xixo←⊃xixo[2]
[48]  xixo[2;⍳3]←'Q04'
[49]  esse[62+⍳9;]←9 80↑xixo
[50]  xixo←que7 acertaquestao matq7[?2;]
[51]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[52]  xixo←⊃xixo[2]
[53]  xixo[2;⍳3]←'Q05'
[54]  esse[71+⍳10;]←10 80↑xixo
[55]  xixo←que8 acertaquestao matq8[?3;]
[56]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[57]  xixo←⊃xixo[2]
[58]  xixo[2;⍳3]←'Q06'
[59]  esse[81+⍳9;]←9 80↑xixo
[60]  resp←(3 0⍕resp),resposta
[61]  resu←resu,[1]1 9⍴resp
[62]  acuja←(f[;2]='#')/⍳1↑⍴f
[63]  f[acuja;]←esse[⍋,f[acuja;3 4 5],' ';]
[64]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[65]  □←(⍕xk←xk+1),'-'
[66]  →testa
[67] fim:upag←(1 0+⍴f)⍴' '
[68]  →(1=≡n)/elafa
[69]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[70]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[71]  upag[2+⍳1↑⍴resu;⍳15]←(1 1 1,12⍴0 1)\[2]resu
[72]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[73]  →terminando
```

```
[74] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 3↓resu)
[75]  aaa[1;35 36]←2 0⍕CORRECAO
[76]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[77]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[78] terminando:
[79]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[80]  relat[1↑⍴relat;;]←upag
[81]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[82]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[83]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo193d n;CORRECAO;EVENTO;aaa;acuja;cab;dhx;esse;f;in;lixonol;relat;resp;resp
      osta;resu;upag;xixo;xk;ylu
[ 1] ⍝ era a 173c
[ 2]  →(0≠⎕NC'opesq')/qveio
[ 3]  opesq←''
[ 4] qveio:
[ 5]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 6]  EVENTO←'PL193d  '
[ 7]  ajustatodas 75
[ 8]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 9]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[10]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[11]  FOLHALA193d←ajusta80 FOLHALA193d
[12]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA193d)⍴' '
[13]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[14]  xk←1 ⋄ resu←0 9⍴0
[15] testa:→(xk>1↑⍴ylu)/fim
[16]  esse←68 80⍴' '
[17]  f←FOLHALA193d
[18]  esse[1;]←80↑dhx[1;]
[19]  esse[2;]←80↑dhx[2;]
[20]  esse[3;]←80↑4 2⍕VERSAOd←1.02
[21]  esse[4;]←80↑ylu[xk;⍳6]
[22]  esse[5;]←80↑ylu[xk;6+⍳30]
[23]  cab←'{\large{',EVENTO[5+⍳3],'}}-',EVENTO[⍳2],'-{\large{',EVENTO[2+⍳3],'}}'
[24]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑cab
[25]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[26] inica:
[27]  resposta←''
[28]  in←2?6
[29]  xixo←que9 acertaquestao matq9[in[1];]
[30]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[31]  xixo←⊃xixo[2]
[32]  xixo[2;⍳3]←'Q01'
[33]  esse[7+⍳11;]←11 80↑xixo
[34]  xixo←que9 acertaquestao matq9[in[2];]
[35]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[36]  xixo←⊃xixo[2]
[37]  xixo[2;⍳3]←'Q02'
[38]  esse[18+⍳11;]←11 80↑xixo
[39]  in←2?5
[40]  xixo←quea acertaquestao matqa[in[1];]
[41]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[42]  xixo←⊃xixo[2]
[43]  xixo[2;⍳3]←'Q03'
[44]  esse[29+⍳9;]←9 80↑xixo
[45]  xixo←quea acertaquestao matqa[in[2];]
[46]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[47]  xixo←⊃xixo[2]
[48]  xixo[2;⍳3]←'Q04'
[49]  esse[38+⍳9;]←9 80↑xixo
```

```
[50]  xixo←queb acertaquestao matqb[?4;]
[51]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[52]  xixo←⊃xixo[2]
[53]  xixo[2;⍳3]←'Q05'
[54]  esse[47+⍳10;]←10 80↑xixo
[55]  xixo←quec acertaquestao matqc[?3;]
[56]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[57]  xixo←⊃xixo[2]
[58]  xixo[2;⍳3]←'Q06'
[59]  esse[57+⍳10;]←10 80↑xixo
[60]  resp←(3 0⍕resp),resposta
[61]  resu←resu,[1]1 9⍴resp
[62]  acuja←(f[;2]='#')/⍳1↑⍴f
[63]  f[acuja;]←esse[⍳⍴acuja;3 4 5],' ';]
[64]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[65]  ⍞←(⍕xk←xk+1),'-'
[66]  →testa
[67] fim:upag←(1 0+⍴f)⍴' '
[68]  →(1=≡n)/elafa
[69]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[70]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[71]  upag[2+⍳1↑⍴resu;⍳15]←(1 1 1,12⍴0 1)\[2]resu
[72]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[73]  →terminando
[74] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 3↓resu)
[75]  aaa[1;35 36]←2 0⍕CORRECAO
[76]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[77]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[78] terminando:
[79]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[80]  relat[1↑⍴relat;;]←upag
[81]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[82]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[83]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[ 0]  opesq vivo193e n;CORRECAO;EVENTO;aaa;acuja;cab;dhx;esse;f;in;lixonol;relat;resp;resp
      osta;resu;upag;xixo;xk;ylu
[ 1] ⍝ era 173d
[ 2]  →(0≠⎕NC'opesq')/qveio
[ 3]  opesq←''
[ 4] qveio:
[ 5]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 6]  EVENTO←'PL193e  '
[ 7]  ajustatodas 75
[ 8]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 9]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[10]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[11]  FOLHALA193e←ajusta80 FOLHALA193e
[12]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA193e)⍴' '
[13]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[14]  xk←1 ⋄ resu←0 10⍴0
[15] testa:→(xk>1↑⍴ylu)/fim
[16]  esse←83 80⍴' '
[17]  f←FOLHALA193e
[18]  esse[1;]←80↑dhx[1;]
[19]  esse[2;]←80↑dhx[2;]
[20]  esse[3;]←80↑4 2⍕VERSAOe←1.02
[21]  esse[4;]←80↑ylu[xk;⍳6]
[22]  esse[5;]←80↑ylu[xk;6+⍳30]
[23]  cab←'{\large{',EVENTO[5+⍳3],'}}-',EVENTO[⍳2],'-{\large{',EVENTO[2+⍳3],'}}'
[24]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑cab
[25]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
```

```
[26] inica:
[27]  resposta←''
[28]  in←2?6
[29]  xixo←queg acertaquestao matqg[in[1];]
[30]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[31]  xixo←⊃xixo[2]
[32]  xixo[2;⍳3]←'Q01'
[33]  esse[7+⍳10;]←10 80↑xixo
[34]  xixo←queg acertaquestao matqg[in[2];]
[35]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[36]  xixo←⊃xixo[2]
[37]  xixo[2;⍳3]←'Q02'
[38]  esse[17+⍳10;]←10 80↑xixo
[39]  in←3?7
[40]  xixo←quee acertaquestao matqe[in[1];]
[41]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[42]  xixo←⊃xixo[2]
[43]  xixo[2;⍳3]←'Q03'
[44]  esse[27+⍳9;]←9 80↑xixo
[45]  xixo←quee acertaquestao matqe[in[2];]
[46]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[47]  xixo←⊃xixo[2]
[48]  xixo[2;⍳3]←'Q04'
[49]  esse[36+⍳9;]←9 80↑xixo
[50]  xixo←quee acertaquestao matqe[in[3];]
[51]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[52]  xixo←⊃xixo[2]
[53]  xixo[2;⍳3]←'Q05'
[54]  esse[45+⍳9;]←9 80↑xixo
[55]  xixo←quef acertaquestao matqf[?4;]
[56]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[57]  xixo←⊃xixo[2]
[58]  xixo[2;⍳3]←'Q06'
[59]  esse[54+⍳10;]←10 80↑xixo
[60]  xixo←qued acertaquestao matqd[?4;]
[61]  resposta←resposta,'ABCDE'[⊃xixo[1]]
[62]  xixo←⊃xixo[2]
[63]  xixo[2;⍳3]←'Q07'
[64]  esse[64+⍳19;]←19 80↑xixo
[65]  resp←(3 0⍕resp),resposta
[66]  resu←resu,[1]1 10⍴resp
[67]  acuja←(f[;2]='#')/⍳1↑⍴f
[68]  f[acuja;]←esse[⍋,f[acuja;3 4 5],' ';]
[69]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[70]  ⍞←(⍕xk←xk+1),'-'
[71]  →testa
[72] fim:upag←(1 0+⍴f)⍴' '
[73]  →(1=≡n)/elafa
[74]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[75]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[76]  upag[2+⍳1↑⍴resu;⍳17]←(1 1 1,14⍴0 1)\[2]resu
[77]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[78]  →terminando
[79] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 3↓resu)
[80]  aaa[1;35 36]←2 0⍕CORRECAO
[81]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[82]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[83] terminando:
[84]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[85]  relat[1↑⍴relat;;]←upag
[86]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[87]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[88]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
```

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------------------------------------------------------------
```

vivo215

```
[ 0]  r←geracaso n;inds
[ 1]  →(n≠1)/nao1
[ 2]  inds←3?1↑⍴BDPOT
[ 3]  inds←inds[⍋inds]
[ 4]  r←BDPOT[inds;]
[ 5]  →fim
[ 6] nao1:→(n≠2)/nao2
[ 7]  inds←3?1↑⍴BDRAI
[ 8]  inds←inds[⍋inds]
[ 9]  r←BDRAI[inds;]
[10]  →fim
[11] nao2:
[12] fim:
[13]  →0
------------------------------------------------------------
[0]  r←geracaso2;inds
[1]  inds←6?1↑⍴BDLOG
[2]  inds←inds[⍋inds]
[3]  r←BDLOG[inds;]
------------------------------------------------------------
[ 0]  geragabarito;x;folha;aaa
[ 1]  BDPOT←70 ajusta BDPOT
[ 2]  BDLOG←70 ajusta BDLOG
[ 3]  BDRAI←70 ajusta BDRAI
[ 4]  x←BDPOT
[ 5]  x[;59]←'&'
[ 6]  x←x,'⍀'
[ 7]  x←x,'⍀'
[ 8]  folha←ajusta80 gabarito
[ 9]  x←'¯-'edit x
[10]  x←x,((1↑⍴x),⍴aaa)⍴aaa←' \hline'
[11]  folha←folha,[1]1 80⍴80↑'\begin{tabular}{|l|l|} \hline'
[12]  folha←folha,[1]((1↑⍴x),80)↑x
[13]  folha←folha,[1]1 80⍴80↑'\end{tabular}'
[14]  folha←folha,[1]1 80⍴80↑'\newpage'
[15]  x←BDRAI
[16]  x[;59]←'&'
[17]  x←x,'⍀'
[18]  x←x,'⍀'
[19]  x←'¯-'edit x
[20]  x←x,((1↑⍴x),⍴aaa)⍴aaa←' \hline'
[21]  folha←folha,[1]1 80⍴80↑'\begin{tabular}{|l|l|} \hline'
[22]  folha←folha,[1]((1↑⍴x),80)↑x
[23]  folha←folha,[1]1 80⍴80↑'\end{tabular}'
[24]  folha←folha,[1]1 80⍴80↑'\newpage'
[25]  x←BDLOG
[26]  x[;59]←'&'
[27]  x←x,'⍀'
[28]  x←x,'⍀'
[29]  x←'¯-'edit x
[30]  x←x,((1↑⍴x),⍴aaa)⍴aaa←' \hline'
[31]  folha←folha,[1]1 80⍴80↑'\begin{tabular}{|l|l|} \hline'
[32]  folha←folha,[1]((1↑⍴x),80)↑x
[33]  folha←folha,[1]1 80⍴80↑'\end{tabular}'
[34]  folha←folha,[1]1 80⍴80↑'\end{document}'
[35]  folha ⎕FM'c:\apl2\gabaloga.tex'
[36]  'arquivo salvo como c:\apl2\gabaloga.tex. Favor compilar e listar'
------------------------------------------------------------
```

```
[0]  r←pedemail x
[1]  →(40≠+/' '=x)/aindanao
[2]  r←80↑'Por favor, informe seu e-mail: ⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_'
[3]  →junnao
[4] aindanao:r←80↑'e-mail cadastrado: ',x
[5] junnao:
------------------------------------------------------------
[ 0]  opesq vivo215a n;CORRECAO;EVENTO;aaa;acuja;caso;dhx;esse;f;lixo1;lixonol;relat;resp;
      resu;upag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←4 ⋄ EVENTO←'PL215   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⍙FM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA215←ajusta80 FOLHALA215
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA215)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑⍙FM'c:⍀apl2⍀VIVOBLOI'
[12]  xk←1 ⋄ resu←0 13⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←21 80⍴' '
[15]  f←FOLHALA215
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←3.19
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[23] ⍝ esse[20;]←80↑pedemail ylu[xk;36+⍳40]
[24]  esse[20;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[25]  esse[21;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[26] inica:
[27] denovo:caso←geracaso 1   ⍝ exercicios de potencia
[28]  esse[7+⍳3;⍳60]←caso[;⍳60]
[29]  resp←resp,⍙,caso[;60+⍳4],' '
[30]  caso←geracaso 2   ⍝ exercicios de raiz
[31]  esse[10+⍳3;⍳60]←caso[;⍳60]
[32]  resp←resp,⍙,caso[;60+⍳4],' '
[33]  caso←geracaso2   ⍝ exercicios de logaritmo
[34]  esse[13+⍳3;⍳60]←caso[⍳3;⍳60]
[35]  resp←resp,⍙,caso[⍳3;60+⍳4],' '
[36]  esse[16+⍳3;⍳60]←caso[3+⍳3;⍳60]
[37]  resp←resp,⍙,caso[3+⍳3;60+⍳4],' '
[38]  resu←resu,[1]1 13⍴resp
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;⍳80]←esse[⍙,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[42]  ⍞←(⍎xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯'-'edit(lixo1←4 0,24⍴7 0 4 0 4 0)⍎resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),'¯'-'edit(24⍴7 0 4 0 4 0)⍎0 1↓resu)
[52]  aaa[1;35 36]←2 0⍎CORRECAO
[53]  lixonol←aaa ⍙FM('c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.gpa')
```

```
[54]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[55] terminando:
[56] ⍝ upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[57]  relat[1↑⍴relat;;]←upag
[58]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[59] ⍝ lixonol←lixonol,[1](ajusta80 INSTRUC215),[1]1 80⍴80↑'\end{document}'
[60]  lixonol←lixonol,[1]1 80⍴80↑'\end{document}'
[61] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[62]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[63]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[64]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo220

```
[ 0]  opesq vivo220a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;num;relat
      ;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←8 ⋄ EVENTO←'PL220   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA220←ajusta80 FOLHALA220
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA220)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[12]  xk←1 ⋄ resu←0 2⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←9 80⍴' '
[15]  f←FOLHALA220
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[8;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[9;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25]  resu←resu,[1]1 2⍴resp
[26]  acuja←(f[;2]='#')/⍳1↑⍴f
[27]  f[acuja;]←esse[⍤,f[acuja;3 4],' ';]
[28]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[29]  ⍞←(⍕xk←xk+1),'-'
[30]  →testa
[31] fim:upag←(1 0+⍴f)⍴' '
[32]  →terminando
[33]  →(1=≡n)/elafa
[34]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[35]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[36]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←4 0 8 0)⍕resu
[37]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[38]  →terminando
[39] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),4 0⍕0 1↓resu)
[40]  aaa[1;35 36]←2 0⍕CORRECAO
[41]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[42]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[43] terminando:
[44]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
```

```
[45]  relat[1↑⍴relat;;]←upag
[46]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[47] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[48]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[49]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'    (.tex)'
-------------------------------------------------------------
```

vivo222

```
[0]  r←a dif b;i
[1]  r←''
[2]  i←1
[3] t1:→(i>⍴a)/fim
[4]  →(a[i]∈b)/naopoe
[5] poe:r←r,a[i]
[6] naopoe:i←i+1
[7]  →t1
[8] fim:
-------------------------------------------------------------
[ 0]  r←d1 difdat d2;data3;v1;v2;v3
[ 1] ⍝ d1 e d2 formato 'ddhh'
[ 2]  data3←⎕TS[3 4]
[ 3]  v2←d2[2]+d2[1]×24
[ 4]  v1←d1[2]+d1[1]×24
[ 5]  v3←data3[2]+data3[1]×24
[ 6]  'Total  = ',⍕v2-v1
[ 7]  'Ja foi = ',⍕v3-v1
[ 8]  'falta  = ',⍕v2-v3
-------------------------------------------------------------
[ 0]  rx←gera222;lixo;r;x
[ 1] novo:
[ 2]  r←7 11⍴0
[ 3]  r[1;⍳7]←6,6?10
[ 4]  r[2;⍳7]←6,6?8
[ 5]  lixo←r[1;1+⍳r[1;1]]inter r[2;1+⍳r[2;1]]
[ 6]  r[3;]←(⍴lixo),10↑lixo
[ 7]  lixo←r[1;1+⍳r[1;1]]uniao r[2;1+⍳r[2;1]]
[ 8]  →(10<⍴lixo)/novo
[ 9]  r[4;]←(⍴lixo),10↑lixo
[10]  lixo←r[4;1+⍳r[4;1]]dif r[1;1+⍳r[1;1]]
[11]  r[5;]←(⍴lixo),10↑lixo
[12]  lixo←r[5;1+⍳r[5;1]]uniao r[3;1+⍳r[3;1]]
[13]  →(10<⍴lixo)/novo
[14]  r[6;]←(⍴lixo),10↑lixo
[15]  lixo←r[1;1+⍳r[1;1]]dif r[6;1+⍳r[6;1]]
[16] ⍝ →(10<⍴lixo)/novo
[17]  r[7;]←(⍴lixo),10↑lixo
[18]  x←2↓+/[2]0 1↓r
[19]  rx←(⊂r),⊂x
-------------------------------------------------------------
[ 0]  r←a inter b;i
[ 1]  r←''
[ 2]  i←1
[ 3] t1:→(i>⍴a)/mais
[ 4]  →(~a[i]∈b)/naopoe
[ 5] poe:r←r,a[i]
[ 6] naopoe:i←i+1
[ 7]  →t1
[ 8] mais:
[ 9]  i←1
[10] t2:→(i>⍴b)/fim
[11]  →((~b[i]∈a)∨(b[i]∈r))/naopoe2
```

```
[12] poe2:r←r,b[i]
[13] naopoe2:i←i+1
[14]  →t2
[15] fim:
------------------------------------------------------------
[0]  r←a uniao b;i
[1]  r←a
[2]  i←1
[3] t1:→(i>ρb)/fim
[4]  →(b[i]∈r)/naopoe
[5] poe:r←r,b[i]
[6] naopoe:i←i+1
[7]  →t1
[8] fim:
------------------------------------------------------------
[ 0]  opesq vivo222a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL222   '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎ιn
[ 9]  ylu←n grupo ylu
[10]  FOLHALA222←ajusta80 FOLHALA222
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALA222)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 6ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←11 80ρ' '
[16]  f←FOLHALA222
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;ι6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;ι4]=((1↑ρf),4)ρ'\#05')/ι1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+ι30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[10;ι10]←'@',esse[6;5+ι3],esse[4;1+ι5],'@'
[32]  esse[11;]←80↑esse[6;5+ι3],'-',esse[4;1+ι5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera222
[35]  esse[8;]←80↑(⍎(⊃xx[1])[1;2]),', ',(⍎(⊃xx[1])[1;3]),', ',(⍎(⊃xx[1])[1;4]),', ',(⍎(⊃xx
      [1])[1;5]),', ',(⍎(⊃xx[1])[1;6]),', ',(⍎(⊃xx[1])[1;7])
[36]  esse[9;]←80↑(⍎(⊃xx[1])[2;2]),', ',(⍎(⊃xx[1])[2;3]),', ',(⍎(⊃xx[1])[2;4]),', ',(⍎(⊃xx
      [1])[2;5]),', ',(⍎(⊃xx[1])[2;6]),', ',(⍎(⊃xx[1])[2;7])
[37]  resp←resp,,(⊃xx[2])
[38]  resu←resu,[1]1 6ρresp
[39]  acuja←(f[;2]='#')/ι1↑ρf
[40]  f[acuja;ι80]←esse[⍋,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\clearpage'
[42]  ⍞←(⍎xk←xk+1),'-'
[43]  →testa
```

```
[44] fim:upag←(1 0+ρf)ρ' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓ρupag)↑'⍀begin{verbatim}'
[47]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[48]  upag[2+⍳1↑ρresu;⍳+/lixo1]←(lixo1←5 0 8 0 4 0 4 0 4 0 4 0)⍣resu
[49]  upag[3+1↑ρresu;]←(1↓ρupag)↑'⍀end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],4 0⍣0 1↓resu)
[52]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍣1↑ρaaa),' linhas e ',(⍣1↓ρaaa),' colunas'
[54] terminando:
[55]  upag[1↑ρupag;]←(1↓ρupag)↑'⍀end{document}'
[56]  relat[1↑ρrelat;;]←upag
[57]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[58]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo223

```
[ 0]  r←caso223;i;sem;r1;let;qual;x;a1;a2;r2
[ 1] comeca:
[ 2]  criapifi
[ 3]  i←1
[ 4]  r1←20 28ρ' '
[ 5]  let←'ABCDEFGHJKLMNPQRSTUVWXYZ'
[ 6] t1:→(i>12)/ufa
[ 7]  sem←?4
[ 8]  →(sem=1)/um
[ 9]  →(sem=2)/dois
[10]  →(sem=3)/tres
[11] quatro:
[12]  →(5≤ρP1)/t1
[13]  r1[i;]←28↑'Empil(P1,',(qual←let[?24]),')'
[14]  P1←qual,P1
[15]  →junta
[16] tres:
[17]  →(5≤ρP2)/t1
[18]  r1[i;]←28↑'Empil(P2,',(qual←let[?24]),')'
[19]  P2←qual,P2
[20]  →junta
[21] dois:
[22]  →(5≤ρF1)/t1
[23]  r1[i;]←28↑'Enfilei(F1,',(qual←let[?24]),')'
[24]  F1←qual,F1
[25]  →junta
[26] um:
[27]  →(5≤ρF2)/t1
[28]  r1[i;]←28↑'Enfilei(F2,',(qual←let[?24]),')'
[29]  F2←qual,F2
[30] junta:
[31]  i←i+1
[32]  →t1
[33] ufa:
[34]  →((0=ρP1)∨(0=ρP2)∨(0=ρF1)∨(0=ρF2))/comeca
[35]  i←1
[36] t2:→(i>8)/ufa2
[37]  sem←?2
[38]  →(sem=1)/umum
[39] doisdois:
[40]  a1←?2
```

```
[41]  a2←⍰2
[42]  →(5≤⍴⍷'P',⍕a1)/t2
[43]  →(1≥⍴⍷'F',⍕a2)/t2
[44]  r1[i+12;]←28↑'Empil(P',(⍕a1),',Desenfilei(F',(⍕a2),'))'
[45]  x←⍷'F',(⍕a2),'[⍴F',(⍕a2),']'
[46]  ⍷'F',(⍕a2),'←¯1↓F',⍕a2
[47]  ⍷'P',(⍕a1),'←x,P',⍕a1
[48]  →mescla
[49] umum:a1←⍰2
[50]  a2←⍰2
[51]  →(5≤⍴⍷'F',⍕a1)/t2
[52]  →(1≥⍴⍷'P',⍕a2)/t2
[53]  r1[i+12;]←28↑'Enfilei(F',(⍕a1),',Desempil(P',(⍕a2),'))'
[54]  x←⍷'P',(⍕a2),'[1]'
[55]  ⍷'P',(⍕a2),'←1↓P',⍕a2
[56]  ⍷'F',(⍕a1),'←x,F',⍕a1
[57] mescla:
[58]  i←i+1
[59]  →t2
[60] ufa2:
[61]  r2←(1↑P1),(1↑P2),(¯1↑F1),¯1↑F2
[62]  r←2⍴0
[63]  r[1]←⊂r1
[64]  r[2]←⊂r2
-----------------------------------------------------------
[0]  criapifi
[1]  P1←P2←F1←F2←''
-----------------------------------------------------------
[ 0]  opesq vivo223a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL223   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA223←ajusta80 FOLHALA223
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA223)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 10⍴''
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←29 80⍴' '
[16]  f←FOLHALA223
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[28;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[29;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
```

```
[33] inica:
[34]  xx←caso223
[35]  esse[7+⍳20;⍳28]←⊃xx[1]
[36]  resp←(3 0⍕resp),' - ',⊃xx[2]
[37]  resu←resu,[1]1 10⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍫,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⎕←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴presu;⍳10]←resu
[48]  upag[3+1↑⍴presu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],0 3↓resu)
[51]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo224

```
[ 0]  r←caso224;e;r1;i;j;qual;lixo
[ 1]  e←15?30
[ 2]  r1←20 30⍴' '
[ 3]  r1[⍳10;]←10 30↑(10 10⍴'incluiabp('),(10 2⍴2 0⍕e[⍳10]),')'
[ 4]  i←1
[ 5]  j←1
[ 6] t1:→(i>5)/ufa
[ 7]  r1[10+j;]←30↑'incluiabp(',(⍕e[10+i]),')'
[ 8]  j←j+1
[ 9]  r1[10+j;]←30↑'excluiabp(',(⍕e[5+i]),')'
[10]  j←j+1
[11]  i←i+1
[12]  →t1
[13] ufa:r←r1
[14]  TABARV←20 3⍴0
[15]  TABARV[1;]←¯1 ¯1,e[1]
[16]  ULTIMO←1
[17]  i←2
[18] t2:→(i>10)/manda
[19]  1 incluiabp e[i]
[20]  i←i+1
[21]  →t2
[22] manda:
[23]  1 incluiabp e[11]
[24]  lixo←1 excluiabp e[6]
[25]  1 incluiabp e[12]
[26]  lixo←1 excluiabp e[7]
[27]  1 incluiabp e[13]
[28]  lixo←1 excluiabp e[8]
[29]  1 incluiabp e[14]
[30]  lixo←1 excluiabp e[9]
```

```
[31]  1 incluiabp e[15]
[32]  lixo←1 excluiabp e[10]
[33]  qual←?3
[34]  R←⍳0
[35]  →(qual=1)/pre
[36]  →(qual=2)/em
[37]  posordem 1
[38]  →kun
[39] pre:
[40]  preordem 1
[41]  →kun
[42] em:
[43]  emordem 1
[44] kun:
[45]  r←2⍴0
[46]  r[1]←⊂r1
[47]  r[2]←⊂qual,R
-------------------------------------------------------------
[0]  emordem raiz
[1]  →(TABARV[raiz;1]=-1)/pula1
[2]  emordem TABARV[raiz;1]
[3] pula1:
[4]  R←R,TABARV[raiz;3]
[5]  →(TABARV[raiz;2]=-1)/0
[6]  emordem TABARV[raiz;2]
-------------------------------------------------------------
[ 0]  r←raiz excluiabp valor;aaux;esqdir;pai;elemx;onde;save;tempo
[ 1] ⍝ 'entrando com ',(  ⍕raiz),  ⍕valor
[ 2] ⍝ OBSERVACAO IMPORTANTE: por questoes de simplicidade (nao ha descritor
[ 3] ⍝ na arvore) NAO E POSSIVEL escluir o raiz usando esta funcao.
[ 4] ⍝ 'excluindo ',(  ⍕valor),' em ',  ⍕raiz
[ 5]  aaux←pai←raiz
[ 6]  esqdir←0
[ 7] inica:→(TABARV[aaux;3]=valor)/achou
[ 8]  →(valor<TABARV[aaux;3])/menor
[ 9] maior:esqdir←1
[10]  pai←aaux
[11]  aaux←TABARV[aaux;2]
[12]  →inica
[13] menor:esqdir←0
[14]  pai←aaux
[15]  aaux←TABARV[aaux;1]
[16]  →inica
[17] achou:elemx←aaux
[18]  →(2=+/TABARV[elemx;1 2]=¯1 ¯1)/temnenhum
[19]  →(TABARV[elemx;1]=¯1)/temdireito
[20]  →(TABARV[elemx;2]=¯1)/temesquerdo
[21] temos2:save←elemx
[22]  elemx←TABARV[elemx;2]
[23] truta:→(TABARV[elemx;1]=¯1)/achou8
[24]  elemx←TABARV[elemx;1]
[25]  →truta
[26] achou8:
[27]  tempo←raiz excluiabp TABARV[elemx;3]
[28] ⍝ 'aux=',  ⍕aaux
[29] ⍝ 'tempo=',  ⍕tempo
[30]  TABARV[aaux;3]←TABARV[tempo;3]
[31]  r←aaux
[32]  →fimdetudo
[33] temesquerdo:
[34]  TABARV[pai;1+esqdir]←TABARV[elemx;1]
[35]  r←elemx
[36]  →fimdetudo
```

```
[37] temdireito:
[38]  TABARV[pai;1+esqdir]←TABARV[elemx;2]
[39]  r←elemx
[40]  →fimdetudo
[41] temnenhum:
[42]  TABARV[pai;1+esqdir]←¯1
[43]  r←elemx
[44] fimdetudo:
-------------------------------------------------------------
[ 0]  r←raiz incluiabp valor;onde;pai;esqdir
[ 1] ⍝ TABARV = tabela de 99x3 (fe,fd,cont)/ULTIMO e' o ultimo ja usado (0=ini)
[ 2] ⍝ 'incluindo ',(  ⍕valor),' em ',  ⍕raiz
[ 3]  →(TABARV[raiz;3]≠¯1)/naovazia
[ 4] vazia:
[ 5]  TABARV[raiz;3]←valor
[ 6]  ULTIMO←ULTIMO+1
[ 7]  r←0
[ 8]  →fim
[ 9] naovazia:ULTIMO←ULTIMO+1
[10]  TABARV[ULTIMO;]←¯1,¯1,valor
[11]  onde←raiz
[12] busca:→(valor<TABARV[onde;3])/emenor
[13] maior:esqdir←1
[14]  pai←onde
[15]  onde←TABARV[onde;2]
[16]  →testa
[17] emenor:esqdir←0
[18]  pai←onde
[19]  onde←TABARV[onde;1]
[20] testa:→(onde≠¯1)/busca
[21]  TABARV[pai;1+esqdir]←ULTIMO
[22] fim:
-------------------------------------------------------------
[0]  posordem raiz
[1]  →(TABARV[raiz;1]=-1)/pula1
[2]  posordem TABARV[raiz;1]
[3] pula1:
[4]  →(TABARV[raiz;2]=-1)/pula2
[5]  posordem TABARV[raiz;2]
[6] pula2:
[7]  R←R,TABARV[raiz;3]
-------------------------------------------------------------
[0]  preordem raiz
[1]  R←R,TABARV[raiz;3]
[2]  →(TABARV[raiz;1]=-1)/pula1
[3]  preordem TABARV[raiz;1]
[4] pula1:
[5]  →(TABARV[raiz;2]=-1)/0
[6]  preordem TABARV[raiz;2]
-------------------------------------------------------------
[ 0]  opesq vivo224a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL224   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA224←ajusta80 FOLHALA224
```

```
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA224)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 11⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←30 80⍴' '
[16]  f←FOLHALA224
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑'4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[29;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[30;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←caso224
[35]  esse[7+⍳20;]←20 80↑⊃xx[1]
[36]  esse[28;]←80↑,(3 8⍴'preordememordem posordem')[((⊃xx[2])[1]);]
[37]  resp←resp,,1↓(⊃xx[2])
[38]  resu←resu,[1]1 11⍴resp
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;⍳80]←esse[⌸,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[42]  ⍞←(⍕xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←4 0 7 0,18⍴3 0)⍕resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],4 0⍕0 1↓resu)
[52]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo225

```
[0]  AVISO
[1]  'Para manter este WS up-to-date, '
[2]  'Fazer de tempos em tempos'
[3]  ')copy cpc cpc igual vetoriza'
[4]  ''
[5]  ''
[6]  'Para corrigir, chame corrige xx, onde xx os 2 ultimos digitos do exercicio'
-------------------------------------------------------------
```

```
[ 0]  opesq vivo225a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;quem;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL225   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA225←ajusta80 FOLHALA225
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA225)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 0⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←19 80⍴' '
[16]  f←FOLHALA225
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[18;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[19;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  quem←?99
[35]  esse[7+⍳10;]←10 80↑QUES[quem;;]
[36]  esse[8;16+⍳3]←'000'⍎100+?899
[37] ⍝ resu←resu,[1]1 11⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⍞←(⍎xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →elafa
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←4 0 7 0,18⍴3 0)⍎resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:
[51]  →terminando
[52]  aaa←(ylu[;⍳36],4 0⍎0 1↓resu)
[53]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[54]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[55] terminando:
[56]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[57]  relat[1↑⍴relat;;]←upag
[58]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[59]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[60]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
```

```
[61]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'    (.tex)'
-------------------------------------------------------------
```

vivo226

```
[0]  r←gera226;x;y
[1]  x←9 9⍴100+81?899
[2]  y←⍉x
[3]  r←2⍴0
[4]  r[1]←⊂x
[5]  r[2]←⊂y[5;5]
-------------------------------------------------------------
[ 0]  opesq vivo226a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL226   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA226←ajusta80 FOLHALA226
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA226)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 2⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←18 80⍴' '
[16]  f←FOLHALA226
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[17;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[18;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera226
[35]  esse[7+⍳9;⍳45]←5 0⍎⊃xx[1]
[36]  resp←resp,⊃xx[2]
[37]  resu←resu,[1]1 2⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⍞←(⍎xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳16]←'¯-'edit 4 0 12 5⍎resu
```

```
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],'¯-'edit 12 5⍕0 1↓resu)
[51]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo231

```
[ 0]  EDGE ALIGN SIBLINGS;⎕IO;FIRST_POSITION;FIRST_SIZE;INDEX;POSITION;SIZE
[ 1] ⍝
[ 2] ⍝ Align controls
[ 3] ⍝
[ 4] ⍝ Arguments:
[ 5] ⍝
[ 6] ⍝    SIBLINGS - List of sibling control handles
[ 7] ⍝               The controls will be aligned relative to the first.
[ 8] ⍝
[ 9] ⍝    EDGE     - Four element Boolean vector specifying edges to align
[10] ⍝
[11] ⍝       EDGE[0] - Left
[12] ⍝       EDGE[1] - Top
[13] ⍝       EDGE[2] - Right
[14] ⍝       EDGE[3] - Bottom
[15] ⍝
[16] ⍝ Example:
[17] ⍝
[18] ⍝    Align the bottom edges of three controls
[19] ⍝    0 0 0 1 ALIGN OK CANCEL HELP
[20] ⍝
[21]  ⎕IO←0
[22]  ⎕ES(2≠⎕NC'EDGE')/5 1 ⍝ VALENCE ERROR
[23]  ⎕ES(1≠⍴⍴EDGE)/5 2 ⍝ RANK ERROR
[24]  ⎕ES(4≠⍴EDGE)/5 3 ⍝ LENGTH ERROR
[25]  ⎕ES(1≠≡EDGE)/'DEPTH ERROR'
[26]  ⎕ES(0≠↑0⍴EDGE)/5 4 ⍝ DOMAIN ERROR
[27]  INDEX←0
[28]  FIRST_POSITION←'CLIENT POSITION'GET_PROPERTY INDEX⊃SIBLINGS
[29]  FIRST_SIZE←'SIZE'GET_PROPERTY INDEX⊃SIBLINGS
[30]  INDEX←1
[31] LOOP:
[32]  POSITION←'CLIENT POSITION'GET_PROPERTY(INDEX⊃SIBLINGS)
[33]  SIZE←'SIZE'GET_PROPERTY(INDEX⊃SIBLINGS)
[34]  →(~EDGE[0])/⎕LC+1 ⋄ (0⊃POSITION)←0⊃FIRST_POSITION
[35]  →(~EDGE[1])/⎕LC+1 ⋄ (1⊃POSITION)←(1⊃FIRST_POSITION)+(1⊃FIRST_SIZE)-1⊃SIZE
[36]  →(~EDGE[2])/⎕LC+1 ⋄ (0⊃POSITION)←(0⊃FIRST_POSITION)+(0⊃FIRST_SIZE)-0⊃SIZE
[37]  →(~EDGE[3])/⎕LC+1 ⋄ (1⊃POSITION)←1⊃FIRST_POSITION
[38]  'CLIENT POSITION'SET_PROPERTY(INDEX⊃SIBLINGS)POSITION
[39]  →((⍴SIBLINGS)>INDEX←INDEX+1)/LOOP
------------------------------------------------------------
[0]  AVISO
[1]  'para gabarito, chame "gabarito (vetor de nums da folha)"'
[2]  ''
[3]  ' o modulo em C esta como comentario na folha...'
------------------------------------------------------------
```

```
[ 0]  HANDLE←CREATECTL ARGS;APRC;CMD
[ 1] ⍝
[ 2] ⍝ Creates a control window.
[ 3] ⍝
[ 4] ⍝    handle←CREATECTL parent class style [id [ctldata]]
[ 5] ⍝
[ 6] ⍝ Arguments:
[ 7] ⍝
[ 8] ⍝    parent   - Handle of parent window
[ 9] ⍝    class    - Class of control to create
[10] ⍝    styles   - Control styles
[11] ⍝    id       - Identifier
[12] ⍝    ctldata  - Creation control data
[13] ⍝
[14] ⍝ See HOW_CONTROL for class and style information
[15] ⍝
[16] ⍝ Creates Unicode control if parent is Unicode
[17] ⍝ The control uses the same font as the parent.
[18] ⍝
[19]  SV145←(⊂'AplCreateControl'),ARGS
[20]  (APRC HANDLE CMD)←SV145
[21]  ⎕ES(APRC≠0)/'AP 145 failed'
[22]  ⎕ES(HANDLE=0)/'AplCreateControl failed'
------------------------------------------------------------
[ 0]  DIALOG←OWNER_PARENT CREATEDLG TEMPLATE;OWNER;PARENT;APRC;CMD
[ 1] ⍝
[ 2] ⍝ Create a dialog
[ 3] ⍝
[ 4] ⍝ Arguments:
[ 5] ⍝
[ 6] ⍝ TEMPLATE     - Character vector, dialog template or styles
[ 7] ⍝
[ 8] ⍝ OWNER_PARENT - Handle of dialog's owner or
[ 9] ⍝              - Handle of dialog's owner and parent
[10] ⍝                (defaults to HWND_DESKTOP)
[11] ⍝
[12] ⍝ Results:
[13] ⍝
[14] ⍝ DIALOG   - Handle of dialog
[15] ⍝
[16] ⍝ The global variable AP145 is used as the processor number for AP 145.
[17] ⍝ AP145 defaults to 145 if not defined. To access AP 145 in a different
[18] ⍝ session or on a different machine, set the variable AP145 to the
[19] ⍝ number defined for the AP in your processor profile.
[20] ⍝
[21] ⍝ See HOW_CONTROL for style information
[22] ⍝
[23]  ⍎(0=⎕NC'AP145')/'AP145←145'
[24]  OWNER←'1'⎕EA'↑OWNER_PARENT'
[25]  PARENT←'1'⎕EA'(⎕IO+1)⊃OWNER_PARENT'
[26]  ⎕ES(2≠AP145 SVOFFER'SV145')/'AP 145 SHARE FAILED'
[27]  SV145←'WinCreateDlg'PARENT OWNER 0 TEMPLATE 0
[28]  (APRC DIALOG CMD)←SV145
[29]  ⎕ES(APRC≠0)/'AP 145 FAILED'
[30]  ⎕ES(DIALOG=0)/'CREATEDLG FAILED'
------------------------------------------------------------
[ 0]  DESTROYDLG HWND;APRC;OSRC;CMD
[ 1] ⍝
[ 2] ⍝ Destroy a dialog
[ 3] ⍝
[ 4] ⍝ Argument: integer
[ 5] ⍝
[ 6] ⍝   Dialog handle returned by LOADDLG
```

```
[ 7] ⍝
[ 8]  SV145←'WinDestroyWindow'HWND
[ 9]  (APRC OSRC CMD)←SV145
[10]  ⎕ES((APRC≠0)∨OSRC=0)/'Destroy Dialog failed'
-------------------------------------------------------------
[ 0]  Δ_VALUE←Δ_PROPERTY GET_PROPERTY Δ_ARGS;Δ_HANDLE;Δ_ID;Δ_APRC;Δ_OSRC;Δ_CMD;Δ_API
[ 1] ⍝
[ 2] ⍝ Get a window property
[ 3] ⍝
[ 4] ⍝ Arguments:
[ 5] ⍝
[ 6] ⍝     Δ_ARGS     - 1 or 2 element vector
[ 7] ⍝                  [0] Handle of window
[ 8] ⍝                  [1] Optional child window identifier
[ 9] ⍝
[10] ⍝     Δ_PROPERTY - Property name
[11] ⍝                  Defaults to DATA.
[12] ⍝                  See variable HOW_PROPERTY for further information
[13] ⍝
[14] ⍝ Result:
[15] ⍝
[16] ⍝     Δ_VALUE    - Property value
[17] ⍝
[18]  Δ_PROPERTY←'''DATA'''⎕EA'Δ_PROPERTY'
[19]  (Δ_HANDLE Δ_ID)←2↑Δ_ARGS
[20]  SV145←'AplGetProperty'Δ_HANDLE Δ_PROPERTY 0 Δ_ID
[21]  (Δ_APRC Δ_OSRC Δ_CMD)←SV145
[22]  (Δ_API Δ_HANDLE Δ_PROPERTY Δ_VALUE Δ_ID)←Δ_CMD
[23]  →(0∧.=Δ_APRC Δ_OSRC)/0
[24]  ⎕ES(Δ_APRC≠0)/⍎'AP 145 FAILED.  APRC:'Δ_APRC
[25]  ⎕ES(Δ_OSRC≠0)/⍎'AplGetProperty FAILED.  OSRC:'Δ_OSRC
-------------------------------------------------------------
[ 0]  PARTITION
[ 1]  →OAP
[ 2] h1:→(0=2|+/X)/1+⎕LC ⋄ ERRO←' NAO PAR ' ⋄ OAP←0 ⋄ OAA←1 ⋄ →0
[ 3] h3:OAP←h4 ⋄ OAA←8 ⋄ MET←0.5×+/X ⋄ →0
[ 4] h4:OAP←h5 ⋄ OAA←9 ⋄ R←((⍴X),MET)⍴0 ⋄ →0
[ 5] h5:OAP←h6 ⋄ OAA←10 ⋄ R[1;X[1]]←X[1] ⋄ →0
[ 6] h6:OAP←h7 ⋄ OAA←11 ⋄ I←2 ⋄ →0
[ 7] h7:→(I>⍴X)/1+⎕LC ⋄ OAP←h8 ⋄ OAA←13 ⋄ →0
[ 8] h75:OAP←h21 ⋄ OAA←29 ⋄ →0
[ 9] h8:OAP←h9 ⋄ OAA←13 ⋄ J←1 ⋄ →0
[10] h9:→(J>MET)/1+⎕LC ⋄ OAP←h10 ⋄ OAA←15 ⋄ →0
[11] h95:OAP←h20 ⋄ OAA←27 ⋄ →0
[12] h10:→(R[I-1;J]=0)/1+⎕LC ⋄ OAP←h19 ⋄ OAA←16 ⋄ R[I;J]←R[I-1;J] ⋄ →0
[13] h11:OAP←h13 ⋄ OAA←18 ⋄ →0
[14] h13:→(X[I]≠J)/1+⎕LC ⋄ OAP←h14 ⋄ OAA←19 ⋄ →0
[15] h135:OAP←h16 ⋄ OAA←21 ⋄ →0
[16] h14:OAP←h19 ⋄ OAA←19 ⋄ R[I;J]←X[I] ⋄ →0
[17] h16:→(~X[I]≥J)/1+⎕LC ⋄ OAP←h19 ⋄ OAA←26 ⋄ →0
[18] h17:→(~R[I-1;J-X[I]]=0)/1+⎕LC ⋄ OAP←h19 ⋄ OAA←26 ⋄ →0
[19] h18:OAP←h19 ⋄ OAA←26 ⋄ R[I;J]←X[I]+(R[I-1;J-X[I]])×10 ⋄ →0
[20] h19:OAP←h9 ⋄ OAA←14 ⋄ J←J+1 ⋄ →0
[21] h20:OAP←h7 ⋄ OAA←12 ⋄ I←I+1 ⋄ →0
[22] h21:OAP←0
-------------------------------------------------------------
[ 0]  Δ_PROPERTY SET_PROPERTY Δ_ARGS;Δ_HANDLE;Δ_VALUE;Δ_ID;Δ_APRC;Δ_OSRC;Δ_CMD
[ 1] ⍝
[ 2] ⍝ Set a window property
[ 3] ⍝
[ 4] ⍝ Arguments:
[ 5] ⍝
[ 6] ⍝     Δ_ARGS     - 2 or 3 element vector
```

```
[ 7] ⍝                  [0] Handle of window
[ 8] ⍝                  [1] Property value
[ 9] ⍝                  [2] Optional child window identifier
[10] ⍝
[11] ⍝     ⍙_PROPERTY - Property name
[12] ⍝                  Defaults to DATA.
[13] ⍝                  See variable HOW_PROPERTY for further information
[14] ⍝
[15]  ⍙_PROPERTY←'''DATA'''⎕EA'⍙_PROPERTY'
[16]  (⍙_HANDLE ⍙_VALUE ⍙_ID)←3↑⍙_ARGS
[17]  SV145←'AplSetProperty'⍙_HANDLE ⍙_PROPERTY ⍙_VALUE ⍙_ID
[18]  (⍙_APRC ⍙_OSRC ⍙_CMD)←SV145
[19]  →(0∧.=⍙_APRC ⍙_OSRC)/0
[20]  ⎕ES(⍙_APRC≠0)/⍞'AP 145 FAILED.  APRC:'⍙_APRC
[21]  ⎕ES(⍙_OSRC≠0)/⍞'AplSetProperty FAILED.  OSRC:'⍙_OSRC
------------------------------------------------------------
[ 0]  LARG SPACE SIBLINGS;⎕IO;DIRECTION;DISTANCE;INDEX;PREV_POSITION;PREV_SIZE;POSITION;SI
      ZE
[ 1] ⍝
[ 2] ⍝ Space controls
[ 3] ⍝
[ 4] ⍝ Arguments:
[ 5] ⍝
[ 6] ⍝    SIBLINGS - List of sibling control handles
[ 7] ⍝               The controls will be spaced relative to the first.
[ 8] ⍝
[ 9] ⍝    LARG     - Two element integer vector
[10] ⍝
[11] ⍝       LARG[0] - Direction.  0 - arrange horizontally
[12] ⍝                             1 - arrange vertically
[13] ⍝       LARG[1] - Distance to space controls in pixels
[14] ⍝
[15] ⍝ Example:
[16] ⍝
[17] ⍝    Space three controls horizontally 5 pixels apart
[18] ⍝    0 5 ALIGN OK CANCEL HELP
[19] ⍝
[20]  ⎕IO←0
[21]  (DIRECTION DISTANCE)←LARG
[22]  ⎕ES(~DIRECTION∊0 1)/5 4 ⍝ DOMAIN ERROR
[23]  ⎕ES(1≠⍴⍴SIBLINGS)/5 2 ⍝ RANK ERROR
[24]  ⎕ES(1≥⍴SIBLINGS)/5 3 ⍝ LENGTH ERROR
[25]  →(DISTANCE<0)/REVERSE
[26]  INDEX←0
[27]  PREV_POSITION←'CLIENT POSITION'GET_PROPERTY INDEX⊃SIBLINGS
[28]  PREV_SIZE←'SIZE'GET_PROPERTY INDEX⊃SIBLINGS
[29]  INDEX←1
[30] LOOP:
[31]  POSITION←'CLIENT POSITION'GET_PROPERTY(INDEX⊃SIBLINGS)
[32]  (DIRECTION⊃POSITION)←+/(DIRECTION⊃PREV_POSITION)(DIRECTION⊃PREV_SIZE)DISTANCE
[33]  'CLIENT POSITION'SET_PROPERTY(INDEX⊃SIBLINGS)POSITION
[34]  PREV_POSITION←'CLIENT POSITION'GET_PROPERTY INDEX⊃SIBLINGS
[35]  PREV_SIZE←'SIZE'GET_PROPERTY INDEX⊃SIBLINGS
[36]  →((⍴SIBLINGS)>INDEX←INDEX+1)/LOOP
[37]  →0
[38] REVERSE:
[39]  INDEX←0
[40]  POSITION←'CLIENT POSITION'GET_PROPERTY INDEX⊃SIBLINGS
[41] REVERSE_LOOP:
[42]  →((⍴SIBLINGS)≤INDEX←INDEX+1)/0
[43]  (DIRECTION⊃POSITION)←DISTANCE+DIRECTION⊃POSITION
[44]  (DIRECTION⊃POSITION)←(DIRECTION⊃POSITION)-DIRECTION⊃'SIZE'GET_PROPERTY INDEX⊃SIBLING
      S
```

```
[45]  ((~DIRECTION)⊃POSITION)←(~DIRECTION)⊃'CLIENT POSITION'GET_PROPERTY INDEX⊃SIBLINGS
[46]  'CLIENT POSITION'SET_PROPERTY(INDEX⊃SIBLINGS)POSITION
[47]  →REVERSE_LOOP
-------------------------------------------------------------
[0]  d
[1]  DESTROYDLG dl
-------------------------------------------------------------
[0]  r←formatvar x;i;max;vet
[1]  i←1 ⋄ vet←⍳0
[2] t1:→(i>1↓⍴x)/fim
[3]  max←⌈/,x[;i]
[4]  vet←vet,(2+⍴⍕max),0
[5]  →(i=i←i+1)/t1
[6] fim:r←vet⍕x
[7]  r←1 numera r
[8]  r←((1,1↓⍴r)⍴'- '[1+r[1↑⍴r;]=' ']),[1]r
-------------------------------------------------------------
[0]  fucomeca
[1]  R←4 0⍕3 5⍴0 ⋄ ERRO←'' ⋄ I←0 ⋄ J←0
[2]  OAA←1
[3]  OAP←2
[4]  X←GET_PROPERTY dl 101
[5]  X←⍪2↓X
[6] ⍝⍝⍝⍝⍝⍝⍝⍝⍝ 'HORIZONTAL SELECTION' SET_PROPERTY dl 107
[7]  PARTITION
-------------------------------------------------------------
[ 0]  fupasso;yy
[ 1]  PARTITION
[ 2]  ALGO[;1]←' '
[ 3]  ALGO[OAA;1]←'>'
[ 4]  yy←⊂[2]ALGO
[ 5]  'DATA'SET_PROPERTY dl yy 102
[ 6]  yy←'Mensagem: I=',(2 0⍕I),'   J=',(2 0⍕J),'   apl=',(2 0⍕OAP),'  algo=',(2 0⍕OAA),ER
      RO
[ 7]  'DATA'SET_PROPERTY dl yy 103
[ 8]  yy←⊂[2]4 0⍕R
[ 9]  'DATA'SET_PROPERTY dl yy 107
-------------------------------------------------------------
[0]  r←gabarito x
[1]  r←partition x
-------------------------------------------------------------
[0]  r←geracaso n;aa;bb
[1] um:r←?n⍴7
[2]  →(0=2|+/r)/cont
[3]  →um
[4] cont:bb←,(n,¯1)↑aa←partition r
[5]  →(n=+/bb=0)/um
[6]  →(4>+/bb=0)/um
[7]  ULTRES←,aa[1↑⍴aa;1↓⍴aa]
[8]  →(74<1↓⍴ULTPAR←formatvar aa)/um
-------------------------------------------------------------
[0]  limpa;lixo
[1]  lixo←⎕EX'X'
[2]  lixo←⎕EX'J'
[3]  lixo←⎕EX'MET'
[4]  lixo←⎕EX'OAA'
[5]  lixo←⎕EX'OAP'
[6]  lixo←⎕EX'R'
[7]  lixo←⎕EX'I'
[8]  lixo←⎕EX'dl'
-------------------------------------------------------------
[ 0]  lixo231b
[ 1]  RESULT←0
```

```
[ 2]  fim←0
[ 3]  dl←CREATEDLG'MIN'
[ 4]  'EVENTS'SET_PROPERTY dl(1 2⍴'Close' 'fim←1⋄DESTROYDLG dl ⋄→0')
[ 5] ⍝ 'CLIENT SIZE' SET_PROPERTY dl(800 600)
[ 6]  SET_PROPERTY dl'simulacao da particao'
[ 7] ⍝--------------------------------
[ 8]  x←CREATECTL dl'ENTRY FIELD' '' 101
[ 9]  'STATE FOCUS'SET_PROPERTY x 1
[10]  'FONT'SET_PROPERTY x'20.APL2 Image'
[11]  'CLIENT SIZE'SET_PROPERTY x(100 50)
[12] ⍝-------------------------
[13]  algo←CREATECTL dl'MLE' 'Readonly' 102
[14]  'FONT'SET_PROPERTY algo'20.APL2 Image'
[15]  'CLIENT SIZE'SET_PROPERTY algo(400 600)
[16]  yy←⊂[2]xx
[17]  'DATA'SET_PROPERTY algo yy
[18] ⍝-----------------------------
[19]  mat←CREATECTL dl'MLE' 'Readonly' 103
[20]  'FONT'SET_PROPERTY mat'20.APL2 Image'
[21]  'CLIENT SIZE'SET_PROPERTY mat(400 400)
[22]  yy←⊂[2]res
[23]  'DATA'SET_PROPERTY mat yy
[24] ⍝-----------------------------
[25]  comeca←CREATECTL dl'PUSH BUTTON' ''
[26]  SET_PROPERTY comeca'Comeca'
[27]  'EVENTS'SET_PROPERTY comeca(1 2⍴'Command' 'RESULT←0 ⋄→inicio')
[28]  sai←CREATECTL dl'PUSH BUTTON' ''
[29]  SET_PROPERTY sai'Sai'
[30]  'EVENTS'SET_PROPERTY sai(1 2⍴'COMMAND' 'RESULT←0 ⋄ DESTROYDLG dl ⋄ →0')
[31]  passo←CREATECTL dl'PUSH BUTTON' ''
[32]  SET_PROPERTY passo'Passo'
[33]  'EVENTS'SET_PROPERTY passo(1 2⍴'COMMAND' '→etapa')
[34] ⍝-----------------------------------
[35]  'CLIENT POSITION'SET_PROPERTY mat(2 2)
[36]  0 0 0 1 ALIGN comeca sai passo
[37]  1 0 0 0 ALIGN mat comeca x
[38]  0 0 0 1 ALIGN mat algo
[39]  0 2 SPACE mat algo
[40]  0 2 SPACE comeca sai passo
[41]  1 2 SPACE mat comeca x
[42]  'CLIENT SIZE'SET_PROPERTY dl(800 600)
[43] fala:
[44]  'entrando...'
[45]  →(fim=1)/0
[46]  0 EXECUTEDLG dl
[47]  'saindo...'
[48] inicio:
[49]  'oioioi....'
[50]  RESULT←0
[51]  →fala
[52] etapa:
[53]  RESULT←0
[54]  →fala
[55] merda:'oba'
------------------------------------------------------------
[ 0]  r←partition x;i;j;met
[ 1]  →(0=2|+/x)/ok
[ 2]  'nao e possivel, pois a soma a impar'
[ 3]  →0
[ 4] ok:r←((⍴x),(met←0.5×+/x))⍴0
[ 5]  r[1;x[1]]←x[1]
[ 6]  i←2
[ 7] t1:→(i>⍴x)/g1
```

```
[ 8]  j←1
[ 9] t2:→(j>met)/g2
[10]  →(r[i-1;j]=0)/blz1
[11]  r[i;j]←r[i-1;j]
[12]  →pula
[13] blz1:→(x[i]≠j)/blz2
[14]  r[i;j]←x[i]
[15]  →pula
[16] blz2:→(x[i]≥j)/pula
[17]  →(r[i-1;j-x[i]]=0)/pula
[18]  r[i;j]←x[i]+(r[i-1;j-x[i]])×10
[19] pula:→(j=j←j+1)/t2
[20] g2:→(i=i←i+1)/t1
[21] g1:
-------------------------------------------------------------
[0]  veja231a
[1]  dl←CREATEDLG tmp231
[2]  0 EXECUTEDLG dl
[3]  DESTROYDLG dl
[4]  →0
-------------------------------------------------------------
[ 0]  opesq vivo231a n;CORRECAO;EVENTO;aa;aaa;acuja;bb;dhx;esse;f;lixo1;lixonol;relat;resp
      ;resu;upag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←1 ⋄ EVENTO←'PL231   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA231←ajusta80 FOLHALA231
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA231)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[12]  xk←1 ⋄ resu←0 2⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←21 80⍴' '
[15]  f←FOLHALA231
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←3.22
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[23]  esse[20;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[21;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  aa←geracaso 8
[27]  esse[8;]←80↑4 0⍎aa
[28]  esse[8+⍳9;]←9 80↑ULTPAR
[29]  esse[18;]←80↑⍎ULTRES
[30]  bb←geracaso 12
[31]  esse[19;]←80↑4 0⍎bb
[32]  resp←resp,ULTRES
[33]  resu←resu,[1]1 2⍴resp
[34]  acuja←(f[;2]='#')/⍳1↑⍴f
[35]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[36]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[37]  ⍞←(⍎xk←xk+1),'-'
[38]  →testa
[39] fim:upag←(1 0+⍴f)⍴' '
```

```
[40]  →(1=≡n)/elafa
[41]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[42]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[43]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0)⍕resu
[44]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[45]  →terminando
[46] elafa:aaa←(ylu,7 0⍕0 1↓resu)
[47]  aaa[1;35 36]←2 0⍕CORRECAO
[48]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[49]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[50] terminando:
[51]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\begin{verbatim}'
[52]  relat[1↑⍴relat;;]←upag
[53]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[54] ⍝ lixonol←lixonol,[1](ajusta80 INSTRUC231)
[55] ⍝ lixonol←lixonol,[1](((1↑⍴ULTPAR),80)↑ULTPAR),[1]1 80⍴80↑'\end{verbatim} \end{docume
      nt}'
[56]  lixonol←lixonol,[1]1 80⍴80↑'\end{verbatim} \end{document}'
[57] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[58]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo232

```
[0]  AVISO
[1]  'A solucao esta programada em C em modulo chamado gulcar.c'
[2]  ''
[3]  ' As folhas tem o algoritmo como comentario...'
------------------------------------------------------------
[0]  r←a achahabs15b b;i
[1] ⍝'a e b',  ⍕a,b
[2]  i←1 ⋄ r←(⍴b)⍴1
[3] vo1:→(i>⍴b)/axa
[4]  →(~b[i]∈a)/nada
[5]  r[i]←0
[6] nada:→(i=i←i+1)/vo1
[7] axa:
------------------------------------------------------------
[ 0]  cavaleiro232 n;acuja;esse;f;real;relat;resp;x;xk
[ 1]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 2]  FOLHALA232←ajusta80 FOLHALA232
[ 3]  relat←ΔFM'c:\apl2\VIVOBLO1'
[ 4]  xk←1
[ 5] testa:→(xk>n)/fim
[ 6]  esse←31 80⍴' '
[ 7]  f←FOLHALA232
[ 8]  esse[1;⍳⍴x]←x←'  -- Cavaleiros da Tavola Redonda'
[ 9]  esse[3;]←80↑4 2⍕3.33
[10]  esse[30;⍳8]←'@OOOOOO@'
[11] inica:
[12]  geracaso15b 20 20
[13]  real←resolve15b
[14]  esse[8 9;]←2 80↑quebralinha'{',(3 0⍕ΔR),' }'
[15]  esse[9+⍳20;]←20 80↑1 numera 3 0⍕ΔM
[16]  resp←12↑real
[17]  acuja←(f[;2]='#')/⍳1↑⍴f
[18]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[19]  ⍞←(⍕xk←xk+1),'-'
[20]  f←(((1↑⍴relat),1↓⍴f)↑relat),[1]f
[21]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'\end{document}'
```

```
[22]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'%',⍕resp
[23]  lixo1←f ⍙FM'c:\apl2\CA232a',('00'⍕xk-1),'.tex'
[24]  →testa
[25] fim:
------------------------------------------------------------
[ 0]  geracaso15b vetor;i;oxe
[ 1] ⍝ vetor[1]=tamanho R; vetor[2]=linhas de M
[ 2] ⍝ R = conjunto de habilidades necessarias
[ 3] ⍝     expresso na forma de vetor de numeros 1..30
[ 4] ⍝ M = conjunto de modelos, cada um com 5+?8 habilidades
[ 5] ⍝ V = resposta
[ 6] ⍝
[ 7] ⍝
[ 8] ⍝ geracaso habilidades requeridas, numero de veiculos
[ 9] inica2:⍙r←vetor[1]?36
[10]  ⍙r←⍙r[⍋⍋⍙r]
[11]  ⍙m←(vetor[2],10)⍴0
[12]  i←1
[13] t1:→(i>1↑⍴⍙m)/aca
[14]  oxe←(4+?6)?36
[15]  oxe←oxe[⍋oxe]
[16]  ⍙m[i;⍳⍴oxe]←oxe
[17]  →(i=i←i+1)/t1
[18] aca:→(vetor[1]=+/⍙r∈⍙m)/ok2
[19]  ⎕←'opes'
[20]  →inica2
[21] ok2:
------------------------------------------------------------
[0]  r←quebralinha a;i
[1]  i←40
[2] t1:→(a[i]=' ')/achou
[3]  i←i+1
[4]  →t1
[5] achou:r←2 80⍴(80↑i↓a),(80↑i↓a)
------------------------------------------------------------
[ 0]  r←resolve15b;i;j;vv;mm;prop
[ 1]  ⍙M←⍙m ⋄ DOCUM←0 60⍴' '
[ 2]  ⍙R←⍙r
[ 3] ⍝ resolve o problema posto em   ⍙r,   ⍙m e
[ 4]  r←⍳0
[ 5] aca0:
[ 6]  prop←vv⍳(mm←⌈/vv←+/⍙m∈⍙r)
[ 7]  →(1=+/mm=vv)/umso
[ 8]  ⎕←'  o'   ⍝ significa que houve empate entre 2 modelos. escolha o 1.
[ 9] umso:
[10]  DOCUM←DOCUM,[1]1 60⍴60↑'O veiculo ',(2 0⍕prop),' tem os requisitos ',3 0⍕(~⍙m[prop;]
      achahabs15b ⍙r)/⍙r
[11]  r←r,prop
[12]  ⍙r←(⍙m[prop;]achahabs15b ⍙r)/⍙r
[13]  →(0=⍴,⍙r)/acabou
[14] oba:
[15]  ⍙m[prop;]←0
[16]  →aca0
[17] acabou:
------------------------------------------------------------
[ 0]  opesq vivo232a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;real
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL232   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
```

```
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA232←ajusta80 FOLHALA232
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA232)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[12]  xk←1 ⋄ resu←0 13⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←31 80⍴' '
[15]  f←FOLHALA232
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.33
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[30;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[31;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  geracaso15b 20 20
[27]  real←resolve15b
[28]  esse[8 9;]←2 80↑quebralinha'{',(3 0⍕ΔR),' }'
[29]  esse[9+⍳20;]←20 80↑1 numera 3 0⍕ΔM
[30]  resp←resp,12↑real
[31]  resu←resu,[1]1 13⍴resp
[32]  acuja←(f[;2]='#')/⍳1↑⍴f
[33]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[34]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[35]  ⍞←(⍕xk←xk+1),'-'
[36]  →testa
[37] fim:upag←(1 0+⍴f)⍴' '
[38]  →(1=≡n)/elafa
[39]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[40]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[41]  upag[2+⍳1↑⍴presu;⍳+/lixo1]←(lixo1←4 0 7 0,22⍴4 0)⍕resu
[42]  upag[3+1↑⍴presu;]←(1↓⍴upag)↑'\end{verbatim}'
[43]  →terminando
[44] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),4 0⍕0 1↓resu)
[45]  aaa[1;35 36]←2 0⍕CORRECAO
[46]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[47]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[48] terminando:
[49]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\begin{verbatim}'
[50]  relat[1↑⍴relat;;]←upag
[51]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[52]  lixonol←lixonol,[1](ajusta80 INSTRUC232),[1](ajusta80 DOCUM),[1]1 80⍴80↑'\end{verbat
      im} \end{document}'
[53] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[54]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[55]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[56]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo233

```
[0]  r←a achahabs15a b;i
[1] ⍝'a e b',  ⍕a,b
[2]  i←1 ⋄ r←(⍴b)⍴1
[3] vo1:→(i>⍴b)/axa
[4]  →(~b[i]∈a)/nada
[5]  r[i]←0
```

```
[6] nada:→(i=i←i+1)/vo1
[7] axa:
------------------------------------------------------------
[ 0]  geracaso15a vetor;i;oxe
[ 1] ⍝ S = conjunto de habilidades necessarias
[ 2] ⍝     expresso na forma de vetor de minusculas (cada uma eh 1 habilidade)
[ 3] ⍝ P = conjunto de jogadores, cada um com ?  ⌈0.5  ×  ⍴S habilidades
[ 4] ⍝     matriz onde a linha eh o numero do jogador e os conteudos sao as
[ 5] ⍝     habilidades extraidas de S
[ 6] ⍝ H = tabela de habilidades com seus precos (colunas 62,63 e 64)
[ 7] ⍝
[ 8] ⍝
[ 9] ⍝ vetor[1]=tamanho de S; vetor[2]=tamanho de P
[10] inica2:Δs←vetor[1]?26
[11]  Δs←Δs[⍋ΔΔs]
[12]  Δp←(vetor[2],⌈0.5×vetor[1])⍴vetor[1]
[13]  i←1
[14] t1:→(i>1↑⍴Δp)/aca
[15]  oxe←Δs[(1↓⍴Δp)?vetor[1]]
[16] ⍝ oxe  ←oxe[  ⍋oxe]
[17]  Δp[i;]←(1↓⍴Δp)↑(?⌊0.4×vetor[1])↓oxe,50⍴0
[18]  →(i=i←i+1)/t1
[19] aca:ΔP←' abcdefghijklmnopqrstuvwxyz'[Δp+1]
[20]  ΔS←'abcdefghijklmnopqrstuvwxyz'[Δs]
[21]  ΔH←ΔHABILIS
[22]  ΔH[;61+⍳3]←26 3⍴3 0⍕(26⍴10)+26?40
[23]  →((⍴Δs)=+/Δs∈Δp)/ok2
[24]  ⍞←'ops'
[25]  →inica2
[26] ok2:
------------------------------------------------------------
[ 0]  r←resolve15a;vv;vp;i;j;melhor;X
[ 1] ⍝ resolve o problema posto em   ΔP,   ΔS e   ΔH  ou em   Δp,   Δs
[ 2]  r←⍳0 ⋄ MELHORES←12 12⍴0 ⋄ X←1
[ 3] aca0:vv←0,⍪,ΔH[;61+⍳3],' '
[ 4] inicio:
[ 5]  vp←(1↑⍴Δp)⍴0
[ 6]  i←1
[ 7] t1:→(i>1↑⍴Δp)/aca1
[ 8]  j←1
[ 9] t2:→(j>1↓⍴Δp)/aca2
[10]  →(Δp[i;j]=0)/soma
[11]  vp[i]←vp[i]+vv[1+Δp[i;j]]
[12] soma:→(j=j←j+1)/t2
[13] aca2:→(i=i←i+1)/t1
[14] aca1:
[15]  MELHORES[X;]←vp
[16]  X←X+1
[17]  melhor←vp⍳⌈/vp
[18]  →(0=+/Δp[melhor;]∈Δs)/oba
[19]  r←r,melhor
[20]  Δs←(Δp[melhor;]achahabs15a Δs)/Δs
[21]  →(0=⍴,Δs)/acabou
[22] oba:
[23]  i←1
[24] t3:→(i>1↓⍴Δp)/ufa
[25]  →(Δp[melhor;i]=0)/puleia
[26]  ΔH[Δp[melhor;i];61+⍳3]←'000'
[27] puleia:→(i=i←i+1)/t3
[28] ufa:
[29]  Δp[melhor;]←0
[30]  →aca0
[31] acabou:
```

```
[32]  →0
------------------------------------------------------------
[ 0]  opesq vivo233a n;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixonol;xixo;aa
      a;lixo1
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL233   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA233←ajusta80 FOLHALA233
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA233)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 13⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←48 80⍴' '
[15]  f←FOLHALA233
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←3.53
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[23]  esse[47;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[48;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  geracaso15a 12 12
[27]  esse[7+⍳26;]←26 80↑ΔH
[28]  esse[34;]←80↑'{',((24⍴1 0)\ΔS),'}'
[29]  esse[34+⍳12;]←12 80↑1 numera((1↑⍴ΔP),20)↑ΔP
[30]  resp←resp,12↑resolve15a
[31]  resu←resu,[1](1,13)⍴resp
[32]  acuja←(f[;2]='#')/⍳1↑⍴f
[33]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[34]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[35]  ⍞←(⍎xk←xk+1),'-'
[36]  →testa
[37] fim:upag←(1 0+⍴f)⍴' '
[38]  →(1=≡n)/elafa
[39]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[40]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[41]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←4 0 7 0,22⍴4 0)⍎resu
[42]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[43]  →terminando
[44] elafa:aaa←(ylu,4 0⍎0 1↓resu)
[45]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[46]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[47] terminando:
[48]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\begin{verbatim}'
[49]  relat[1↑⍴relat;;]←upag
[50]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[51]  lixonol←lixonol,[1](ajusta80 INSTRUC233),[1](ajusta80 5 0⍎(12≠+/[2]0=MELHORES)/[1]ME
      LHORES)
[52]  lixonol←lixonol,[1]1 80⍴80↑'\end{verbatim} \end{document}'
[53] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[54]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[55]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[56]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo240

```
[0]  AVISO
[1]  'Em T existe a ultima matriz resposta gerada'
[2]  ' se ΔMOSTRA←1, executa passo a passo. Se=0 nao mostra'
[3]  ' em sala faca a←geracaso 6 e depois mochila a'
[4]  ''
[5]  ' as folhas de exercicio tem o algoritmo em C como COMENTARIO...'
-------------------------------------------------------------
[ 0]  D←S DISPLAY A;⎕IO;R;C;HL;HC;HT;HB;VL;VB;V;W;N;B
[ 1] ⍝ Display a general array in pictorial form
[ 2] ⍝  Normal call is monadic.  Dyadic call used only in
[ 3] ⍝    recursion to specify display rank, shape, and depth.
[ 4]  ⎕IO←0
[ 5]  ⍝(0=⎕NC'S')/'S←⍴A'
[ 6]  R←↑⍴,S                    ⍝ Pseudo rank
[ 7]  C←'┐┌└┘'                  ⍝ UR, UL, LL, and LR corners
[ 8]  HL←'─'                    ⍝ Horizontal line
[ 9]  HC←HL,'⊖→',HL,'~+∊'       ⍝ Horizontal borders
[10]  HT←HC[(0<R)×1+0<↑¯1↑,S]
[11] ⍝W←,0≡¨↑0⍴⊂(1⌈⍴A)↑A
[12]  HB←HC[3+3⌊('2×~A≡⍕A'⎕EA'1+↑∊0×(1⌈×/⍴A)↑,A')+3×1<⍴⍴S]
[13]  VL←'│'                    ⍝ Vertical line
[14]  VB←VL,'⍬↓'                ⍝ Vertical border
[15]  V←VB[(1<R)×1+0<¯1↑¯1↓,S]
[16]  ⍝(0∊⍴A)/'A←(1⌈⍴A)⍴⊂↑A'   ⍝ Show prototype of empties
[17]  →(1<≡A)/GEN
[18]  →(2<⍴⍴A)/D3
[19]  D←⍕A                      ⍝ Simple arrays
[20]  W←1↑⍴D←(¯2↑1 1,⍴D)⍴D
[21]  N←¯1+1↓⍴D
[22]  →(0=⍴⍴A)/SS
[23]  D←(C[1],V,((W-1)⍴VL),C[2]),((HT,N⍴HL),[0]D,[0]HB,N⍴HL),C[0],(W⍴VL),C[3]
[24]  →0
[25] SS:HB←((0 ' ')=↑0⍴⊂A)/' -'
[26]  D←' ',(' ',[0]D,[0]HB,N⍴' '),' '
[27]  →0
[28] GEN:D←⍕⍕DISPLAY¨A          ⍝ Enclosed arrays
[29]  N←D∨.≠' '
[30]  D←(N∨~1⌽N)⌿D
[31]  D←(∨⌿~'  '∈D)/D
[32]  D←((1,⍴S)⍴S)DISPLAY D
[33]  →(2≥⍴,S)↓D3E,0
[34] D3:D←0 ¯1↓0 1↓⍕⊂A          ⍝ Multi-dimensional arrays
[35]  W←1↑⍴D
[36]  N←¯1+1↓⍴D
[37]  D←(C[1],V,((W-1)⍴VL),C[2]),((HT,N⍴HL),[0]D,[0]HB,N⍴HL),C[0],(W⍴VL),C[3]
[38] D3E:N←¯2+⍴,S
[39]  V←C[N⍴1],[0]VB[1+0<¯2↓,S],[0](((¯3+↑⍴D),N)⍴VL),[0]C[N⍴2]
[40]  D←V,D
[41] ⍝¶⍝ APL2/6000 FKEY verification tag - DO NOT REMOVE, MUST BE LAST LINE
-------------------------------------------------------------
[0]  r←geracaso n
[1] ⍝ este cara gera w, v e W
[2]  r←(?n⍴n-2)(?n⍴2×n)((17 18 19 20 21 22 23 24)[?8]-3)
-------------------------------------------------------------
[ 0]  r←geraexemplo n
[ 1]  →(n≠1)/prox
[ 2]  r←(1 5 1 1 6 6 8 8)(2 21 3 13 13 11 19 4)(14)
[ 3]  →0
[ 4] prox:
[ 5]  →(n≠2)/mais
[ 6]  r←(1 3 4 2 4 2 3 3)(2 14 13 17 21 22 22 9)(13)
```

```
[ 7]  →0
[ 8] mais:
[ 9]  r←(7 4 7 8 4 3 4 4)(3 5 5 17 7 16 23 4)(15)
------------------------------------------------------------
[ 0]  r←mochila x;w;v;n;W;i;Y;t;A;B;⎕IO;lixo;aa
[ 1] ⍝recebe (vet pesos) (vet valores) limite-mochila
[ 2] ⍝devolve (listaprodutos) valor-da-mochila
[ 3]  ⎕IO←0
[ 4]  w←0,⊃x[0] ⋄ v←0,⊃x[1] ⋄ W←⊃x[2]
[ 5]   ⋄ n←≢⍵⊃x[1]
[ 6]  r←(n+1)⍴¯1
[ 7]  t←((n+1),W+1)⍴0
[ 8]  Y←0
[ 9] t1:→(Y>W)/f1
[10]  t[0;Y]←0
[11]  i←1
[12] t2:→(i>n)/f2
[13]  A←t[(i-1);Y]
[14]  →(w[i]>Y)/too
[15]  B←t[i-1;Y-w[i]]+v[i]
[16]  →junta
[17] too:B←0
[18] junta:t[i;Y]←A⌈B
[19]  i←i+1
[20]  →t2
[21] f2:Y←Y+1
[22]  →(⍙MOSTRA=0)/t1
[23]  't[i][j]=combinacao melhores i produtos com peso≤j.  Limite=',⍕W
[24]  ' calculando a coluna ',(⍕Y-1),'   de peso≤',⍕Y-1
[25]  (0 numera4 t),'|',((3 3⍴'     w---'),[0]3 0⍕(n,1)⍴1↓w),'|',((3 3⍴'     v---'),[0]3 0
      ⍕(n,1)⍴1↓v)
[26]  '----                          0 para encerrar'
[27]  lixo←⍞
[28]  →('0'=1↑lixo)/0
[29]  →t1
[30] f1:
[31]  →(⍙MOSTRA=0)/k9
[32]  '==================================='
[33] k9:
[34]  Y←W
[35]  i←n
[36] t3:→(i<1)/t5
[37]  →(t[i;Y]=t[i-1;Y])/difas
[38]  →(⍙MOSTRA=0)/h9
[39]  aa←' L=',(4 0⍕i),' C=',(4 0⍕Y),'(',(4 0⍕t[i;Y]),')',' :'
[40]  aa←aa,' L=',(4 0⍕i-1),' C=',(4 0⍕Y),'(',(4 0⍕t[i-1;Y]),')','    logo o elemento ',(4
       0⍕i),' vai'
[41]  aa
[42]  ' o novo peso=',2 0⍕Y-w[i]
[43] h9:
[44]  r[i]←1
[45]  Y←Y-w[i]
[46]  →plen
[47] difas:
[48]  →(⍙MOSTRA=0)/g7
[49]  aa←' L=',(4 0⍕i),' C=',(4 0⍕Y),'(',(4 0⍕t[i;Y]),')',' :'
[50]  aa←aa,' L=',(4 0⍕i-1),' C=',(4 0⍕Y),'(',(4 0⍕t[i-1;Y]),')','    logo o elemento ',(4
       0⍕i),' nao vai'
[51]  aa
[52] g7:
[53]  r[i]←0
[54] plen:i←i-1
[55]  →t3
```

```
[56] t5:
[57]  r←(1↓r)(t[(¯1+1↑⍴t);(¯1+¯1↑⍴t)])
[58]  T←t
-------------------------------------------------------------
[0]  r←orig numera4 oper;aa;⎕IO
[1]  ⎕IO←orig
[2]  r←3 0⍕oper
[3]  r←(((3 0⍕(((1↑⍴oper),1)⍴⍳1↑⍴oper)),[⎕IO+1]'|'),[⎕IO+1]' '),r
[4]  r←((1,aa)⍴'     ',3 0⍕⍳1↓⍴oper),[⎕IO]((1,aa←5+3×1↓⍴oper)⍴'   +',100⍴'-'),[⎕IO]r
-------------------------------------------------------------
[ 0]  opesq vivo240a n;CORRECAO;EVENTO;a;aaa;bbb;acuja;b;dhx;esse;f;kk;lixo1;lixonol;num;r
      elat;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL240   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA240←ajusta80 FOLHALA240
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA240)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[12]  xk←1 ⋄ resu←0 14⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←12 80⍴' '
[15]  f←FOLHALA240
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←1.04
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] ini1:
[26]  bbb←mochila aaa←geracaso 12
[27]  esse[8;]←80↑3 0⍕,⊃aaa[1]
[28]  esse[9;]←80↑3 0⍕,⊃aaa[2]
[29]  esse[10;]←80↑3 0⍕,⊃aaa[3]
[30]  resu←resu,[1]1 14⍴resp,(,⊃bbb[1]),,⊃bbb[2]
[31]  acuja←(f[;2]='#')/⍳1↑⍴f
[32]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[33]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[34]  ⍞←(⍕xk←xk+1),'-'
[35]  →testa
[36] fim:upag←(1 0+⍴f)⍴' '
[37]  →(1=≡n)/elafa
[38]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[39]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[40]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←4 0 6 0,(12⍴2 0),5 0,(8⍴2 0),8 0)⍕resu
[41]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[42]  →terminando
[43] elafa:aaa←ylu,'¯-'edit(6 0,(12⍴2 0),5 0,(8⍴2 0),8 0)⍕0 1↓resu
[44]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[45]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[46] terminando:
[47]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[48]  relat[1↑⍴relat;;]←upag
[49]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[50] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
```

```
[51]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[52]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo245

```
[0]  AVISO
[1]  'esta funcao esta programada em c com o nome de f245'
[2]  ' no diretorio da aula corresponente...'
[3]  ' tem tambem o f245.mpl, feito em maple'
-------------------------------------------------------------
[ 0]  r←geracaso;a;b;x;y;na;nb;j;k;l;m;n;y81;y82
[ 1]  a←3+?10
[ 2]  b←7-?9
[ 3]  x←((?5)×10)+10?30
[ 4]  x←x[⍋x]
[ 5]  y←a+b×x
[ 6]  y[⍳8]←y[⍳8]+5-?8⍴10
[ 7]  r←2 10⍴0
[ 8]  r[1;]←x
[ 9]  r[2;]←y
-------------------------------------------------------------
[0]  r←geraemisinfl
[1]  r←2 11⍴0
[2]  r[1;]←200+(?70×⍳11)
[3]  r[2;⍳10]←5+0.1×?14 24 25 35 36 46 57 57 58 68
-------------------------------------------------------------
[ 0]  r←resolvecaso aaa;a;b;x;y;na;nb;j;k;l;m;n;y81;y82
[ 1]  x←aaa[1;]
[ 2]  y←aaa[2;]
[ 3]  j←+/x[⍳8]
[ 4]  k←+/y[⍳8]
[ 5]  l←+/x[⍳8]*2
[ 6]  m←+/x[⍳8]×y[⍳8]
[ 7]  n←8
[ 8]  nb←((k×j)-(n×m))÷(j*2)-l×n
[ 9]  na←(k-j×nb)÷n
[10]  y81←na+x[9]×nb
[11]  y82←na+x[10]×nb
[12]  r←5 8⍴0
[13]  r[1;]←x[⍳8]
[14]  r[2;]←y[⍳8]
[15]  r[3;1 2]←na,nb
[16]  r[4;1 2]←x[9 10]
[17]  r[5;1 2]←y81,y82
-------------------------------------------------------------
[ 0]  r←resolveeminf aaa;x;y;j;k;l;m;n;nb;na
[ 1]  x←aaa[1;⍳10]
[ 2]  y←aaa[2;⍳10]
[ 3]  j←+/x
[ 4]  k←+/y
[ 5]  l←+/x*2
[ 6]  m←+/x×y
[ 7]  n←10
[ 8]  nb←((k×j)-(n×m))÷(j*2)-l×n
[ 9]  na←(k-j×nb)÷n
[10]  r←na+aaa[1;11]×nb
-------------------------------------------------------------
[ 0]  opesq vivo245a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;relat;resp;resu;
      upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
```

```
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←1 ⋄ EVENTO←'PL245   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍎⍳n   ⍝ era 36->76
[ 9]  FOLHALA245←ajusta80 FOLHALA245
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA245)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[12]  xk←1 ⋄ resu←0 4⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←15 80⍴' '
[15]  f←FOLHALA245
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←1.06
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[23]  esse[14;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[15;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  xx←resolvecaso geracaso
[27]  esse[8;]←80↑'¯'-'edit 4 0⍎xx[1;]
[28]  esse[9;]←80↑'¯'-'edit 4 0⍎xx[2;]
[29]  esse[10;]←80↑'¯'-'edit 4 0⍎xx[4;1 2]
[30]  yy←geraemisinfl
[31]  esse[11 12;]←2 80⍴(80↑trtrim 5 0⍎yy[1;⍳10]),80↑trtrim 5 1⍎yy[2;⍳10]
[32]  esse[13;]←80↑6 0⍎yy[1;11]
[33]  resu←resu,[1]1 4⍴resp,xx[5;1 2],resolveeminf yy
[34]  acuja←(f[;2]='#')/⍳1↑⍴f
[35]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[36]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[37]  ⍞←(⍎xk←xk+1),'-'
[38]  →testa
[39] fim:upag←(1 0+⍴f)⍴' '
[40]  →(1=≡n)/elafa
[41]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[42]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[43]  upag[2+⍳1↑⍴resu;⍳37]←'¯'-'edit(5 0 14 2 8 2 10 2)⍎resu
[44]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[45]  →terminando
[46] elafa:aaa←(ylu,'¯'-'edit 12 2⍎0 1↓resu)
[47]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[48]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[49] terminando:
[50]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[51]  relat[1↑⍴relat;;]←upag
[52]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[53] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[54]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[55]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[56]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo246

```
[0]  r←ajusta246 k
[1]  r←10 70⍴' '
[2]  r[;1 2]←10 2⍴2 0⍎⍳10
```

```
[3]  r[;3]←r[;14]←r[;25]←'&'
[4]  r[;3+⍳10]←10 10⍴10 0⍕k[;1]
[5]  r[;14+⍳10]←10 10⍴10 0⍕k[;2]
[6]  r[;25+⍳10]←10 10⍴10 4⍕k[;3]
[7]  r[;38+⍳10]←10 10⍴'⍀⍀ ⍀hline '
------------------------------------------------------------
[0]  r←ajusta4 x;i
[1]  i←1
[2]  r←10 80⍴' '
[3] t1:→(i>10)/fim
[4]  r[i;]←80↑(⍕x[i;1]),'&',(⍕x[i;2]),'&',(⍕x[i;3]),'&',(⍕x[i;4]),'&',(⍕x[i;5]),'⍀⍀ ⍀hlin
      e'
[5]  i←i+1
[6]  →t1
[7] fim:
------------------------------------------------------------
[0]  r←ajusta5 x;i
[1]  i←1
[2]  r←6 80⍴' '
[3] t1:→(i>6)/fim
[4]  r[i;]←80↑(⍕x[i;1]),'&',(⍕⌊x[i;2]),'&',(⍕x[i;3]),'&',(⍕x[i;4]),'&',(⍕x[i;5]),'&',(⍕x[
      i;6]),'⍀⍀ ⍀hline'
[5]  i←i+1
[6]  →t1
[7] fim:
------------------------------------------------------------
[0]  r←geracaso246
[1]  r←⍉3 10⍴(80+?10⍴30),(100+?10⍴30),(90+?10⍴30)÷1000
------------------------------------------------------------
[ 0]  r←geracaso4;y;coe;x;a;b;c;resp
[ 1]  y←10 4⍴0
[ 2]  y[;2]←¯100+?10⍴1000
[ 3]  y[;3]←?10⍴1000
[ 4]  y[;4]←¯100+?10⍴1000
[ 5]  coe←4?9000
[ 6]  coe←coe[⍋coe]
[ 7]  coe←¯1⌽coe
[ 8]  coe[3]←-coe[3]
[ 9]  y[;1]←coe[1]+(coe[2]×y[;2])+(coe[3]×y[;3])+coe[4]×y[;4]
[10]  x←10 4⍴0
[11]  x[;1]←1
[12]  x[;2]←y[;2]
[13]  x[;3]←y[;3]
[14]  x[;4]←y[;4]
[15]  a←(⍉x)+.×x
[16]  b←⌹a
[17]  c←b+.×⍉x
[18]  resp←c+.×10 1⍴y[;1]
[19]  r←2⍴0
[20]  r[1]←⊂(10 1⍴⍳10),[2]y
[21]  r[2]←⊂coe
------------------------------------------------------------
[ 0]  r←geracaso5;y;coef;casa;rmed;veic;fran;x;a;b;c;resp
[ 1]  y←6 5⍴0
[ 2]  coef←?5⍴100
[ 3]  coef←coef[⍋coef]
[ 4]  coef←¯1⌽coef
[ 5]  coef[2 3 4 5]←coef[2 3 4 5]×0.001
[ 6]  casa←11000+?6⍴9000
[ 7]  rmed←6000+?6⍴8000
[ 8]  veic←80000+?6⍴90000
[ 9]  fran←3000+?6⍴8000
[10]  casa←casa[⍋casa]
```

```
[11]  rmed←rmed[⍋casa]
[12]  veic←veic[⍋rmed]
[13]  fran←fran[⍋veic]
[14]  y[;2]←casa
[15]  y[;3]←rmed
[16]  y[;4]←veic
[17]  y[;5]←fran
[18]  y[;1]←coef[1]+(coef[2]×y[;2])+(coef[3]×y[;3])+(coef[4]×y[;4])+coef[5]×y[;5]
[19]  x←6 5⍴0
[20]  x[;1]←1
[21]  x[;2]←y[;2]
[22]  x[;3]←y[;3]
[23]  x[;4]←y[;4]
[24]  x[;5]←y[;5]
[25]  a←(⌹x)+.×x
[26]  b←⌸a
[27]  c←b+.×⌹x
[28]  resp←c+.×6 1⍴y[;1]  ⍝ nao e usado, ┤e so para ter certeza
[29]  r←2⍴0
[30]  r[1]←⊂(6 1⍴⍳6),[2]y
[31]  r[2]←⊂coef
-------------------------------------------------------------
[0]  r←resolve246 k;x;y
[1]  x←⌹3 10⍴(10⍴1),,k[;2],,k[;3]
[2]  y←10 1⍴k[;1]
[3]  r←((⌸(⌹x)+.×x)+.×⌹x)+.×y
-------------------------------------------------------------
[ 0]  opesq vivo246a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;mask;nomes;ql39;
      qlinha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL246   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA246←ajusta80 FOLHALA246
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA246)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 13⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←35 80⍴' '
[16]  f←FOLHALA246
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.11
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[34;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[35;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
```

```
[34]  xx←geracaso246
[35]  esse[7+⍳10;]←10 80↑ajusta246 xx
[36]  zz←resolve246 xx
[37]  resp←resp,,zz
[38]  xx←geracaso4
[39]  esse[17+⍳10;]←'¯'-'edit 10 80↑ajusta4⊃xx[1]
[40]  resp←resp,,⊃xx[2]
[41]  xx←geracaso5
[42]  esse[27+⍳6;]←'¯'-'edit 6 80↑ajusta5⊃xx[1]
[43]  resp←resp,,⊃xx[2]
[44]  resu←resu,[1]1 13⍴resp
[45]  acuja←(f[;2]='#')/⍳1↑⍴f
[46]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[47]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[48]  ⎕←(⍕xk←xk+1),'-'
[49]  →testa
[50] fim:upag←(1 0+⍴f)⍴' '
[51]  mask←4 0 7 2 5 2 7 1 8 0 6 0 6 0 6 0 6 0 6 3 6 3 6 3 6 3
[52]  →(1=≡n)/elafa
[53]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[54]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[55]  upag[2+⍳1↑⍴resu;⍳79]←'¯'-'edit mask⍕resu
[56]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[57]  →terminando
[58] elafa:aaa←'¯'-'edit(ylu[;⍳36],(2↓mask)⍕0 1↓resu)
[59]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.gpa')
[60]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[61] terminando:
[62]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[63]  relat[1↑⍴relat;;]←upag
[64]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[65]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.tex'
[66]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[67]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo252

```
[ 0]  ana onde;j
[ 1]  ⎕IO←1
[ 2]  →(onde=1)/um
[ 3]  j←1
[ 4] in:→(j>onde)/um
[ 5]  ana onde-1
[ 6]  →(onde≠2)/roda
[ 7]  anagra←anagra,[1]1 7⍴(3 0⍕cont),palavra
[ 8]  cont←cont+1
[ 9] roda:rota onde
[10]  →(j=j←j+1)/in
[11] um:
-------------------------------------------------------------
[0]  rota on;j;p;temp
[1]  p←1+(⍴palavra)-on
[2]  temp←palavra[p]
[3]  j←p+1
[4] opa:→(j>⍴palavra)/aca
[5]  palavra[j-1]←palavra[j]
[6]  →(j=j←j+1)/opa
[7] aca:palavra[j-1]←temp
-------------------------------------------------------------
[ 0]  opesq vivo252a n;CORRECAO;EVENTO;aaa;acuja;aspa;cont;dhx;esse;f;lixo1;lixonol;onde;p
      al;palavra;relat;resp;resu;upag;xixo;xk;ylu
```

```
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:
[ 4]  aspa←''''
[ 5]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 6]  CORRECAO←0 ⋄ EVENTO←'PL252   '
[ 7]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[10]  FOLHALA252←ajusta80 FOLHALA252
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA252)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 24⍴''
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALA252
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←3.02
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  esse[5;]←80↑ylu[xk;6+⍳30]
[22]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[23]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[24] inica:
[25]  pal←?1↑⍴TABPAL
[26]  palavra←,TABPAL[pal;]
[27]  esse[8;]←80↑aspa,palavra,aspa
[28]  cont←1
[29]  onde←7+4?9
[30]  onde←onde[⍋onde]
[31]  anagra←0 7⍴' '
[32]  ana 4
[33]  esse[8+⍳4;⍳4]←4 4⍴4 0⍎onde
[34]  resp←(4 0⍎resp),' ',¯1↓,anagra[onde;3+⍳4],' '
[35]  resu←resu,[1]1 24⍴resp
[36]  acuja←(f[;2]='#')/⍳1↑⍴f
[37]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[39]  ⍞←(⍎xk←xk+1),'-'
[40]  →testa
[41] fim:upag←(1 0+⍴f)⍴' '
[42]  →(1=≡n)/elafa
[43]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[44]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[45]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑resu
[46]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[47]  →terminando
[48] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 5↓resu)
[49]  aaa[1;35 36]←2 0⍎CORRECAO
[50]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[51]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[52] terminando:
[53]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[54]  relat[1↑⍴relat;;]←upag
[55]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[56] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[57]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo252

```
[ 0]  ana onde;j
[ 1]  ⎕IO←1
[ 2]  →(onde=1)/um
[ 3]  j←1
[ 4] in:→(j>onde)/um
[ 5]  ana onde-1
[ 6]  →(onde≠2)/roda
[ 7]  anagra←anagra,[1]1 7⍴(3 0⍕cont),palavra
[ 8]  cont←cont+1
[ 9] roda:rota onde
[10]  →(j=j←j+1)/in
[11] um:
------------------------------------------------------------
[0]  rota on;j;p;temp
[1]  p←1+(⍴palavra)-on
[2]  temp←palavra[p]
[3]  j←p+1
[4] opa:→(j>⍴palavra)/aca
[5]  palavra[j-1]←palavra[j]
[6]  →(j=j←j+1)/opa
[7] aca:palavra[j-1]←temp
------------------------------------------------------------
[ 0]  opesq vivo252a n;CORRECAO;EVENTO;aaa;acuja;aspa;cont;dhx;esse;f;lixo1;lixonol;onde;p
      al;palavra;relat;resp;resu;upag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:
[ 4]  aspa←''''
[ 5]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 6]  CORRECAO←0 ⋄ EVENTO←'PL252   '
[ 7]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[10]  FOLHALA252←ajusta80 FOLHALA252
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA252)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 24⍴''
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALA252
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←3.02
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  esse[5;]←80↑ylu[xk;6+⍳30]
[22]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[23]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[24] inica:
[25]  pal←?1↑⍴TABPAL
[26]  palavra←,TABPAL[pal;]
[27]  esse[8;]←80↑aspa,palavra,aspa
[28]  cont←1
[29]  onde←7+4?9
[30]  onde←onde[⍋onde]
[31]  anagra←0 7⍴' '
[32]  ana 4
[33]  esse[8+⍳4;⍳4]←4 4⍴4 0⍕onde
[34]  resp←(4 0⍕resp),' ',¯1↓,anagra[onde;3+⍳4],' '
[35]  resu←resu,[1]1 24⍴resp
[36]  acuja←(f[;2]='#')/⍳1↑⍴f
```

```
[37]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[39]  □←(⍕xk←xk+1),'-'
[40]  →testa
[41] fim:upag←(1 0+⍴f)⍴' '
[42]  →(1=≡n)/elafa
[43]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[44]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[45]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑resu
[46]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[47]  →terminando
[48] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 5↓resu)
[49]  aaa[1;35 36]←2 0⍕CORRECAO
[50]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[51]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[52] terminando:
[53]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[54]  relat[1↑⍴relat;;]←upag
[55]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[56] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[57]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←□EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo253

```
[ 0]  AVISO
[ 1]  'Este WS tem a funcao do andacavalo, e fala do backtracking'
[ 2]  ' '
[ 3]  'Tem tambem as funcoes para conduzir o exemplo do achabruto...'
[ 4]  '  Suponha precisar achar a funcao inversa de uma funcao inversivel'
[ 5]  ' '
[ 6]  'calliq 3000, acha o liquido para um salario bruto de 3000'
[ 7]  'calliqext 3000, idem, mas mostra cada um dos descontos'
[ 8]  'achabru 3000 3000 busca recursivamente qual o bruto que da um liquido'
[ 9]  '        de 3000.'
[10]  ''
[11]  '  Na folha existe o codigo C devidamente comentado'
-------------------------------------------------------------
[0]  r←achabru x;li
[1] ⍝x[1]=liquido desejado, x[2]=liquido chutado.
[2] ⍝ na primeira chamada, ambos sao iguais
[3]  li←calliq x[2]
[4]  x,li
[5]  →(0.0001>|li-x[1])/acabou
[6]  r←achabru x[1],x[2]+(x[1]-li)
[7]  →0
[8] acabou:r←10 2⍕x[2]
-------------------------------------------------------------
[ 0]  r←andacavalo x;linpos;colpos;k;deltacol;deltalin
[ 1] ⍝   □  ←'-', 2 0   ⍕x[1]
[ 2]  quantos←quantos+1
[ 3] ⍝   →(x[1]  ≠25)/prox
[ 4] ⍝ ' ------------------------------------------'
[ 5] ⍝ matriz
[ 6] ⍝ ' ------------------------------------------'
[ 7] ⍝ prox:
[ 8]  deltalin←¯2 ¯1 1 2 2 1 ¯1 ¯2
[ 9]  deltacol←1 2 2 1 ¯1 ¯2 ¯2 ¯1
[10]  k←1
[11] loop:
```

```
[12]  r←0
[13]  linpos←x[2]+deltalin[k]
[14]  colpos←x[3]+deltacol[k]
[15]  →((linpos<1)∨(linpos>8)∨(colpos<1)∨(colpos>8))/pula
[16]  →(matriz[linpos;colpos]≠0)/pula
[17]  matriz[linpos;colpos]←x[1]
[18]  →(x[1]≥56)/acabou
[19]  r←andacavalo(x[1]+1),linpos,colpos
[20]  →(r=1)/pula
[21] ⍝retorno  ←retorno+1
[22]  matriz[linpos;colpos]←0
[23]  →pula
[24] acabou:r←1
[25] pula:k←k+1
[26]  →((k≤8)∧(r=0))/loop
-------------------------------------------------------------
[0]  bloco
[1]  f←(((1↑⍴relat),1↓⍴f)↑relat),[1]f
[2]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'\end{document}'
[3]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'%',resp
[4]  lixo1←f ⎕FM'c:\apl2\CA253a',('00'⍕xk-1),'.tex'
[5]  →testa
[6] fim:
-------------------------------------------------------------
[0]  r←calliq bu;inss;xir;ir;csin;fund;sau
[1]  SR←100
[2]  inss←bu×⌈/,(0 5 11 20<(bu÷SR))/0.085 0.095 0.11 0.125
[3]  ir←((bu×0.1 0.22 0.3 0.4)-(0 0.6 1.5 4×SR))[¯1↑(0 5 12 25<(bu÷SR))/⍳4]
[4]  csin←bu×0.01
[5]  fund←SR×⌈/,(0 5<(bu÷SR))/0.05 0.12
[6]  sau←bu×0.02
[7]  r←bu-(inss+ir+csin+fund+sau)
-------------------------------------------------------------
[0]  r←calliqext bu;inss;xir;ir;csin;fund;sau
[1]  SR←100
[2]  'INSS=',10 2⍕inss←bu×⌈/,(0 5 11 20<(bu÷SR))/0.085 0.095 0.11 0.125
[3]  'IR  =',10 2⍕ir←((bu×0.1 0.22 0.3 0.4)-(0 0.6 1.5 4×SR))[¯1↑(0 5 12 25<(bu÷SR))/⍳4]
[4]  'C.SI=',10 2⍕csin←bu×0.01
[5]  'FUND=',10 2⍕fund←SR×⌈/,(0 5<(bu÷SR))/0.05 0.12
[6]  'SSAU=',10 2⍕sau←bu×0.02
[7]  'LIQ =',10 2⍕r←bu-(inss+ir+csin+fund+sau)
-------------------------------------------------------------
[ 0]  cavaleiro253a n;ab;acuja;bb;esse;f;lixo1;matriz;quantos;relat;resp;x;xk
[ 1]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.76543232
[ 2]  FOLHALA253←ajusta80 FOLHALA253
[ 3]  relat←⎕FM'c:\apl2\VIVOBLO1'
[ 4]  xk←1
[ 5] testa:→(xk>n)/fim
[ 6]  f←FOLHALA253
[ 7]  esse←11 80⍴' '
[ 8]  esse[1;⍳⍴x]←x←'  -- Cavaleiros da Tavola Redonda'
[ 9]  esse[3;]←80↑4 2⍕3.03
[10]  esse[10;⍳8]←'@000000@'
[11] inica:
[12]  quantos←0
[13]  matriz←(2⍴8)⍴0
[14]  ab←?8
[15]  bb←?8
[16]  matriz[ab;bb]←1
[17]  esse[8;]←80↑2 0⍕ab
[18]  esse[9;]←80↑2 0⍕bb
[19]  →(0=andacavalo 2,ab,bb)/volta1
[20]  →(quantos≤56)/volta2
```

```
[21]  →(quantos>100)/volta3
[22]  →continua
[23] volta1:⍞←'z'
[24]  →inica
[25] volta2:⍞←'m'
[26]  →inica
[27] volta3:⍞←'M'
[28]  →inica
[29] continua:
[30]  resp←⍕mp matriz
[31]  acuja←(f[;2]='#')/⍳1↑⍴f
[32]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[33]  ⍞←(⍕xk←xk+1),'-'
[34]  f←(((1↑⍴relat),1↓⍴f)↑relat),[1]f
[35]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'\end{document}'
[36]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'%',resp
[37]  lixo1←f ΔFM'c:\apl2\CA253a',('00'⍕xk-1),'.tex'
[38]  →testa
[39] fim:
------------------------------------------------------------
[0]  r←mp alka;i
[1]  i←1 ⋄ r←''
[2] vo:→(i>1↑⍴alka)/fim
[3]  r←r,alka[i;i]
[4]  →(i=i←i+1)/vo
[5] fim:
------------------------------------------------------------
[ 0]  r←a ondeta b;i;j;k;⎕PW;⎕IO
[ 1]  ⎕IO←1
[ 2]  ⎕PW←120
[ 3]  b←,b
[ 4]  i←1
[ 5] t1:→(i>1↑⍴a)/fim
[ 6]  j←1
[ 7] t2:→(j>1↓⍴a)/upa
[ 8]  →(a[i;j]≠b[1])/soma
[ 9]  k←1
[10] t3:→(k>⍴b)/achou
[11]  →(a[i;j+k-1]=b[k])/ainda
[12]  →soma
[13] ainda:k←k+1
[14]  →t3
[15] achou:'=',(⍕i),' ',(⍕j),a[i;]
[16]  j←j+⍴b
[17]  →t2
[18] soma:j←j+1
[19]  →t2
[20] upa:i←i+1
[21]  →t1
[22] fim:
------------------------------------------------------------
[0]  r←pedemail x
[1]  →(40≠+/' '=x)/aindanao
[2]  r←80↑'Por favor, informe seu e-mail: \_\_\_\_\_'
[3]  →junnao
[4] aindanao:r←80↑'e-mail cadastrado: \verb+',x,'+'
[5] junnao:
------------------------------------------------------------
[ 0]  r←raizsetima x;z;zz
[ 1]  z←x[2]*7
[ 2] ⍝ x,z
[ 3] ⍝ zz←⍞
[ 4]  →(0.1>|z-x[1])/acabou
```

```
[ 5]  →(z>x[1])/dimi
[ 6] aum:
[ 7]  r←raizsetima x[1],x[2]+0.001×x[2]
[ 8]  →0
[ 9] dimi:
[10]  r←raizsetima x[1],x[2]-0.001×x[2]
[11]  →0
[12] acabou:r←x[2]
------------------------------------------------------------
[ 0]  opesq vivo253a n;CORRECAO;EVENTO;f;acuja;ylu;relat;dhx;resu;xk;lixo1;upag;esse;resp;
      ab;bb;aaa;lixonol
[ 1] ⍝ ---------------- inicializacao ----------------------
[ 2]  →(0≠⎕NC'opesq')/qveio
[ 3]  opesq←10⍴' '
[ 4] qveio:
[ 5]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.76543232
[ 6]  CORRECAO←8 ⋄ EVENTO←'PL253   '
[ 7]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 8]  'z = significa que esta instancia nao tem solucao'
[ 9]  'm = nao houve nenhum backtracking'
[10]  'M = muitos backtrackings'
[11] ⍝ ------------- processamento de alunos ----------------
[12]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.alu' ⋄ EVENTO←n
[13]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍕⍳n
[14] ⍝ modelo de IF: →(~condicao)/1+⎕LC ⋄ fazer se condicao verdadeira
[15]  FOLHALA253←ajusta80 FOLHALA253
[16]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA253)⍴' '
[17]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[18] ⍝ ------------- comeco do processamento ----------------
[19]  xk←1 ⋄ resu←0 9⍴0
[20] testa:→(xk>1↑⍴ylu)/fim
[21]  f←FOLHALA253
[22]  esse←11 80⍴' '
[23]  esse[1;]←80↑dhx[1;]
[24]  esse[2;]←80↑dhx[2;]
[25]  esse[3;]←80↑4 2⍕VERSAOa←3.03
[26]  esse[4;]←80↑ylu[xk;⍳6]
[27]  esse[5;]←80↑ylu[xk;6+⍳30]
[28]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[29]  esse[7;]←80↑(3 0⍕resp←xk),' - ',opesq
[30] ⍝ esse[10;]←pedemail ylu[xk;36+⍳40]
[31]  esse[10;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[11;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34] ⍝ ---------------------- loop -------------------------
[35]  quantos←0
[36]  matriz←(2⍴8)⍴0
[37]  ab←?8
[38]  bb←?8
[39]  matriz[ab;bb]←1
[40]  esse[8;]←80↑2 0⍕ab
[41]  esse[9;]←80↑2 0⍕bb
[42]  →(0=andacavalo 2,ab,bb)/volta1
[43]  →(quantos≤56)/volta2
[44]  →(quantos>100)/volta3
[45]  →continua
[46] volta1:⍞←'z'
[47]  →inica
[48] volta2:⍞←'m'
[49]  →inica
[50] volta3:⍞←'M'
[51]  →inica
```

```
[52] continua:
[53] ⍝ ------------------- monta o resultado -----------------
[54]  resu←resu,[1](1,9)⍴resp,mp matriz
[55]  acuja←(f[;2]='#')/⍳1↑⍴f
[56]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[57]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[58]  ⎕←(⍕xk←xk+1),'-'
[59]  →testa
[60] ⍝ -------------------- fim de tudo --------------------
[61] fim:upag←(1 0+⍴f)⍴' '
[62]  →(1=≡n)/elafa
[63]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[64]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[65]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 5 0 5 0 5 0 5 0 5 0)⍕resu
[66]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[67]  →terminando
[68] elafa:aaa←(ylu,5 0⍕0 1↓resu)
[69]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∘\⍷EVENTO=' ')/EVENTO),'.gpa')
[70]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[71] terminando:
[72]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[73]  relat[1↑⍴relat;;]←upag
[74]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)⎕FM'c:\apl2\',((~⍷∘\⍷EVENTO=' ')/EVENTO),'.t
      ex'
[75]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[76]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo254

```
[ 0]  r←geracaso;lixo;yy;zz;aspa;kk;QUIZ
[ 1] ⍝ X←10+5?89
[ 2] ⍝ Z0←Z0,[1]1 60⍴60↑'Valores de X=',⍕X
[ 3] ⍝ insereorde 5
[ 4] ⍝ RES←LAST1
[ 5]  zeraz
[ 6]  aspa←''''
[ 7]  QUIZ←9 80⍴' '
[ 8]  QUIZ[1;⍳50]←50↑'(quizumba ',aspa,'zebra ',aspa,'(cao gato cobra rato))'
[ 9]  QUIZ[1;50+⍳30]←30↑'(cobra rato)'
[10]  QUIZ[2;⍳50]←50↑'(quizumba ',aspa,'z ',aspa,'(a v f d t z d s))'
[11]  QUIZ[2;50+⍳30]←30↑'(f d t z d s)'
[12]  QUIZ[3;⍳50]←50↑'(quizumba ',aspa,'1 ',aspa,'(5 6 7 8 9))'
[13]  QUIZ[3;50+⍳30]←30↑'(7 8 9)'
[14]  QUIZ[4;⍳50]←50↑'(quizumba ',aspa,'zebra ',aspa,'(gato cao rato anu pardal))'
[15]  QUIZ[4;50+⍳30]←30↑'(ratu anu pardal)'
[16]  QUIZ[5;⍳50]←50↑'(quizumba ',aspa,'9 ',aspa,'(6 7 8 9))'
[17]  QUIZ[5;50+⍳30]←30↑'(8 9)'
[18]  QUIZ[6;⍳50]←50↑'(quizumba ',aspa,'d ',aspa,'(a b c d e f))'
[19]  QUIZ[6;50+⍳30]←30↑'(c d e f)'
[20]  QUIZ[7;⍳50]←50↑'(quizumba ',aspa,'cao ',aspa,'(zebra gato rato anu))'
[21]  QUIZ[7;50+⍳30]←30↑'(rato anu)'
[22]  QUIZ[8;⍳50]←50↑'(quizumba ',aspa,'2 ',aspa,'(5 6 7 8 9))'
[23]  QUIZ[8;50+⍳30]←30↑'(7 8 9)'
[24]  QUIZ[9;⍳50]←50↑'(quizumba ',aspa,'3 ',aspa,'(5 6 7 8))'
[25]  QUIZ[9;50+⍳30]←30↑'(7 8)'
[26]  kk←?9
[27] zer:
[28]  yy←(3 4 5 6 7 8)[?6],(5 6 7 8 9 10 11 12 13 14)[?10]
[29]  lixo←power yy
[30]  →(3<1↑⍴Z1)/blz
[31]  ⎕←'*'
```

```
[32]  →zer
[33] blz:
[34] zer2:zz←999+2?999
[35]  zz←zz[⍒zz]
[36]  lixo←mdc zz
[37]  →(3<1↑⍴Z2)/blz2
[38]  ⍞←'!'
[39]  →zer2
[40] blz2:RES←5 0⍕THIRD2
[41]  RES←RES,5 0⍕THIRD1
[42]  RES←RES,' ',QUIZ[kk;50+⍳30]
[43]  r←3 80⍴' '
[44]  r[1;]←80↑5 0⍕zz
[45]  r[2;]←80↑4 0⍕yy
[46]  r[3;]←80↑QUIZ[kk;⍳50]
-------------------------------------------------------------
[ 0]  r←insere ia
[ 1]  Z0←Z0,[1]1 60⍴60↑'entrando insere ',(⍕ia),'          - ',⍕X
[ 2]  →(ia[1]=1)/igual
[ 3]  →(X[ia[1]-1]≤ia[2])/igual
[ 4] difere:X[ia[1]]←X[ia[1]-1]
[ 5]  insere((ia[1]-1),ia[2])
[ 6]  →0
[ 7] igual:X[ia[1]]←ia[2]
[ 8] fim:LAST1←ia
[ 9] ⍝ referencia Ata99, pag 1-6
-------------------------------------------------------------
[0]  insereorde n
[1]  Z0←Z0,[1]1 60⍴60↑'entrando insereorde ',⍕n
[2]  →(n≤1)/0
[3]  insereorde n-1
[4]  insere n,X[n]
[5] ⍝ referencia Ata99, pag 1-6
-------------------------------------------------------------
[0]  limpavars;lixo
[1]  lixo←⎕EX'LAST1'
[2]  lixo←⎕EX'THIRD1'
[3]  lixo←⎕EX'THIRD2'
[4]  lixo←⎕EX'X'
[5]  lixo←⎕EX'Z0'
[6]  lixo←⎕EX'Z1'
[7]  lixo←⎕EX'Z2'
[8]  lixo←⎕EX'RES'
-------------------------------------------------------------
[0]  r←mdc xy
[1]  →(2≠1↑⍴Z2)/contr
[2]  THIRD2←xy
[3] contr:Z2←Z2,[1]1 60⍴60↑'Chamando com ',⍕xy
[4]  →(xy[2]=0)/zero
[5]  r←mdc xy[2],xy[2]|xy[1]
[6]  →0
[7] zero:r←xy[1]
[8] ⍝ referencia Ata99, pag 39-9.
-------------------------------------------------------------
[0]  r←pedemail x
[1]  →(40≠+/' '=x)/aindanao
[2]  r←80↑'Por favor, informe seu e-mail: ⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_'
[3]  →junnao
[4] aindanao:r←80↑'e-mail cadastrado: ⍀verb+',x,'+'
[5] junnao:
-------------------------------------------------------------
[ 0]  r←power xn;t
[ 1]  →(2≠1↑⍴Z1)/com
```

```
[ 2]  THIRD1←xn
[ 3] com:Z1←Z1,[1]1 60⍴60↑'Entrando com ',⍕xn
[ 4]  →(xn[2]=0)/um
[ 5]  t←power xn[1],⌊xn[2]÷2
[ 6]  →(0=2|xn[2])/par
[ 7]  r←xn[1]×t×t
[ 8]  →fim
[ 9] par:r←t×t
[10]  →fim
[11] um:r←1
[12] fim:
[13] ⍝ referencia Ata99, pag. 1-11
------------------------------------------------------------
[ 0]  opesq vivo254a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;relat;resp;resu;
      upag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←6 ⋄ EVENTO←'PL254   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA254←ajusta80 FOLHALA254
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA254)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 57⍴' '
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←12 80⍴' '
[15]  f←FOLHALA254
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.21
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23] ⍝ esse[11;]←pedemail ylu[xk;36+⍳40]
[24]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[25]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[26] inica:
[27]  esse[7+⍳3;]←geracaso
[28]  resp←(3 0⍕resp),' - ',RES
[29]  resu←resu,[1]1 57⍴resp
[30]  acuja←(f[;2]='#')/⍳1↑⍴f
[31]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[32]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[33]  ⎕←(⍕xk←xk+1),'-'
[34]  →testa
[35] fim:upag←(1 0+⍴f)⍴' '
[36]  →(1=≡n)/elafa
[37]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[38]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[39]  upag[2+⍳1↑⍴resu;⍳57]←resu
[40]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[41]  →terminando
[42] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 6↓resu)
[43]  aaa[1;35 36]←2 0⍕CORRECAO
[44]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[45]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[46] terminando:
[47]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
```

```
[48]  relat[1↑⍴relat;;]←upag
[49]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[50] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[51]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[52]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[53]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[0]  zeraz
[1]  Z0←Z1←Z2←0 60⍴' '
------------------------------------------------------------
```

vivo255

```
[0]  AVISO
[1]  'a=iguais; m=diferentes'
------------------------------------------------------------
[ 0]  r←quem conima onde;met;xx
[ 1] ⍝ 'chamada com '
[ 2] ⍝ onde
[ 3] ⍝ '---'
[ 4] ⍝ o resultado eh criado na variavel VOLTA
[ 5]  xx←AQUAD[quem;]
[ 6]  met←⌊(1↓⍴onde)÷2
[ 7]  →((xx[1]=¯1)∨(xx[1]=¯2))/direto1
[ 8]  xx[1]conima onde[1 2;⍳met]
[ 9]  →pula2
[10] direto1:VOLTA[onde[1;⍳met];onde[2;⍳met]]←VC[|xx[1]]
[11] pula2:→((xx[2]=¯1)∨(xx[2]=¯2))/direto2
[12]  xx[2]conima(2,met)⍴onde[1;⍳met],onde[2;met+⍳met]
[13]  →pula3
[14] direto2:VOLTA[onde[1;⍳met];onde[2;met+⍳met]]←VC[|xx[2]]
[15] pula3:→((xx[3]=¯1)∨(xx[3]=¯2))/direto3
[16]  xx[3]conima(2,met)⍴onde[1;met+⍳met],onde[2;⍳met]
[17]  →pula4
[18] direto3:VOLTA[onde[1;met+⍳met];onde[2;⍳met]]←VC[|xx[3]]
[19] pula4:→((xx[4]=¯1)∨(xx[4]=¯2))/direto4
[20]  xx[4]conima(2,met)⍴onde[1;met+⍳met],onde[2;met+⍳met]
[21]  →pula5
[22] direto4:VOLTA[onde[1;met+⍳met];onde[2;met+⍳met]]←VC[|xx[4]]
[23] pula5:
------------------------------------------------------------
[ 0]  r←num conquad ima;c1;c2;c3;c4;met
[ 1]  →(2<1↑⍴ima)/egrande
[ 2] epequena:AQUAD[num;]←(¯1 ¯2)[VC⍳(ima[1;1],ima[1;2],ima[2;1],ima[2;2])]
[ 3]  →0
[ 4] egrande:met←⌊(1↑⍴ima)÷2
[ 5]  c1←ima[⍳met;⍳met] ⋄ c2←ima[⍳met;met+⍳met]
[ 6]  c3←ima[met+⍳met;⍳met] ⋄ c4←ima[met+⍳met;met+⍳met]
[ 7] difc0:→(0=tudoigual c1)/difc1
[ 8]  AQUAD[num;1]←(¯1 ¯2)[VC⍳c1[1;1]]
[ 9]  →next2
[10] difc1:PROX←PROX+1
[11]  AQUAD[num;1]←PROX
[12]  PROX conquad c1
[13] next2:→(0=tudoigual c2)/difc2
[14]  AQUAD[num;2]←(¯1 ¯2)[VC⍳c2[1;1]]
[15]  →next3
[16] difc2:PROX←PROX+1
[17]  AQUAD[num;2]←PROX
[18]  PROX conquad c2
[19] next3:→(0=tudoigual c3)/difc3
[20]  AQUAD[num;3]←(¯1 ¯2)[VC⍳c3[1;1]]
```

```
[21]  →next4
[22] difc3:PROX←PROX+1
[23]  AQUAD[num;3]←PROX
[24]  PROX conquad c3
[25] next4:→(0=tudoigual c4)/difc4
[26]  AQUAD[num;4]←(¯1 ¯2)[VCιc4[1;1]]
[27]  →next5
[28] difc4:PROX←PROX+1
[29]  AQUAD[num;4]←PROX
[30]  PROX conquad c4
[31] next5:
------------------------------------------------------------
[0]  geima ima;PROX
[1]  VC←'.x'
[2]  PROX←1
[3]  AQUAD←64 4ρ0
[4]  1 conquad ima
[5]  VOLTA←16 16ρ' '
[6]  AQUAD←(PROX,4)↑AQUAD
------------------------------------------------------------
[ 0]  r←geracaso;or;x;y;met
[ 1]  or←16
[ 2]  r←(or,or)ρVC[1]
[ 3]  met←⌊or÷4
[ 4]  y←?3×met
[ 5]  x←?3×met
[ 6]  r[x+ιmet;y+ιmet]←(met,met)ρVC[2]
[ 7]  y←met+?2×met
[ 8]  x←met+?2×met
[ 9]  r[x+ιmet;y+ιmet]←(met,met)ρVC[2]
[10]  y←met+?2×met
[11]  x←met+?2×met
[12]  r[x+ιmet;y+ιmet]←(met,met)ρVC[2]
------------------------------------------------------------
[ 0]  r←gerainst;quem;q1;q2;q3;q4;q5;q6;q7;q8;ima
[ 1] denovo:IMA←ima←geracaso
[ 2]  geima ima
[ 3]  1 conima 2 16ρι16
[ 4]  →(33≥(1↑ρAQUAD))/ok
[ 5]  □←'*'
[ 6]  →denovo
[ 7] ok:
[ 8]  →(12<1↑ρAQUAD)/ok2
[ 9]  □←'o'
[10]  →denovo
[11] ok2:
[12]  r←17ρ0
[13]  quem←10+?(1↑ρAQUAD)-10
[14]  r[1 2 3 4 5]←quem,AQUAD[quem;]
[15]  r[6 7 8]←q1,q2,-VCιima[q1←?16;q2←?16]
[16]  r[9 10 11]←q3,q4,-VCιima[q3←?16;q4←?16]
[17]  r[12 13 14]←q5,q6,-VCιima[q5←?16;q6←?16]
[18]  r[15 16 17]←q7,q8,-VCιima[q7←?16;q8←?16]
------------------------------------------------------------
[0]  r←tripa3 aa
[1]  aa←33 16↑aa
[2]  r←aa[ι11;],' ',aa[11+ι11;],' ',aa[22+ι11;]
------------------------------------------------------------
[0]  r←tudoigual ima;x
[1]  x←⎕AVι,ima
[2]  x←x[⍋x]
[3]  r←x[1]=x[ρx]
------------------------------------------------------------
```

```
[ 0]  r←veaquad ac;xx;i;j
[ 1]  r←((1↑⍴ac),12)⍴' '
[ 2]  xx←((1↑⍴ac),4)↑ac
[ 3]  i←1
[ 4] t1:→(i>1↑⍴xx)/fimi
[ 5]  j←1
[ 6] t2:→(j>1↓⍴xx)/fimj
[ 7]  →(xx[i;j]=¯1)/eponto
[ 8]  →(xx[i;j]=¯2)/exis
[ 9]  →(xx[i;j]>9)/eduplo
[10]  r[i;(3×j-1)+⍳3]←' ',(1 0⍕xx[i;j]),' '
[11]  →pula
[12] eduplo:
[13]  r[i;(3×j-1)+⍳3]←3 0⍕xx[i;j]
[14]  →pula
[15] eponto:
[16]  r[i;(3×j-1)+⍳3]←' ',VC[1],' '
[17]  →pula
[18] exis:
[19]  r[i;(3×j-1)+⍳3]←' ',VC[2],' '
[20] pula:→(j=j←j+1)/t2
[21] fimj:→(i=i←i+1)/t1
[22] fimi:r←1 numera r
-------------------------------------------------------------
[0]  r←veima ima;zz
[1]  r←1 numera ima
[2]  r←((3,zz←1↓⍴r)⍴' '),[1]r
[3]  r[3;4+⍳zz-4]←'-'
[4]  r[1 2;]←(2 4⍴' '),⍉((zz-4),2)⍴2 0⍕⍳zz-4
[5]  r←r[;⍳4],[2]((2×(1↓⍴r)-4)⍴1 0)⍀[2]0 4↓r
-------------------------------------------------------------
[ 0]  opesq vivo255a n;CORRECAO;EVENTO;aaa;acuja;azeb;dhx;esse;f;lixo1;lixonol;relat;resp;
      resu;upag;xixo;xk;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←6 ⋄ EVENTO←'PL255   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA255←ajusta80 FOLHALA255
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA255)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[12]  xk←1 ⋄ resu←0 7⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←42 80⍴' '
[15]  f←FOLHALA255
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.68
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[41;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[42;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  zz←gerainst
[27]  esse[7+⍳19;⍳36]←veima IMA
[28]  esse[27;]←80↑2 0⍕zz[1]
[29]  resp←resp,zz[2 3 4 5]
```

```
[30]  esse[27+⍳11;⍳50]←tripa3 veaquad AQUAD
[31]  esse[39;]←80↑(2 0⍕zz[6]),'][',2 0⍕zz[7]
[32]  resp←resp,zz[8]
[33]  esse[40;]←80↑(2 0⍕zz[9]),'][',2 0⍕zz[10]
[34]  resp←resp,zz[11]
[35]  resu←resu,[1]1 7⍴resp
[36]  acuja←(f[;2]='#')/⍳1↑⍴f
[37]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[39]  ⍞←(⍕xk←xk+1),'-'
[40]  →testa
[41] fim:upag←(1 0+⍴f)⍴' '
[42]  →(1=≡n)/elafa
[43]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[44]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[45]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯'-'edit(lixo1←5 0 10 0 5 0 5 0 5 0 10 0 5 0)⍕resu
[46]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[47]  →terminando
[48] elafa:aaa←(ylu,'¯'-'edit 5 0⍕0 1↓resu)
[49]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[50]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[51] terminando:
[52] ⍝upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[53]  relat[1↑⍴relat;;]←upag
[54]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[55]  lixonol←lixonol,[1](1,80)⍴80↑'\begin{verbatim}'
[56]  lixonol←lixonol,[1]((1↑⍴INSTRUC255),80)↑INSTRUC255
[57]  lixonol←lixonol,[1]((1↑⍴azeb),80)↑azeb←'¯'-'edit veaquad AQUAD
[58]  lixonol←lixonol,[1]((1↑⍴azeb),80)↑azeb←veima IMA
[59]  lixonol←lixonol,[1](1,80)⍴80↑'\end{verbatim} \end{document}'
[60] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[61]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[62]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[63]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo255m n;CORRECAO;EVENTO;aaa;acuja;azeb;cab;dhx;esse;f;lixo1;lixonol;relat;r
      esp;resu;upag;xixo;xk;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←6 ⋄ EVENTO←'PL255m  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA255←ajusta80 FOLHALA255
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA255)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 7⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←42 80⍴' '
[15]  f←FOLHALA255
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.66
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[41;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[42;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
```

```
[26]  zz←gerainst
[27]  IMA1←IMA
[28]  AQUAD1←AQUAD
[29]  esse[7+⍳19;⍳36]←veima IMA1
[30]  esse[27;]←80↑2 0⍕zz[1]
[31]  resp←resp,zz[2 3 4 5]
[32]  zz←gerainst
[33]  IMA2←IMA
[34]  AQUAD2←AQUAD
[35]  esse[27+⍳11;⍳50]←tripa3 veaquad AQUAD2
[36]  esse[39;]←80↑(2 0⍕zz[6]),';',2 0⍕zz[7]
[37]  resp←resp,zz[8]
[38]  esse[40;]←80↑(2 0⍕zz[9]),';',2 0⍕zz[10]
[39]  resp←resp,zz[11]
[40]  resu←resu,[1]1 7⍴resp
[41]  acuja←(f[;2]='#')/⍳1↑⍴f
[42]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[44]  ⍞←(⍕xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+⍴f)⍴' '
[47]  →(1=≡n)/elafa
[48]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[49]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[50]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯'-'edit(lixo1←5 0 10 0 5 0 5 0 5 0 10 0 5 0)⍕resu
[51]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[52]  →terminando
[53] elafa:aaa←(⍳lu,'¯'-'edit 5 0⍕0 1↓resu)
[54]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[55]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[56] terminando:
[57] Aupag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[58]  relat[1↑⍴relat;;]←upag
[59]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[60]  lixonol←lixonol,[1](1,80)⍴80↑'⍀begin{verbatim}'
[61]  lixonol←lixonol,[1]((1↑⍴INSTRUC255),80)↑INSTRUC255
[62]  lixonol←lixonol,[1]((1↑⍴azeb),80)↑azeb←'¯'-'edit veaquad AQUAD
[63]  lixonol←lixonol,[1]((1↑⍴azeb),80)↑azeb←veima IMA
[64]  lixonol←lixonol,[1](1,80)⍴80↑'⍀end{verbatim} ⍀end{document}'
[65] A se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[66]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[67]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[68]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo256

```
[0]  r←acertalat mat
[1]  r←'55 &55 &55 &55 &55 &55 &55 &55 &55 &55 ⍀⍀ ⍀hline'⍕mat
-------------------------------------------------------------
[ 0]  prefhom casamentohm prefmul;i;j
[ 1]  ⎕IO←0
[ 2]  PREFHOM←prefhom
[ 3]  PREFMUL←prefmul
[ 4]  SOLTEIRO←(1↑⍴prefhom)⍴1
[ 5]  RESPOSTA←(0,(2+⍴SOLTEIRO))⍴0
[ 6]  CLASSHOM←(2⍴⍴SOLTEIRO)⍴0
[ 7]  CLASSMUL←(2⍴⍴SOLTEIRO)⍴0
[ 8]  HOMEM←(⍴SOLTEIRO)⍴0
[ 9]  MULHER←(⍴SOLTEIRO)⍴0
[10]  i←0
[11] t1:→(i≥⍴SOLTEIRO)/f1
```

```
[12]  j←0
[13] t2:→(j≥ρSOLTEIRO)/f2
[14]  CLASSHOM[i;prefhom[i;j]]←j
[15]  CLASSMUL[i;prefmul[i;j]]←j
[16]  →(j=j←j+1)/t2
[17] f2:→(i=i←i+1)/t1
[18] f1:tentativahm 0
-------------------------------------------------------------
[ 0]  r←estavelhm hml;candhom;candmul;k;ateonde;resp
[ 1]  resp←1
[ 2]  k←0
[ 3] t1:→((k≥hml[2])∨(resp=0))/fim
[ 4]  candmul←PREFHOM[hml[0];k]
[ 5]  k←k+1
[ 6]  →(SOLTEIRO[candmul]=1)/naosol
[ 7]  resp←CLASSMUL[candmul;hml[0]]>CLASSMUL[candmul;HOMEM[candmul]]
[ 8] naosol:→t1
[ 9] fim:k←0
[10]  ateonde←CLASSMUL[hml[1];hml[0]]
[11] t2:→((k≥ateonde)∨(resp=0))/fim2
[12]  candhom←PREFMUL[hml[1];k]
[13]  k←k+1
[14]  →(candhom≥hml[0])/pula
[15]  resp←CLASSHOM[candhom;hml[1]]>CLASSHOM[candhom;MULHER[candhom]]
[16] pula:→t2
[17] fim2:r←resp
-------------------------------------------------------------
[ 0]  r←geracasohm n;ph;pm;i;respo
[ 1]  pm←ph←(2ρn)ρ0
[ 2]  i←0
[ 3] t1:→(i≥n)/fim
[ 4]  pm[i;]←n?n
[ 5]  ph[i;]←n?n
[ 6]  →(i=i←i+1)/t1
[ 7] fim:ph casamentohm pm
[ 8]  respo←RESPOSTA[0;10],RESPOSTA[¯1+1↑ρRESPOSTA;11]
[ 9]  ph←ph+1
[10]  pm←pm+1
[11]  r←(ph pm respo)
-------------------------------------------------------------
[ 0]  imprimehm;perdahom;perdamul;i;linha
[ 1]  perdahom←perdamul←0
[ 2]  linha←(2+ρSOLTEIRO)ρ0
[ 3]  i←0
[ 4] t1:→(i≥ρSOLTEIRO)/ika
[ 5]  linha[i]←MULHER[i]+1
[ 6]  perdahom←perdahom+CLASSHOM[i;MULHER[i]]+1
[ 7]  perdamul←perdamul+CLASSMUL[MULHER[i];i]+1
[ 8]  →(i=i←i+1)/t1
[ 9] ika:
[10]  linha[i]←perdahom
[11]  linha[i+1]←perdamul
[12]  RESPOSTA←RESPOSTA,[0]linha
-------------------------------------------------------------
[ 0]  limpa;lixo
[ 1]  lixo←⎕EX'PREFMUL'
[ 2]  lixo←⎕EX'PREFHOM'
[ 3]  lixo←⎕EX'CLASSMUL'
[ 4]  lixo←⎕EX'CLASSHOM'
[ 5]  lixo←⎕EX'HOMEM'
[ 6]  lixo←⎕EX'MULHER'
[ 7]  lixo←⎕EX'SOLTEIRO'
[ 8]  lixo←⎕EX'RESPOSTA'
```

```
------------------------------------------------------------
[ 0]  tentativahm m;r;mul
[ 1]  r←0
[ 2] t1:→(r≥⍴SOLTEIRO)/fim
[ 3]  mul←PREFHOM[m;r]
[ 4]  →((SOLTEIRO[mul]=0)∨(~estavelhm m,mul,r))/pula
[ 5]  MULHER[m]←mul
[ 6]  HOMEM[mul]←m
[ 7]  SOLTEIRO[mul]←0
[ 8]  →(m≥¯1+⍴SOLTEIRO)/impa
[ 9]  tentativahm m+1
[10]  →junta
[11] impa:imprimehm
[12] junta:SOLTEIRO[mul]←1
[13] pula:→(r=r←r+1)/t1
[14] fim:
------------------------------------------------------------
[ 0]  opesq vivo256a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;relat;resp;resu;
      upag;xk;xxx;ylu
[ 1] ⍝ ---------------- inicializacao ----------------------
[ 2]  'este WS funciona com ⎕IO←0 (e demora...)'
[ 3]  ⎕IO←0
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←''
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[6]+⎕TS[5]+⎕TS[4])*2.76543232
[ 8]  CORRECAO←2 ⋄ EVENTO←'PL256   '
[ 9]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[2 1 0]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      3 4],⎕TS[5]+⎕TS[6]÷1000
[10] ⍝ ------------- processamento de alunos ----------------
[11]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.alu' ⋄ EVENTO←n
[12]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎1+⍳n
[13] ⍝ modelo de IF: →(~condicao)/1+⎕LC ⋄ fazer se condicao verdadeira
[14]  FOLHALA256←ajusta80 FOLHALA256
[15]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA256)⍴' '
[16]  relat[0;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[17] ⍝ ------------- comeco do processamento ----------------
[18]  xk←1 ⋄ resu←0 3⍴0
[19] testa:→(xk>1↑⍴ylu)/fim
[20]  f←FOLHALA256
[21]  esse←27 80⍴' '
[22]  esse[0;]←80↑dhx[0;]
[23]  esse[1;]←80↑dhx[1;]
[24]  esse[2;]←80↑4 2⍎VERSAOa←3.02
[25]  esse[3;]←80↑ylu[xk-1;⍳6]
[26]  esse[4;]←80↑ylu[xk-1;6+⍳30]
[27]  →(~1=≡n)/1+⎕LC ⋄ esse[5;]←80↑EVENTO
[28]  esse[6;]←80↑(3 0⍎resp←xk),' - ',opesq
[29] inica:
[30] ⍝---------------nucleo variavel do programa ---------------
[31]  xxx←geracasohm 10
[32]  esse[7+⍳10;]←10 80↑acertalat⊃xxx[0]
[33]  esse[17+⍳10;]←10 80↑acertalat⊃xxx[1]
[34] ⍝ ------------------- monta o resultado -----------------
[35]  resu←resu,[0](1,3)⍴resp,⊃xxx[2]
[36]  acuja←(f[;1]='#')/⍳1↑⍴f
[37]  f[acuja;]←esse[¯1+≢,f[acuja;2 3],' ';]
[38]  relat[xk;;]←f,[0](1,1↓⍴f)⍴200↑'\newpage'
[39]  limpa
[40]  ⍞←(⍎xk←xk+1),'-'
[41]  →testa
[42] ⍝ -------------------- fim de tudo ---------------------
[43] fim:upag←(1 0+⍴f)⍴' '
```

```
[44]  →(1=≡n)/elafa
[45]  upag[0;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[1;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0)⍉resu
[48]  upag[2+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),5 0⍉0 1↓resu)
[51]  aaa[0;34 35]←2 0⍉CORRECAO
[52]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∘'\'⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍉1↑⍴aaa),' linhas e ',(⍉1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[¯1+1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[56]  relat[¯1+1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)⎕FM'c:\apl2\',((~⍷∘'\'⍷EVENTO=' ')/EVENTO),'.t
      ex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo257

```
[ 0]  AVISO
[ 1]  'Imprima a variavel RESPOSTA que tem a resposta do exercicio comum proposto'
[ 2]  'na folha...'
[ 3]  ''
[ 4]  'mais alguns detalhes:'
[ 5]  ' 1. O algoritmo desta folha PARA ao preencher as linhas 1, 2 e 3. REforcar bem'
[ 6]  'este ponto com os alunos. POrque ? Porque o gerador de casos NAO garante que'
[ 7]  'a instancia gerada tenha solucao unica, ou sequer que tenha solucao'
[ 8]  ''
[ 9]  'PAra ver isto na pratica faca gerainst 30 e tente resolver'
[10]  ''
[11]  ' A solucao definitiva deste problema, estara em construir um gerador de'
[12]  'instancias de sudoku que gere apenas casos resolviveis e de solucao unica'
[13]  ' Ha uma tentativa coma  funcao geracerto que usa o SUDOKUDESCO, veja la...'
[14]  ' 04/03/10=por enquanto este SUDODESCO nao gera solucoes unicas.'
[15]  ' o resto ele faz tudo certo'
[16]  'na resposta PODEM aparecer zeros'
[17]  ''
[18]  ' uma aluna apresentou um exercício que N↓O pode ser resolvido'
[19]  ' pois deu zero na funcao SUDOKU. A questao é: como ele pôde ser'
[20]  ' gerado ??????????????????????'
-------------------------------------------------------------
[ 0]  r←EPOSSIVEL x;k;l;c;sg
[ 1]  k←x[1] ⋄ l←x[2] ⋄ c←x[3]
[ 2]  →(~k∈M[l;])/bl1
[ 3]  r←0
[ 4]  →0
[ 5] bl1:→(~k∈M[;c])/bl2
[ 6]  r←0
[ 7]  →0
[ 8] bl2:sg←SUBGRUPO l,c
[ 9]  →(~k∈(,M)[sg])/bl3
[10]  r←0
[11]  →0
[12] bl3:r←1
-------------------------------------------------------------
[ 0]  r←OPROXIMO x;l;c
[ 1]  l←x[1] ⋄ c←x[2]
[ 2]  →((l>9)∨(c>9))/lixo
[ 3]  c←c+1
[ 4] s1:→(c>9)/somal
```

```
[ 5]  →(M[l;c]≠0)/somac
[ 6]  r←l,c
[ 7]  →0
[ 8] somac:c←c+1
[ 9]  →s1
[10] somal:c←1
[11]  l←l+1
[12]  →s1
[13] lixo:'deu xabu'
------------------------------------------------------------
[ 0]  r←SUBGRUPO x;l;c
[ 1]  l←x[1] ⋄ c←x[2]
[ 2]  →(((l=1)∨(l=2)∨(l=3))∧((c=1)∨(c=2)∨(c=3)))/q1
[ 3]  →(((l=1)∨(l=2)∨(l=3))∧((c=4)∨(c=5)∨(c=6)))/q2
[ 4]  →(((l=1)∨(l=2)∨(l=3))∧((c=7)∨(c=8)∨(c=9)))/q3
[ 5]  →(((l=4)∨(l=5)∨(l=6))∧((c=1)∨(c=2)∨(c=3)))/q4
[ 6]  →(((l=4)∨(l=5)∨(l=6))∧((c=4)∨(c=5)∨(c=6)))/q5
[ 7]  →(((l=4)∨(l=5)∨(l=6))∧((c=7)∨(c=8)∨(c=9)))/q6
[ 8]  →(((l=7)∨(l=8)∨(l=9))∧((c=1)∨(c=2)∨(c=3)))/q7
[ 9]  →(((l=7)∨(l=8)∨(l=9))∧((c=4)∨(c=5)∨(c=6)))/q8
[10]  →(((l=7)∨(l=8)∨(l=9))∧((c=7)∨(c=8)∨(c=9)))/q9
[11] q1:r←1 2 3 10 11 12 19 20 21
[12]  →0
[13] q2:r←4 5 6 13 14 15 22 23 24
[14]  →0
[15] q3:r←7 8 9 16 17 18 25 26 27
[16]  →0
[17] q4:r←28 29 30 37 38 39 46 47 48
[18]  →0
[19] q5:r←31 32 33 40 41 42 49 50 51
[20]  →0
[21] q6:r←34 35 36 43 44 45 52 53 54
[22]  →0
[23] q7:r←55 56 57 64 65 66 73 74 75
[24]  →0
[25] q8:r←58 59 60 67 68 69 76 77 78
[26]  →0
[27] q9:r←61 62 63 70 71 72 79 80 81
------------------------------------------------------------
[ 0]  r←SUDOKU x;l;c;k;resp;l1;c1
[ 1]  CONTADOR←CONTADOR+1
[ 2]  resp←0
[ 3]  l←x[1] ⋄ c←x[2]
[ 4] ⍝ →(l>3)/feio
[ 5] ⍝ se a linha acima for comentada o programa vai ate o fim...
[ 6]  k←1
[ 7] volta:
[ 8]  resp←0
[ 9]  →(~EPOSSIVEL k,l,c)/somak
[10]  M[l;c]←k
[11] ⍝ →((l=9)∧(c=9))/fechou  -------------- alteracao -------------
[12]  →((l=9)∧(~0∈c↓M[l;]))/fechou
[13]  (l1 c1)←OPROXIMO l,c
[14]  resp←SUDOKU l1,c1
[15]  →(resp=999)/feio
[16]  →(resp=1)/conta
[17]  M[l1;c1]←0
[18]  →somak
[19] fechou:resp←1
[20] somak:k←k+1
[21] conta:→((k≤9)∧(resp≠1))/volta
[22] acabou:r←resp
[23]  →0
```

```
[24] feio:r←999
-------------------------------------------------------------
[ 0]  r←SUDOKUDESCO x;l;c;k;resp;l1;c1
[ 1]  CONTADOR←CONTADOR+1
[ 2]  →(CONTADOR>30000)/feio
[ 3]  resp←0
[ 4]  l←x[1] ⋄ c←x[2]
[ 5]  k←1
[ 6] volta:
[ 7]  resp←0
[ 8]  →(~EPOSSIVEL k,l,c)/somak
[ 9]  M[l;c]←k
[10]  →((l=9)∧(~0∈c↓M[l;]))/fechou
[11]  (l1 c1)←OPROXIMO l,c
[12]  resp←SUDOKUDESCO l1,c1
[13]  →(resp=999)/feio
[14]  →(resp=1)/conta
[15]  M[l1;c1]←0
[16]  →somak
[17] fechou:resp←1
[18] somak:k←k+1
[19] conta:→((k≤9)∧(resp≠1))/volta
[20] acabou:r←resp
[21]  →0
[22] feio:r←999
-------------------------------------------------------------
[0]  r←TRANSF x;z
[1] ⍝ devolve uma 9x9 numerica recebendo uma 9x9 alfa, com - no lugar de zero
[2]  z←'-0'edit x
[3]  r←9 9⍴⍎(162⍴1 0)⍀,z
-------------------------------------------------------------
[0]  r←acertaku2 x
[1]  r←9 20⍴' '
[2]  r[;1 3 5 7 9 11 13 15 17 19]←'|'
[3]  r[;2 4 6 8 10 12 14 16 18]←'5'⍕x
[4]  r[;20]←'.'
[5]  r←9 80⍴r
-------------------------------------------------------------
[ 0]  r←avaliacorrecao M;i;x
[ 1]  i←1
[ 2] t1:→(i>9)/n2
[ 3]  →(9≠+/(⍳9)=x←x[⍋x←M[i;]])/errol
[ 4]  i←i+1
[ 5]  →t1
[ 6] n2:
[ 7]  i←1
[ 8] t2:→(i>9)/n3
[ 9]  →(9≠+/(⍳9)=x←x[⍋x←M[;i]])/erroc
[10]  i←i+1
[11]  →t2
[12] n3:
[13]  →(9≠+/(⍳9)=x←x[⍋x←,M[⍳3;⍳3]])/erroq1
[14]  →(9≠+/(⍳9)=x←x[⍋x←,M[⍳3;3+⍳3]])/erroq2
[15]  →(9≠+/(⍳9)=x←x[⍋x←,M[⍳3;6+⍳3]])/erroq3
[16]  →(9≠+/(⍳9)=x←x[⍋x←,M[3+⍳3;⍳3]])/erroq4
[17]  →(9≠+/(⍳9)=x←x[⍋x←,M[3+⍳3;3+⍳3]])/erroq5
[18]  →(9≠+/(⍳9)=x←x[⍋x←,M[3+⍳3;6+⍳3]])/erroq6
[19]  →(9≠+/(⍳9)=x←x[⍋x←,M[6+⍳3;⍳3]])/erroq7
[20]  →(9≠+/(⍳9)=x←x[⍋x←,M[6+⍳3;3+⍳3]])/erroq8
[21]  →(9≠+/(⍳9)=x←x[⍋x←,M[6+⍳3;6+⍳3]])/erroq9
[22]  r←1
[23]  →0
[24] errol:'erro na linha ',(⍕i) ⋄ r←¯1
```

```
[25]  →0
[26] erroc:'erro na coluna ',(⍕i) ◇ r←¯1
[27]  →0
[28] erroq1:'erro no q1' ◇ r←¯1
[29]  →0
[30] erroq2:'erro no q2' ◇ r←¯1
[31]  →0
[32] erroq3:'erro no q3' ◇ r←¯1
[33]  →0
[34] erroq4:'erro no q4' ◇ r←¯1
[35]  →0
[36] erroq5:'erro no q5' ◇ r←¯1
[37]  →0
[38] erroq6:'erro no q6' ◇ r←¯1
[39]  →0
[40] erroq7:'erro no q7' ◇ r←¯1
[41]  →0
[42] erroq8:'erro no q8' ◇ r←¯1
[43]  →0
[44] erroq9:'erro no q9' ◇ r←¯1
[45]  →0
------------------------------------------------------------
[0]  r←explode x
[1]  →(x=0)/bra
[2]  r←20↑'{↖huge ',(1 0⍕x),'}'
[3]  →0
[4] bra:r←20⍴' '
------------------------------------------------------------
[0]  r←geracerto;i;lixo
[1] t1:
[2]  CONTADOR←0
[3]  MS←M←gerainst 20
[4]  lixo←SUDOKUDESCO 1,1
[5]  →(lixo=999)/t1
[6]  lixo←avaliacorrecao M
[7]  →(lixo=0)/t1
[8]  X←r←MS,[0.5]M
------------------------------------------------------------
[ 0]  r←gerainst lim;x;i;l;za;op;zz;c;j
[ 1]  x←9 9⍴⊂⍳9 ◇ r←9 9⍴0
[ 2]  i←1
[ 3] poe:→(i>lim)/fim99
[ 4]  l←?9 ◇ c←?9
[ 5]  →(r[l;c]≠0)/poe
[ 6]  →((l=1)∧(c=1))/poe
[ 7]  za←(⍳9)=zz←,⊃x[l;c]
[ 8]  op←za/⍳9
[ 9]  →(0≠⍴op)/blz
[10]  □←'*'
[11]  →poe
[12] blz:op←op[?⍴op]
[13]  j←1
[14] pl:→(j>9)/fim
[15]  x[j;c]←⊂op retira⊃x[j;c]
[16]  →(j=j←j+1)/pl
[17] fim:j←1
[18] pl2:→(j>9)/fi2
[19]  x[l;j]←⊂op retira⊃x[l;j]
[20]  →(j=j←j+1)/pl2
[21] fi2:
[22]  →(((l=1)∨(l=2)∨(l=3))∧((c=1)∨(c=2)∨(c=3)))/q1
[23]  →(((l=1)∨(l=2)∨(l=3))∧((c=4)∨(c=5)∨(c=6)))/q2
[24]  →(((l=1)∨(l=2)∨(l=3))∧((c=7)∨(c=8)∨(c=9)))/q3
```

```
[25]  →(((l=4)∨(l=5)∨(l=6))∧((c=1)∨(c=2)∨(c=3)))/q4
[26]  →(((l=4)∨(l=5)∨(l=6))∧((c=4)∨(c=5)∨(c=6)))/q5
[27]  →(((l=4)∨(l=5)∨(l=6))∧((c=7)∨(c=8)∨(c=9)))/q6
[28]  →(((l=7)∨(l=8)∨(l=9))∧((c=1)∨(c=2)∨(c=3)))/q7
[29]  →(((l=7)∨(l=8)∨(l=9))∧((c=4)∨(c=5)∨(c=6)))/q8
[30]  →(((l=7)∨(l=8)∨(l=9))∧((c=7)∨(c=8)∨(c=9)))/q9
[31] q1:x[⍳3;⍳3]←op retiraq x[⍳3;⍳3]
[32]  →acer
[33] q2:x[⍳3;3+⍳3]←op retiraq x[⍳3;3+⍳3]
[34]  →acer
[35] q3:x[⍳3;6+⍳3]←op retiraq x[⍳3;6+⍳3]
[36]  →acer
[37] q4:x[3+⍳3;⍳3]←op retiraq x[3+⍳3;⍳3]
[38]  →acer
[39] q5:x[3+⍳3;3+⍳3]←op retiraq x[3+⍳3;3+⍳3]
[40]  →acer
[41] q6:x[3+⍳3;6+⍳3]←op retiraq x[3+⍳3;6+⍳3]
[42]  →acer
[43] q7:x[6+⍳3;⍳3]←op retiraq x[6+⍳3;⍳3]
[44]  →acer
[45] q8:x[6+⍳3;3+⍳3]←op retiraq x[6+⍳3;3+⍳3]
[46]  →acer
[47] q9:x[6+⍳3;6+⍳3]←op retiraq x[6+⍳3;6+⍳3]
[48]  →acer
[49] acer:r[l;c]←op
[50]  i←i+1
[51]  →poe
[52] fim99:
------------------------------------------------------------
[0]  r←op retira ve;x
[1]  x←,ve
[2]  x[op]←0
[3]  r←x
------------------------------------------------------------
[ 0]  r←op retiraq ma;i;j;v1
[ 1]  r←ma
[ 2]  i←1
[ 3] t1:→(i>3)/fim
[ 4]  j←1
[ 5] t2:→(j>3)/fi
[ 6]  v1←⊃ma[i;j]
[ 7]  v1[op]←0
[ 8]  r[i;j]←⊂v1
[ 9]  j←j+1
[10]  →t2
[11] fi:i←i+1
[12]  →t1
[13] fim:
------------------------------------------------------------
[ 0]  testa qt;i;lixo
[ 1]  i←1
[ 2] t1:→(i>qt)/0
[ 3]  CONTADOR←0
[ 4]  MS←M←gerainst 20
[ 5]  LANT←M[1;]
[ 6]  lixo←SUDOKUDESCO 1,1
[ 7]  lixo←avaliacorrecao M
[ 8]  i←i+1
[ 9]  i-1
[10]  →t1
------------------------------------------------------------
[0]  r←ve x;y
[1]  y←2 0⍕x
```

```
[2]  y←'|',y,'|'
[3]  y←'-',[1]y,[1]'-'
[4]  y[5 8;2 4 6 8 10 12 14 16 18]←'¯'
[5]  y[;8 14]←'|'
[6]  r←y
-------------------------------------------------------------
[ 0]  opesq vivo257a n;CORRECAO;EVENTO;aaa;acuja;bb;cc;dhx;esse;f;i;kk;lixo1;lixonol;relat
      ;resp;resu;upag;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  'demora...'
[ 5]  CORRECAO←9 ◇ EVENTO←'PL257   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ◇ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ◇ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ◇ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA257←ajusta80 FOLHALA257
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA257)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ◇ resu←0 10⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←27 80⍴' '
[15]  f←FOLHALA257
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←3.06
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ◇ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[23]  esse[26;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[27;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  M←bb←gerainst 20
[27]  LANT←M[1;]
[28]  cc←SUDOKUDESCO 1 1
[29]  esse[7+⍳9;]←acertaku2 bb
[30]  i←1
[31] t55:→(i>9)/cont66
[32]  esse[16+i;⍳20]←explode LANT[i]
[33]  i←i+1
[34]  →t55
[35] cont66:resp←resp,M[1;]
[36]  resu←resu,[1]1 10⍴resp
[37]  acuja←(f[;2]='#')/⍳1↑⍴f
[38]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[39]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[40]  ⍞←(⍎xk←xk+1),'-'
[41]  →testa
[42] fim:
[43]  kk←2 0 2 0 3 0 2 0 2 0 3 0 2 0 2 0
[44]  upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←4 0 5 0,kk)⍎resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:
[52]  aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),(3 0,kk)⍎0 1↓resu)
[53]  aaa[1;35 36]←2 0⍎CORRECAO
[54]  lixonol←aaa ΔFM('c:\apl2\',((~⍬∧\⍬EVENTO=' ')/EVENTO),'.gpa')
```

```
[55]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[56] terminando:
[57]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍝end{document}'
[58]  relat[1↑⍴relat;;]←upag
[59]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)⎕FM'c:⍝apl2⍝',((~⍵∧⍝⍵EVENTO=' ')/EVENTO),'.t
      ex'
[60]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[61]  'Arquivo(s) criado(s) com o nome de c:⍝apl2⍝',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo258

```
[0]  r←acertaext x
[1]  →(2≠+/x[¯2 ¯1+⍴x]='⍝e')/blz
[2]  x←¯2↓x
[3] blz:r←'⍝ 'edit x
------------------------------------------------------------
[ 0]  r←ackerman x
[ 1] ⍝ x[1]=m, x[2]=n
[ 2]  'chamando com ',⍕x
[ 3]  →(x[1]=0)/zero
[ 4]  →(x[2]=0)/um
[ 5]  r←ackerman(x[1]-1),ackerman x[1],x[2]-1
[ 6]  →0
[ 7] um:r←ackerman(x[1]-1),1
[ 8]  →0
[ 9] zero:r←x[2]+1
------------------------------------------------------------
[ 0]  r←extenso x;a;b;c;d;ee
[ 1]  →(x<1000000000)/pulab
[ 2]  ee←⍎('000000000000'⍕x)[1 2 3]
[ 3]  →(ee=1)/umb
[ 4]  r←(acertaext extenso ee),'bilhoes ',acertaext extenso⍎('000000000000'⍕x)[4 5 6 7 8 9
       10 11 12]
[ 5]  →0
[ 6] umb:
[ 7]  r←(acertaext extenso ee),'bilhao ',acertaext extenso⍎('000000000000'⍕x)[4 5 6 7 8 9
      10 11 12]
[ 8]  →0
[ 9] pulab:
[10]  →(x<1000000)/pulam
[11]  ee←⍎('000000000'⍕x)[1 2 3]
[12]  →(ee=1)/um
[13]  r←(acertaext extenso ee),'milhoes ',acertaext extenso⍎('000000000'⍕x)[4 5 6 7 8 9]
[14]  →0
[15] um:
[16]  r←(acertaext extenso ee),'milhao ',acertaext extenso⍎('000000000'⍕x)[4 5 6 7 8 9]
[17]  →0
[18] pulam:
[19]  →(x<1000)/pulaz
[20]  r←(acertaext extenso(⍎('000000'⍕x)[1 2 3])),' mil ',acertaext extenso⍎('000000'⍕x)[4
       5 6]
[21]  →0
[22] pulaz:
[23]  →(x=100)/ecem
[24]  a←⍎('000'⍕x)[1]
[25]  b←⍎('000'⍕x)[2]
[26]  d←c←⍎('000'⍕x)[3]
[27]  →(b≠1)/exc
[28]  d←10+c
[29] exc:→(d≠c)/pp
[30]  r←qt00[a+1;],qtx0[b+1;],qt0119[c+1;]
```

```
[31]  →finz
[32] pp:r←qt00[a+1;],qt0119[d+1;]
[33]  →finz
[34] ecem:r←'cemº'
[35] finz:r←(r≠' ')/r
[36]  r←acertaext r
-------------------------------------------------------------
[ 0]  garrafas x
[ 1]  →(x=0)/0
[ 2]  →(x=1)/um
[ 3]  (⍕x),' garrafas de cerveja na mesa'
[ 4]  (⍕x),' garrafas de cerveja'
[ 5]  '   abra uma'
[ 6]  '   passe-a adiante'
[ 7]  →junta
[ 8] um:
[ 9]  '1 garrafa de cerveja na mesa'
[10]  '1 garrafa de cerveja'
[11]  '   abra uma'
[12]  '   passe-a adiante'
[13] junta:
[14]  →(x=2)/dois
[15]  (⍕x-1),' garrafas de cerveja na mesa'
[16]  →junta2
[17] dois:
[18]  '1 garrafa de cerveja na mesa'
[19] junta2:
[20]  '---'
[21]  garrafas x-1
-------------------------------------------------------------
[0]  testaext z;i
[1]  i←1
[2] ini:→(i>z)/fim
[3]  extenso i
[4]  i←i+1
[5]  →ini
[6] fim:
-------------------------------------------------------------
[ 0]  opesq vivo258a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;num;relat
      ;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←8 ⋄ EVENTO←'PL258   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA258←ajusta80 FOLHALA258
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA258)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[12]  xk←1 ⋄ resu←0 2⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←7 80⍴' '
[15]  f←FOLHALA258
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
```

```
[23] ini1:
[24]  resu←resu,[1]1 2⍴resp
[25]  acuja←(f[;2]='#')/⍳1↑⍴f
[26]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[27]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[28]  ⎕←(⍕xk←xk+1),'-'
[29]  →testa
[30] fim:upag←(1 0+⍴f)⍴' '
[31]  'Nto há arquivo GPA'
[32] terminando:
[33]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[34]  relat[1↑⍴relat;;]←upag
[35]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[36] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[37]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[38]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'    .tex'
------------------------------------------------------------
```

vivo259

```
[ 0]  AVISO
[ 1]  'Imprima COLATEORIA para ter um roteiro do que falar nos metodos'
[ 2]  'nao exatos'
[ 3]  ' '
[ 4]  ' em ULT esta a resposta da ultima folha'
[ 5]  ' '
[ 6]  ' mostre OU NAO o comando que lista todas as alternativas (dentro da f. tsp)'
[ 7]  ' '
[ 8]  ' '
[ 9]  ' '
[10]  ' Criei a f. guloso, que recebe o mesmo parametro gerado por "geracaso 10"'
[11]  '   chame x←geracaso 10'
[12]  '   guloso x'
[13]  '        mostra o resultado do caminho guloso (distancia,pontos...pontos)'
[14]  '        compare este resultado com x[3]=distancia e x[5]=pontos'
[15]  ''
[16]  ' em X (global) esta o ultimo geracaso...'
------------------------------------------------------------
[ 0]  calc x;d;d1;j;lis;m1;mat;ori;r1;z;dc;cc
[ 1] ⍝ antes de chamar este cara:
[ 2] ⍝ MENOR ← infinito, CMENOR←0 20⍴' ', ORIGEM←x,y de onde comeca
[ 3] ⍝ chamada inicial 0,ORIGEM,MATRIZ(sem a origem),0 20⍴' '
[ 4]  d←⊃x[1] ⍝ distancia ate aqui
[ 5]  ori←⊃x[2] ⍝ coordenadas x,y de onde estou
[ 6]  mat←⊃x[3] ⍝ matriz de cidades que falta visitar (nn x 28)
[ 7]  lis←⊃x[4] ⍝ lista de cidades ja visitadas
[ 8] ⍝ 'chamando com '
[ 9] ⍝ (⍕ori),,¯1 20↑lis
[10] ⍝ '-----------------'
[11]  →(1=1↑⍴mat)/sotemuma
[12]  j←1
[13] t1:→(j>1↑⍴mat)/final
[14]  d1←d+ori distancia⍋mat[j;20+⍳4],' ',mat[j;24+⍳4]
[15]  m1←(j≠⍳1↑⍴mat)/[1]mat
[16]  r1←4⍴0
[17]  r1[1]←⊂d1
[18]  r1[2]←⊂⍋mat[j;20+⍳4],' ',mat[j;24+⍳4]
[19]  r1[3]←⊂m1
[20]  r1[4]←⊂lis,[1]1 20⍴mat[j;⍳20]
[21]  calc r1
[22]  j←j+1
[23]  →t1
```

```
[24] final:
[25]  →0
[26] sotemuma:dc←d+ori distancia⍎mat[1;20+⍳4],' ',mat[1;24+⍳4]
[27]  dc←dc+(⍎mat[1;20+⍳4],' ',mat[1;24+⍳4])distancia ORIGEM
[28]  cc←⊂lis,[1]1 20⍴mat[1;⍳20]
[29]  →(dc≥MENOR)/0
[30]  MENOR←dc
[31]  CMENOR←cc
------------------------------------------------------------
[0]  r←demora x;a;b
[1]  a←24 60 60 1000⊥⎕TS[4 5 6 7]
[2]  ⍎x
[3]  b←24 60 60 1000⊥⎕TS[4 5 6 7]
[4]  r←(b-a)÷1000
------------------------------------------------------------
[0]  r←a distancia b
[1]  r←(((a[1]-b[1])*2)+((a[2]-b[2])*2))*0.5
------------------------------------------------------------
[0]  r←a excluivv v;b;c
[1]  b←1↓(v[1]+1)↑v
[2]  c←a≠b
[3]  b←c/b
[4]  r←21↑(v[1]-1),b
------------------------------------------------------------
[0]  geraa
[1]  a←4⍴0
[2]  a[1]←⊂0
[3]  a[2]←⊂20 9
[4]  a[3]←⊂MAT[2 3 4 5 6 7;]
[5]  a[4]←⊂0 20⍴' '
[6]  zera
------------------------------------------------------------
[ 0]  r←geracaso n;x;i;z;mat
[ 1]  x←n?23
[ 2]  x←x[⍋x]
[ 3]  i←?n
[ 4]  z←MATPR[x;]
[ 5]  mat←montadist z
[ 6]  zera
[ 7]  mat tsp 0,(21↑(n-1),(i≠⍳n)/⍳n),21↑1,i
[ 8]  r←5⍴0
[ 9]  r[1]←⊂'¯-'edit 1 numera z     ⍝ matriz de cidades participantes deste exercicio
[10]  r[2]←⊂z[i;⍳20]                 ⍝ cidade inicial e terminal (a mesma)
[11]  r[3]←⊂⍎10 2⍕MENOR              ⍝ comprimento do menor caminho (a resposta)
[12]  r[4]←⊂z[CMENOR[3,1+n];⍳20]     ⍝ a segunda e a penultima cidades percorridas
[13]  r[5]←⊂CMENOR                   ⍝ r[1]=quantidade de numeros validos no vetor
[14] ⍝ r[2..n]=sequencia de visitas no tsp
------------------------------------------------------------
[ 0]  r←geracasoexemplo;x;i;z;mat
[ 1]  x←2 5 6 9 11 14 16 17 18 19
[ 2]  x←x[⍋x]
[ 3]  i←5
[ 4]  z←MATPR[x;]
[ 5]  MATULT←mat←montadist z
[ 6]  zera
[ 7]  n←10
[ 8]  mat tsp 0,(21↑(n-1),(i≠⍳n)/⍳n),21↑1,i
[ 9]  r←5⍴0
[10]  r[1]←⊂'¯-'edit 1 numera z
[11]  r[2]←⊂z[i;⍳20]
[12]  r[3]←⊂⍎10 2⍕MENOR
[13]  r[4]←⊂z[CMENOR[3,1+n];⍳20]
[14]  r[5]←⊂CMENOR
```

```
------------------------------------------------------------
[ 0]  geragaba;x;i;n;z;mat;r;xx
[ 1]  'A seguir, olhe a matriz MATPR e escreva:'
[ 2]  ' a) o vetor de cidades a visitar '
[ 3]  ' b) a cidade inicial/final'
[ 4]  1 numera MATPR
[ 5]  x←⍞
[ 6]  i←⍞
[ 7]  n←⍴x
[ 8]  x←x[⍋x]
[ 9]  z←MATPR[x;]
[10]  mat←montadist z
[11]  zera
[12]  mat tsp 0,(21↑(n-1),(i≠⍳n)/⍳n),21↑1,i
[13]  r←5⍴0
[14]  r[1]←⊂'¯'-'edit 1 numera z
[15]  r[2]←⊂z[i;⍳20]
[16]  r[3]←⊂⍎10 2⍕MENOR
[17]  r[4]←⊂z[CMENOR[3,1+n];⍳20]
[18]  r[5]←⊂CMENOR
[19]  'A menor distancia = ',⊃r[3]
[20]  'Cidades da resposta = ',,⊃r[4]
[21]  'O caminho minimo = ',⍕xx←⊃r[5]
[22]  xx←(xx>0)/xx
[23]  'Distancias = '
[24]  i←2
[25] t3:→(i≥⍴xx)/f8
[26]  'De ',(⍕xx[i]),' para ',(⍕xx[i+1]),' - D=',⍕mat[xx[i];xx[i+1]]
[27]  i←i+1
[28]  →t3
[29] f8:
------------------------------------------------------------
[ 0]  geraquestao;as;i;ii;j;naov;qua;soma;tra;vap;x;x1;z;z1
[ 1]  as←''''
[ 2]  'Suponha o seguinte conjunto de cidades e de dist⍀^ancias entre elas'
[ 3]  x←geracaso 7
[ 4]  x1←'-¯'edit⊃x[1]
[ 5]  x1[;4]←':'
[ 6]  z←7 7⍴0
[ 7]  i←1
[ 8] t1:→(i>7)/fim
[ 9]  j←1
[10] t2:→(j>7)/fi0
[11]  z[i;j]←(⍎,x1[i;24+⍳8])distancia⍎,x1[j;24+⍳8]
[12]  j←j+1
[13]  →t2
[14] fi0:i←i+1
[15]  →t1
[16] fim:
[17]  '⍀begin{verbatim}'
[18]  (24⍴' '),' 1     2     3     4     5     6     7'
[19]  (22⍴' '),' ---   ---   ---   ---   ---   ---   ---'
[20]  x1[;⍳20],6 0⍕z
[21]  z1←7 7⍴⍎,6 0⍕z
[22]  '⍀end{verbatim}'
[23]  ' Supondo a cidade inicial = ',x1[1;4+⍳20],' calcule o TSP usando'
[24]  ' o algoritmo guloso (v⍀',as,'a para a mais pr⍀',as,'oxima ainda n⍀~ao visitada)'
[25]  'e calcule o valor do TSP (ou TCV em portugu⍀^es) medido em quil⍀^ometros.'
[26]  'Informe tamb⍀',as,'em a sequ⍀^encia de cidades visitadas, come⍀c cando e'
[27]  'terminando na cidade 1.'
[28]  soma←0
[29]  naov←2 3 4 5 6 7
[30]  ii←1
```

```
[31]  tra←1
[32] t4:→(0=ρnaov)/acabou
[33]  soma←soma+qua←⌊/,z1[ii;naov]
[34]  vap←(,qua=z1[(,ii);naov])/naov
[35]  ii←vap
[36]  tra←tra,vap
[37]  naov←(vap≠naov)/naov
[38]  →t4
[39] acabou:
[40]  soma←soma+z1[vap;1]
[41]  tra←tra,1
[42]  'soma ',(⍕soma),' e tra ',⍕tra
-------------------------------------------------------------
[0]  r←geratabela n;z
[1]  z←(n,2)ρ0
[2]  z[;1]←⍳n
[3]  z[;2]←0,¯1↓⌈(!⍳n)÷2
[4]  r←((n+2),38)ρ' '
[5]  r[1;]←38↑'numero cidades     quantidade de rotas'
[6]  r[2;]←38↑'      --------      ------------------'
[7]  r[2+⍳n;]←14 0 24 0⍕z
-------------------------------------------------------------
[ 0]  r←guloso x;a;b;d;i;j;ultim;faltam;QUANTO;QUAL;ds;distt
[ 1] ⍝ x e um ρ5, gerado pela funcao "geracaso"
[ 2]  QUANTO←0 ⋄ QUAL←⍳0
[ 3]  b←0 4↓'-¯'edit⊃x[1]
[ 4]  d←(a,a←1↑ρb)ρ0
[ 5]  i←1
[ 6] t1:→(i>a)/fim
[ 7]  j←1
[ 8] t2:→(j>a)/soma
[ 9]  d[i;j]←d[j;i]←((((⍪b[i;20+⍳4])-⍪b[j;20+⍳4])*2)+((⍪b[i;24+⍳4])-⍪b[j;24+⍳4])*2)*0.5
[10]  →(i≠j)/ufa
[11]  d[i;j]←999999
[12] ufa:
[13]  j←j+1
[14]  →t2
[15] soma:i←i+1
[16]  →t1
[17] fim:dd←d
[18]  QUAL←ultim←(⊃x[5])[2]
[19]  distt←d[;ultim]
[20] novo:
[21]  d[;ultim]←999999
[22]  ds←(,d[ultim;]=⌊/d[ultim;])/⍳1↑ρd
[23]  →(999999=⌊/d[ultim;])/acabou
[24]  QUAL←QUAL,ds
[25]  QUANTO←QUANTO+,d[ultim;ds]
[26]  ultim←ds
[27]  →novo
[28] acabou:QUANTO←QUANTO+distt[QUAL[ρQUAL]]
[29]  r←QUANTO,QUAL,QUAL[1]
-------------------------------------------------------------
[ 0]  r←montadist mat;li;i;j
[ 1]  r←(2ρ(li←1↑ρmat))ρ0
[ 2]  i←1
[ 3] t1:→(i>li)/fim
[ 4]  j←1
[ 5] t2:→(j>li)/soma
[ 6]  r[i;j]←(⍪mat[i;20+⍳4],' ',mat[i;24+⍳4])distancia⍪mat[j;20+⍳4],' ',mat[j;24+⍳4]
[ 7]  j←j+1
[ 8]  →t2
[ 9] soma:i←i+1
```

```
[10]  →t1
[11] fim:
------------------------------------------------------------
[0]  r←mostratsp x
[1]  MUN←MUN+1
[2]  r←(⍕MUN),' - ',⍕1↓(x≠0)/x
------------------------------------------------------------
[ 0]  r←preenchematriz;x;i;j;d1;d2;d3
[ 1]  x←23 23⍴0
[ 2]  i←1
[ 3] t1:→(i>23)/fim
[ 4]  j←1
[ 5] t2:→(j>23)/soma
[ 6]  d1←((⍎MATPR[i;20+⍳4])-⍎MATPR[j;20+⍳4])*2
[ 7]  d2←((⍎MATPR[i;24+⍳4])-⍎MATPR[j;24+⍳4])*2
[ 8]  d3←(d1+d2)*0.5
[ 9]  x[i;j]←x[j;i]←d3
[10]  j←j+1
[11]  →t2
[12] soma:i←i+1
[13]  →t1
[14] fim:r←x
------------------------------------------------------------
[ 0]  matdist tsp vv;d1;dc;j;novojav;novovis;vvfutu;vvdist;vvpass
[ 1]  vvdist←vv[1]
[ 2]  vvfutu←vv[1+⍳21]
[ 3]  vvpass←vv[22+⍳21]
[ 4]  →(vvfutu[1]=1)/souma
[ 5]  j←1
[ 6] t1:→(j>vvfutu[1])/terminou
[ 7]  d1←vvdist+matdist[vvpass[1+vvpass[1]];vvfutu[1+j]]
[ 8]  novovis←vvfutu[j+1]excluivv vvfutu
[ 9]  novojav←vvpass
[10]  novojav[1]←novojav[1]+1
[11]  novojav[1+novojav[1]]←vvfutu[j+1]
[12]  matdist tsp d1,novovis,novojav
[13]  j←j+1
[14]  →t1
[15] terminou:→0
[16] souma:dc←vvdist+matdist[vvpass[1+vvpass[1]];vvfutu[2]]
[17]  dc←dc+matdist[vvfutu[2];vvpass[2]]
[18]  vvpass[vvpass[1]+2]←vvfutu[2]
[19]  vvpass[vvpass[1]+3]←vvpass[2]
[20]  vvpass[1]←vvpass[1]+2
[21] ⍝ mostratsp vvpass
[22]  →(dc≥MENOR)/0
[23]  MENOR←dc
[24]  CMENOR←vvpass
------------------------------------------------------------
[ 0]  opesq vivo259b n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;nomes;num
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL259b  '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA259b←ajusta80 FOLHALA259b
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA259b)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
```

```
[12]  xk←1 ⋄ resu←0 3⍴0
[13]  ylu←n grupo ylu
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←16 80⍴' '
[16]  f←FOLHALA259b
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOh←1.01
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:
[28]  esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[32]  esse[15;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[16;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] ini1:
[35]  X←zz←geracaso 6
[36]  esse[7+⍳6;]←6 80↑⊃zz[1]
[37]  esse[14;]←80↑⊃zz[2]
[38]  ULT←⊃zz[5]
[39]  resp←resp,(⊃zz[3]),1↑guloso zz
[40]  resu←resu,[1]1 3⍴resp
[41]  acuja←(f[;2]='#')/⍳1↑⍴f
[42]  f[acuja;]←esse[⍤,f[acuja;3 4],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[44]  ⍞←(⍕xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+⍴f)⍴' '
[47]  →(1=≡n)/elafa
[48]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[49]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[50]  upag[2+⍳1↑⍴resu;⍳26]←3 0 13 2 10 2⍕resu
[51]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[52]  →terminando
[53] elafa:aaa←ylu,10 2⍕0 1↓resu
[54]  lixonol←aaa ⎕FM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[55]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[56] terminando:
[57]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[58]  relat[1↑⍴relat;;]←upag
[59]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[60] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[61]  lixonol←lixonol ⎕FM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[62]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[ 0]  opesq vivo259e n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;nomes;num
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu;zz
[ 1]  'demora...'
[ 2]  →(0≠⎕NC'opesq')/qveio
[ 3]  opesq←10⍴' '
[ 4] qveio:
[ 5]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 6]  EVENTO←'PL259e  '
[ 7]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
```

```
[ 9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[10]  FOLHALA259e←ajusta80 FOLHALA259e
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA259e)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 54⍴' '
[14]  ylu←n grupo ylu
[15] testa:→(xk>1↑⍴ylu)/fim
[16]  esse←20 80⍴' '
[17]  f←FOLHALA259e
[18]  esse[1;]←80↑dhx[1;]
[19]  esse[2;]←80↑dhx[2;]
[20]  esse[3;]←80↑4 2⍕VERSAOe←1.01
[21]  esse[4;]←80↑ylu[xk;⍳6]
[22]  →(36=1↓⍴ylu)/zebra
[23]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[24]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[25]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[26]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[27]  →maiszebra
[28] zebra:
[29]  esse[5;]←80↑ylu[xk;6+⍳30]
[30] maiszebra:
[31]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[32]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[33]  esse[19;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[34]  esse[20;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[35] ini1:
[36]  X←zz←geracaso 9 ⍝ mudar para 10
[37]  esse[7+⍳10;]←10 80↑⊃zz[1]
[38]  esse[18;]←80↑⊃zz[2]
[39]  ULT←⊃zz[5]
[40]  resp←(3 0⍕resp),(10 1⍕⊃zz[3]),' ',,⊃zz[4]
[41]  resu←resu,[1]1 54⍴resp
[42]  acuja←(f[;2]='#')/⍳1↑⍴f
[43]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[44]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[45]  ⍞←(⍕xk←xk+1),'-'
[46]  →testa
[47] fim:upag←(1 0+⍴f)⍴' '
[48]  →(1=≡n)/elafa
[49]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[50]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[51]  upag[2+⍳1↑⍴resu;⍳54]←resu
[52]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[53]  →terminando
[54] elafa:aaa←(ylu,0 3↓resu)
[55]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[56]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[57] terminando:
[58]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[59]  relat[1↑⍴relat;;]←upag
[60]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[61] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[62]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[63]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[ 0]  opesq vivo259h n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;nomes;num
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu;zz
[ 1]  'demora...'
[ 2]  →(0≠⎕NC'opesq')/qveio
[ 3]  opesq←10⍴' '
[ 4] qveio:
[ 5]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
```

```
[ 6]  EVENTO←'PL259h  '
[ 7]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[10]  FOLHALA259h←ajusta80 FOLHALA259h
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA259h)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 54⍴' '
[14]  ylu←n grupo ylu
[15] testa:→(xk>1↑⍴ylu)/fim
[16]  esse←20 80⍴' '
[17]  f←FOLHALA259h
[18]  esse[1;]←80↑dhx[1;]
[19]  esse[2;]←80↑dhx[2;]
[20]  esse[3;]←80↑4 2⍎VERSAOh←1.01
[21]  esse[4;]←80↑ylu[xk;⍳6]
[22]  →(36=1↓⍴ylu)/zebra
[23]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[24]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[25]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[26]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[27]  →maiszebra
[28] zebra:
[29]  esse[5;]←80↑ylu[xk;6+⍳30]
[30] maiszebra:
[31]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[32]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[33]  esse[19;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[34]  esse[20;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[35] ini1:
[36]  X←zz←geracaso 9 ⍝ mudar para 10
[37]  esse[7+⍳10;]←10 80↑⊃zz[1]
[38]  esse[18;]←80↑⊃zz[2]
[39]  ULT←⊃zz[5]
[40]  resp←(3 0⍎resp),(10 1⍎⊃zz[3]),' ',,⊃zz[4]
[41]  resu←resu,[1]1 54⍴resp
[42]  acuja←(f[;2]='#')/⍳1↑⍴f
[43]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[44]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[45]  ⍞←(⍎xk←xk+1),'-'
[46]  →testa
[47] fim:upag←(1 0+⍴f)⍴' '
[48]  →(1=≡n)/elafa
[49]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[50]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[51]  upag[2+⍳1↑⍴resu;⍳54]←resu
[52]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[53]  →terminando
[54] elafa:aaa←(ylu,0 3↓resu)
[55]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[56]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[57] terminando:
[58]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[59]  relat[1↑⍴relat;;]←upag
[60]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[61] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[62]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[63]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[0]  zera
[1]  MENOR←999999999
[2]  CMENOR←''
```

```
[3]  MUN←0
-------------------------------------------------------------
```

vivo260

```
[0]  AVISO
[1]  'Pretendia fazer uma folha VIVO260p com os codigos em APL e falando'
[2]  'sobre os maravilhosos desenhadores de arvores feitos em APL'
[3]  'cai do cavalo: o ambiente PC850 nao aceita caracteres APL e dai'
[4]  'para nao esquentar a cabeca deixei esta empreitada em banho maria'
[5]  ''
[6]  ' de qualquer maneira FOLHALA260p e vivo260p estao ai mais ou menos feitos...'
-------------------------------------------------------------
[ 0]  r←caminha260;lista;ru
[ 1]  lista←⍳0
[ 2]  lista←,1
[ 3]  ru←⍳0
[ 4] tem:→(0=⍴lista)/acabou
[ 5]  ru←ru,TABARV[lista[1];3]
[ 6]  →(TABARV[lista[1];1]=¯1)/mais1
[ 7]  lista←lista,TABARV[lista[1];1]
[ 8] mais1:
[ 9]  →(TABARV[lista[1];2]=¯1)/mais2
[10]  lista←lista,TABARV[lista[1];2]
[11] mais2:
[12]  lista←1↓lista
[13]  →tem
[14] acabou:r←ru
-------------------------------------------------------------
[0]  emordem raiz
[1]  →(TABARV[raiz;0]=¯1)/ufa
[2]  emordem TABARV[raiz;1]
[3] ufa:
[4]  TABARV[raiz;3]
[5]  →(TABARV[raiz;2]=¯1)/foi
[6]  emordem TABARV[raiz;2]
[7] foi:
-------------------------------------------------------------
[ 0]  r←excluiabp260 valor;aaux;esqdir;pai;elemx;onde;save;tempo
[ 1] ⍝ 'entrando com ',(  ⍕raiz),  ⍕valor
[ 2] ⍝ OBSERVACAO IMPORTANTE: por questoes de simplicidade (nao ha descritor
[ 3] ⍝ na arvore) NAO E POSSIVEL escluir o raiz usando esta funcao.
[ 4] ⍝ 'excluindo ',(  ⍕valor),' em ',  ⍕raiz
[ 5]  aaux←pai←1
[ 6]  esqdir←0
[ 7] inica:→(TABARV[aaux;3]=valor)/achou
[ 8]  →(valor<TABARV[aaux;3])/menor
[ 9] maior:esqdir←1
[10]  pai←aaux
[11]  aaux←TABARV[aaux;2]
[12]  →inica
[13] menor:esqdir←0
[14]  pai←aaux
[15]  aaux←TABARV[aaux;1]
[16]  →inica
[17] achou:elemx←aaux
[18]  →(2=+/TABARV[elemx;1 2]=¯1 ¯1)/temnenhum
[19]  →(TABARV[elemx;1]=¯1)/temdireito
[20]  →(TABARV[elemx;2]=¯1)/temesquerdo
[21] temos2:save←elemx
[22]  elemx←TABARV[elemx;2]
[23] truta:→(TABARV[elemx;1]=¯1)/achou8
```

```
[24]  elemx←TABARV[elemx;1]
[25]  →truta
[26] achou8:
[27]  tempo←excluiabp260 TABARV[elemx;3]
[28] ⍝ 'aux=',  ⍕aaux
[29] ⍝ 'tempo=',  ⍕tempo
[30]  TABARV[aaux;3]←TABARV[tempo;3]
[31]  r←aaux
[32]  →fimdetudo
[33] temesquerdo:
[34]  TABARV[pai;1+esqdir]←TABARV[elemx;1]
[35]  r←elemx
[36]  →fimdetudo
[37] temdireito:
[38]  TABARV[pai;1+esqdir]←TABARV[elemx;2]
[39]  r←elemx
[40]  →fimdetudo
[41] temnenhum:
[42]  TABARV[pai;1+esqdir]←¯1
[43]  r←elemx
[44] fimdetudo:
------------------------------------------------------------
[0]  geraarv260
[1]  TABARV←25 3⍴¯1
[2]  ULTIMO←0
------------------------------------------------------------
[ 0]  r←geracaso260;i;lixo;ru;inc;exc
[ 1] ⍝ 20 inclusoes e 6 exclusoes
[ 2]  inc←20?99
[ 3]  exc←inc[6?20]
[ 4]  geraarv260
[ 5]  i←1
[ 6] t1:→(i>⍴inc)/oba
[ 7]  incluiabp260 inc[i]
[ 8]  i←i+1
[ 9]  →t1
[10] oba:i←1
[11] t2:→(i>⍴exc)/foi
[12]  lixo←excluiabp260 exc[i]
[13]  i←i+1
[14]  →t2
[15] foi:ru←caminha260
[16]  r←4 14⍴0
[17]  r[1;⍳10]←inc[⍳10]
[18]  r[2;⍳10]←inc[10+⍳10]
[19]  r[3;⍳6]←exc
[20]  r[4;]←ru
------------------------------------------------------------
[ 0]  incluiabp260 valor;onde;pai;esqdir
[ 1]  →(TABARV[1;3]≠¯1)/naovazia
[ 2] vazia:
[ 3]  TABARV[1;3]←valor
[ 4]  ULTIMO←ULTIMO+1
[ 5]  r←0
[ 6]  →fim
[ 7] naovazia:ULTIMO←ULTIMO+1
[ 8]  TABARV[ULTIMO;]←¯1,¯1,valor
[ 9]  onde←1
[10] busca:→(valor<TABARV[onde;3])/emenor
[11] maior:esqdir←1
[12]  pai←onde
[13]  onde←TABARV[onde;2]
[14]  →testa
```

```
[15] emenor:esqdir←0
[16]  pai←onde
[17]  onde←TABARV[onde;1]
[18] testa:→(onde≠¯1)/busca
[19]  TABARV[pai;1+esqdir]←ULTIMO
[20] fim:
------------------------------------------------------------
[ 0]  r←pesq260c x
[ 1]  →(TABARV[0;3]≠¯1)/vai
[ 2]  r←¯1
[ 3]  →0
[ 4] vai:raiz←0
[ 5] testa:
[ 6]  →(raiz=¯1)/naoachou
[ 7]  →(TABARV[raiz;3]=x)/achou
[ 8]  →(TABARV[raiz;3]<x)/menor
[ 9] maior:raiz←TABARV[raiz;1]
[10]  →testa
[11] menor:raiz←TABARV[raiz;2]
[12]  →testa
[13] achou:r←raiz
[14]  →0
[15] naoachou:
[16]  r←¯1
------------------------------------------------------------
[ 0]  opesq vivo260b n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL260b  '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA260b←ajusta80 FOLHALA260b
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA260b)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALA260b
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOb←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracaso260
[35]  esse[7+⍳2;]←2 80↑⍎xx[1 2;⍳10]
```

```
[36]  esse[10;]←80↑⍕xx[3;⍳6]
[37]  resp←resp,,xx[4;10 13]
[38]  resu←resu,[1]1 3⍴resp
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[42]  ⎕←(⍕xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍕resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[52]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo260c n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL260c  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA260c←ajusta80 FOLHALA260c
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA260c)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALA260c
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOb←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracaso260
```

```
[35]  esse[7+⍳2;]←2 80↑⍕xx[1 2;⍳10]
[36]  esse[10;]←80↑⍕xx[3;⍳6]
[37]  resp←resp,,xx[4;10 13]
[38]  resu←resu,[1]1 3⍴resp
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;⍳80]←esse[⌽,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[42]  ⎕←(⍕xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍕resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[52]  lixonol←aaa ⍙FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol ⍙FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo260p n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL260p  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⍙FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA260p←ajusta80 FOLHALA260p
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA260p)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⍙FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALA260p
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOb←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
```

```
[34]  xx←geracaso260
[35]  esse[7+⍳2;]←2 80↑⍕xx[1 2;⍳10]
[36]  esse[10;]←80↑⍕xx[3;⍳6]
[37]  resp←resp,,xx[4;10 13]
[38]  resu←resu,[1]1 3⍴resp
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[42]  ⎕←(⍕xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍕resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[52]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo261

```
[0]  r←acerta261 x;y;z
[1]  y←⊃x
[2]  z←(10 5⍴5 2⍕y[⍳10;1]),',',(10 5⍴5 2⍕y[⍳10;2]),(10 20⍴' ')
[3]  z←z,[2](10 5⍴5 2⍕y[10+⍳10;1]),',',(10 5⍴5 2⍕y[10+⍳10;2])
[4]  r←10 80↑z
------------------------------------------------------------
[0]  r←area lm
[1]  r←(lm[2]-lm[1])×lm[4]-lm[3]
------------------------------------------------------------
[ 0]  p criaakd1 lm;x;i;pai
[ 1]  →(1≥1↑⍴p)/0
[ 2]  x←p gerafilhos1 lm
[ 3]  i←1
[ 4] t1:→(i>4)/fim
[ 5]  →(x[i;5]=0)/soma
[ 6]  ARV←ARV,[1]1 13⍴x[i;],PAI,(area x[i;⍳4]),0,0,0,0,0
[ 7]  ARV[PAI;8+i]←1↑⍴ARV
[ 8]  →(x[i;5]=1)/naotem
[ 9]  ARV[1↑⍴ARV;13]←0
[10]  pai←PAI
[11]  PAI←1↑⍴ARV
[12]  (⊃x[i;6])criaakd1 x[i;⍳4]
[13]  PAI←pai
[14]  →soma
[15] naotem:
[16]  ARV[1↑⍴ARV;13]←1
[17] soma:
[18]  i←i+1
[19]  →t1
[20] fim:
------------------------------------------------------------
```

```
[ 0]  p criaakd2 lm;x;i;pai
[ 1]  →(1≥1↑⍴p)/0
[ 2]  x←p gerafilhos2 lm
[ 3]  i←1
[ 4] t1:→(i>4)/fim
[ 5]  →(x[i;5]=0)/soma
[ 6]  ARV←ARV,[1]1 13⍴x[i;],PAI,(area x[i;⍳4]),0,0,0,0,0
[ 7]  ARV[PAI;8+i]←1↑⍴ARV
[ 8]  →(x[i;5]=1)/naotem
[ 9]  ARV[1↑⍴ARV;13]←0
[10]  pai←PAI
[11]  PAI←1↑⍴ARV
[12]  (⊃x[i;6])criaakd2 x[i;⍳4]
[13]  PAI←pai
[14]  →soma
[15] naotem:
[16]  ARV[1↑⍴ARV;13]←1
[17] soma:
[18]  i←i+1
[19]  →t1
[20] fim:
------------------------------------------------------------
[0]  p criazero lm
[1]  ARV←1 13⍴lm,(1↑⍴p),(⊂p),¯1,(area lm),5⍴0
[2]  PAI←1
------------------------------------------------------------
[ 0]  r←geracaso261;x;y;w
[ 1] inicio:
[ 2]  x←20 gerapontos 0 10 0 8
[ 3]  x criazero 0 10 0 8
[ 4]  x criaakd1 0 10 0 8
[ 5]  y←mostramen ARV
[ 6]  r←5⍴0
[ 7]  r[1]←⊂x
[ 8]  r[2]←⊂y[1;3]
[ 9]  w←+/y[;3]=⌊/y[;3]
[10]  →(w=1)/ok1
[11]  □←'*'
[12]  →inicio
[13] ok1:
[14]  r[3]←⊂y[1;1 2]
[15]  w←+/y[;3]=⌈/y[;3]
[16]  →(w=1)/ok2
[17]  □←'o'
[18]  →inicio
[19] ok2:
[20]  r[4]←⊂y[20;3]
[21]  r[5]←⊂y[20;1 2]
------------------------------------------------------------
[ 0]  r←pontos gerafilhos1 n;cortex;cortey;cx;cy;i;ps;pres
[ 1]  →(1≥1↑⍴pontos)/0
[ 2] ⍝ n=xmin, xmax, ymin, ymax
[ 3]  ps←pontos quemsao n
[ 4]  cx←ps[⍋ps[;1];]
[ 5]  cy←ps[⍋ps[;2];]
[ 6]  →(0=2|1↑⍴cx)/cxpar
[ 7] cximpar:cortex←cx[⌈0.5×1↑⍴cx;1]
[ 8]  cortey←cy[⌈0.5×1↑⍴cy;2]
[ 9]  →juntax
[10] cxpar:cortex←0.5×,+/cx[((0.5×1↑⍴cx),1+0.5×1↑⍴cx);1]
[11]  cortey←0.5×+/,cy[((0.5×1↑⍴cy),1+0.5×1↑⍴cy);2]
[12] juntax:r←4 6⍴0
[13] ⍝ 'cortex=',(⍕cortex),'   cortey=',⍕cortey
```

```
[14]  r[1;⍳4]←n[1],cortex,n[3],cortey
[15]  r[2;⍳4]←cortex,n[2],n[3],cortey
[16]  r[3;⍳4]←n[1],cortex,cortey,n[4]
[17]  r[4;⍳4]←cortex,n[2],cortey,n[4]
[18]  i←1
[19] t2:→(i>4)/fim
[20]  r[i;5]←1↑⍴pres←ps quemsao r[i;⍳4]
[21]  r[i;6]←⊂pres
[22]  ps←ps menos pres
[23]  i←i+1
[24]  →t2
[25] fim:
-------------------------------------------------------------
[ 0]  r←pontos gerafilhos2 n;cortex;cortey;cx;cy;i;ps;pres
[ 1]  →(1≥1↑⍴pontos)/0
[ 2] ⍝ n=xmin, xmax, ymin, ymax
[ 3]  ps←pontos quemsao n
[ 4]  cortex←(n[1]+n[2])÷2
[ 5]  cortey←(n[3]+n[4])÷2
[ 6] juntax:r←4 6⍴0
[ 7] ⍝ 'cortex=',(⍕cortex),'   cortey=',⍕cortey
[ 8]  r[1;⍳4]←n[1],cortex,n[3],cortey
[ 9]  r[2;⍳4]←cortex,n[2],n[3],cortey
[10]  r[3;⍳4]←n[1],cortex,cortey,n[4]
[11]  r[4;⍳4]←cortex,n[2],cortey,n[4]
[12]  i←1
[13] t2:→(i>4)/fim
[14]  r[i;5]←1↑⍴pres←ps quemsao r[i;⍳4]
[15]  r[i;6]←⊂pres
[16]  ps←ps menos pres
[17]  i←i+1
[18]  →t2
[19] fim:
-------------------------------------------------------------
[ 0]  r←n gerapontos lims;i;alfa
[ 1] inicio:
[ 2]  i←1
[ 3]  r←(n,2)⍴0
[ 4] t1:→(i>n)/fim
[ 5]  alfa←((?⌈¯1+lims[2]-lims[1])+⌊lims[1]),((?⌈¯1+lims[4]-lims[3])+⌊lims[3])
[ 6] t2:
[ 7] ⍝→(0≠+/(alfa[1]=,r[⍳¯1+i;1])∧(alfa[2]=,r[⍳¯1+i;2]))/naopode
[ 8]  →(0=+/alfa[1]=,r[⍳¯1+i;1])/soma1
[ 9]  alfa[1]←alfa[1]+0.1×?3
[10] soma1:
[11]  →(0=+/alfa[2]=,r[⍳¯1+i;2])/soma2
[12]  alfa[2]←alfa[2]+0.1×?3
[13]  →t2
[14] soma2:
[15]  r[i;]←alfa
[16]  i←i+1
[17]  →t1
[18] fim:→((lims[2]≥⌈/,r[;1])∧(lims[4]≥⌈/,r[;2]))/ok3
[19]  ⍞←'%'
[20]  →inicio
[21] ok3:
-------------------------------------------------------------
[0]  r←antes menos atual;i
[1]  r←0 2⍴0
[2]  i←1
[3] t1:→(i>1↑⍴antes)/fim
[4]  →(∨/(antes[i;1]=,atual[;1])∧(antes[i;2]=,atual[;2]))/mata
[5]  r←r,[1]antes[i;]
```

```
[6] mata:i←i+1
[7]  →t1
[8] fim:
-------------------------------------------------------------
[ 0]  r←mostramen x;i
[ 1]  r←0 14⍴0
[ 2]  i←1
[ 3] t1:→(i>1↑⍴x)/fim
[ 4]  →(x[i;5]≠1)/soma
[ 5]  r←r,[1]1 14⍴x[i;⍳5],(,⊃x[i;6]),x[i;6+⍳6]
[ 6] soma:i←i+1
[ 7]  →t1
[ 8] fim:
[ 9]  r←r[⍋r[;9];6 7 9]
-------------------------------------------------------------
[0]  r←p quemsao lm;rx
[1]  rx←((lm[1]≤p[;1])∧(p[;1]≤lm[2]))∧((lm[3]≤p[;2])∧(p[;2]≤lm[4]))
[2]  r←rx/[1]p
-------------------------------------------------------------
[ 0]  opesq vivo261a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL261   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA261←ajusta80 FOLHALA261
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA261)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 5⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←21 80⍴' '
[16]  f←FOLHALA261
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[20;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[21;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracaso261
[35]  esse[7+⍳10;]←10 80↑acerta261⊃xx[1]
[36]  esse[18;]←80↑⍎⊃xx[2]
[37]  esse[19;]←80↑⍎⊃xx[4]
[38]  resp←resp,,(,⊃xx[3]),,⊃xx[5]
[39]  resu←resu,[1]1 5⍴resp
[40]  acuja←(f[;2]='#')/⍳1↑⍴f
[41]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
```

```
[42]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[43]  ⍞←(⍕xk←xk+1),'-'
[44]  →testa
[45] fim:upag←(1 0+⍴f)⍴' '
[46]  →(1=≡n)/elafa
[47]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[48]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[49]  upag[2+⍳1↑⍴resu;⍳61]←5 0 10 2 8 2 30 2 8 2⍕resu
[50]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[51]  →terminando
[52] elafa:aaa←(ylu[;⍳36],9 2⍕0 1↓resu)
[53]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[54]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[55] terminando:
[56]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[57]  relat[1↑⍴relat;;]←upag
[58]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[59]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[60]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[61]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo262

```
[0]  AVISO
[1]  'Por enquanto este cara nao usa o GPA, mas deixei gera-lo vazio'
[2]  'para o caso de querer mudar la na frente'
------------------------------------------------------------
[ 0]  opesq vivo262a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL262   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA262←ajusta80 FOLHALA262
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA262)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALA262
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
```

```
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34] ⍝ xx←geracaso
[35] ⍝ esse[7+⍳3;]←3 80↑acertaca xx
[36] ⍝ resp←resp,,xx[2 3;5]
[37]  resu←resu,[1]1 3⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⍞←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍕resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[51]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo263

```
[0]  AVISO
[1]  'Por enquanto este cara nao usa o GPA, mas deixei gera-lo vazio'
[2]  'para o caso de querer mudar la na frente'
[3]  ''
[4]  ' Na variavel R esta a ultima solucao achada - explicada'
------------------------------------------------------------
[ 0]  r←tableaux mat;co;i;aux;li;lipi;aux0;aux1
[ 1]  R←0 78⍴' ' ⍝ contem a resolucao do tableaux etapa a etapa
[ 2]  R←R,[1]1 78⍴78↑'Matriz original'
[ 3]  R←R,[1]((1↑⍴mat),78)↑⍕mat
[ 4] volta:
[ 5]  →((1↓⍴mat)=+/mat[1;]≥0)/acabou
[ 6]  co←mat[1;]⍳(⌊/mat[1;])
[ 7]  i←1 ⋄ aux0←⍳0 ⋄ aux1←⍳0
[ 8] t0:→(i>1↑⍴mat)/oba
[ 9]  →(mat[i;co]≤0)/soma
[10]  aux0←aux0,mat[i;1↓⍴mat]÷mat[i;co]
[11]  aux1←aux1,i
[12] soma:
[13]  i←i+1
[14]  →t0
[15] oba:
[16]  aux←aux0⍳⌊/aux0
[17]  li←aux1[aux]
[18]  R←R,[1]1 78⍴78↑'Pivot li=',(⍕li),'     co=',(⍕co),'    valor=',⍕mat[li;co]
[19]  lipi←mat[li;]÷mat[li;co] ⍝ linha dividida pelo pivot
[20]  i←1
[21] t1:→(i>1↑⍴mat)/fi
[22]  →(i=li)/propia
[23]  →(mat[i;co]>0)/pos
```

```
[24] neg:
[25]  mat[i;]←mat[i;]+(|mat[i;co])×lipi
[26]  i←i+1
[27]  →t1
[28] pos:
[29]  mat[i;]←mat[i;]-(|mat[i;co])×lipi
[30]  i←i+1
[31]  →t1
[32] propia:
[33]  mat[i;]←lipi
[34]  i←i+1
[35]  →t1
[36] fi:
[37]  R←R,[1]((1↑⍴mat),78)↑⍕mat
[38]  R←R,[1]1 78⍴' '
[39]  →volta
[40] acabou:
[41]  r←mat
------------------------------------------------------------
[ 0]  opesq vivo263a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL263   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA263←ajusta80 FOLHALA263
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA263)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALA263
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34] ⍝ xx←geracaso
[35] ⍝ esse[7+⍳3;]←3 80↑acertaca xx
[36] ⍝ resp←resp,,xx[2 3;5]
[37]  resu←resu,[1]1 3⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⍞←(⍕xk←xk+1),'-'
```

```
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍕resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[51]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo265

```
[0]  AVISO
[1]  'Limitado a 99 exemplares'
-------------------------------------------------------------
[ 0]  r←euler81exemplo;x;i;j
[ 1]  x←131 673 234 103 18
[ 2]  x←x,201 96 342 965 150
[ 3]  x←x,630 803 746 422 111
[ 4]  x←x,537 699 497 121 956
[ 5]  x←x,805 732 524 37 331
[ 6]  x←5 5⍴x
[ 7]  x
[ 8]  i←4
[ 9] t1:→(i<1)/f1
[10]  x[5;i]←x[5;i]+x[5;i+1]
[11]  x[i;5]←x[i;5]+x[(i+1);5]
[12]  i←i-1
[13]  'i=',⍕i
[14]  x
[15]  '----'
[16]  →t1
[17] f1:⍞'--------------------'
[18] ⍞ x
[19]  '----------------'
[20]  i←4
[21] t2:→(i<1)/f5
[22]  j←4
[23] t3:→(j<1)/f6
[24]  x[i;j]←x[i;j]+x[i+1;j]⌊x[i;j+1]
[25]  j←j-1
[26]  →t3
[27] f6:i←i-1
[28]  'segunda volta'
[29]  'i=',⍕i
[30]  x
[31]  →t2
[32] f5:
[33] ⍞'resultado final ------------'
[34] ⍞ x
-------------------------------------------------------------
[ 0]  euler82exemplo;x;tam;sol;i;j
```

```
[ 1]  x←131 673 234 103 18
[ 2]  x←x,201 96 342 965 150
[ 3]  x←x,630 803 746 422 111
[ 4]  x←x,537 699 497 121 956
[ 5]  x←x,805 732 524 37 331
[ 6]  x←5 5⍴x
[ 7]  x
[ 8]  tam←5
[ 9]  sol←5⍴0
[10]  i←1
[11] t1:→(i>tam)/f1
[12]  sol[i]←x[i;tam]
[13]  i←i+1
[14]  →t1
[15] f1:
[16]  '------------'
[17]  sol
[18]  '----------'
[19]  i←tam-1
[20] t2:→(i<1)/f2
[21]  sol[1]←sol[1]+x[1;i]
[22]  j←2
[23]  'sol apos a linha 7 do algoritmo na folha'
[24]  sol
[25] t3:→(j>tam)/f3
[26]  sol[j]←(sol[j-1]+x[j;i])⌊(sol[j]+x[j;i])
[27]  j←j+1
[28]  'apos a linha 10, j vale ',⍕j
[29]  sol
[30]  '---------'
[31]  →t3
[32] f3:j←tam-1
[33] t4:→(j<1)/f5
[34]  sol[j]←sol[j]⌊sol[j+1]+x[j;i]
[35]  j←j-1
[36]  'apos a linha 15, j vale ',⍕j
[37]  sol
[38]  '=====''
[39]  →t4
[40] f5:i←i-1
[41]  →t2
[42] f2:⌊/sol
-------------------------------------------------------------
[ 0]  r←gera67;x;i;j
[ 1]  r←2⍴0
[ 2]  x←100 100⍴?10000⍴999
[ 3]  i←1
[ 4] t1:→(i>100)/f1
[ 5]  j←1
[ 6] t2:→(j>100)/f2
[ 7]  →(j≤i)/soma
[ 8]  x[i;j]←0
[ 9] soma:j←j+1
[10]  →t2
[11] f2:i←i+1
[12]  →t1
[13] f1:
[14] ⍝ dados estao em x
[15]  r[1]←⊂x
[16]  i←99
[17] t11:→(i<1)/fim
[18]  j←1
[19] t21:→(j>i)/vorta
```

```
[20]  x[i;j]←x[i;j]+x[i+1;j]⌈x[i+1;j+1]
[21]  j←j+1
[22]  →t21
[23] vorta:i←i-1
[24]  →t11
[25] fim:r[2]←⊂x[1;1]
-------------------------------------------------------------
[ 0]  r←gera81;x;i;j
[ 1]  r←2⍴0
[ 2]  x←80 80⍴?6400⍴999
[ 3]  r[1]←⊂x
[ 4]  i←79
[ 5] t1:→(i<1)/f1
[ 6]  x[80;i]←x[80;i]+x[80;i+1]
[ 7]  x[i;80]←x[i;80]+x[(i+1);80]
[ 8]  i←i-1
[ 9]  →t1
[10] f1:
[11]  i←79
[12] t2:→(i<1)/f5
[13]  j←79
[14] t3:→(j<1)/f6
[15]  x[i;j]←x[i;j]+x[i+1;j]⌊x[i;j+1]
[16]  j←j-1
[17]  →t3
[18] f6:i←i-1
[19]  →t2
[20] f5:r[2]←⊂x[1;1]
-------------------------------------------------------------
[ 0]  r←gera82;x;tam;sol;i;j
[ 1]  r←2⍴0
[ 2]  x←80 80⍴?6400⍴999
[ 3]  r[1]←⊂x
[ 4]  tam←80
[ 5]  sol←80⍴0
[ 6]  i←1
[ 7] t1:→(i>tam)/f1
[ 8]  sol[i]←x[i;tam]
[ 9]  i←i+1
[10]  →t1
[11] f1:i←tam-1
[12] t2:→(i<1)/f2
[13]  sol[1]←sol[1]+x[1;i]
[14]  j←2
[15] t3:→(j>tam)/f3
[16]  sol[j]←(sol[j-1]+x[j;i])⌊(sol[j]+x[j;i])
[17]  j←j+1
[18]  →t3
[19] f3:j←tam-1
[20] t4:→(j<1)/f5
[21]  sol[j]←sol[j]⌊sol[j+1]+x[j;i]
[22]  j←j-1
[23]  →t4
[24] f5:i←i-1
[25]  →t2
[26] f2:r[2]←⊂⌊/sol
-------------------------------------------------------------
[ 0]  r←nom geracaso265 num;x;y;z;cam;lix
[ 1]  x←gera67
[ 2]  y←gera81
[ 3]  z←gera82
[ 4]  nom←3↑(trim nom),'XXX'
[ 5]  cam←'c:\apl2\'
```

```
[ 6]  lix←(4 0⍕⊃x[1])ΔFM cam,nom,'F',('00'⍕num),'E1'
[ 7]  lix←(4 0⍕⊃y[1])ΔFM cam,nom,'F',('00'⍕num),'E2'
[ 8]  lix←(4 0⍕⊃z[1])ΔFM cam,nom,'F',('00'⍕num),'E3'
[ 9]  r←(⊃x[2]),(⊃y[2]),⊃z[2]
------------------------------------------------------------
[ 0]  opesq vivo265a n;CORRECAO;EVENTO;IDX;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;q
      linha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL265   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ IDX←3↑2↓n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n ⋄ IDX←'XXX'
[ 9]  ylu←n grupo ylu
[10]  FOLHALA265←ajusta80 FOLHALA265
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA265)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 4⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALA265
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.06
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←IDX geracaso265 xk
[35]  esse[8;]←80↑IDX,'F',('00'⍕xk),'E1'
[36]  esse[9;]←80↑IDX,'F',('00'⍕xk),'E2'
[37]  esse[10;]←80↑IDX,'F',('00'⍕xk),'E3'
[38]  resp←resp,xx
[39]  resu←resu,[1]1 4⍴resp
[40]  acuja←(f[;2]='#')/⍳1↑⍴f
[41]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[42]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[43]  ⍞←(⍕xk←xk+1),'-'
[44]  →testa
[45] fim:upag←(1 0+⍴f)⍴' '
[46]  →(1=≡n)/elafa
[47]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[48]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[49]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 12 0 8 0 8 0)⍕resu
[50]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[51]  →terminando
[52] elafa:aaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[53]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[54]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[55] terminando:
```

```
[56]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[57]  relat[1↑⍴relat;;]←upag
[58]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[59]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[60]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[61]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo266

```
[0]  r←edi266 z
[1]  r←0 70⍴' '
[2]  r←r,[1]1 70⍴70↑'  h.in     dura     h.fi    '
[3]  r←r,[1]1 70⍴70↑' -------- -------- --------'
[4]  r←r,[1]((1↑⍴z),70)↑' 5555 :00  5555 :00 5555 :00 '⍕z[;4 5 6 7 8 9]
-------------------------------------------------------------
[0]  r←gera266;x;y
[1]  x←geratar 30
[2]  y←reso266 x
[3]  r←2⍴0
[4]  r[1]←⊂x[30?30;4 5 6 7]
[5]  r[2]←⊂(⍴⊃y[1]),⊃y[3]
-------------------------------------------------------------
[0]  r←geraexe1;n;hi;d;rr;hf
[1]  n←11
[2]  hi←1 3 0 5 3 5 6 8 8 2 12×60
[3]  d←4 3 7 3 6 5 5 4 5 12 3×60
[4]  hf←hi+d
[5]  rr←⍉(3,n)⍴hi,d,hf     ⍝ este rr tem as colunas em minutos
[6]  r←rr,(⍉60 60⍴rr[;1]),(⍉60 60⍴rr[;2]),⍉60 60⍴rr[;3]
[7]  r←r[⍋r[;3];]
-------------------------------------------------------------
[0]  r←geraforn n;hi;d;rr;hf
[1]  hi←n↑?200⍴330
[2]  d←n↑8+?200⍴12
[3]  hf←hi+d
[4]  rr←⍉(3,n)⍴hi,d,hf     ⍝ este rr tem as colunas em minutos
[5]  r←rr,(⍉60 60⍴rr[;1]),(⍉60 60⍴rr[;2]),⍉60 60⍴rr[;3]
[6]  r←r[⍋r[;3];]
-------------------------------------------------------------
[0]  r←geraforn266;x;y
[1]  x←geraforn 25
[2]  y←reso266 x
[3]  r←2⍴0
[4]  r[1]←⊂x[25?25;1 2]
[5]  r[2]←⊂(⍴⊃y[1]),⊃y[3]
-------------------------------------------------------------
[0]  r←geratar n;hi;d;rr;hf
[1]  hi←n↑15×?200⍴20×4
[2]  d←n↑15+5×?200⍴43
[3]  hf←hi+d
[4]  rr←⍉(3,n)⍴hi,d,hf     ⍝ este rr tem as colunas em minutos
[5]  r←rr,(⍉60 60⍴rr[;1]),(⍉60 60⍴rr[;2]),⍉60 60⍴rr[;3]
[6]  r←r[⍋r[;3];]
-------------------------------------------------------------
[ 0]  r←reso266 x;i;a;res;haf;tu;ti
[ 1]  a←x[⍋x[;3];]
[ 2]  res←1
[ 3]  haf←a[1;3]
[ 4]  tu←a[1;2]
[ 5]  i←2
[ 6] t1:→(i>1↑⍴x)/fim
```

```
[ 7]  →(a[i;1]<haf)/soma
[ 8]  res←res,i
[ 9]  haf←a[i;3]
[10]  tu←tu+a[i;2]
[11] soma:
[12]  i←i+1
[13]  →t1
[14] fim:r←3ρ0
[15]  r[1]←⊂res
[16]  r[2]←⊂((⍳1↑ρa)∈res)/[1]a
[17]  r[3]←⊂tu
-------------------------------------------------------------
[ 0]  opesq vivo266a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL266   '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA266←ajusta80 FOLHALA266
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALA266)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 5ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←64 80ρ' '
[16]  f←FOLHALA266
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.06
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑ρf),4)ρ'\#05')/⍳1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[63;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[64;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera266
[35]  esse[7+⍳30;]←30 80↑2 0 10 0 3 0 16 0 3 0⍎(30 1ρ⍳30),⊃xx[1]
[36]  resp←resp,,⊃xx[2]
[37]  xx←geraforn266
[38]  esse[37+⍳25;]←25 80↑2 0 20 0 18 0⍎(25 1ρ⍳25),⊃xx[1]
[39]  resp←resp,,⊃xx[2]
[40]  resu←resu,[1]1 5ρresp
[41]  acuja←(f[;2]='#')/⍳1↑ρf
[42]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\clearpage'
[44]  ⍞←(⍎xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+ρf)ρ' '
[47]  →(1=≡n)/elafa
[48]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
```

```
[49]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[50]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 10 0 5 0)⍉resu
[51]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[52]  →terminando
[53] elafa:aaa←(ylu[;⍳36],9 0⍉0 1↓resu)
[54]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[55]  '!!!!!  Arquivo GPA com ',(⍉1↑⍴aaa),' linhas e ',(⍉1↓⍴aaa),' colunas'
[56] terminando:
[57]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[58]  relat[1↑⍴relat;;]←upag
[59]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[60]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[61]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[62]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo271

```
[ 0]  r←BESTFIT pacs;i;sac;ja;onde;ind;quais
[ 1]  r←40 20⍴0 ⋄ ja←40⍴0
[ 2]  i←1
[ 3]  sac←1 ⋄ ja[1]←1
[ 4] loop:→(i>⍴pacs)/fim
[ 5]  onde←(pacs[i]++/[2]r[⍳sac;])≤SACOLA
[ 6]  →((⍴onde)=+/onde=0)/naocabe
[ 7] cabe:
[ 8]  quais←onde/⍳⍴onde
[ 9]  →(2≤⍴,quais)/maisdeum
[10]  ind←quais
[11]  →pula
[12] maisdeum:ind←quais[(+/[2]r[quais;])⍳(⌈/+/[2]r[quais;])]
[13] pula:r[ind;ja[ind]]←pacs[i]
[14]  ja[ind]←ja[ind]+1
[15] ⍝ 'colocando ',(  ⍕pacs[i]),' na sacola ',  ⍕ind
[16]  i←i+1
[17]  →loop
[18] naocabe:sac←sac+1
[19]  ja[sac]←1
[20]  →loop
[21] fim:r←(0≠+/[1]r)/r
[22]  r←(0≠+/[2]r)/[1]r
[23]  r←(((1↑⍴r),1)⍴ja-1),r
------------------------------------------------------------
[ 0]  r←FIRSTFIT pacs;i;sac;ja;onde;ind
[ 1]  r←40 20⍴0 ⋄ ja←40⍴0
[ 2]  i←1
[ 3]  sac←1 ⋄ ja[1]←1
[ 4] loop:→(i>⍴pacs)/fim
[ 5]  onde←(pacs[i]++/[2]r[⍳sac;])≤SACOLA
[ 6]  →((⍴onde)=+/onde=0)/naocabe
[ 7] cabe:ind←1↑onde/⍳⍴onde
[ 8]  r[ind;ja[ind]]←pacs[i]
[ 9]  ja[ind]←ja[ind]+1
[10] ⍝ 'colocando ',(  ⍕pacs[i]),' na sacola ',  ⍕ind
[11]  i←i+1
[12]  →loop
[13] naocabe:sac←sac+1
[14]  ja[sac]←1
[15]  →loop
[16] fim:r←(0≠+/[1]r)/r
[17]  r←(0≠+/[2]r)/[1]r
[18]  r←(((1↑⍴r),1)⍴ja-1),r
```

```
------------------------------------------------------------
[ 0]  r←NEXTFIT pacs;i;sac;prox;ja
[ 1]  r←40 20⍴0 ⋄ ja←40⍴0
[ 2]  i←1
[ 3]  sac←1 ⋄ prox←1
[ 4] loop:→(i>⍴pacs)/fim
[ 5]  →(((+/r[sac;])+pacs[i])>SACOLA)/naocabe
[ 6] cabe:r[sac;prox]←pacs[i]
[ 7]  ja[sac]←ja[sac]+1
[ 8]  prox←prox+1
[ 9]  i←i+1
[10]  →loop
[11] naocabe:sac←sac+1
[12]  prox←1
[13]  →loop
[14] fim:r←(0≠+/[1]r)/r
[15]  r←(0≠+/[2]r)/[1]r
[16]  r←(((1↑⍴r),1)⍴ja),r
------------------------------------------------------------
[0]  r←OFFFIRSTFIT x
[1]  r←FIRSTFIT x←x[⍒x]
------------------------------------------------------------
[ 0]  r←WORSTFIT pacs;i;sac;ja;onde;ind;quais
[ 1]  r←40 20⍴0 ⋄ ja←40⍴0
[ 2]  i←1
[ 3]  sac←1 ⋄ ja[1]←1
[ 4] loop:→(i>⍴pacs)/fim
[ 5]  onde←(pacs[i]++/[2]r[⍳sac;])≤SACOLA
[ 6]  →((⍴onde)=+/onde=0)/naocabe
[ 7] cabe:
[ 8]  quais←onde/⍳⍴onde
[ 9] ⍝ 'quais=',  ⍕quais
[10]  →(2≤⍴,quais)/maisdeum
[11]  ind←quais
[12]  →pula
[13] maisdeum:ind←quais[(+/[2]r[quais;])⍳(⌊/+/[2]r[quais;])]
[14] pula:r[ind;ja[ind]]←pacs[i]
[15]  ja[ind]←ja[ind]+1
[16] ⍝ 'colocando ',(  ⍕pacs[i]),' na sacola ',  ⍕ind
[17]  i←i+1
[18]  →loop
[19] naocabe:sac←sac+1
[20]  ja[sac]←1
[21]  →loop
[22] fim:r←(0≠+/[1]r)/r
[23]  r←(0≠+/[2]r)/[1]r
[24]  r←(((1↑⍴r),1)⍴ja-1),r
------------------------------------------------------------
[ 0]  r←acertac x;aa
[ 1]  r←2 70⍴' '
[ 2]  aa←(3 0⍕x[1]),'&',(3 0⍕x[2]),'&',(3 0⍕x[3]),'&'
[ 3]  aa←aa,(3 0⍕x[4]),'&',(3 0⍕x[5]),'&',(3 0⍕x[6]),'&'
[ 4]  aa←aa,(3 0⍕x[7]),'&',(3 0⍕x[8]),'&',(3 0⍕x[9]),'&'
[ 5]  aa←aa,(3 0⍕x[10]),'⍀⍀'
[ 6]  r[1;]←70↑aa
[ 7]  aa←(3 0⍕x[11]),'&',(3 0⍕x[12]),'&',(3 0⍕x[13]),'&'
[ 8]  aa←aa,(3 0⍕x[14]),'&',(3 0⍕x[15]),'&',(3 0⍕x[16]),'&'
[ 9]  aa←aa,(3 0⍕x[17]),'&',(3 0⍕x[18]),'&',(3 0⍕x[19]),'&'
[10]  aa←aa,(3 0⍕x[20]),'⍀⍀'
[11]  r[2;]←70↑aa
------------------------------------------------------------
[0]  r←geralig z
[1]  SACOLA←15
```

```
[2]  r←?zρ10
-------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80ρ' '
[ 6] te:→(i>1↑ρzz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>ρcandi)/eca
[ 9]  j←qt
[10] te3:→(candi[j]=' ')/ufa
[11]  j←j-1
[12]  →te3
[13] ufa:r←r,[1]1 80ρ80↑j↓candi
[14]  candi←j↓candi
[15]  →((ρcandi)=+/candi=' ')/som
[16]  →te2
[17] eca:r←r,[1]1 80ρ80↑candi
[18] som:i←i+1
[19]  →te
[20] fim:'acabou'
-------------------------------------------------------------
[ 0]  opesq vivo271a n;CORRECAO;EVENTO;a1;a2;a3;a4;a5;aaa;acuja;caso;dhx;esse;f;ind;lixo1;
      lixonol;relat;resp;resu;upag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←5 ⋄ EVENTO←'PL271   '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[ 9]  FOLHALA271←ajusta80 FOLHALA271
[10]  relat←((2+1↑ρylu),1 0+ρFOLHALA271)ρ' '
[11]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[12]  xk←1 ⋄ resu←0 6ρ0
[13] testa:→(xk>1↑ρylu)/fim
[14]  esse←12 80ρ' '
[15]  f←FOLHALA271
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←3.16
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[23]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  SACOLA←15
[27] uuu:caso←geralig 20
[28]  a1←NEXTFIT caso ⋄ a2←FIRSTFIT caso ⋄ a3←BESTFIT caso
[29]  a4←WORSTFIT caso ⋄ a5←OFFFIRSTFIT caso
[30]  →(((1↑ρa1)≠(1↑ρa3))∧((1↑ρa1)≠(1↑ρa5)))/blz
[31]  ⍞←'*'
[32]  →uuu
[33] blz:
[34]  resp←resp,1↑ρa1
[35]  ind←?1↑ρa2
[36]  resp←resp,+/1↓,a2[ind;]
```

```
[37]  esse[10;]←80↑3 0⍕ind
[38]  resp←resp,a3[1;1]
[39]  resp←resp,+/1↓,a4[(1↑⍴a4);]
[40]  resp←resp,¯1+1↓⍴a5
[41]  esse[7+⍳2;]←2 80↑acertac caso
[42] continua:
[43]  resu←resu,[1](1,6)⍴resp
[44]  acuja←(f[;2]='#')/⍳1↑⍴f
[45]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[46]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[47]  ⍞←(⍕xk←xk+1),'-'
[48]  →testa
[49] fim:upag←(1 0+⍴f)⍴' '
[50]  →(1=≡n)/elafa
[51]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[52]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[53]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 5 0 5 0 5 0)⍕resu
[54]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[55]  →terminando
[56] elafa:aaa←(⍳lu,5 0⍕0 1↓resu)
[57]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[58]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[59] terminando:
[60]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[61]  relat[1↑⍴relat;;]←upag
[62]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[63]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[64]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[65]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
[66]  ' vide as matrizes A1(next), A2(first), A3(best), A4(worst), A5(off)'
[67]  A1←a1 ⋄ A2←a2 ⋄ A3←a3 ⋄ A4←a4 ⋄ A5←a5
-------------------------------------------------------------
```

vivo272

```
[ 0]  r←cad achagordos vet;i;vet1;j;vizinho;⎕IO
[ 1]  ⎕IO←0
[ 2]  i←0
[ 3]  vet1←¯4,vet,¯4
[ 4] volta:→(i≥1↑⍴cad)/acabou
[ 5]  j←0 ⋄ vizinho←0
[ 6] vv:→(j≥1↓⍴cad)/fiml
[ 7]  →(cad[i;j]<0)/soma
[ 8]  →((vet1[cad[i;j]]≠¯2)∧(vet1[2+cad[i;j]]≠¯2))/soma
[ 9]  vizinho←vizinho+1
[10] soma:→(j=j←j+1)/vv
[11] fiml:
[12]  i←i+1
[13]  →(vizinho<4)/volta
[14]  r←i   ⍝ a resposta considera   ⎕io=1
[15]  →0
[16] acabou:r←999
-------------------------------------------------------------
[0]  r←aviso
[1]  ' Para nenhum gordo,responda 999'
-------------------------------------------------------------
[ 0]  r←geracaso tam;⎕IO;lin;cadeias;max;ocup;aocu;quem;i;qtas;antes;tanto;divisor
[ 1]  ⎕IO←0 ⋄ lin←0 ⋄ cadeias←20 20⍴¯1 ⋄ max←0 ⋄ QTAS←⍳0
[ 2]  divisor←5
[ 3]  r←tam⍴¯2   ⍝   ¯2 significa livre
[ 4]  ocup←(10+?⌈tam÷divisor×1.7)?tam-⌈tam÷divisor
[ 5]  r[ocup]←¯1   ⍝   ¯1 significa que a poltrona e de avulso
```

```
[ 6]  aocu←tam-2×ρocup
[ 7]  quem←(r=¯2)/ιtam
[ 8]  quem←quem[(ρquem)?ρquem]
[ 9]  tanto←5+?20-2×divisor
[10] gg:→(aocu<tanto)/fim
[11]  i←0
[12]  qtas←2+(?⌈tam÷(3×divisor))+?⌈tam÷4×divisor
[13]  QTAS←QTAS,qtas
[14]  antes←quem[0]
[15] vv:→(i≥qtas-1)/blz
[16]  cadeias[lin;i]←r[quem[i]]←quem[i+1]
[17]  →(i=i←i+1)/vv
[18] blz:
[19]  r[quem[i]]←antes
[20]  cadeias[lin;i]←antes
[21]  aocu←aocu-qtas
[22]  quem←qtas↓quem
[23]  lin←lin+1
[24]  max←max⌈i+1
[25]  →gg
[26] fim:CADEIAS←(lin,max)↑cadeias
[27]  OCUPADOS←ocup
[28]  LIVRES←(r=¯2)/ιtam
-------------------------------------------------------------
[0]  r←geraresp tam;z;x;y
[1] denovo:z←geracaso tam
[2]  x←vexa z
[3]  y←ordenacadeias CADEIAS
[4]  →(7>1↑ρy)/denovo
[5]  r←(+/z=¯2),(+/z=¯1),(+/z≥0),(1↑ρy),(+/,y[5;]>0),(+/,y[7;]>0),(1↓ρy),y achagordos z
[6]  Z←z
[7]  X←x
[8]  Y←4 0⍉y
-------------------------------------------------------------
[ 0]  r←ordenacadeias X;⎕IO;maior;i;ult;qual
[ 1]  maior←⌈/,X
[ 2]  ⎕IO←1
[ 3]  r←(ρX)ρ0
[ 4]  i←0
[ 5]  ult←1
[ 6] volta:→(i>maior)/acabou
[ 7]  →(~i∈X)/soma
[ 8]  r[ult;]←X[qual←((+/[2]X∈i)/ι1↑ρr);]
[ 9]  ult←ult+1
[10]  X[qual;]←¯3
[11] soma:→(i=i←i+1)/volta
[12] acabou:
-------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80ρ' '
[ 6] te:→(i>1↑ρzz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>ρcandi)/eca
[ 9]  j←qt
[10] te3:→(candi[j]=' ')/ufa
[11]  j←j-1
[12]  →te3
[13] ufa:r←r,[1]1 80ρ80↑j↑candi
[14]  candi←j↓candi
```

```
[15]  →((⍴candi)=+/candi=' ')/som
[16]  →te2
[17] eca:r←r,[1]1 80⍴80↑candi
[18] som:i←i+1
[19]  →te
[20] fim:'acabou'
-------------------------------------------------------------
[0]  r←vexa M;aa;⎕IO
[1]  ⎕IO←1
[2]  r←((aa←⌈(⍴M)÷10),43)⍴' '
[3]  r[⍳aa;1 2]←(aa,2)⍴2 0⍕¯1+⍳aa
[4]  r[⍳aa;3+⍳40]←4 0⍕(aa,10)⍴M
[5]  r[;3 8 12 16 20 24 28 32 36 40]←'&'
[6]  r←r,'⍀'
[7]  r←r,'⍀'
-------------------------------------------------------------
[ 0]  opesq vivo272a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←8 ⋄ EVENTO←'PL272   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA272←ajusta80 FOLHALA272
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA272)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:⍀apl2⍀VIVOBLOI'
[12]  xk←1 ⋄ resu←0 9⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←21 80⍴' '
[15]  f←FOLHALA272
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.26
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[20;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[21;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  resp←resp,geraresp 120
[27]  esse[7+⍳12;]←'¯-'edit 12 80↑X
[28]  resu←resu,[1](1,9)⍴resp
[29]  acuja←(f[;2]='#')/⍳1↑⍴f
[30]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[31]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[32]  ⍞←(⍕xk←xk+1),'-'
[33]  →testa
[34] fim:upag←(1 0+⍴f)⍴' '
[35]  →(1=≡n)/elafa
[36]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[37]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[38]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0)⍕resu
[39]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[40]  →terminando
[41] elafa:aaa←(ylu,5 0⍕0 1↓resu)
[42]  aaa[1;35 36]←2 0⍕CORRECAO
[43]  lixonol←aaa ⎕FM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[44]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
```

```
[45] terminando:
[46]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[47]  relat[1↑⍴relat;;]←upag
[48]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[49] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[50]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[51]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[52]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo273

```
[0]  AVISO
[1]  'o exercicio 273a = gera o mesmo exemplo, mas enunciados diferentes'
[2]  'o 273z gera exemplo e enunciado iguais'
------------------------------------------------------------
[ 0]  r←h achaavos x;mae;pai;i
[ 1]  r←0 47⍴' '
[ 2]  i←1
[ 3] testa:→(i>1↑⍴x)/fim
[ 4]  →(x[i;3]=0)/soma
[ 5]  →(x[i;2]=0)/soma
[ 6]  pai←x[i;2]
[ 7]  mae←x[i;3]
[ 8]  →(x[mae;2]=0)/soma
[ 9]  →(x[mae;3]=0)/soma
[10]  →(x[pai;2]=0)/soma
[11]  →(x[pai;3]=0)/soma
[12]  r←r,[1]'AV',(h[i;]),h[x[pai;2];],h[x[pai;3];],h[x[mae;2];],h[x[mae;3];]
[13] soma:→(i=i←i+1)/testa
[14] fim:
------------------------------------------------------------
[ 0]  r←h achabiavoshom x;mae;avoo;avoa;i;avoe;avoi;pai
[ 1] ⍝ acha e devolve o neto e seus 4 bisavos homens
[ 2]  r←0 47⍴' '
[ 3]  i←1
[ 4] testa:→(i>1↑⍴x)/fim
[ 5]  →(x[i;3]=0)/soma
[ 6]  →(x[i;2]=0)/soma
[ 7]  pai←x[i;2]
[ 8]  mae←x[i;3]
[ 9]  →(x[mae;2]=0)/soma
[10]  →(x[pai;2]=0)/soma
[11]  →(x[mae;3]=0)/soma
[12]  →(x[pai;3]=0)/soma
[13]  avoo←x[mae;2]
[14]  avoa←x[mae;3]
[15]  avoe←x[pai;2]
[16]  avoi←x[pai;3]
[17]  →(x[avoo;2]=0)/soma
[18]  →(x[avoi;2]=0)/soma
[19]  →(x[avoe;2]=0)/soma
[20]  →(x[avoa;2]=0)/soma
[21]  r←r,[1]'BH',(h[i;]),h[x[avoe;2];],h[x[avoi;2];],h[x[avoo;2];],h[x[avoa;2];]
[22] soma:→(i=i←i+1)/testa
[23] fim:
------------------------------------------------------------
[ 0]  r←h achabiavosmat x;mae;avoo;avoa;i
[ 1] ⍝ acha e devolve o neto e seus 4 avos maternos
[ 2]  r←0 47⍴' '
[ 3]  i←1
[ 4] testa:→(i>1↑⍴x)/fim
```

```
[ 5]  →(x[i;3]=0)/soma
[ 6]  mae←x[i;3]
[ 7]  →(x[mae;2]=0)/soma
[ 8]  →(x[mae;3]=0)/soma
[ 9]  avoo←x[mae;2]
[10]  avoa←x[mae;3]
[11]  →(x[avoo;2]=0)/soma
[12]  →(x[avoo;3]=0)/soma
[13]  →(x[avoa;2]=0)/soma
[14]  →(x[avoa;3]=0)/soma
[15]  r←r,[1]'BA',(h[i;]),h[x[avoo;2];],h[x[avoo;3];],h[x[avoa;2];],h[x[avoa;3];]
[16] soma:→(i=i←i+1)/testa
[17] fim:
-------------------------------------------------------------
[ 0]  r←h achabiavosmul x;mae;avoo;avoa;i;avoe;avoi;pai
[ 1] ⍝ acha e devolve o neto e seus 4 bisavos mulheres
[ 2]  r←0 47⍴' '
[ 3]  i←1
[ 4] testa:→(i>1↑⍴x)/fim
[ 5]  →(x[i;3]=0)/soma
[ 6]  →(x[i;2]=0)/soma
[ 7]  pai←x[i;2]
[ 8]  mae←x[i;3]
[ 9]  →(x[mae;2]=0)/soma
[10]  →(x[pai;2]=0)/soma
[11]  →(x[mae;3]=0)/soma
[12]  →(x[pai;3]=0)/soma
[13]  avoo←x[mae;2]
[14]  avoa←x[mae;3]
[15]  avoe←x[pai;2]
[16]  avoi←x[pai;3]
[17]  →(x[avoo;3]=0)/soma
[18]  →(x[avoi;3]=0)/soma
[19]  →(x[avoe;3]=0)/soma
[20]  →(x[avoa;3]=0)/soma
[21]  r←r,[1]'BM',(h[i;]),h[x[avoe;3];],h[x[avoi;3];],h[x[avoo;3];],h[x[avoa;3];]
[22] soma:→(i=i←i+1)/testa
[23] fim:
-------------------------------------------------------------
[ 0]  r←h achabiavospat x;pai;avoo;avoa;i
[ 1] ⍝ acha e devolve o neto e seus 4 avos  paternos
[ 2]  r←0 47⍴' '
[ 3]  i←1
[ 4] testa:→(i>1↑⍴x)/fim
[ 5]  →(x[i;2]=0)/soma
[ 6]  pai←x[i;2]
[ 7]  →(x[pai;2]=0)/soma
[ 8]  →(x[pai;3]=0)/soma
[ 9]  avoo←x[pai;2]
[10]  avoa←x[pai;3]
[11]  →(x[avoo;2]=0)/soma
[12]  →(x[avoo;3]=0)/soma
[13]  →(x[avoa;2]=0)/soma
[14]  →(x[avoa;3]=0)/soma
[15]  r←r,[1]'BP',(h[i;]),h[x[avoo;2];],h[x[avoo;3];],h[x[avoa;2];],h[x[avoa;3];]
[16] soma:→(i=i←i+1)/testa
[17] fim:
-------------------------------------------------------------
[ 0]  r←h geracasoa x;a1;v1;t1;i
[ 1]  a1←h achaavos x
[ 2]  a1←a1,[1]h achabiavosmat x
[ 3]  a1←a1,[1]h achabiavospat x
[ 4]  a1←a1,[1]h achabiavosmul x
```

```
[ 5]  a1←a1,[1]h achabiavoshom x
[ 6]  r←2 61⍴' '
[ 7]  v1←2?1↑⍴a1
[ 8]  t1←'AVavos            '
[ 9]  t1←t1,'BMbisavos mulheres'
[10]  t1←t1,'BHbisavos homens  '
[11]  t1←t1,'BPbisavos paternos'
[12]  t1←t1,'BAbisavos maternos'
[13]  t1←5 18⍴t1
[14]  i←1
[15] fo1:→(2=+/a1[v1[1];1 2]=t1[i;1 2])/ac1
[16]  →(i=i←i+1)/fo1
[17] ac1:r[1;]←t1[i;2+⍳16],a1[v1[1];2+⍳45]
[18]  i←1
[19] fo2:→(2=+/a1[v1[2];1 2]=t1[i;1 2])/ac2
[20]  →(i=i←i+1)/fo2
[21] ac2:r[2;]←t1[i;2+⍳16],a1[v1[2];2+⍳45]
------------------------------------------------------------
[ 0]  r←geracason x;i;imen;men
[ 1] ⍝ se esta funcao devolver   ¯1 em r[1;2] eh porque deu merda...
[ 2]  r←4 2⍴0
[ 3]  r[1;1]←12+?5
[ 4]  r[2;1]←30+?5
[ 5]  r[3;1]←0.9+20+?10
[ 6]  r[4;1]←0.9+20+?10
[ 7] ⍝              r[1;2]  ←x[;2]  ⍳1  ↑(x[;2]>r[1;1])/x[;2]
[ 8] ⍝              r[2;2]  ←x[;3]  ⍳  ¯1  ↑(x[;3]>r[2;1])/x[;3]
[ 9]  i←1
[10] x0:→(i>1↑⍴x)/af0
[11]  →(x[i;2]>r[1;1])/acho0
[12]  →(i=i←i+1)/x0
[13] acho0:r[1;2]←i
[14]  →fuga0
[15] af0:r[1;2]←¯1
[16]  →0
[17] fuga0:
[18]  →(i>3)/obag
[19]  r[1;2]←¯1
[20]  →0
[21] obag:i←1↑⍴x
[22] x1:→(i<1)/af1
[23]  →(x[i;3]>r[2;1])/acho1
[24]  →(i=i←i-1)/x1
[25] acho1:r[2;2]←i
[26]  →fuga1
[27] af1:r[1;2]←¯1
[28]  →0
[29] fuga1:
[30]  i←1 ⋄ men←9999
[31] t1:→(i>1↑⍴x)/f1
[32]  →(men<|r[3;1]-x[i;4])/p1
[33]  men←|r[3;1]-x[i;4]
[34]  imen←i
[35] p1:→(i=i←i+1)/t1
[36] f1:r[3;2]←imen
[37]  i←1 ⋄ men←9999
[38] t2:→(i>1↑⍴x)/f2
[39]  →(men<|r[4;1]-x[i;5])/p2
[40]  men←|r[4;1]-x[i;5]
[41]  imen←i
[42] p2:→(i=i←i+1)/t2
[43] f2:r[4;2]←imen
------------------------------------------------------------
```

```
[ 0]  r←geragab aa
[ 1]  r←((1↑⍴aa),30)⍴' '
[ 2]  i←1
[ 3] t1:→(i>1↑⍴r)/fim
[ 4]  →(aa[i;1]>200)/mulhe
[ 5] home:r[i;⍳9]←9↑NH[aa[i;1]-100;]
[ 6]  →ambos
[ 7] mulhe:r[i;⍳9]←9↑NM[aa[i;1]-200;]
[ 8] ambos:r[i;10+⍳20]←4 0⍕aa[i;1+⍳5]
[ 9]  →(i=i←i+1)/t1
[10] fim:r←'# 'edit r
-------------------------------------------------------------
[ 0]  r←geratab;velho;H;M;marcador;novo;medio;i;tabirm;irmaos;iv;im;liscas;ondecasou;r1;r2
      ;rf;j;vv;zz;wq
[ 1] ⍝ rand⋄⍝ QUEM  ← 20 6   ⍴0   ⋄   ⍝QC  ←1   ⋄   ⍝QI  ←1
[ 2]  H←100+⍳60
[ 3]  M←200+⍳60
[ 4]  r←50 6⍴0
[ 5]  velho←medio←⍳0
[ 6]  marcador←0
[ 7]  novo←1
[ 8] inica:→(novo>35)/acabou
[ 9]  r[novo;1]←tiraG
[10]  r[novo+1;1]←tiraH ⋄ r[novo;2]←novo+1
[11]  r[novo+2;1]←tiraM ⋄ r[novo;3]←novo+2
[12]  medio←medio,novo ⋄ velho←velho,(novo+1),novo+2
[13]  tabirm←2 2 2 2 2 2 2 2 3 3 3 3 3 4 4 4 5 5 6
[14]  irmaos←tabirm[?⍴tabirm]
[15]  i←3
[16] testa1:→(i>irmaos)/vai
[17]  r[novo+i;1]←tiraaleG ⋄ r[novo+i;2]←r[novo;2] ⋄ r[novo+i;3]←r[novo;3]
[18]  →(i=i←i+1)/testa1
[19] vai:
[20]  novo←novo+i
[21]  →inica
[22] acabou:
[23]  r←(r[;1]≠0)/[1]r
[24]  im←iv←1 ⋄ medio←1↓medio
[25] comm:→(im>⍴medio)/fimm
[26]  r[velho[iv];3]←medio[im]
[27]  im←im+1
[28]  →(im>⍴medio)/fimm
[29]  r[velho[iv];2]←medio[im] ⋄ im←im+1
[30]  →(im>⍴medio)/fimm
[31]  r[velho[iv+1];3]←medio[im] ⋄ im←im+1
[32]  →(im>⍴medio)/fimm
[33]  r[velho[iv+1];2]←medio[im] ⋄ im←im+1
[34]  →(im>⍴medio)/fimm
[35]  iv←iv+2
[36]  →comm
[37] fimm:   ⍝ acha conjuge e primeiro filho
[38]  i←1 ⋄ liscas←,r[;2]
[39] uja:→(i>1↑⍴r)/fimv
[40]  ondecasou←liscas⍳i
[41]  →(ondecasou>1↑⍴r)/soma1
[42]  r[i;4]←r[ondecasou;3]
[43]  wq←((,r[;2])∈i)/⍳⍴,r[;2]
[44]  →(1=⍴,wq)/umso
[45]  wq←,r[wq;1]
[46]  wq←wq[⍋wq]
[47]  wq←1↑wq
[48]  r[i;5]←(,r[;1])⍳wq
[49]  →soma1
```

```
[50] umso:r[i;5]←ondecasou
[51] soma1:→(i=i←i+1)/uja
[52] fimv:   ⍝ baguncando a matriz
[53]  r1←r ⋄ r2←r
[54]  rf←,r1[;1]
[55]  rf←rf[⍋rf]
[56]  i←1
[57] koko:→(i>1↑⍴rf)/fim8
[58]  j←2
[59] ikik:→(j>6)/pull
[60]  →(r1[i;j]=0)/somp
[61]  r2[i;j]←rf⍳r1[r1[i;j];1]
[62] somp:→(j=j←j+1)/ikik
[63] pull:→(i=i←i+1)/koko
[64] fim8:
[65]  →(r1[1;1]>199)/emul
[66] ehom:RAIZ←(zz≠'#')/zz←,NH[r1[1;1]-100;]
[67]  →ika
[68] emul:RAIZ←(zz≠'#')/zz←,NH[r1[1;1]-200;]
[69] ika:
[70]  r2←r2[⍋r2[;1];]   ⍝ resultado final em r2
[71]  i←1↑⍴r2
[72] oba1:→(i<1)/yfa
[73]  vv←(r2[i;2]×1000)+r2[i;3]
[74]  →(0=vv)/yfa1
[75]  j←i-1
[76] oba2:→(j<1)/yfa1
[77]  →(((r2[j;2]×1000)+r2[j;3])≠vv)/somay
[78]  r2[j;6]←i
[79]  →(r2[i;6]≠0)/somay
[80]  r2[i;6]←¯1
[81] somay:→(j=j←j-1)/oba2
[82] yfa1:→(i=i←i-1)/oba1
[83] yfa:r←r2
-------------------------------------------------------------
[ 0]  r←geratext1 x;h;homs;muls;i;pai;mae;conj;pfil;pirm;z
[ 1] ⍝ recebe um x gerado pela geratab e devolve um texto descritivo
[ 2]  h←((1↑⍴x),9)⍴' ' ⋄ r←0 70⍴' '
[ 3]  homs←(x[;1]<200)/x[;1]
[ 4]  muls←(x[;1]>199)/x[;1]
[ 5]  h[⍳⍴homs;]←NH[homs-100;]
[ 6]  h[(⍴homs)+⍳⍴muls;]←NM[muls-200;]
[ 7]  h←h,[1]1 9⍴'*'
[ 8]  i←1
[ 9] t1:→(i>1↑⍴x)/ac1
[10]  →(0=+/x[i;2 3 4 5 6])/s6
[11]  z←h[i;]
[12]  pai←x[i;2]
[13]  →(pai≠0)/pu1
[14]  pai←1↑⍴h
[15] pu1:mae←x[i;3]
[16]  →(mae≠0)/pu2
[17]  mae←1↑⍴h
[18] pu2:
[19]  →(pai=mae)/s2
[20]  z←z,' P=',(,h[pai;]),' M=',,h[mae;]
[21] s2:conj←x[i;4]
[22]  →(conj=0)/s3
[23]  z←z,' C=',(,h[conj;])
[24] s3:pfil←x[i;5]
[25]  →(pfil=0)/s4
[26]  z←z,' 1=',,h[pfil;]
[27] s4:pirm←x[i;6]
```

```
[28]  →(pirm≠¯1)/pu4
[29]  z←z,' UI'
[30]  →s5
[31] pu4:→(pirm=0)/s5
[32]  z←z,' I=',(,h[pirm;])
[33] s5:
[34]  r←r,[1]1 70ρ70↑z
[35] s6:
[36]  →(i=i←i+1)/t1
[37] ac1:
[38] ⍝ r  ←r[  ⎕AV  ⍋r[;  ⍳9];]
[39]  i←1
[40] foo:→(i>1↑⍴r)/fimm
[41]  r[i;]←70↑(r[i;]≠'#')/r[i;]
[42]  →(i=i←i+1)/foo
[43] fimm:
[44]  HHH←h[⍳¯1+1↑⍴h;]
[45]  i←1
[46] fof:→(i>1↑⍴HHH)/fimf
[47]  HHH[i;]←9↑(HHH[i;]≠'#')/HHH[i;]
[48]  →(i=i←i+1)/fof
[49] fimf:→((1↑⍴r)≠+/,' '=r[;1↓⍴r])/terminou
[50]  r←0 ¯1↓r
[51]  →fimf
[52] terminou:
------------------------------------------------------------
[ 0]  r←levantaverbo x;i
[ 1]  i←1
[ 2]  SUBIU←0
[ 3] t1:→(i>1↑⍴x)/fim
[ 4]  →((1↓⍴x)=+/x[i;]=' ')/ebra
[ 5] soma:i←i+1
[ 6]  →t1
[ 7] ebra:
[ 8]  →(i≥1↑⍴x)/fim
[ 9]  →(14=+/x[i+1;⍳14]='\end{verbatim}')/esim
[10]  →soma
[11] esim:x[i;]←(1↓⍴x)↑'\end{verbatim}'
[12]  x[i+1;]←(1↓⍴x)⍴' '
[13]  SUBIU←1
[14]  i←i+2
[15]  →t1
[16] fim:r←x
------------------------------------------------------------
[0]  r←listaav
[1]  r←(256 3⍴3 0⍕⍳256),'-',256 1⍴⎕AV
------------------------------------------------------------
[0]  r←pedemail x
[1]  →(40≠+/' '=x)/aindanao
[2]  r←80↑'Por favor, informe seu e-mail: \_\_\_\_\_'
[3]  →junnao
[4] aindanao:r←80↑'e-mail cadastrado: ',x
[5] junnao:
------------------------------------------------------------
[ 0]  preencheF;zz;xixa
[ 1]  F←64 150⍴' '
[ 2]  F[1;]←150↑'UNICENP - Centro Universitario Positivo'
[ 3]  F[2;]←150↑'Cadeira de Estrutura de Dados e Arquivos'
[ 4]  F[3+⍳2;]←definicao
[ 5]  zz←'   TEXTO QUE DESCREVE A FAMILIA EXEMPLO'
[ 6]  F[6;⍳⍴zz]←zz
[ 7]  F[6+⍳31;⍳48]←text1
[ 8]  F[6;47+⍳103]←'='
```

```
[ 9]  F[6+⍳31;49]←'|'
[10]  F[6;90+⍳⍴zz]←zz←'O raiz e Adrian'
[11]  F[6+⍳13;64+⍳86]←desenho1
[12]  F[20;49+⍳101]←'='
[13]  zz←'NOME,   &PAI,   &MAE,   &CONJUGE,   &PRIMEIRO FILHO e   &PROXIMO IRMAO'
[14]  F[20;55+⍳⍴zz]←zz
[15]  xixa←1 numera HHH1,[2]'  ¯-'edit 3 0⍕0 1↓caso1
[16]  F[20+⍳13;53+⍳27]←13 27↑xixa
[17]  F[20+⍳13;88+⍳27]←13 27↑13 0↓xixa
[18]  F[20+⍳13;123+⍳27]←13 27↑26 0↓xixa
[19]  F[34;50+⍳20]←20↑'EXEMPLO EXERCS'
[20]  F[33+⍳4;73+⍳74]←enunexe1
[21]  F[38;]←'='
[22]  F[39 40;⍳30]←exemplos1[1 2;]
[23]  F[39 40;30+⍳30]←exemplos1[3 4;]
[24]  F[39 40;60+⍳30]←exemplos1[5 6;]
[25]  F[39 40;90+⍳30]←exemplos1[7 8;]
[26]  F[39 40;120+⍳30]←exemplos1[9 10;]
[27]  F[41;]←'='
[28] ⍝ F[41+  ⍳18;  ⍳112]  ←'E'   ⍝ enunciado (texto) do caso a resolver
[29]  F[41+⍳23;114]←'|'
[30] ⍝ F[41+  ⍳23;115+  ⍳35]  ←'L'   ⍝ lista numerada dos nomes que comporao esta sols
[31]  F[60;⍳112]←'='
[32]  F[61 62 63 64;⍳112]←perguntas   ⍝'P'   ⍝ perguntas a fazer
-------------------------------------------------------------
[0]  r←tiraG
[1]  marcador←marcador+1
[2]  →(1=2|marcador)/homem
[3] mulher:r←M[?⍴M]
[4]  M←(~r=M)/M
[5]  →0
[6] homem:r←H[?⍴H]
[7]  H←(~r=H)/H
-------------------------------------------------------------
[0]  r←tiraH
[1]  r←H[?⍴H]
[2]  H←(~r=H)/H
-------------------------------------------------------------
[0]  r←tiraM
[1]  r←M[?⍴M]
[2]  M←(~r=M)/M
-------------------------------------------------------------
[0]  r←tiraaleG
[1]  →(1=?2)/homem
[2] mulher:r←M[?⍴M]
[3]  M←(~r=M)/M
[4]  →0
[5] homem:r←H[?⍴H]
[6]  H←(~r=H)/H
-------------------------------------------------------------
[ 0]  opesq vivo273a n;CORRECAO;EVENTO;HH;YY;aaa;acuja;dhx;esse;f;h1;lixao;lixo1;lixonol;r
      elat;resp;resu;upag;x;x1;x2;x3;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL273   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA273←ajusta80 FOLHALA273
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA273)⍴' '
```

```
[11]  relat[1;;]←(1↓⍴relat)↑⍙FM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 91⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←98 80⍴' '
[15]  f←FOLHALA273
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.17
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[97;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[98;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26] denovo:XX←geratab
[27]  YY←geratext1 XX
[28]  esse[8+⍳36;]←x1←36 80↑¯1 numera YY
[29]  H←h1←46 17↑lixao←1 numera HH←HHH
[30]  esse[8;]←80↑' A RAIZ = ',RAIZ
[31]  esse[44+⍳46;]←46 80↑h1
[32]  x2←geracason XX
[33]  →(x2[1;2]≠¯1)/blz3
[34]  ⎕←'*'
[35]  →denovo
[36] blz3:
[37]  esse[91;]←80↑2 0⍕x2[1;1]
[38]  esse[92;]←80↑2 0⍕x2[2;1]
[39]  esse[93;]←80↑4 1⍕x2[3;1]
[40]  esse[94;]←80↑4 1⍕x2[4;1]
[41]  x3←HH geracasoa XX
[42]  esse[95;]←80↑'Quais os nomes de ',x3[1;⍳16],' de ',x3[1;16+⍳9]
[43]  esse[96;]←80↑'Quais os nomes de ',x3[2;⍳16],' de ',x3[2;16+⍳9]
[44]  resp←(3 0⍕resp),((,3 0⍕x2[;2]),'  '),,x3[;25+⍳36],'|'
[45]  resu←resu,[1]1 91⍴resp
[46]  acuja←(f[;2]='#')/⍳1↑⍴f
[47]  f[acuja;⍳80]←esse[⌷,f[acuja;3 4],' ';]
[48] ⍝ tira linhas em branco
[49] denovw:f←levantaverbo f
[50]  →(1=SUBIU)/denovw
[51]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[52]  ⎕←(⍕xk←xk+1),'-'
[53]  →testa
[54] fim:upag←(1 0+⍴f)⍴' '
[55]  →(1=≡n)/elafa
[56]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[57]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[58]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑resu
[59]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[60]  →terminando
[61] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 3↓resu)
[62]  lixonol←aaa ⍙FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[63]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[64] terminando:
[65]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\begin{verbatim}'
[66]  relat[1↑⍴relat;;]←upag
[67]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[68]  lixonol←lixonol,[1](ajusta80 INSTRUC273z),[1]1 80⍴80↑'\end{verbatim} \end{document}'
[69]  lixonol←lixonol ⍙FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[70]  lixonol←⎕EX 3 10⍴'quantos   matriz    SUBIU     '
[71]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo273z n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
```

```
      l;xixo;aaa;lixo1;caso;oba2
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL273z  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA273z←ajusta80 FOLHALA273z
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA273z)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 0⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←7 80⍴' '
[15]  f←FOLHALA273z
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.02
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23] inica:
[24]  acuja←(f[;2]='#')/⍳1↑⍴f
[25]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[26]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[27]  ⍞←(⍕xk←xk+1),'-'
[28]  →testa
[29] fim:
[30] terminando:
[31]  relat[1↑⍴relat;1↑1↓⍴relat;]←80↑'\end{document}'
[32]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[33] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[34]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[35]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[36]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo291

```
[ 0]  r←acerta4 x
[ 1]  →(0=⍴,x)/vazio
[ 2]  →(1=⍴,x)/um
[ 3]  →(2=⍴,x)/dois
[ 4]  →(3=⍴,x)/tres
[ 5]  →(4=⍴,x)/quatro
[ 6] erro:'deu erro na geracao de errados'
[ 7]  →0
[ 8] vazio:r←'&&&\\'
[ 9]  →0
[10] um:r←(3 0⍕x),'&&&\\'
[11]  →0
[12] dois:r←(3 0⍕x[1]),'&',(3 0⍕x[2]),'&&\\'
[13]  →0
[14] tres:r←(3 0⍕x[1]),'&',(3 0⍕x[2]),'&',(3 0⍕x[3]),'&\\'
[15]  →0
[16] quatro:r←(3 0⍕x[1]),'&',(3 0⍕x[2]),'&',(3 0⍕x[3]),'&',(3 0⍕x[4]),'\\'
-------------------------------------------------------------
[ 0]  geraenun x;enun;tam;linhas;enun1;solu1
[ 1] ⍝ esta funcao:
```

```
[ 2] ⍝ 1 Embaralha a matriz ENUNCIADO a partir da linha 5
[ 3] ⍝ 2 Substitui os ____ por valores entre 100 e 1400
[ 4] ⍝ 3 Escolhe as 4 linhas iniciais e mais x linhas das seguintes
[ 5] ⍝ 4 Devolve em   ΔENUN o texto que ira para a prova
[ 6] ⍝ 5 Devolve em   ΔSOLU uma matriz 3 por x, (x   ≤ 18)  contendo
[ 7] ⍝ col1=1/2/3=criacao/exapansao/exclusao
[ 8] ⍝ col2=1 . 8=arquivo A..H
[ 9] ⍝ col3=tamanho
[10] ⍝ em   ΔDEFE vai um vetor (possivelmente vazio) com os clusters defeituosos
[11]  →(x>18)/erro
[12]  ΔDEFE←((?5)-1)?24
[13]  ΔDEFE←ΔDEFE[⍋ΔDEFE]
[14]  tam←(100×?18⍴14),0 0 0 0
[15]  enun←,ENUNCIADO
[16]  enun[(enun='_')/⍳⍴enun]←4 0⍕¯4↓tam
[17]  enun←(⍴ENUNCIADO)⍴enun
[18]  enun1←enun[(linhas←(⍳4),4+linhas←x?18);]
[19]  ΔENUN←0 2↓enun1
[20]  solu1←(⍪((4×⍴linhas)⍴1 0)⍀(,enun1[;1]),,enun1[;2]),tam[linhas]
[21]  ΔSOLU←⍉(3,⍴linhas)⍴solu1
[22]  →0
[23] erro:'x nao pode ser maior que 18, reentre'
------------------------------------------------------------
[0]  lixo1
[1]  →(como=0)/vai
[2]  xx←ΔFM'f:⍀apl2⍀livrbloi'
[3]  xx←((1↑⍴xx),80)↑xx
[4]  f←xx,[□IO]f,[□IO]1 80⍴80↑'⍀end{document}'
[5] vai:f ΔFM'c:⍀apl2⍀L___'
------------------------------------------------------------
[0]  r←qt lixo3 aa;i;contador;aspa
[1]  i←1 ⋄ contador←8 ⋄ aspa←'''' ⋄ r←aa
[2] vo:→(i>1↑⍴aa)/fim
[3]  →(2≠+/aa[i;1 2]='⍀#')/soma
[4]  r[i;2+⍳qt]←⍪aspa,(qt⍴'0'),aspa,'⍕contador'
[5]  contador←contador+1
[6] soma:→(i=i←i+1)/vo
[7] fim:
------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠□NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i>1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10] te3:→(candi[j]=' ')/ufa
[11]  j←j-1
[12]  →te3
[13] ufa:r←r,[1]1 80⍴80↑j↑candi
[14]  candi←j↓candi
[15]  →((⍴candi)=+/candi=' ')/som
[16]  →te2
[17] eca:r←r,[1]1 80⍴80↑candi
[18] som:i←i+1
[19]  →te
[20] fim:'acabou'
------------------------------------------------------------
[ 0]  r←defe resolve solu;tam;ativos;comeca;faltam;i;inicial;inicio;jaaloquei;lugares;onde
      ;ondeva;zerara
```

```
[ 1] ⍝ esta funcao recebe a   ΔSOLU da geraenun e calcula a fat correta
[ 2] ⍝ recebe tambem a variavel   ΔDEFE
[ 3]  CASO←((1↑⍴ΔSOLU),30)⍴0
[ 4]  r←30⍴0
[ 5]  r[defe]←¯2
[ 6]  i←1 ⋄ ativos←0 3⍴0
[ 7] loop:→(i>1↑⍴solu)/fim
[ 8]  CASO[1⌈(i-1);]←r
[ 9]  →(solu[i;2]∈ativos[;1])/jatem
[10]  tam←⌈solu[i;3]÷500
[11]  ativos←ativos,[1](solu[i;2],inicio←1↑lugares←tam↑(0=r)/⍳30),solu[i;3]
[12]  →(lugares[⍴lugares]=0)/deuxabu
[13]  r[lugares]←(1↓lugares),¯1
[14]  →(i=i←i+1)/loop
[15] jatem:→(solu[i;1]=3)/exclusao
[16]  inicial←(ativos[;1]=solu[i;2])/[1]⍳1↑⍴ativos
[17]  jaaloquei←1
[18]  comeca←ativos[inicial;2]
[19] acha:→(r[comeca]=¯1)/achou
[20]  jaaloquei←jaaloquei+1
[21]  comeca←r[comeca]
[22]  →acha
[23] achou:ativos[inicial;3]←ativos[inicial;3]+solu[i;3]
[24]  faltam←(⌈ativos[inicial;3]÷500)-jaaloquei
[25]  lugares←faltam↑(0=r)/⍳30
[26]  →((⍴lugares)=0)/ok
[27]  →(lugares[⍴lugares]=0)/deuxabu
[28]  r[comeca]←1↑lugares
[29]  r[lugares]←(1↓lugares),¯1
[30] ok:→(i=i←i+1)/loop
[31] exclusao:
[32]  ondeva←(ativos[;1]=solu[i;2])/⍳1↑⍴ativos
[33]  onde←zerara←ativos[ondeva;2]
[34]  ativos←(ativos[;1]≠solu[i;2])/[1]ativos
[35] zera:→(r[onde]=¯1)/ufa
[36]  onde←r[onde]
[37]  zerara←zerara,onde
[38]  →zera
[39] ufa:r[zerara]←0
[40]  →(i=i←i+1)/loop
[41] fim:CASO[(i-1);]←r
[42]  →0
[43] deuxabu:r←30⍴¯100
------------------------------------------------------------
[0]  r←ultimo t;x
[1]  x←(t=0)∨(t=¯2)
[2]  r←(1+⍴t)-1↑(~∧⍀⊖x)/⍳⍴t
------------------------------------------------------------
[ 0]  opesq vivo291a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;indices;lixo1;lixonol;relat;re
      sp;resu;t;ult;upag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←4 ⋄ EVENTO←'PL291   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA291←ajusta80 FOLHALA291
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA291)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[12]  xk←1 ⋄ resu←0 5⍴0
```

```
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←32 80⍴' '
[15]  f←FOLHALA291
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.2
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[31;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[32;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26] dinovo:geraenun 14
[27]  esse[8;]←80↑acerta4 ΔDEFE
[28]  esse[8+⍳18;]←18 80↑1 numera(18,71)↑ΔENUN
[29]  t←ΔDEFE resolve 18 3↑ΔSOLU
[30]  →(¯100≠t[1])/blznn
[31]  ⎕←'*'
[32]  →dinovo
[33] blznn:
[34]  ult←ultimo t
[35]  indices←(4?ult-1)
[36]  indices←indices[⍋indices]
[37]  esse[27;]←80↑2 0⍕indices[1]
[38]  esse[28;]←80↑2 0⍕indices[2]
[39]  esse[29;]←80↑2 0⍕indices[3]
[40]  esse[30;]←80↑2 0⍕indices[4]
[41]  resu←resu,[1]1 5⍴resp,t[indices]
[42]  acuja←(f[;2]='#')/⍳1↑⍴f
[43]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[44]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[45]  ⎕←(⍕xk←xk+1),'-'
[46]  →testa
[47] fim:upag←(1 0+⍴f)⍴' '
[48]  →(1=≡n)/elafa
[49]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[50]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[51]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←5 0 10 0 5 0 5 0 5 0)⍕resu
[52]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[53]  →terminando
[54] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),'¯-'edit 5 0⍕0 1↓resu)
[55]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[56]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[57] terminando:
[58]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[59]  relat[1↑⍴relat;;]←upag
[60]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[61] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[62]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[63]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[64]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
[65]  'a ultima folha gerada esta em CASO neste ws'
------------------------------------------------------------
```

vivo292

```
[0]  r←DOCUMENTAC292;i
[1]  r←((1↑⍴ΔSOLU),300)⍴' '
[2]  i←1
[3] t:→(i>1↑⍴ΔSOLU)/fim
[4]  r[i;]←300↑acerta resunix(i,3)↑ΔSOLU
```

```
[5]  i←i+1
[6]  →t
[7] fim:r←1 numera r
[8]  r←((4×1↑ρr),76)ρr
-------------------------------------------------------------
[ 0]  r←acerta x;poin;arqs
[ 1]  r←120 17ρ' '
[ 2]  poin←(x[;1]>0)/⍳1↑ρx
[ 3]  arqs←(x[;1]≤0)/⍳1↑ρx
[ 4]  r[poin;1]←'('
[ 5]  r[poin;2 3 4]←((ρpoin),3)ρ3 0⍕x[poin;1]
[ 6]  r[poin;5]←','
[ 7]  r[poin;6 7 8]←((ρpoin),3)ρ3 0⍕x[poin;2]
[ 8]  r[poin;9]←','
[ 9]  r[poin;10 11 12]←((ρpoin),3)ρ3 0⍕x[poin;3]
[10]  r[poin;13]←','
[11]  r[poin;14 15 16]←((ρpoin),3)ρ3 0⍕x[poin;4]
[12]  r[poin;17]←')'
[13]  r[arqs;1]←'-ABCDEFGH'[,1+|x[arqs;1]]
[14]  r←,r
[15]  r←(r≠' ')/r
-------------------------------------------------------------
[0]  r←achaends x;i
[1]  r←tirazero bloco[x;]
[2]  →(0=ρr)/0
[3]  i←1
[4] testajj:→(i>ρr)/0
[5]  r←r,achaends r[i]
[6]  →(i=i←i+1)/testajj
-------------------------------------------------------------
[ 0]  r←formata ff;i;j;k
[ 1] ⍝ esta funcao recebe o resultado do UNIX e o trasforma em matriz n x 13
[ 2]  i←1 ⋄ j←1 ⋄ k←1 ⋄ r←80 13ρ' '
[ 3] testa:→(i>ρff)/fim
[ 4]  →(ff[i]∊'ABCDEFGHIJKLMNOPQRSTUVWXYZ-')/letra
[ 5]  →(ff[i]=')')/fecha
[ 6]  r[j;k]←ff[i]
[ 7]  k←k+1
[ 8]  i←i+1
[ 9]  →testa
[10] letra:r[j;k]←ff[i]
[11]  j←j+1
[12]  k←1
[13]  i←i+1
[14]  →testa
[15] fecha:r[j;k]←ff[i]
[16]  j←j+1
[17]  k←1
[18]  i←i+1
[19]  →testa
[20] fim:r←(j,13)↑r
-------------------------------------------------------------
[ 0]  geraenun x;enun;tam;linhas;enun1;solu1
[ 1] ⍝ esta funcao:
[ 2] ⍝ 1 Embaralha a matriz ENUNCIADO a partir da linha 5
[ 3] ⍝ 2 Substitui os ____ por valores entre 100 e 500
[ 4] ⍝ 3 Escolhe as 4 linhas iniciais e mais x linhas das seguintes
[ 5] ⍝ 4 Devolve em   ΔENUN o texto que ira para a prova
[ 6] ⍝ 5 Devolve em   ΔSOLU uma matriz 3 por x, (x   ≤ 18)  contendo
[ 7] ⍝ col1=1/2/3=criacao/exapansao/exclusao
[ 8] ⍝ col2=1 . 8=arquivo A..H
[ 9] ⍝ col3=tamanho
[10]  →(x>18)/erro
```

```
[11]  tam←(100×?1+18ρ4),0 0 0 0
[12]  enun←,ENUNCIADO
[13]  enun[(enun='_')/ιρenun]←4 0⍕¯4↓tam
[14]  enun←(ρENUNCIADO)ρenun
[15]  enun1←enun[(linhas←(ι4),4+linhas←x?18);]
[16]  ΔENUN←0 2↓enun1
[17]  solu1←(⍪((4×ρlinhas)ρ1 0)⍀(,enun1[;1]),,enun1[;2]),tam[linhas]
[18]  ΔSOLU←⍉(3,ρlinhas)ρsolu1
[19]  →0
[20] erro:'x nao pode ser maior que 18, reentre'
------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80ρ' '
[ 6] te:→(i>1↑ρzz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>ρcandi)/eca
[ 9]  j←qt
[10] te3:→(candi[j]=' ')/ufa
[11]  j←j-1
[12]  →te3
[13] ufa:r←r,[1]1 80ρ80↑j↑candi
[14]  candi←j↓candi
[15]  →((ρcandi)=+/candi=' ')/som
[16]  →te2
[17] eca:r←r,[1]1 80ρ80↑candi
[18] som:i←i+1
[19]  →te
[20] fim:'acabou'
------------------------------------------------------------
[ 0]  r←resunix solu;bloco;file;kfile;ksolu;mae;onde;ondezeros;proxblo;px1;px2;px3;px4;px5
      ;px6;px7;px8;px9;qtdbloco;raios;vet;filho;ondepai;pai
[ 1]  ksolu←1 ⋄ bloco←120 4ρ0 ⋄ file←8 7ρ0
[ 2] ini00:→(ksolu>1↑ρsolu)/fim00
[ 3]  →(solu[ksolu;2]∈file[;1])/jatem
[ 4]  file[(1↑(0=file[;1])/ι1↑ρfile);1]←solu[ksolu;2]
[ 5] jatem:kfile←(,file[;1])ιsolu[ksolu;2]
[ 6]  →(solu[ksolu;1]=3)/exclui
[ 7]  qtdbloco←solu[ksolu;3]÷100
[ 8] testa00:→(qtdbloco≤0)/ok00
[ 9]  onde←1↑(file[kfile;]=0)/ι7
[10]  proxblo←1↑(0=bloco[;1])/ι1↑ρbloco
[11]  →(onde=4)/e300
[12]  →(onde=5)/e400
[13]  →(onde=6)/e500
[14] e1ou200:file[kfile;onde]←proxblo
[15]  bloco[proxblo;1]←-solu[ksolu;2]
[16]  qtdbloco←qtdbloco-1
[17]  →testa00
[18] e300:px1←proxblo
[19]  bloco[px1;]←999
[20]  px2←1↑(0=bloco[;1])/ι1↑ρbloco
[21]  file[kfile;4]←px1
[22]  bloco[px1;]←px2,0 0 0
[23]  bloco[px2;1]←-solu[ksolu;2]
[24]  qtdbloco←qtdbloco-1
[25]  →testa00
[26] e400:ondezeros←1↑((0=bloco[file[kfile;4];]),1)/ι5
[27]  →(ondezeros=5)/preenche4
[28]  px3←1↑(0=bloco[;1])/ι1↑ρbloco
```

```
[29]  bloco[file[kfile;4];ondezeros]←px3
[30]  bloco[px3;1]←-solu[ksolu;2]
[31]  qtdbloco←qtdbloco-1
[32]  →testa00
[33] preenche4:px4←1↑(0=bloco[;1])/⍳1↑⍴bloco
[34]  bloco[px4;]←999
[35]  px5←1↑(0=bloco[;1])/⍳1↑⍴bloco
[36]  bloco[px5;]←999
[37]  px6←1↑(0=bloco[;1])/⍳1↑⍴bloco
[38]  bloco[px4;]←px5,0 0 0
[39]  bloco[px5;]←px6,0 0 0
[40]  file[kfile;5]←px4
[41]  bloco[px6;1]←-solu[ksolu;2]
[42]  qtdbloco←qtdbloco-1
[43]  →testa00
[44] e500:
[45]  pai←bloco[file[kfile;5];]
[46]  ondepai←¯1↑(pai≠0)/pai
[47]  filho←bloco[ondepai;]
[48]  →(4=mae←+/filho≠0)/cheio
[49]  px7←1↑(0=bloco[;1])/⍳1↑⍴bloco
[50]  bloco[ondepai;mae+1]←px7
[51]  bloco[px7;1]←-solu[ksolu;2]
[52]  qtdbloco←qtdbloco-1
[53]  →testa00
[54] cheio:px8←1↑(0=bloco[;1])/⍳1↑⍴bloco
[55]  bloco[px8;]←999
[56]  px9←1↑(0=bloco[;1])/⍳1↑⍴bloco
[57]  bloco[px8;]←px9,0 0 0
[58]  bloco[file[kfile;5];(1↑(bloco[file[kfile;5];]=0)/⍳4)]←px8
[59]  bloco[px9;1]←-solu[ksolu;2]
[60]  qtdbloco←qtdbloco-1
[61]  →testa00
[62] ok00:→(ksolu=ksolu←ksolu+1)/ini00
[63] exclui:raios←''
[64]  →(file[kfile;5]=0)/quica
[65]  raios←(achaends file[kfile;5]),file[kfile;5]
[66] quica:→(file[kfile;4]=0)/quica2
[67]  raios←raios,(achaends file[kfile;4]),file[kfile;4]
[68]  bloco[raios;]←0
[69] quica2:→(file[kfile;3]=0)/quica3
[70]  bloco[file[kfile;3];]←0
[71] quica3:bloco[file[kfile;2];]←0
[72]  file←8 7↑((⍳8)≠kfile)/[1]file
[73]  →(ksolu=ksolu←ksolu+1)/ini00
[74] fim00:vet←~4≠+/[2]bloco=0
[75]  r←(~⍱⍱⍱vet)/[1]bloco
-------------------------------------------------------------
[0]  r←tam frase
[1]  r←⍴(~⍱⍱⍱frase=' ')/frase
-------------------------------------------------------------
[0]  r←tirazero x
[1]  r←(x>0)/x
-------------------------------------------------------------
[ 0]  opesq vivo292a n;CORRECAO;EVENTO;aaa;acuja;dhx;essafolha;esse;f;ind1;ind2;inds;ip;li
      xo1;lixonol;qto;relat;resp;resu;resultado;t;upag;uu;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL292   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
```

```
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA292←ajusta80 FOLHALA292
[10]  relat←((2+1↑⍴ylu),1 20+⍴FOLHALA292)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 100⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←28 100⍴' '
[15]  f←((1↑⍴FOLHALA292),100)↑FOLHALA292
[16]  esse[1;]←100↑dhx[1;]
[17]  esse[2;]←100↑dhx[2;]
[18]  esse[3;]←100↑4 2⍕VERSAOa←4.23
[19]  esse[4;]←100↑ylu[xk;⍳6]
[20]  esse[5;]←100↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←100↑EVENTO
[22]  esse[7;]←100↑(3 0⍕resp←xk),' ',opesq
[23]  esse[27;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[28;]←100↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26] denovo:geraenun 10+?2
[27]  esse[7+⍳(1↑⍴ΔENUN);⍳70]←((1↑⍴ΔENUN),70)↑1 numera((1↑⍴ΔENUN),71)↑ΔENUN
[28]  t←acerta resunix ΔSOLU
[29]  uu←formata t
[30]  ind1←(uu[;1]≠'(')/⍳1↑⍴uu
[31]  ind2←(uu[;1]='(')/⍳1↑⍴uu
[32]  →((1<⍴ind1)∧(1<⍴ind2))/blz
[33]  ⎕←'*'
[34]  →denovo
[35] blz:
[36]  inds←ind1[2?⍴ind1],ind2[2?⍴ind2]
[37]  inds←inds[⍋inds]
[38]  esse[26;]←100↑(2 0⍕inds[1]),'\hspace{2cm}',(2 0⍕inds[2]),'\hspace{2cm}',(2 0⍕inds[3]
      ),'\hspace{2cm}',(2 0⍕inds[4]),'\\'
[39]  resu←resu,[1]1 100⍴100↑(4 0⍕resp),(5⍴' '),,uu[inds;],'/'
[40]  acuja←(f[;2]='#')/⍳1↑⍴f
[41]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[42]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[43]  ⎕←(⍕xk←xk+1),'-'
[44]  →testa
[45] fim:upag←(1 0+⍴f)⍴' '
[46]  →(1=≡n)/elafa
[47]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[48]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[49]  upag[2+⍳1↑⍴presu;]←((1↑⍴presu),100)↑resu
[50]  upag[3+1↑⍴presu;]←(1↓⍴upag)↑'\end{verbatim}'
[51]  →terminando
[52] elafa:aaa←(ylu,0 5↓resu)
[53]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[54]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[55] terminando:
[56]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[57]  relat[1↑⍴relat;;]←upag
[58]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[59] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[60]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[61]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[62]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo293

```
[0]  r←achaende z;i
```

```
[1] ⍝ devolve o endereco em TABS de z
[2]  i←1
[3] lll:→(i>1↑⍴TABS)/fim
[4]  →(4=+/z=TABS[i;⍳4])/achou
[5]  →(i=i←i+1)/lll
[6] achou:r←i
[7]  →0
[8] fim:'estourou TABS'
-------------------------------------------------------------
[ 0]  r←alternativa comando;i;zz
[ 1]  i←1 ⋄ r←'' ⋄ zz←comando
[ 2]  zz←(comando≠' ')/comando
[ 3] lk:→(i>⍴zz)/uka
[ 4]  →(zz[i]='(')/abre
[ 5]  →(zz[i]=')')/fecha
[ 6]  r←r,zz[i]
[ 7] soma:→(i=i←i+1)/lk
[ 8] abre:r←r,'[[[['
[ 9]  →soma
[10] fecha:r←r,']]]]'
[11]  →soma
[12] uka:r←(((⍴r)÷4),4)⍴r
[13]  i←1
[14] v1:→(i>1↑⍴r)/gt
[15]  →((r[i;1]='[')∨(r[i;1]=']'))/k1
[16]  TABS[proximo TABS;]←r[i;],8⍴' '
[17] k1:→(i=i←i+1)/v1
[18] gt:
-------------------------------------------------------------
[ 0]  arrumatabs nome;i
[ 1]  TABS←(4≠+/TABS[;⍳4]=' ')/[1]TABS
[ 2]  TABS←TABS[⍋AV⍳TABS;]
[ 3]  i←1
[ 4] uja:→(i>1↑⍴TABS)/fim
[ 5]  TABS[i;4+⍳4]←4 0⍕1000+(i-1)×12
[ 6]  →(i=i←i+1)/uja
[ 7] fim:i←1
[ 8] vols:→(i>1↑⍴TABS)/f33
[ 9]  →(4=+/TABS[i;⍳4]=4↑nome)/achou
[10]  →(i=i←i+1)/vols
[11] achou:TABS[i;4+⍳4]←'2000'
[12] f33:
-------------------------------------------------------------
[ 0]  r←contaelems lista;x;i;contapar
[ 1]  x←(~⍷∧⍀⍷lista=' ')/lista
[ 2]  x←1↓x
[ 3]  x←¯1↓x
[ 4]  i←1 ⋄ r←1 ⋄ ULTIMO←''
[ 5] t1:→(i>⍴x)/fim
[ 6]  →(x[i]≠'(')/continua
[ 7]  contapar←0
[ 8]  →exclui
[ 9] continua:→(x[i]=' ')/somavolta
[10]  ULTIMO←ULTIMO,x[i]
[11]  →(i=i←i+1)/t1
[12] exclui:ULTIMO←ULTIMO,x[i]
[13]  →(x[i]=')')/subtrae
[14]  →(x[i]='(')/somae
[15]  →conta22
[16] subtrae:contapar←contapar-1
[17]  →(contapar=0)/mesmo
[18]  →conta22
[19] somae:contapar←contapar+1
```

```
[20] conta22:→(i=i←i+1)/exclui
[21] somavolta:r←r+1 ⋄ ULTIMO←''
[22] mesmo:→(i=i←i+1)/t1
[23] fim:
------------------------------------------------------------
[0]  r←a diferente b
[1]  →(a=' ')/eb
[2] ea:r←a
[3]  →0
[4] eb:r←b
------------------------------------------------------------
[ 0]  r←a existe b;i
[ 1]  i←1
[ 2] novo:→(i>1↑⍴b)/acabou
[ 3]  →(4=+/a=b[i;⍳4])/tem
[ 4]  →(4=+/b[i;⍳4]=' ')/acabou
[ 5]  →(i=i←i+1)/novo
[ 6] tem:r←1
[ 7]  →0
[ 8] acabou:r←0
[ 9]  →0
------------------------------------------------------------
[0]  geracaso tam
[1]  inicializa
[2]  L1←'L1'geralista tam
[3]  LC←geracomando L1
[4]  arrumatabs'L1'
[5]  preenche LC
[6]  TABS←TABS[;4+⍳4],[2]TABS[;⍳4]
------------------------------------------------------------
[ 0]  r←geracomando comando;i;zz
[ 1]  i←1 ⋄ r←'' ⋄ zz←comando
[ 2]  zz←(comando≠' ')/comando
[ 3] lk:→(i>⍴zz)/uka
[ 4]  →(zz[i]='(')/abre
[ 5]  →(zz[i]=')')/fecha
[ 6]  r←r,zz[i]
[ 7] soma:→(i=i←i+1)/lk
[ 8] abre:r←r,'[[[['
[ 9]  →soma
[10] fecha:r←r,']]]]'
[11]  →soma
[12] uka:r←(((⍴r)÷4),4)⍴r
------------------------------------------------------------
[ 0]  r←geraid;LETRA
[ 1]  LETRA←'ABCDEFGHIJKLMNOPQRSTUVWXYZ'
[ 2] denovo:→(1=?2)/num
[ 3]  r←LETRA[?4⍴26]
[ 4]  →okk
[ 5] num:r←,'0005'⍕?5000
[ 6] okk:
[ 7]  →(r existe TABS)/denovo
[ 8]  TABS[proximo TABS;]←r,8⍴' '
[ 9] fim:
------------------------------------------------------------
[ 0]  rr←nome geralista x;i;conta;manda;r;j;zz
[ 1]  r←'' ⋄ i←1 ⋄ conta←0
[ 2] loop1:→(i>x)/termina
[ 3]  manda←?10
[ 4]  →(manda<6)/fui
[ 5]  r←r,' ('
[ 6]  conta←conta+1
[ 7]  →(manda<9)/fui
```

```
[ 8]  r←r,' ('
[ 9]  conta←conta+1
[10] fui:r←r,geraid,' '
[11]  →(1=?4)/pul2
[12]  →(conta<1)/pul2
[13]  r←r,') '
[14]  conta←conta-1
[15] pul2:
[16]  →(i=i←i+1)/loop1
[17] termina:
[18] volteia:→(conta<1)/fim
[19]  r←r,') '
[20]  conta←conta-1
[21]  →volteia
[22] fim:r←'(',r,')'
[23]  i←1 ⋄ j←1 ⋄ rr←(⍴r)⍴' '
[24] ula:→(i>¯1+⍴rr)/ufa
[25]  →(((r[i]=' ')∧(r[i+1]=')'))∨((r[i]='(')∧(r[i+1]=' ')))/blz
[26]  rr[j]←r[i]
[27]  →((r[i]=' ')∧(r[i+1]=' '))/tem2
[28]  i←i+1 ⋄ j←j+1
[29]  →ula
[30] blz:rr[j]←r[i]diferente r[i+1]
[31] tem2:i←i+2 ⋄ j←j+1
[32]  →ula
[33] ufa:TABS[proximo TABS;]←(4↑nome),'2000    '
[34]  COMANDO←geracomando rr
------------------------------------------------------------
[0]  inicializa
[1]  TABS←60 12⍴' '
[2]  SACO←60 2⍴0
[3]  TABS[1 2;⍳4]←2 4⍴'nil t   '
[4]  ULTIMO←1
------------------------------------------------------------
[0]  r←obtemsaco
[1]  →(ULTIMO>60)/erro
[2]  ULTIMO←ULTIMO+1
[3]  r←ULTIMO-1
[4]  →0
[5] erro:'estourou o saco'
------------------------------------------------------------
[ 0]  r←preenche coma;i;z;y;PILHA;pil;xave
[ 1]  i←2 ⋄ PILHA←⍳0 ⋄ xave←0
[ 2] perga:→(i>1↑⍴coma)/fim
[ 3]  →(coma[i;1]='[')/abre
[ 4]  →(coma[i;1]=']')/fecha
[ 5]  z←obtemsaco
[ 6]  y←achaende coma[i;]
[ 7]  →((0=⍴PILHA)∨(xave=0))/nao
[ 8]  pil←1↑PILHA
[ 9]  PILHA←1↓PILHA
[10]  SACO[pil;2]←2000+8×z-1   ⍝  ⍝  ⍝  ⍝  ⍝ erro
[11] nao:
[12]  SACO[z;1]←⍎TABS[y;4+⍳4]
[13]  PILHA←z,PILHA
[14]  xave←1
[15]  →soma
[16] abre:
[17]  z←obtemsaco
[18]  →(xave=0)/ufffa
[19]  pil←1↑PILHA
[20]  PILHA←1↓PILHA
[21]  SACO[pil;2]←2000+8×z-1
```

```
[22] ufffa:SACO[z;1]←2000+8×z
[23]  PILHA←z,PILHA
[24]  xave←0
[25]  →soma
[26] fecha:
[27]  pil←1↑PILHA
[28]  PILHA←1↓PILHA
[29]  SACO[pil;2]←⍕TABS[achaende'nil ';4+⍳4]
[30]  xave←1
[31] soma:→(i=i←i+1)/perga
[32] fim:→(0=⍴PILHA)/ufa
[33]  pil←1↑PILHA
[34]  PILHA←1↓PILHA
[35]  SACO[pil;2]←⍕TABS[achaende'nil ';4+⍳4]
[36]  →fim
[37] ufa:
-------------------------------------------------------------
[ 0]  r←proximo b;i
[ 1]  i←1
[ 2] lop:→(i>1↑⍴b)/erro
[ 3]  →(4=+/b[i;⍳4]=' ')/achou
[ 4]  →(i=i←i+1)/lop
[ 5] achou:r←i
[ 6]  →0
[ 7] erro:'oops deu zebra no proximo. Estouro de TABS...'
[ 8]  →0
-------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i>1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10] te3:→(candi[j]=' ')/ufa
[11]  j←j-1
[12]  →te3
[13] ufa:r←r,[1]1 80⍴80↑j↑candi
[14]  candi←j↓candi
[15]  →((⍴candi)=+/candi=' ')/som
[16]  →te2
[17] eca:r←r,[1]1 80⍴80↑candi
[18] som:i←i+1
[19]  →te
[20] fim:'acabou'
-------------------------------------------------------------
[ 0]  r←vesaco1;vc;v1;v2;v3
[ 1]  r←(SACO[;1]≠0)/[1]SACO
[ 2]  vc←1↑⍴r
[ 3]  v1←5 0⍕(vc,1)⍴2000+8×¯1+⍳vc
[ 4]  v2←5 0⍕(vc,1)⍴r[;1]
[ 5]  v3←5 0⍕(vc,1)⍴r[;2]
[ 6]  r←v1,'&',v2,'&',v3
[ 7]  →(30<1↑⍴r)/erro1
[ 8]  r←30 150↑r
[ 9]  r[;6 12]←'&'
[10]  →0
[11] erro1:r[1;1]←'%'
-------------------------------------------------------------
[ 0]  opesq vivo293a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixonol;relat;resp;resu;upag;x
```

```
      ixo;xk;ylu;z
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL293   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA293←150 ajusta FOLHALA293
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA293)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 255⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←56 150⍴' '
[15]  f←FOLHALA293
[16]  esse[1;]←150↑dhx[1;]
[17]  esse[2;]←150↑dhx[2;]
[18]  esse[3;]←150↑4 2⍎VERSAOa←3.25
[19]  esse[4;]←150↑ylu[xk;⍳6]
[20]  esse[5;]←150↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←150↑EVENTO
[22]  esse[7;]←150↑(3 0⍎resp←xk),'-',opesq
[23]  esse[55;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[56;]←150↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  geracaso 14
[27]  z←vesaco1
[28]  →(z[1;1]≠'%')/blz88
[29]  ⍞←'⍟'
[30]  →inica
[31] blz88:
[32]  esse[7+⍳17;]←17 150↑(TABS[;⍳4],'&'),TABS[;4+⍳4]
[33]  esse[24+⍳30;]←z
[34]  xixo←(2 0⍎contaelems L1),'-'
[35]  →(50>⍴ULTIMO)/ika
[36]  ⍞←'!'
[37]  →inica
[38] ika:
[39]  resu←resu,[1]1 255⍴255↑(3 0⍎resp),'  ',250↑xixo,ULTIMO,' | ',L1
[40]  acuja←(f[;2]='#')/⍳1↑⍴f
[41]  f[acuja;⍳150]←esse[⍤,f[acuja;3 4],' ';]
[42]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[43]  ⍞←(⍎xk←xk+1),'-'
[44]  →testa
[45] fim:upag←(1 0+⍴f)⍴' '
[46]  →(1=≡n)/elafa
[47]  upag[1;]←(1↓⍴upag)↑'\onecolumn \begin{verbatim}'
[48]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[49]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),150)↑resu  ⍝
[50]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[51]  →terminando
[52] elafa:aaa←(ylu,0 5↓resu)
[53]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[54]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[55] terminando:
[56]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[57]  relat[1↑⍴relat;;]←upag
[58]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.t
      ex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
```

```
------------------------------------------------------------
```

vivo311

```
[0]  CP
[1]  P←5 6⍴0
------------------------------------------------------------
[0]  r←EP pi
[1]  →(P[pi;6]≤0)/erro
[2]  r←P[pi;P[pi;6]]
[3]  P[pi;6]←P[pi;6]-1
[4]  →0
[5] erro:r←43
------------------------------------------------------------
[0]  r←pi IP le;x;y;lixo
[1]  →(P[pi;6]≥5)/tes
[2]  P[pi;6]←P[pi;6]+1
[3]  P[pi;P[pi;6]]←L le
[4]  r←0
[5]  →fim
[6] tes:
[7] fim:r←0
------------------------------------------------------------
[0]  r←L x
[1]  →(x=-1)/erro
[2]  r←⎕AV⍳x
[3]  →0
[4] erro:'deu erro'
------------------------------------------------------------
[0]  r←N x
[1]  r←⎕AV[x]
------------------------------------------------------------
[0]  r←analisaP;x;i;z
[1]  x←,P ⋄ z←0 3⍴0
[2]  i←1
[3] so:→(i>1↑⍴x)/aca
[4]  →(x[i]=0)/soma
[5]  z←z,[1]1 3⍴(1+⌊(i-1)÷6),(1+6|i-1),x[i]
[6] soma:→(i=i←i+1)/so
[7] aca:r←z
------------------------------------------------------------
[ 0]  r←geram tam;ind
[ 1]  r←(tam,3)⍴0
[ 2]  r[;1]←?tam⍴5
[ 3]  r[;2]←(1 1 1 2 2 2 1 1 1 1)[?tam⍴10]
[ 4]  r[;3]←L'ABCDEFGIJKLMNOPQRSTUVXYZ'[?tam⍴24]
[ 5]  ind←(r[;2]=1)/⍳tam
[ 6]  ind←(⌊tam÷7)↑ind[(⍴ind)?⍴ind]
[ 7]  r[ind;3]←-?(⌊tam÷7)⍴5
------------------------------------------------------------
[ 0]  r←montaa x;i;aspa
[ 1] ⍝ x e o resultado de geram
[ 2]  aspa←''''
[ 3]  i←1
[ 4]  r←((1↑⍴x),11)⍴' '
[ 5] ica:→(i>1↑⍴x)/fim
[ 6]  →(x[i;2]=2)/excl
[ 7]  →(x[i;3]>0)/norm
[ 8]  r[i;1]←1 0⍕x[i;1]
[ 9]  r[i;3 4 5 6 7 8 9 10]←'IP N EP '
[10]  r[i;11]←1 0⍕|x[i;3]
[11]  →soma
```

```
[12] norm:
[13]  r[i;1]←1 0⍕x[i;1]
[14]  r[i;3 4 5 6 7 8]←'IP ',aspa,(N x[i;3]),aspa
[15]  →soma
[16] excl:r[i;⍳4]←'EP ',(1 0⍕x[i;1])
[17] soma:→(i=i←i+1)/ica
[18] fim:
-------------------------------------------------------------
[ 0]  r←montap x;i
[ 1] ⍝ x e o resultado de geram
[ 2]  i←1
[ 3]  r←((1↑⍴x),11)⍴' '
[ 4] ica:→(i>1↑⍴x)/fim
[ 5]  →(x[i;2]=2)/excl
[ 6]  →(x[i;3]>0)/norm
[ 7]  r[i;1 2 3 5 6 7 8 10 11]←'IP(,EP())'
[ 8]  r[i;4]←1 0⍕x[i;1]
[ 9]  r[i;9]←1 0⍕|x[i;3]
[10]  →soma
[11] norm:r[i;⍳7]←'IP( ,',(N x[i;3]),')'
[12]  r[i;4]←1 0⍕x[i;1]
[13]  →soma
[14] excl:r[i;⍳5]←'EP(',(1 0⍕x[i;1]),')'
[15] soma:→(i=i←i+1)/ica
[16] fim:
[17]  r←(50 3⍴' '),r,' '
[18]  r[;⍳2]←((1↑⍴x),2)⍴2 0⍕⍳1↑⍴x
[19]  r[;3]←'.'
-------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i>1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10] te3:→(candi[j]=' ')/ufa
[11]  j←j-1
[12]  →te3
[13] ufa:r←r,[1]1 80⍴80↑j↑candi
[14]  candi←j↓candi
[15]  →((⍴candi)=+/candi=' ')/som
[16]  →te2
[17] eca:r←r,[1]1 80⍴80↑candi
[18] som:i←i+1
[19]  →te
[20] fim:'acabou'
-------------------------------------------------------------
[0]  r←tam frase
[1]  r←⍴(~⍵∧⍳⍵=' ')/frase
-------------------------------------------------------------
[0]  r←visual x
[1]  r←⎕AV[x+49×x<40]
-------------------------------------------------------------
[ 0]  opesq vivo311a n;CORRECAO;EVENTO;aaa;acuja;cab;dhx;esse;f;i;j;k;lixo;lixo1;lixonol;m
      ;mel;p;relat;resp;resu;u;upag;x;xixo;xk;y;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
```

```
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL311   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA311←ajusta80 FOLHALA311
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA311)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 29⍴' ' ⍝ era 42
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←62 80⍴' '
[15]  f←FOLHALA311
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←3.27
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[23]  esse[61;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[62;⍳17]←esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[5+⍳5]
[25] inica:
[26]  y←montaa x←geram 50
[27]  esse[7+⍳50;⍳15]←montap x
[28]  esse[7+⍳50;17+⍳49]←50 49⍴'1=_____T_ 2=_____T_ 3=_____T_ 4=_____T_ 5=_____T_'
[29] ⍝                    12345678901234567890123456789012345678901234567890123456789
[30]  i←1
[31]  CP
[32] ok1:→(i>50)/ufa
[33]  ⍞' lixo  ←',y[i;]
[34]  →(i=i←i+1)/ok1
[35] ufa:
[36]  j←analisaP
[37]  →(15>1↑⍴j)/testa
[38]  k←15?1↑⍴j
[39]  M←m←j[k;]
[40]  p←15 15⍴' ' ⋄ p[;1 2]←15 2⍴2 0⍎⍳15
[41]  p[;3]←'.' ⋄ p[;4 5]←15 2⍴'P='
[42]  p[;6]←15 1⍴1 0⍎m[;1] ⋄ p[;9]←15 1⍴'12345T'[m[;2]]
[43]  p[;10 11 12 13]←'_'
[44]  esse[57+⍳2;⍳75]←2 75⍴15 15⍴⍴p
[45]  mel←(10⍴1 0),0 0,(10⍴1 0),0 0,10⍴1 0
[46]  resp←(3 0⍎resp),'  -  ',mel\visual m[;3]
[47]  resu←resu,[1](1,29)⍴resp
[48]  acuja←(f[;2]='#')/⍳1↑⍴f
[49]  f[acuja;⍳80]←esse[⍞,f[acuja;3 4],' ';]
[50]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[51]  ⍞←(⍎xk←xk+1),'-'
[52]  →testa
[53] fim:upag←(1 0+⍴f)⍴' '
[54]  →(1=≡n)/elafa
[55]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[56]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[57]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑resu
[58]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[59]  →terminando
[60] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 3↓resu)
[61]  aaa[1;35 36]←2 0⍎CORRECAO
[62]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[63]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[64] terminando:
[65]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[66]  relat[1↑⍴relat;;]←upag
```

```
[67]  lixonol←(((×/2↑⍴prelat),¯1↑⍴prelat)⍴prelat)
[68] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[69]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[70]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[71]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo312

```
[0]  r←AMBICRM x
[1]  M←x⍴0
[2]  ⎕IO←0
[3]  PPVELHO←PPL←0
[4]  →(x≠100)/fim
[5]  M[80+⍳20]←1+⍳20
[6] fim:r←0
------------------------------------------------------------
[0]  r←AMBIOBT x;ppltemp
[1] ⍝  →((PPL+x)>99)/erro
[2]  →((PPL+x)>¯1+⍴M)/erro
[3]  ppltemp←PPL
[4]  PPL←PPL+x
[5]  r←ppltemp
[6]  →0
[7] erro:r←-1
------------------------------------------------------------
[ 0]  AVISO
[ 1]  'Para gerar um gabarito para um aluno qualquer:'
[ 2]  'Crie uma variavel tal como'
[ 3]  'PILECRI( 2)'
[ 4]  'PILECRI( 2)... etc'
[ 5]  'chame gabarito com essa variavel'
[ 6]  ' imprima o resultado'
[ 7]  ''
[ 8]  'Para gerar um caso adhoc, faca:'
[ 9]  'x ← 20 geracaso MATC'
[10]  'y ← gabarito 0 3↓x'
[11]  ' olhe y'
------------------------------------------------------------
[0]  r←PILECRI tam;y
[1]  y←AMBIOBT 2
[2]  →(y<0)/erro
[3]  M[y]←-1
[4]  M[y+1]←tam
[5]  r←y
[6]  →0
[7] erro:r←-1
------------------------------------------------------------
[0]  r←PILEEXC P
[1]  →(M[P]=¯1)/vazia
[2]  r←M[P]+1
[3]  M[P]←M[M[P]]
[4]  →0
[5] vazia:r←-1
------------------------------------------------------------
[ 0]  r←PILEINS v;x;y;P;E
[ 1]  P←v[0] ⋄ E←v[1]
[ 2]  x←AMBIOBT M[P+1]+1
[ 3]  →(x<0)/erro
[ 4]  y←0
[ 5] testa:→(y≥M[P+1])/fim
[ 6]  M[x+y+1]←M[E+y]
```

```
[ 7]  →(y=y←y+1)/testa
[ 8] fim:M[x]←M[P]
[ 9]  M[P]←x
[10]  r←0
[11]  →0
[12] erro:r←-1
-------------------------------------------------------------
[ 0]  r←PILSCRI vet;x;y;T;Q
[ 1]  T←vet[0] ⋄ Q←vet[1]
[ 2]  x←AMBIOBT 4+T×Q
[ 3]  →(x<0)/erro
[ 4]  M[x]←x+4
[ 5]  M[x+1]←M[x]+T×Q
[ 6]  M[x+2]←T
[ 7]  M[x+3]←M[x]
[ 8]  r←x
[ 9]  →0
[10] erro:r←-1
-------------------------------------------------------------
[0]  r←PILSEXC P
[1] ⍝ 'PILSEXC P=',  ⍕P
[2]  →(M[P+3]=M[P])/erro
[3]  M[P+3]←M[P+3]-M[P+2]
[4]  r←M[P+3]
[5]  →0
[6] erro:r←-1
-------------------------------------------------------------
[ 0]  r←PILSINS vet;x;P;E
[ 1]  P←vet[0]
[ 2]  E←vet[1]
[ 3]  →((M[P+3]+M[P+2])>M[P+1])/cheio
[ 4]  x←0
[ 5] testa:→(x≥M[P+2])/fim
[ 6]  M[M[P+3]+x]←M[E+x]
[ 7]  →(x=x←x+1)/testa
[ 8] fim:M[P+3]←M[P+3]+M[P+2]
[ 9]  r←0
[10]  →0
[11] cheio:r←-1
-------------------------------------------------------------
[ 0]  r←acerta linha;indx;indy;vals
[ 1]  indx←(linha='x')/⍳⍴linha
[ 2]  →(0=⍴indx)/conta
[ 3]  indy←indx+1
[ 4]  linha[indy]←vals←'9'⍕2+?¯1+⍴((2×⍴indy)⍴1 0)⍀linha[indy]
[ 5]  linha[indx]←' '
[ 6] conta:indx←(linha='y')/⍳⍴linha
[ 7]  →(0=⍴indx)/fimcaca
[ 8]  indy←,indx∘.+1 2
[ 9]  linha[indy]←vals←'99'⍕80+?⍴((2×⍴indx)⍴1 0)⍀linha[indx+2]
[10]  linha[indx]←' '
[11] fimcaca:indx←(linha='z')/⍳⍴linha
[12]  →(0=⍴indx)/fim
[13]  indy←,indx∘.+1 2
[14]  linha[indy]←vals←'ZI2'⎕FMT(⍴,indx)↑ALEATORIOS
[15]  ALEATORIOS←(⍴,indx)↓ALEATORIOS
[16]  linha[indx]←' '
[17] fim:r←linha
-------------------------------------------------------------
[ 0]  r←arrumac x;y
[ 1]  y←1↑⍴x
[ 2]  →(y>9)/dez
[ 3]  r←(1 0⍕(y,1)⍴⍳y),':',x
```

```
[ 4]  →fim
[ 5] dez:→(y>99)/cem
[ 6]  r←(2 0⍕(y,1)⍴⍳y),':',x
[ 7]  →fim
[ 8] cem:r←(3 0⍕(y,1)⍴⍳y),':',x
[ 9] fim:
-------------------------------------------------------------
[0]  r←chutainds;inds;a1
[1]  inds←⍳80
[2]  inds←(M[inds]≠0)/inds
[3]  a1←5?⍴inds
[4]  a1←a1[⍋a1]
[5]  r←inds[a1],M[inds[a1]]
-------------------------------------------------------------
[ 0]  r←gabarito va;i;y
[ 1]  AMBICRM 100
[ 2]  r←0 55⍴' ' ⋄ i←1
[ 3] volta:→(i≥1↑⍴va)/fim
[ 4]  y←va[i;]
[ 5]  r←r,[0]1 55⍴55↑y
[ 6]  ⍎y
[ 7]  r←r,[0]ve M
[ 8]  i←i+1
[ 9]  →volta
[10] fim:
-------------------------------------------------------------
[ 0]  r←qtos geracaso mat;⎕IO;tama;fazer;j;matb;lixo;i
[ 1]  ⎕IO←0
[ 2] ⍝ matriz usada em mat; 12 primeiros sempre; 30 exercicios por folha
[ 3] ⍝ executam-se obrigatoriamente as primeiras 12 linhas
[ 4] ⍝ o exercicio sempre tera 30 exercicios.
[ 5]  tama←1↑⍴mat
[ 6]  fazer←mat[⍳8;],[0]mat[(8+(qtos-8)?tama-8);]
[ 7]  j←0 ⋄ matb←(⍴fazer)⍴' '
[ 8] acabou:→(j≥qtos)/mesmo
[ 9]  fazer[j;]←acerta fazer[j;]
[10]  →(j=j←j+1)/acabou
[11] mesmo:matb←arrumac fazer
[12]  matb←'←='edit matb
[13]  lixo←AMBICRM 100
[14]  j←0
[15] acab2:→(j≥qtos)/mem2
[16]  lixo←⍎fazer[j;]
[17]  →(j=j←j+1)/acab2
[18] mem2:r←matb
-------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10]  →(0=' 'є j↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80⍴80↑j↑candi
[15]  candi←j↓candi
[16]  →((⍴candi)=+/candi=' ')/som
```

```
[17]  →te2
[18] eca:r←r,[⎕IO]1 80ρ80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
-------------------------------------------------------------
[ 0]  r←ve M;x;y;z;i;w
[ 1]  x←10 10ρM
[ 2]  w←z←,y←5 0⍕x
[ 3] isca:y←10 50ρw
[ 4]  y←(((10 4)ρ4 0⍕10×⍳10),'|'),y
[ 5]  z←((1 55ρ'    |',5 0⍕⍳10),[0]'-'),[0]y
[ 6]  z[0;2]←'M'
[ 7]  r←'¯-'edit z
-------------------------------------------------------------
[ 0]  r←vex M;x;y;z;i;w;⎕IO
[ 1]  ⎕IO←0
[ 2]  x←10 10ρM
[ 3]  w←z←,y←5 0⍕x
[ 4]  i←0
[ 5] te5:→(i≥499)/isca
[ 6]  →((z[i]=' ')∧(z[i+1]='0'))/sim
[ 7]  →soma
[ 8] sim:w[i]←w[i+1]←' '
[ 9]  i←i+1
[10]  →soma
[11] soma:→(i=i←i+1)/te5
[12] isca:y←10 50ρw
[13]  r←(10 5ρ5 0⍕⍳10),y
[14]  r[;6 11 16 21 26 31 36 41 46 51]←'&'
[15]  r←r,'⍀'
[16]  r←r,'⍀'
-------------------------------------------------------------
[ 0]  opesq vivo312a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;flm;lixo;lixo1;lixonol;relat;r
      esp;resu;upag;xixo;xk;xx;ylu;yy;⎕IO
[ 1]  ⎕IO←0
[ 2]  →(0≠⎕NC'opesq')/qveio
[ 3]  opesq←10ρ' '
[ 4] qveio:
[ 5]  ⎕RL←⌊(⎕TS[6]+⎕TS[5]+⎕TS[4])*2.7364736473
[ 6]  CORRECAO←5 ⋄ EVENTO←'PL312   '
[ 7]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[2 1 0]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      3 4],⎕TS[5]+⎕TS[6]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕⍳n
[10]  FOLHALA312←ajusta80 FOLHALA312
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALA312)ρ' '
[12]  relat[0;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[13]  xk←1 ⋄ resu←0 6ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←30 80ρ' '
[16]  f←FOLHALA312
[17]  esse[0;]←80↑dhx[0;]
[18]  esse[1;]←80↑dhx[1;]
[19]  esse[2;]←80↑4 2⍕VERSAOa←3.18
[20]  esse[3;]←80↑ylu[xk-1;⍳6]
[21]  esse[4;]←80↑ylu[xk-1;6+⍳30]
[22]  →(~1=≡n)/1+⎕LC ⋄ esse[5;]←80↑EVENTO
[23]  esse[6;]←80↑(3 0⍕resp←xk),' ',opesq
[24]  esse[28;⍳10]←'@',esse[5;5+⍳3],esse[3;1+⍳5],'@'
[25]  esse[29;⍳17]←esse[5;5+⍳3],'-',esse[3;1+⍳5],' - ',opesq[5+⍳5]
[26] inica:
[27]  xx←20 geracaso MATC
```

```
[28]  esse[7+⍳20;]←20 80↑xx
[29]  yy←chutainds
[30]  esse[27;]←80↑(2 0⍕yy[0]),'&',(2 0⍕yy[1]),'&',(2 0⍕yy[2]),'&',(2 0⍕yy[3]),'&',(2 0⍕yy
      [4]),'⍀⍀'
[31]  esse[27;]←'¯'-'edit esse[27;]
[32]  resp←resp,yy[5+⍳5]
[33]  resu←resu,[0](1,6)⍴resp
[34]  acuja←(f[;1]='#')/⍳1↑⍴f
[35]  f[acuja;⍳80]←esse[¯1+⍋,f[acuja;2 3],' ';]
[36]  relat[xk;;]←f,[0](1,1↓⍴f)⍴200↑'⍀newpage'
[37]  ⎕←(⍕xk←xk+1),'-'
[38]  →testa
[39] fim:upag←(1 0+⍴f)⍴' '
[40]  →(1=≡n)/elafa
[41]  upag[0;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[42]  upag[1;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[43]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯'-'edit(lixo1←5 0 10 0 5 0 5 0 5 0 5 0)⍕resu
[44]  upag[2+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[45]  →terminando
[46] elafa:aaa←(⍳lu,'¯'-'edit 5 0⍕0 1↓resu)
[47]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[48]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[49] terminando:
[50]  upag[¯1+1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[51]  relat[¯1+1↑⍴relat;;]←upag
[52]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[53]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[54]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[55]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo313

```
[0]  AVISO
[1]  'para gabarito veja as funcoes qualques e gabarito'
[2]  ''
[3]  ' Este WS esta em quarentena. Confirmar antes de botar fe'
[4]  ' '
[5]  ' Programei RPN1.C e RPN2.C - funcionando legal.'
-------------------------------------------------------------
[0]  r←achaniv y;inds
[1]  inds←(y=⍋,DBQUESTOES[;1 2],' ')/⍳1↑⍴DBQUESTOES
[2]  r←inds[?⍴inds]
-------------------------------------------------------------
[0]  r←arruma a
[1]  r←'××'edit'÷/'edit'*E'edit a
-------------------------------------------------------------
[0]  r←consultapilha
[1]  r←PILHA[TOPO;]
-------------------------------------------------------------
[0]  criapilha
[1]  PILHA←100 14⍴' '
[2]  TOPO←0
-------------------------------------------------------------
[0]  r←desdobra x;y
[1]  y←'*E'edit x
[2]  y←'××'edit y
[3]  y←'÷/'edit y
[4]  r←y
-------------------------------------------------------------
[0]  r←desempilha
[1]  →(TOPO<1)/erro
```

```
[2]  r←PILHA[TOPO;]
[3]  TOPO←TOPO-1
[4]  →0
[5] erro:r←'  ¯1',12ρ' '
-------------------------------------------------------------
[0]  r←empilha x
[1]  →(TOPO>99)/erro
[2]  TOPO←TOPO+1
[3]  PILHA[TOPO;]←x
[4]  r←0
[5]  →0
[6] erro:r←¯1
-------------------------------------------------------------
[ 0]  r←gabarito x;i;xx;prio1;prio2
[ 1]  x←16↓DBQUESTOES[x;]
[ 2]  VISSE←0 50ρ' '
[ 3]  x←trunca x
[ 4]  criapilha
[ 5]  x←x,')' ⋄ r←''
[ 6]  xx←empilha'(',13ρ' '
[ 7]  i←1
[ 8] testa:→(i>ρx)/fim
[ 9]  VISSE←VISSE,[1]1 50ρ50↑vepilha
[10]  →(x[i]='(')/left
[11]  →(x[i]=')')/right
[12]  →(x[i]∈'+-÷×')/operador
[13] digito:r←r,x[i]
[14]  →soma
[15] left:xx←empilha 14↑'('
[16]  →soma
[17] operador:prio1←prioridade x[i]
[18]  prio2←prioridade 1↑consultapilha
[19] test22:→(prio2<prio1)/terma22
[20]  r←r,1↑desempilha
[21]  →operador
[22] terma22:xx←empilha 14↑x[i]
[23]  →soma
[24] right:→('('=1↑consultapilha)/deuok
[25]  r←r,1↑desempilha
[26]  →right
[27] deuok:xx←desempilha
[28]  →soma
[29] soma:→(i=i←i+1)/testa
[30] fim:
[31]  VISSE
-------------------------------------------------------------
[0]  r←prioridade y
[1]  r←1↑(('+-×/E'=y),1)/1 1 2 2 3 0
-------------------------------------------------------------
[0]  r←qualques x;ta
[1]  'esta funcao espera receber os primeiros caracteres da expressao'
[2]  'e devolve os numeros da(s) linha(s) em DBQUESTOES'
[3]  'lembre que a expressao deve ser traduzida PARA o APLes'
[4]  'por exemplo, entrar 1×0 ao inves de 1E0...'
[5]  ta←ρx
[6]  r←(ta=+/[2]DBQUESTOES[;16+ιta]=(801,ta)ρx)/ι801
-------------------------------------------------------------
[ 0]  r←rpn x;i;xx;prio1;prio2
[ 1]  →('×'∈x)/erro
[ 2]  →('÷'∈x)/erro
[ 3]  x←trunca x
[ 4]  criapilha
[ 5]  x←x,')' ⋄ r←''
```

```
[ 6]  xx←empilha'(',13ρ' '
[ 7]  i←1
[ 8] testa:→(i>ρx)/fim
[ 9]  →(x[i]='(')/left
[10]  →(x[i]=')')/right
[11]  →(x[i]∈'+-*/E')/operador
[12] digito:r←r,x[i]
[13]  →soma
[14] left:xx←empilha 14↑'('
[15]  →soma
[16] operador:prio1←prioridade x[i]
[17]  prio2←prioridade 1↑consultapilha
[18] test22:→(prio2<prio1)/terma22
[19]  r←r,1↑desempilha
[20]  →operador
[21] terma22:xx←empilha 14↑x[i]
[22]  →soma
[23] right:→('('=1↑consultapilha)/deuok
[24]  r←r,1↑desempilha
[25]  →right
[26] deuok:xx←desempilha
[27]  →soma
[28] soma:→(i=i←i+1)/testa
[29] fim:
[30]  →0
[31] erro:'usou-se × ou ÷ na entrada. Nao pode.'
-------------------------------------------------------------
[0]  r←tam frase
[1]  r←ρ(~⍵∧⍀⍵frase=' ')/frase
-------------------------------------------------------------
[0]  r←trunca y
[1]  r←(y≠' ')/y
-------------------------------------------------------------
[0]  r←vepilha
[1]  r←⍵(PILHA[;1]≠' ')/,PILHA[;1]
-------------------------------------------------------------
[ 0]  opesq vivo313a n;CORRECAO;EVENTO;aaa;aaa;acuja;dhx;esse;f;indl;j;linhax;lixo1;lixono
      l;relat;reso;resp;resu;upag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL313   '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[ 9]  FOLHALA313←ajusta80 FOLHALA313
[10]  qtdexercicios←4 ⋄ qtdconjuntos←8
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALA313)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[13]  xk←1 ⋄ resu←0 69ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←17 80ρ' '
[16]  f←FOLHALA313
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←4.21
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  esse[5;]←80↑ylu[xk;6+⍳30]
[22]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[23]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[24]  esse[16;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
```

```
[25]  esse[17;⍳17]←esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[26] inica:
[27]  reso←''
[28]  j←1
[29] testa2:→(j>qtdexercicios)/fimtal
[30]  achou←achaniv qtdconjuntos-(qtdexercicios-j)
[31]  esse[7+j;]←80↑,linhax←,arruma DBQUESTOES[achou;16+⍳59]
[32]  indl←5+?(⍴aaa←rpn linhax)-5
[33]  esse[11+j;]←80↑3 0⍕indl
[34]  reso←reso,,' ',aaa[indl],(,DBQUESTOES[achou;6+⍳10]),'    '
[35]  →(j=j←j+1)/testa2
[36] fimtal:resu←resu,[1]1 69⍴(4 0⍕resp),((20⍴1),0,(44⍴1))⍀reso
[37]  acuja←(f[;2]='#')/⍳1↑⍴f
[38]  f[acuja;⍳80]←esse[⌸,f[acuja;3 4],' ';]
[39]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[40]  ⍞←(⍕xk←xk+1),'-'
[41]  →testa
[42] fim:upag←(1 0+⍴f)⍴' '
[43]  →(1=≡n)/elafa
[44]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[45]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[46]  upag[2+⍳1↑⍴presu;]←((1↑⍴presu),80)↑'¯-'edit resu
[47] ⍝ upag[3+1↑⍴presu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[48]  →terminando
[49] elafa:aaa←(ylu,0 4↓'¯-'edit resu)
[50]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[51]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[52] terminando:
[53]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{verbatim} ⍀end{document}'
[54]  relat[1↑⍴relat;;]←upag
[55]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[56] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[57]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo314

```
[ 0]  r←ff anda labe;alfa;i;j;mov;g;h;contador;maze;mark
[ 1]  ALFAS←0 4⍴0   ⍝ esta varivael contem todos os ALFAS desta rodada
[ 2] ⍝ espera-se que labe tenha 0=caminho e 1=barreira
[ 3]  criap 200 ⋄ contador←0 ⋄ PASSO←0 3⍴0 ⋄ r←''
[ 4]  maze←1,[1](1,labe,1),[1]1
[ 5]  mark←(⍴maze)⍴0
[ 6]  mark[2;2]←1
[ 7]  empil 2 2 0
[ 8] comecou:→(TOPOP=0)/acabou
[ 9]  alfa←desem
[10]  contador←contador+1
[11]  ALFAS←ALFAS,[1]1 4⍴contador,alfa
[12]  →(contador≠1↑ff)/mand
[13]  PASSO←PASSO,[1]alfa
[14]  ff←1↓ff
[15]  →(0=⍴ff)/0
[16] mand:i←alfa[1] ⋄ j←alfa[2] ⋄ mov←alfa[3]+1
[17] and3:→(mov>4)/alah
[18]  g←i+MOVE[mov;1] ⋄ h←j+MOVE[mov;2]
[19]  →((i≠1+1↑⍴labe)∨(j≠1+1↓⍴labe))/continua
[20] ⍝'acabou'
[21] ⍝ 'contador = ',  ⍕contador
[22]  r←,PILHA[⍳TOPOP;3]
```

```
[23]  →0
[24] continua:→((maze[g;h]=0)∧(mark[g;h]=0))/ok
[25]  →soma
[26] ok:mark[g;h]←1
[27]  empil i,j,mov
[28]  mov←0 ⋄ i←g ⋄ j←h
[29] soma:mov←mov+1
[30]  →and3
[31] alah:→comecou
[32] acabou:'nao ha caminho'
-------------------------------------------------------------
[0]  criap x
[1]  PILHA←(x,3)⍴0
[2]  TOPOP←0
-------------------------------------------------------------
[0]  r←desem
[1]  →(TOPOP≤0)/erro
[2]  r←PILHA[TOPOP;]
[3]  TOPOP←TOPOP-1
[4]  →0
[5] erro:' deu erro na pilha '
-------------------------------------------------------------
[0]  empil x
[1] ⍝ x e um vetor de 3 numeros
[2]  →(TOPOP≥1↑⍴PILHA)/erro
[3]  TOPOP←TOPOP+1
[4]  PILHA[TOPOP;]←x
[5]  →0
[6] erro:' deu erro na pilha '
-------------------------------------------------------------
[ 0]  opesq vivo314a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lab;lixo1;lixonol;r;relat;resp
      ;resu;upag;xixo;xk;xxx;ylu;yy;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←4 ⋄ EVENTO←'PL314   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA314←ajusta80 FOLHALA314
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA314)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[12]  xk←1 ⋄ resu←0 5⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←18 80⍴' '
[15]  f←FOLHALA314
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←3.31
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[23] inica:
[24]  yy←'.'=⍋lab←'labe',,'99'⍎⍞20
[25]  esse[7+⍳10;]←10 80↑2 0⍎yy
[26]  lin←10
[27]  r←lin anda yy
[28]  xxx←,PASSO
[29]  r←2000 anda yy
[30]  resp←resp,(⍴r),xxx
```

```
[31]  esse[18;]←80↑2 0⍕lin
[32] continua:
[33]  resu←resu,[1](1,5)⍴resp
[34]  acuja←(f[;2]='#')/⍳1↑⍴f
[35]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[36]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[37]  ⎕←(⍕xk←xk+1),'-'
[38]  →testa
[39] fim:upag←(1 0+⍴f)⍴' '
[40]  →(1=≡n)/elafa
[41]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[42]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[43]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 5 0 5 0)⍕resu
[44]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[45]  →terminando
[46] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),5 0⍕0 1↓resu)
[47]  aaa[1;35 36]←2 0⍕CORRECAO
[48]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[49]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[50] terminando:
[51]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[52]  relat[1↑⍴relat;;]←upag
[53]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[54] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[55]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[56]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[57]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo315

```
[0]  AVISO
[1]  ' condicao em que ha necessidade de '
[2]  ' desempilhar varios pontos e empilhar 1 so'
[3]  ' (1,1), (4,5), (2,8),(2,9)(2,10) e '
[4]  ' finalmente (3,15). Deve desempilhar (2,8)(2,9)e (2,10)'
------------------------------------------------------------
[0]  CRIAPILHA
[1]  PILHA←0 2⍴0
[2]  TOPO←0
------------------------------------------------------------
[ 0]  r←DESEMP
[ 1] ⍝ 'desempilhou'
[ 2]  →(TOPO≤0)/erro
[ 3]  TOPO←TOPO-1
[ 4]  r←,PILHA[1;]
[ 5]  PILHA←1 0↓PILHA
[ 6] ⍝ PILHA
[ 7] ⍝ '----------------'
[ 8]  →0
[ 9] erro:'deu xabu'
------------------------------------------------------------
[0]  EMPILHA par
[1] ⍝ 'empilhou'
[2]  TOPO←TOPO+1
[3]  MAX←MAX⌈TOPO
[4]  PILHA←(1 2⍴par),[1]PILHA
[5] ⍝ PILHA
[6] ⍝ '------------------'
------------------------------------------------------------
[0]  r←VENEXT
[1]  r←,PILHA[2;]
```

```
------------------------------------------------------------
[0]  r←VETOPO
[1]  r←,PILHA[1;]
------------------------------------------------------------
[0]  r←geracaso;quantos;limite;x;y;oba
[1]  quantos←15 ⋄ limite←30
[2] vorta:x←quantos?limite
[3]  y←quantos?limite
[4]  r←graham oba←⍉(2,quantos)⍴x,y
[5]  →(¯1=r)/vorta
[6]  LINHA←,';','(',(2 0⍕(quantos,1)⍴x),',',(2 0⍕(quantos,1)⍴y),')'
[7]  LINHA←'⍀{',(1↓LINHA),'⍀}'
[8]  LINHA←(LINHA≠' ')/LINHA
------------------------------------------------------------
[ 0]  r←graham x;cands;c2;c3;p0;i;aa;bb;pn;lixo
[ 1]  cands←((,x[;2])=⌊/,x[;2])/⍳1↑⍴x
[ 2]  MAX←0
[ 3]  c2←x[cands;]
[ 4]  →(1=,⍴cands)/ufa
[ 5]  c3←((,c2[;1])=⌊/,c2[;1])/⍳1↑⍴c2
[ 6]  p0←,x[c3;]
[ 7]  →conta
[ 8] ufa:c3←,cands
[ 9]  p0←,x[c3;]
[10] conta:   ⍝'Eis o p0=',  ⍕p0
[11]  pn←((c3≠⍳1↑⍴x)/[1]x),0
[12]  i←1
[13] t1:→(i>1↑⍴pn)/fim
[14]  →(0≠pn[i;1]-p0[1])/blz
[15]  pn[i;3]←○0.5
[16]  →soma
[17] blz:pn[i;3]←¯3○(pn[i;2]-p0[2])÷(pn[i;1]-p0[1])
[18]  pn[i;3]←pn[i;3]+○pn[i;3]<0
[19] soma:→(i=i←i+1)/t1
[20] fim:pn←pn[⍋pn[;3];]
[21] ⍝ verificacao de integriadde
[22]  i←1
[23] tfg:→(i>1↑⍴pn)/uga
[24]  →(2<+/pn[i;3]=pn[;3])/errt
[25]  →(i=i←i+1)/tfg
[26] uga:
[27]  PN←pn
[28]  CRIAPILHA
[29]  EMPILHA p0
[30]  EMPILHA pn[1;⍳2]
[31]  EMPILHA pn[2;⍳2]
[32]  i←3
[33] t2:→(i>1↑⍴pn)/fim2
[34]  aa←(pn[i;1]-VENEXT[1])×(VETOPO[2]-VENEXT[2])
[35]  bb←(VETOPO[1]-VENEXT[1])×(pn[i;2]-VENEXT[2])
[36]  →((aa-bb)<0)/terminou
[37]  lixo←DESEMP
[38]  →t2
[39] terminou:EMPILHA pn[i;1 2]
[40]  →(i=i←i+1)/t2
[41] fim2:r←TOPO
[42]  →0
[43] errt:r←¯1
[44]  →0
------------------------------------------------------------
[ 0]  r←quebralinha x;t1;t2
[ 1]  r←3 80⍴' '
[ 2]  t1←⌊(⍴,x)÷3
```

```
[ 3] vorta1:→(x[t1]=';')/ufa1
[ 4]  t1←t1+1
[ 5]  →vorta1
[ 6] ufa1:r[1;]←80↑t1↑x
[ 7]  x←t1↓x
[ 8]  t2←⌊(⍴,x)÷2
[ 9] vorta2:→(x[t2]=';')/ufa2
[10]  t2←t2+1
[11]  →vorta2
[12] ufa2:r[2;]←80↑t2↑x
[13]  r[3;]←80↑t2↓x
-------------------------------------------------------------
[0]  testa;i;lixo
[1]  i←1
[2]  →(i>2000)/0
[3]  lixo←geracaso
[4]  →(i=i←i+1)/2
-------------------------------------------------------------
[ 0]  opesq vivo315a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←1 ⋄ EVENTO←'PL315   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA315←ajusta80 FOLHALA315
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA315)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[12]  xk←1 ⋄ resu←0 2⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←12 80⍴' '
[15]  f←FOLHALA315
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.18
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  caso←geracaso
[27] ⍝quebralinha LINHA
[28]  esse[7+⍳3;]←quebralinha LINHA
[29]  resp←resp,caso
[30]  resu←resu,[1]1 2⍴resp
[31]  acuja←(f[;2]='#')/⍳1↑⍴f
[32]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[33]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[34]  ⍞←(⍕xk←xk+1),'-'
[35]  →testa
[36] fim:upag←(1 0+⍴f)⍴' '
[37]  →(1=≡n)/elafa
[38]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[39]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[40]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0)⍕resu
[41]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[42]  →terminando
```

```
[43] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),10 0⍕0 1↓resu)
[44]  aaa[1;35 36]←2 0⍕CORRECAO
[45]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[46]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[47] terminando:
[48]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[49]  relat[1↑⍴relat;;]←upag
[50]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[51] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[52]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[53]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[54]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo318

```
[0]  AVISO
[1]  'Para manter este WS up-to-date, '
[2]  'Fazer de tempos em tempos'
[3]  ')copy cpc cpc igual vetoriza'
[4]  ''
[5]  ''
[6]  'Para corrigir, chame corrige xx, onde xx os 2 ultimos digitos do exercicio'
-------------------------------------------------------------
[ 0]  cavaleiro318a n;acuja;esse;f;lixo1;relat;resp;xk
[ 1]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 2]  FOLHALA318←ajusta80 FOLHALA318
[ 3]  relat←ΔFM'c:\apl2\VIVOBLO1'
[ 4]  xk←1
[ 5] testa:→(xk>n)/fim
[ 6]  esse←19 80⍴' '
[ 7]  f←FOLHALA318
[ 8]  esse[1;⍳⍴x]←x←' ----- Cavaleiros da Tavola Redonda --'
[ 9]  esse[3;]←80↑4 2⍕1.11
[10]  esse[18;⍳8]←'@000000@'
[11] inica:
[12]  quem←?99
[13]  esse[7+⍳10;]←10 80↑QUES[quem;;]
[14]  esse[8;16+⍳3]←'000'⍕100+?899
[15]  acuja←(f[;2]='#')/⍳1↑⍴f
[16]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[17]  ⍞←(⍕xk←xk+1),'-'
[18]  resp←' nao tem resposta..... '
[19]  ' nao tem resposta..... '
[20]  f←(((1↑⍴relat),1↓⍴f)↑relat),[1]f
[21]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'\end{document}'
[22]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'%',⍕resp
[23]  lixo1←f ΔFM'c:\apl2\CA318a',('00'⍕xk-1),'.tex'
[24]  →testa
[25] fim:
-------------------------------------------------------------
[0]  corrige x
[1]  RESP[x;;]
-------------------------------------------------------------
[ 0]  r←geracaso;sem
[ 1]  r←10 60⍴' '
[ 2]  r[1;]←60↑'algoritmo TESTE'
[ 3]  r[2;]←60↑'inteiro X,Y,Z,T'
[ 4]  r[10;]←60↑'fim{algoritmo}'
[ 5]  sem←?4
[ 6]  →(sem=1)/um
[ 7]  →(sem=2)/do
```

```
[ 8]  →(sem=3)/tr
[ 9]  →qu
[10] um:r[3;]←60↑'repita' ⋄ r[9;]←60↑'ate ',geracondicao
[11]  →conta
[12] do:r[3;]←60↑'enquanto ',geracondicao ⋄ r[9;]←60↑'fim{enquanto}'
[13]  →conta
[14] tr:r[3;]←60↑'para ',('XYZT'[?4]),' de ',('5'⍕?4),' ate ',('5'⍕5+?4),' passo ',('5'⍕?2
      )
[15]  r[9;]←60↑'fim{para}'
[16]  →conta
[17] qu:r[3;]←60↑'se ',geracondicao ⋄ r[9;]←60↑'fim{se}'
[18] conta:
[19]  sem←?4
[20]  →(sem=1)/um2
[21]  →(sem=2)/do2
[22]  →(sem=3)/tr2
[23]  →qu2
[24] um2:r[4;]←60↑'   repita' ⋄ r[8;]←60↑'   ate ',geracondicao
[25]  →conta2
[26] do2:r[4;]←60↑'   enquanto ',geracondicao ⋄ r[8;]←60↑'   fim{enquanto}'
[27]  →conta2
[28] tr2:r[4;]←60↑'   para ',('XYZT'[?4]),' de ',('5'⍕?4),' ate ',('5'⍕5+?4),' passo ',('5
      '⍕?2)
[29]  r[8;]←60↑'   fim{para}'
[30]  →conta2
[31] qu2:r[4;]←60↑'   se ',geracondicao ⋄ r[8;]←60↑'   fim{se}'
[32] conta2:r[5;]←60↑'      ',geracoma
[33]  r[6;]←60↑'      ',geracoma
[34]  r[7;]←60↑'      ',geracoma
------------------------------------------------------------
[0]  r←geracoma;var;mei;fin
[1]  var←4⍴'XYZT'
[2]  mei←3⍴'+-*'
[3] vorta:fin←4 2⍴(var[?4],' '),'50'⍕?20
[4]  →(2≠?2)/mesmo
[5]  r←var[?4],'<-',,fin[?2;]
[6]  →(r[1]=r[4])/vorta
[7]  →0
[8] mesmo:r←var[?4],'<-',var[?4],(,mei[?3]),,fin[?2;]
------------------------------------------------------------
[0]  r←geracondicao;var;con
[1]  var←4 1⍴'XYZT'
[2]  con←6 2⍴'= > < <>>=<='
[3]  r←(,var[?4;]),(,con[?6;]),'55'⍕?20
------------------------------------------------------------
[0]  r←a igual b;maior
[1]  maior←(1↑⍴a)⌈1↑⍴b
[2]  a←maior↑a ⋄ b←maior↑b
[3]  r←maior=+/a=b
------------------------------------------------------------
[0]  montabanco1;i
[1]  QUES←99 10 60⍴' '
[2]  i←1
[3] t1:→(i>99)/0
[4]  QUES[i;;]←geracaso
[5]  →(i=i←i+1)/t1
------------------------------------------------------------
[0]  montabanco2;i
[1]  i←1
[2] t1:→(i>99)/0
[3]  QUES[i;1;15+⍳6]←'-','***','00'⍕i
[4]  →(i=i←i+1)/t1
------------------------------------------------------------
```

```
[0]  montabanco3;i;aaa
[1]  RESP←99 18 70⍴' '
[2]  i←1
[3] t1:→(i>99)/0
[4]  ⍴aaa←cpc QUES[i;;]
[5]  RESP[i;;]←18 70↑aaa
[6]  →(i=i←i+1)/t1
-------------------------------------------------------------
[ 0]  r←tradc x;i;j
[ 1]  i←j←1 ⋄ r←100⍴' '
[ 2] t1:→(i≥⍴x)/fim
[ 3]  →(i=⍴x)/pula
[ 4]  →((x[i]='<')∧(x[i+1]='-'))/recebe
[ 5]  →((x[i]='<')∧(x[i+1]='>'))/dif2
[ 6] pula:→(x[i]='∨')/ou
[ 7]  →(x[i]='∧')/e
[ 8]  →(x[i]='~')/nao
[ 9]  →(x[i]='≠')/diferente
[10]  →(x[i]='≤')/menig
[11]  →(x[i]='≥')/maiig
[12]  →(x[i]='×')/vezes
[13]  →(x[i]='>')/maior
[14]  →(x[i]='<')/menor
[15]  →(x[i]='→')/vaip
[16]  →(x[i]='←')/vemp
[17] nada:r[j]←x[i]
[18]  i←i+1
[19]  j←j+1
[20]  →t1
[21] dif2:
[22]  r[j+¯1+⍳6]←'$⍀neq$'
[23]  j←j+6
[24]  i←i+2
[25]  →t1
[26] vaip:
[27]  r[j+¯1+⍳5]←'$⍀to$'
[28]  j←j+5
[29]  i←i+1
[30]  →t1
[31] vemp:
[32]  r[j+¯1+⍳7]←'$⍀gets$'
[33]  j←j+7
[34]  i←i+1
[35]  →t1
[36] recebe:r[j+¯1+⍳7]←'$⍀gets$'
[37]  j←j+7
[38]  i←i+2
[39]  →t1
[40] ou:r[j+¯1+⍳6]←'$⍀lor$'
[41]  j←j+6
[42]  i←i+1
[43]  →t1
[44] nao:r[j+¯1+⍳6]←'$⍀sim$'
[45]  j←j+6
[46]  i←i+1
[47]  →t1
[48] e:r[j+¯1+⍳7]←'$⍀land$'
[49]  j←j+7
[50]  i←i+1
[51]  →t1
[52] diferente:r[j+¯1+⍳6]←'$⍀neq$'
[53]  j←j+6
[54]  i←i+1
```

```
[55]  →t1
[56] menig:r[j+¯1+⍳5]←'$≠le$'
[57]  j←j+5
[58]  i←i+1
[59]  →t1
[60] maiig:r[j+¯1+⍳5]←'$≠ge$'
[61]  j←j+5
[62]  i←i+1
[63]  →t1
[64] vezes:r[j+¯1+⍳8]←'$≠times$'
[65]  j←j+8
[66]  i←i+1
[67]  →t1
[68] maior:r[j+¯1+⍳3]←'$>$'
[69]  j←j+3
[70]  i←i+1
[71]  →t1
[72] menor:r[j+¯1+⍳3]←'$<$'
[73]  j←j+3
[74]  i←i+1
[75]  →t1
[76] fim:r←trim r
[77]  r←'≠STATE ',r
-------------------------------------------------------------
[0]  vars
-------------------------------------------------------------
[ 0]  r←vetoriza x;i;rr;letra;aspa;nume
[ 1] ⍝ versao 1.07
[ 2]  aspa←''''' ⋄ nume←'0123456789'
[ 3]  letra←'abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ()',aspa
[ 4] ⍝ tira os brancos
[ 5]  i←1 ⋄ rr←1
[ 6] t2:→(i>¯2+⍴x)/vaiz
[ 7]  →((x[i+1]=' ')∧(x[i]∈letra)∧(x[i+2]∈nume))/mataz
[ 8]  →((x[i+1]=' ')∧(x[i]∈nume)∧(x[i+2]∈letra))/mataz
[ 9]  →((x[i]∈letra)∧(x[i+2]∈letra))/naopode
[10]  →((x[i]∈letra)∧(x[i+2]='-'))/naopode  ⍝ comando incluido para o passo negativo
[11]  →(x[i+1]≠' ')/naopode
[12] pode:rr←rr,0
[13]  →(i=i←i+1)/t2
[14] mataz:x[i+1]←'!'
[15] naopode:rr←rr,1
[16]  →(i=i←i+1)/t2
[17] vaiz:rr←rr,1
[18]  x←rr/x
[19] ⍝ separa o sinal <-
[20]  →(2≠+/'<-'∈x)/faca
[21]  i←1 ⋄ rr←⍳0
[22] t1:→(i>¯1+⍴x)/vaix
[23]  →((x[i]='<')∧(x[i+1]='-'))/esim
[24]  rr←rr,1
[25]  →(i=i←i+1)/t1
[26] esim:rr←rr,0 1 1 0
[27]  →(i=i←i+2)/t1
[28] vaix:rr←rr,1
[29]  x←rr≠x
[30] faca:x←'! 'edit x
[31]  r←(~' '=x)⊂x
-------------------------------------------------------------
[0]  r←vije a;i
[1]  i←1
[2]  r←18 80⍴' '
[3] t1:→(i>18)/fim
```

```
[4]  →(10=+/' '=a[i;⍳10])/fim
[5]  r[i;]←80↑tradc a[i;]
[6]  →(i=i←i+1)/t1
[7] fim:
------------------------------------------------------------
[ 0]  opesq vivo318a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;quem;relat;resp;
      resu;upag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL318   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA318←ajusta80 FOLHALA318
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA318)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[12]  xk←1 ⋄ resu←0 0⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←19 80⍴' '
[15]  f←FOLHALA318
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←1.11
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[18;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[19;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  quem←?99
[27]  esse[7+⍳10;]←10 80↑QUES[quem;;]
[28]  esse[8;16+⍳3]←'000'⍕100+?899
[29]  acuja←(f[;2]='#')/⍳1↑⍴f
[30]  f[acuja;⍳80]←esse[⌽,f[acuja;3 4],' ';]
[31]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[32]  ⍞←(⍕xk←xk+1),'-'
[33]  →testa
[34] fim:upag←(1 0+⍴f)⍴' '
[35]  →(1=≡n)/elafa
[36]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[37]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[38]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[39]  →terminando
[40] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'))
[41]  aaa[1;35 36]←2 0⍕CORRECAO
[42]  '!!!!!  Nao foi gravado arquivo GPA !!!!!!!'
[43] terminando:
[44] ⍝ upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[45]  relat[1↑⍴relat;;]←upag
[46]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[47] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[48]  lixonol←lixonol,[1]INSTRUC318
[49]  lixonol←lixonol,[1]1 80⍴80↑'\end{document}'
[50]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[51]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[52]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (soh .tex)'
------------------------------------------------------------
```

vivo319

```
[0]  AVISO
[1]  'Para manter este WS up-to-date, '
[2]  'Fazer de tempos em tempos'
[3]  ')copy cpc cpc igual vetoriza'
-------------------------------------------------------------
[0]  r←achav xx
[1]  r←1↓(∨/xx∈'V')/⍳1↑⍴xx
-------------------------------------------------------------
[ 0]  r←convf x;i;min;xx;zz
[ 1]  i←1 ⋄ r←((1↑⍴x),100)⍴' ' ⋄ min←0
[ 2] t1:→(i>1↑⍴x)/fim
[ 3]  xx←rtrim x[i;]
[ 4]  →(0=⍴xx)/soma
[ 5]  →((xx[1]='s')∧(xx[2]='e'))/se
[ 6]  →((xx[1]='r')∧(xx[2]='e'))/repita
[ 7]  →((xx[1]='p')∧(xx[2]='a'))/para
[ 8]  →((xx[1]='e')∧(xx[2]='n'))/enquanto
[ 9]  →((xx[1]='f')∧(xx[5]='e'))/fimenquanto
[10]  →((xx[1]='f')∧(xx[5]='p'))/fimpara
[11]  →((xx[1]='f')∧(xx[5]='s'))/fimse
[12]  →((xx[1]='a')∧(xx[2]='t'))/ate
[13]  r[i;]←100↑zz←'⍀STATE ',tradcoma2 xx
[14]  →soma
[15] se:r[i;]←100↑zz←'⍀IF{',(trim tradcoma2 3↓xx),'}'
[16]  →soma
[17] repita:r[i;]←100↑zz←'⍀REPEAT'
[18]  →soma
[19] para:r[i;]←100↑zz←'⍀FOR{',(trim tradcoma2 5↓xx),'}'
[20]  →soma
[21] enquanto:r[i;]←100↑zz←'⍀WHILE{',(trim tradcoma2 9↓xx),'}'
[22]  →soma
[23] fimenquanto:r[i;]←100↑zz←'⍀ENDWHILE'
[24]  →soma
[25] fimpara:r[i;]←100↑zz←'⍀ENDFOR'
[26]  →soma
[27] fimse:r[i;]←100↑zz←'⍀ENDIF'
[28]  →soma
[29] ate:r[i;]←100↑zz←'⍀UNTIL{',(trim tradcoma2 4↓xx),'}'
[30]  →soma
[31] soma:⍺min←min⌈⍴zz
[32]  →(i=i←i+1)/t1
[33] fim:⍺r←((1↑⍴r),min)↑r
-------------------------------------------------------------
[ 0]  r←geracaso;sem
[ 1]  r←10 60⍴' '
[ 2]  r[1;]←60↑'algoritmo TESTE'
[ 3]  r[2;]←60↑'inteiro X,Y,Z,T'
[ 4]  r[10;]←60↑'fim{algoritmo}'
[ 5]  sem←?4
[ 6]  →(sem=1)/um
[ 7]  →(sem=2)/do
[ 8]  →(sem=3)/tr
[ 9]  →qu
[10] um:r[3;]←60↑'repita' ⋄ r[9;]←60↑'ate ',geracondicao
[11]  →conta
[12] do:r[3;]←60↑'enquanto ',geracondicao ⋄ r[9;]←60↑'fim{enquanto}'
[13]  →conta
[14] tr:r[3;]←60↑'para ',('XYZT'[?4]),' de ',('5'⍕?4),' ate ',('5'⍕5+?4),' passo ',('5'⍕?2
      )
[15]  r[9;]←60↑'fim{para}'
[16]  →conta
```

```
[17] qu:r[3;]←60↑'se ',geracondicao ◇ r[9;]←60↑'fim{se}'
[18] conta:
[19]  sem←?4
[20]  →(sem=1)/um2
[21]  →(sem=2)/do2
[22]  →(sem=3)/tr2
[23]  →qu2
[24] um2:r[4;]←60↑'   repita' ◇ r[8;]←60↑'   ate ',geracondicao
[25]  →conta2
[26] do2:r[4;]←60↑'   enquanto ',geracondicao ◇ r[8;]←60↑'   fim{enquanto}'
[27]  →conta2
[28] tr2:r[4;]←60↑'   para ',('XYZT'[?4]),' de ',('5'⍕?4),' ate ',('5'⍕5+?4),' passo ',('5
      '⍕?2)
[29]  r[8;]←60↑'   fim{para}'
[30]  →conta2
[31] qu2:r[4;]←60↑'   se ',geracondicao ◇ r[8;]←60↑'   fim{se}'
[32] conta2:r[5;]←60↑'      ',geracoma
[33]  r[6;]←60↑'      ',geracoma
[34]  r[7;]←60↑'      ',geracoma
-------------------------------------------------------------
[0]  r←geracoma;var;mei;fin
[1]  var←4⍴'XYZT'
[2]  mei←3⍴'+-*'
[3] vorta:fin←4 2⍴(var[?4],' '),'50'⍕?20
[4]  →(2≠?2)/mesmo
[5]  r←var[?4],'<-',,fin[?2;]
[6]  →(r[1]=r[4])/vorta
[7]  →0
[8] mesmo:r←var[?4],'<-',var[?4],(,mei[?3]),,fin[?2;]
-------------------------------------------------------------
[0]  r←geracondicao;var;con
[1]  var←4 1⍴'XYZT'
[2]  con←6 2⍴'= > < <>>=<='
[3]  r←(,var[?4;]),(,con[?6;]),'55'⍕?20
-------------------------------------------------------------
[0]  r←a igual b;maior
[1]  maior←(1↑⍴a)⌈1↑⍴b
[2]  a←maior↑a ◇ b←maior↑b
[3]  r←maior=+/a=b
-------------------------------------------------------------
[0]  montabanco1;i
[1]  QUES←99 10 60⍴' '
[2]  i←1
[3] t1:→(i>99)/0
[4]  QUES[i;;]←geracaso
[5]  →(i=i←i+1)/t1
-------------------------------------------------------------
[0]  montabanco2;i
[1]  i←1
[2] t1:→(i>99)/0
[3]  QUES[i;1;15+⍳6]←'-','***','00'⍕i
[4]  →(i=i←i+1)/t1
-------------------------------------------------------------
[0]  montabanco3;i;aaa
[1]  RESP←99 18 70⍴' '
[2]  i←1
[3] t1:→(i>99)/0
[4]  ⍴aaa←cpc QUES[i;;]
[5]  RESP[i;;]←18 70↑aaa
[6]  →(i=i←i+1)/t1
-------------------------------------------------------------
[0]  testa;i
[1]  i←1
```

```
[2]  →(i>99)/0
[3]  +/60=+/QUESB[i;;]=' '
[4]  →(i=i←i+1)/2
-------------------------------------------------------------
[ 0]  r←tradcoma2 x;i;j
[ 1]  i←j←1 ⋄ r←100⍴' ' ⋄ x←trim x
[ 2] t1:→(i>⍴x)/fim
[ 3]  →(i=⍴x)/pula
[ 4]  →((x[i]='<')∧(x[i+1]='-'))/recebe
[ 5]  →((x[i]='<')∧(x[i+1]='>'))/diferente
[ 6]  →((x[i]='>')∧(x[i+1]='='))/maiig2
[ 7]  →((x[i]='<')∧(x[i+1]='='))/menig2
[ 8] pula:→(x[i]='∨')/ou
[ 9]  →(x[i]='∧')/e
[10]  →(x[i]='~')/nao
[11]  →(x[i]='≤')/menig
[12]  →(x[i]='≥')/maiig
[13]  →(x[i]='×')/vezes
[14]  →(x[i]='>')/maior
[15]  →(x[i]='<')/menor
[16]  →(x[i]='←')/reca
[17]  →(x[i]='→')/vai
[18] nada:r[j]←x[i]
[19]  j←j+1
[20]  i←i+1
[21]  →t1
[22] recebe:r[j+¯1+⍳7]←'$⍀gets$'
[23]  j←j+7
[24]  i←i+2
[25]  →t1
[26] ou:r[j+¯1+⍳6]←'$⍀lor$'
[27]  j←j+6
[28]  i←i+1
[29]  →t1
[30] nao:r[j+¯1+⍳6]←'$⍀sim$'
[31]  j←j+6
[32]  i←i+1
[33]  →t1
[34] e:r[j+¯1+⍳7]←'$⍀land$'
[35]  j←j+7
[36]  i←i+1
[37]  →t1
[38] diferente:r[j+¯1+⍳6]←'$⍀neq$'
[39]  j←j+6
[40]  i←i+2
[41]  →t1
[42] menig:r[j+¯1+⍳5]←'$⍀le$'
[43]  j←j+5
[44]  i←i+1
[45]  →t1
[46] maiig:r[j+¯1+⍳5]←'$⍀ge$'
[47]  j←j+5
[48]  i←i+1
[49]  →t1
[50] vezes:r[j+¯1+⍳8]←'$⍀times$'
[51]  j←j+8
[52]  i←i+1
[53]  →t1
[54] maior:r[j+¯1+⍳3]←'$>$'
[55]  j←j+3
[56]  i←i+1
[57]  →t1
[58] menor:r[j+¯1+⍳3]←'$<$'
```

```
[59]  j←j+3
[60]  i←i+1
[61]  →t1
[62] vai:r[j+¯1+⍳5]←'$⍀to$'
[63]  j←j+5
[64]  i←i+1
[65]  →t1
[66] reca:r[j+¯1+⍳7]←'$⍀gets$'
[67]  j←j+7
[68]  i←i+1
[69]  →t1
[70] menig2:r[j+¯1+⍳5]←'$⍀le$'
[71]  j←j+5
[72]  i←i+2
[73]  →t1
[74] maiig2:r[j+¯1+⍳5]←'$⍀ge$'
[75]  j←j+5
[76]  i←i+2
[77]  →t1
[78] fim:r←trim r
-------------------------------------------------------------
[ 0]  r←vetoriza x;i;rr;letra;aspa;nume
[ 1] ⍝ versao 1.07
[ 2]  aspa←'''' ⋄ nume←'0123456789'
[ 3]  letra←'abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ()',aspa
[ 4] ⍝ tira os brancos
[ 5]  i←1 ⋄ rr←1
[ 6] t2:→(i>¯2+⍴x)/vaiz
[ 7]  →((x[i+1]=' ')∧(x[i]∈letra)∧(x[i+2]∈nume))/mataz
[ 8]  →((x[i+1]=' ')∧(x[i]∈nume)∧(x[i+2]∈letra))/mataz
[ 9]  →((x[i]∈letra)∧(x[i+2]∈letra))/naopode
[10]  →((x[i]∈letra)∧(x[i+2]='-'))/naopode  ⍝ comando incluido para o passo negativo
[11]  →(x[i+1]≠' ')/naopode
[12] pode:rr←rr,0
[13]  →(i=i←i+1)/t2
[14] mataz:x[i+1]←'!'
[15] naopode:rr←rr,1
[16]  →(i=i←i+1)/t2
[17] vaiz:rr←rr,1
[18]  x←rr/x
[19] ⍝ separa o sinal <-
[20]  →(2≠+/'<-'∈x)/faca
[21]  i←1 ⋄ rr←⍳0
[22] t1:→(i>¯1+⍴x)/vaix
[23]  →((x[i]='<')∧(x[i+1]='-'))/esim
[24]  rr←rr,1
[25]  →(i=i←i+1)/t1
[26] esim:rr←rr,0 1 1 0
[27]  →(i=i←i+2)/t1
[28] vaix:rr←rr,1
[29]  x←rr⍀x
[30] faca:x←'! 'edit x
[31]  r←(~' '=x)⊂x
-------------------------------------------------------------
[ 0]  opesq vivo319a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;quem;quais;onde;tempo
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL319   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
```

```
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA319←ajusta80 FOLHALA319
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA319)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 80⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←53 80⍴' '
[15]  f←FOLHALA319
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←1.02
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23] inica:
[24]  quem←?99
[25]  esse[7+⍳18;]←18 80↑convf RESPA[quem;;]
[26]  esse[8;13+⍳3]←'000'⍕100+?899
[27]  resp←resp,quem
[28]  quem←?99
[29]  esse[25+⍳10;]←10 80↑convf QUESB[quem;;]
[30]  quais←achav RESPB[quem;;]
[31]  onde←quais[2?⍴quais]
[32]  tempo←convf RESPB[quem;;]
[33]  resp←(3 0 3 0⍕resp),tempo[onde[1];⍳37],tempo[onde[2];⍳37]
[34]  tempo[onde;]←2 100⍴100↑'\STATE \uuline{\hspace{4cm}}.'
[35]  esse[35+⍳18;]←18 80↑tempo
[36]  esse[36;13+⍳3]←esse[26;23+⍳3]←'000'⍕100+?899
[37]  resu←resu,[1]1 80⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[41]  ⍞←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[3+1↑⍴presu;]←(1↓⍴upag)↑'\end{verbatim}'
[48]  →terminando
[49] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 4↓resu)
[50]  aaa[1;35 36]←2 0⍕CORRECAO
[51]  lixonol←aaa ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa'
[52] terminando:
[53]  upag[2+⍳1↑⍴presu;]←resu
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[58]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo321

```
[0]  CF
[1]  F←5 7⍴0
------------------------------------------------------------
[0]  r←EF fi
```

```
[1]  →(F[fi;7]≥F[fi;6])/erro
[2]  F[fi;7]←F[fi;7]+1
[3]  r←F[fi;F[fi;7]]
[4]  →(F[fi;6]≠F[fi;7])/fim
[5]  F[fi;6]←F[fi;7]←0
[6] fim:
[7]  →0
[8] erro:r←43
-------------------------------------------------------------
[ 0]  r←fi IF le;x;y;lixo
[ 1]  →(F[fi;6]≥5)/tes
[ 2]  F[fi;6]←F[fi;6]+1
[ 3]  F[fi;F[fi;6]]←L le
[ 4]  →fim
[ 5] tes:→(F[fi;7]≤0)/erro
[ 6]  x←F[fi;6]-F[fi;7]
[ 7]  y←1
[ 8] oi:→(y>x)/aca
[ 9]  F[fi;y]←F[fi;F[fi;7]+y]
[10]  →(y=y←y+1)/oi
[11] aca:F[fi;6]←F[fi;6]-F[fi;7]
[12]  F[fi;7]←0
[13]  lixo←fi IF le
[14]  →fim
[15] erro:r←0
[16] fim:r←0
-------------------------------------------------------------
[0]  r←L x
[1]  →(x=-1)/erro
[2]  r←⎕AV⍳x
[3]  →0
[4] erro:'deu erro'
-------------------------------------------------------------
[0]  r←N x
[1]  r←⎕AV[x]
-------------------------------------------------------------
[0]  r←analisa;x;i;z
[1]  x←,F ⋄ z←0 3⍴0
[2]  i←1
[3] so:→(i>35)/aca
[4]  →(x[i]=0)/soma
[5]  z←z,[1]1 3⍴(1+⌊(i-1)÷7),(1+7|i-1),x[i]
[6] soma:→(i=i←i+1)/so
[7] aca:r←z
-------------------------------------------------------------
[ 0]  r←geram;ind
[ 1]  r←46 3⍴0
[ 2]  r[;1]←?46⍴5
[ 3]  r[;2]←(1 1 1 2 2 2 1 1 1 1)[?46⍴10]
[ 4]  r[;3]←L'ABCDEFGIJKLMNOPQRSTUVXYZ'[?46⍴24]
[ 5]  ind←(r[;2]=1)/⍳46
[ 6]  ind←8↑ind[(⍴ind)?⍴ind]
[ 7]  r[ind;3]←-?8⍴5
-------------------------------------------------------------
[ 0]  r←montaa x;i;aspa
[ 1] ⍝ x e o resultado de geram
[ 2]  aspa←''''
[ 3]  i←1
[ 4]  r←46 11⍴' '
[ 5] ica:→(i>46)/fim
[ 6]  →(x[i;2]=2)/excl
[ 7]  →(x[i;3]>0)/norm
[ 8]  r[i;1]←1 0⍕x[i;1]
```

```
[ 9]  r[i;3 4 5 6 7 8 9 10]←'IF N EF '
[10]  r[i;11]←1 0⍕|x[i;3]
[11]  →soma
[12] norm:
[13]  r[i;1]←1 0⍕x[i;1]
[14]  r[i;3 4 5 6 7 8]←'IF ',aspa,(N x[i;3]),aspa
[15]  →soma
[16] excl:r[i;⍳4]←'EF ',(1 0⍕x[i;1])
[17] soma:→(i=i←i+1)/ica
[18] fim:
------------------------------------------------------------
[ 0]  r←montap x;i
[ 1] ⍝ x e o resultado de geram
[ 2]  i←1
[ 3]  r←46 11⍴' '
[ 4] ica:→(i>46)/fim
[ 5]  →(x[i;2]=2)/excl
[ 6]  →(x[i;3]>0)/norm
[ 7]  r[i;1 2 3 5 6 7 8 10 11]←'IF(,EF())'
[ 8]  r[i;4]←1 0⍕x[i;1]
[ 9]  r[i;9]←1 0⍕|x[i;3]
[10]  →soma
[11] norm:r[i;⍳7]←'IF( ,',(N x[i;3]),')'
[12]  r[i;4]←1 0⍕x[i;1]
[13]  →soma
[14] excl:r[i;⍳5]←'EF(',(1 0⍕x[i;1]),')'
[15] soma:→(i=i←i+1)/ica
[16] fim:
[17]  r←(46 3⍴' '),r,' '
[18]  r[;⍳2]←46 2⍴2 0⍕⍳46
[19]  r[;3]←'.'
------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10]  →(0=' 'ϵj↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80⍴80↑j↑candi
[15]  candi←j↓candi
[16]  →((⍴candi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80⍴80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
------------------------------------------------------------
[0]  r←tam frase
[1]  r←⍴(~⍵∧≠⍵frase=' ')/frase
------------------------------------------------------------
[0]  r←tiralinhasembranco l;i
[1]  i←1 ⋄ r←0 80⍴' '
[2] t1:→(i>1↑⍴l)/fim
[3]  →(80=+/' '=l[i;])/blz
[4]  r←r,[1]1 80⍴l[i;]
```

```
[5] blz:→(i=i←i+1)/t1
[6] fim:
------------------------------------------------------------
[0]  r←visual x
[1]  r←⎕AV[x+49×x<40]
------------------------------------------------------------
[ 0]  opesq vivo321a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;i;j;k;linhao;lixo1;lixonol;m;p
      ;relat;resp;resu;upag;x;xixo;xk;y;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL321   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA321←ajusta80 FOLHALA321
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA321)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 29⍴0  ⍝ aqui era 0 42, quando eram 15 perguntas
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←58 80⍴' '
[15]  f←FOLHALA321
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←3.24
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[23]  esse[57;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[58;]←80↑,esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  y←montaa x←geram
[27]  esse[7+⍳46;]←46 80↑LIXO←montap x
[28]  linhao←'1_____E_S_ 2_____E_S_ 3_____E_S_ 4_____E_S_ 5_____E_S_'
[29]  esse[7+⍳46;15+⍳65]←46 65⍴65↑linhao
[30]  i←1
[31]  CF
[32] ok1:→(i>46)/ufa
[33]  ⍞' lixo  ←',y[i;]
[34]  →(i=i←i+1)/ok1
[35] ufa:
[36]  j←analisa
[37]  k←15?1↑⍴j
[38]  →(15>1↑⍴j)/inica
[39]  m←j[k;]
[40]  p←15 14⍴' ' ⋄ p[;1 2]←15 2⍴2 0⍎⍳15
[41]  p[;3]←'.' ⋄ p[;4 5]←15 2⍴'F='
[42]  p[;6]←15 1⍴1 0⍎m[;1] ⋄ p[;9]←15 1⍴'12345ES'[m[;2]]
[43]  p[;10 11 12 13]←'_'
[44]  esse[53+⍳2;]←2 80↑2 70⍴⍴ ⍝ era ⍳3... 3 80↑3 70... quando eram 15
[45]  resp←(3 0⍎resp),'  -  ',((10⍴1 0),0 0,(10⍴1 0),0 0,10⍴1 0)⍉visual m[;3]
[46]  resu←resu,[1]1 29⍴resp ⍝ era 42
[47]  acuja←(f[;2]='#')/⍳1↑⍴f
[48]  f[acuja;⍳80]←esse[⍞,f[acuja;3 4],' ';]
[49]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[50]  ⍞←(⍎xk←xk+1),'-'
[51]  →testa
[52] fim:upag←(1 0+⍴f)⍴' '
[53]  →(1=≡n)/elafa
[54]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
```

```
[55]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[56]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑resu
[57]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[58]  →terminando
[59] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 3↓resu)
[60]  aaa[1;35 36]←2 0⍕CORRECAO
[61]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[62]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[63] terminando:
[64]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[65]  relat[1↑⍴relat;;]←upag
[66]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[67] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[68]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[69]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[70]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo322

```
[0]  CC
[1]  F←5 8⍴0
-------------------------------------------------------------
[ 0]  r←EC fi
[ 1]  →(F[fi;8]≤0)/erro
[ 2]  F[fi;7]←F[fi;7]+1
[ 3]  →(F[fi;7]<6)/ok
[ 4]  F[fi;7]←1
[ 5] ok:r←F[fi;F[fi;7]]
[ 6]  F[fi;8]←F[fi;8]-1
[ 7] fim:
[ 8]  →0
[ 9] erro:r←43
-------------------------------------------------------------
[ 0]  r←fi IC le;x;y;lixo
[ 1]  →(F[fi;8]≥5)/erro
[ 2]  F[fi;6]←F[fi;6]+1
[ 3]  →(F[fi;6]<6)/ok
[ 4]  F[fi;6]←1
[ 5] ok:F[fi;8]←F[fi;8]+1
[ 6]  F[fi;F[fi;6]]←L le
[ 7]  r←0
[ 8]  →fim
[ 9] erro:r←¯1
[10] fim:
-------------------------------------------------------------
[0]  r←L x
[1]  →(x=-1)/erro
[2]  r←⎕AV⍳x
[3]  →0
[4] erro:'deu erro'
-------------------------------------------------------------
[0]  r←N x
[1]  r←⎕AV[x]
-------------------------------------------------------------
[0]  r←analisa;x;i;z
[1]  x←,F ⋄ z←0 3⍴0
[2]  i←1
[3] so:→(i>40)/aca
[4]  →(x[i]=0)/soma
[5]  z←z,[1]1 3⍴(1+⌊(i-1)÷8),(1+8|i-1),x[i]
[6] soma:→(i=i←i+1)/so
```

```
[7] aca:r←z
------------------------------------------------------------
[0]  r←geram;ind
[1]  r←50 3⍴0
[2]  r[;1]←?50⍴5
[3]  r[;2]←(1 1 1 2 2 2 1 1 1 1)[?50⍴10]
[4]  r[;3]←L'ABCDEFGIJKLMNOPQRSTUVXYZ'[?50⍴24]
[5]  ind←(r[;2]=1)/⍳50
[6]  ind←8↑ind[(⍴ind)?⍴ind]
[7]  r[ind;3]←-?8⍴5
------------------------------------------------------------
[ 0]  r←montaa x;i;aspa
[ 1] ⍝ x e o resultado de geram
[ 2]  aspa←''''
[ 3]  i←1
[ 4]  r←50 11⍴' '
[ 5] ica:→(i>50)/fim
[ 6]  →(x[i;2]=2)/excl
[ 7]  →(x[i;3]>0)/norm
[ 8]  r[i;1]←1 0⍕x[i;1]
[ 9]  r[i;3 4 5 6 7 8 9 10]←'IC N EC '
[10]  r[i;11]←1 0⍕|x[i;3]
[11]  →soma
[12] norm:
[13]  r[i;1]←1 0⍕x[i;1]
[14]  r[i;3 4 5 6 7 8]←'IC ',aspa,(N x[i;3]),aspa
[15]  →soma
[16] excl:r[i;⍳4]←'EC ',(1 0⍕x[i;1])
[17] soma:→(i=i←i+1)/ica
[18] fim:
------------------------------------------------------------
[ 0]  r←montap x;i
[ 1] ⍝ x e o resultado de geram
[ 2]  i←1
[ 3]  r←50 11⍴' '
[ 4] ica:→(i>50)/fim
[ 5]  →(x[i;2]=2)/excl
[ 6]  →(x[i;3]>0)/norm
[ 7]  r[i;1 2 3 5 6 7 8 10 11]←'IC(,EC())'
[ 8]  r[i;4]←1 0⍕x[i;1]
[ 9]  r[i;9]←1 0⍕|x[i;3]
[10]  →soma
[11] norm:r[i;⍳7]←'IC( ,',(N x[i;3]),')'
[12]  r[i;4]←1 0⍕x[i;1]
[13]  →soma
[14] excl:r[i;⍳5]←'EC(',(1 0⍕x[i;1]),')'
[15] soma:→(i=i←i+1)/ica
[16] fim:
[17]  r←(50 3⍴' '),r,' '
[18]  r[;⍳2]←50 2⍴2 0⍕⍳50
[19]  r[;3]←'.'
------------------------------------------------------------
[0]  r←visual x
[1]  r←⎕AV[x+49×x<40]
------------------------------------------------------------
[ 0]  opesq vivo322a n;CORRECAO;EVENTO;aaa;acuja;cab;dhx;esse;f;flm;i;j;k;linhao;lixo;lixo
      1;lixonol;m;p;relat;resp;resu;u;upag;x;xixo;xk;y;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL322   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
```

```
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA322←ajusta80 FOLHALA322
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA322)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[12]  xk←1 ⋄ resu←0 29⍴''  ⍝ era 42
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←58 80⍴' '
[15]  f←FOLHALA322
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.24
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  cab←80↑EVENTO
[22]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←cab
[23]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[24]  esse[57;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[25]  esse[58;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[26] inica:
[27]  y←montaa x←geram
[28]  esse[7+⍳46;⍳15]←46 15↑montap x
[29]  linhao←64↑'1...E_S_Q_ 2...E_S_Q_ 3...E_S_Q_ 4...E_S_Q_ 5...E_S_Q_'
[30]  esse[7+⍳46;16+⍳64]←46 64⍴linhao
[31]  i←1
[32]  CC
[33] ok1:→(i>46)/ufa
[34]  ⍞←' lixo  ←',y[i;]
[35]  →(i=i←i+1)/ok1
[36] ufa:
[37]  j←analisa
[38]  k←15?1↑⍴j
[39]  →(15>1↑⍴j)/inica
[40]  m←j[k;]
[41]  p←15 14⍴' ' ⋄ p[;1 2]←15 2⍴2 0⍕⍳15
[42]  p[;3]←'.' ⋄ p[;4 5]←15 2⍴'F='
[43]  p[;6]←15 1⍴1 0⍕m[;1] ⋄ p[;9]←15 1⍴'12345ESQ'[m[;2]]
[44]  p[;10 11 12 13]←'_'
[45]  esse[53+⍳2;]←2 80↑2 70⍴⍴ ⍝ era tudo 3
[46]  resp←(3 0⍕resp),'  -  ',((10⍴1 0),0 0,(10⍴1 0),0 0,10⍴1 0)⍀visual m[;3]
[47]  resu←resu,[1]1 29⍴resp
[48]  acuja←(f[;2]='#')/⍳1↑⍴f
[49]  f[acuja;⍳80]←esse[⍞,f[acuja;3 4],' ';]
[50]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[51]  ⍞←(⍕xk←xk+1),'-'
[52]  →testa
[53] fim:upag←(1 0+⍴f)⍴' '
[54]  →(1=≡n)/elafa
[55]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[56]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[57]  upag[2+⍳1↑⍴presu;]←((1↑⍴presu),80)↑resu
[58]  upag[3+1↑⍴presu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[59]  →terminando
[60] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 3↓resu)
[61]  aaa[1;35 36]←2 0⍕CORRECAO
[62]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[63]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[64] terminando:
[65]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[66]  relat[1↑⍴relat;;]←upag
[67]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[68] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
```

```
[69]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[70]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[71]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo323

```
[0]  r←AMBICRM x
[1]  M←x⍴0
[2]  ⎕IO←0
[3]  PPVELHO←PPL←0
[4]  →(x≠100)/fim
[5]  M[80+⍳20]←1+⍳20
[6] fim:r←0
-------------------------------------------------------------
[0]  r←AMBIOBT x;ppltemp
[1] ⍝  →((PPL+x)>99)/erro
[2]  →((PPL+x)>¯1+⍴M)/erro
[3]  ppltemp←PPL
[4]  PPL←PPL+x
[5]  r←ppltemp
[6]  →0
[7] erro:r←¯1
-------------------------------------------------------------
[ 0]  r←FILCCRI tam;x
[ 1] ⍝ tam[0] = tamanho e tam[1] = quantidade de elementos
[ 2] ⍝ descritores: Limite-entr, Entrada, Limite-sai, Saida, Tamanho,qtos
[ 3]  x←AMBIOBT(tam[0]×tam[1])+6
[ 4]  →(x<0)/naodeu
[ 5]  M[x]←x+6+(tam[0]×tam[1])
[ 6]  M[(x+1),(x+2),x+3]←x+6
[ 7]  M[x+4]←tam[0]
[ 8]  M[x+5]←0
[ 9]  r←x
[10]  →0
[11] naodeu:r←¯1
-------------------------------------------------------------
[ 0]  r←FILCEXC fe;s
[ 1]  →(M[fe+5]≤0)/erro
[ 2]  s←M[fe+3]
[ 3]  M[fe+3]←M[fe+3]+M[fe+4]
[ 4]  →(M[fe+3]<M[fe])/lkj
[ 5]  M[fe+3]←M[fe+2]
[ 6] lkj:M[fe+5]←M[fe+5]-1
[ 7]  r←s
[ 8]  →0
[ 9] erro:r←¯1
-------------------------------------------------------------
[ 0]  r←FILCINS fe;F;Q;K;Y
[ 1] ⍝ f=fila, e=endereco de carga
[ 2]  F←fe[0] ⋄ K←fe[1]
[ 3]  →(M[F+5]≥(M[F]-M[F+2])÷M[F+4])/erro
[ 4]  →(M[F+1]<M[F])/blk
[ 5]  M[F+1]←M[F+2]
[ 6] blk:Y←0
[ 7] vorta:→(Y>M[F+4]-1)/kjh
[ 8]  M[M[F+1]+Y]←M[K+Y]
[ 9]  →(Y=Y←Y+1)/vorta
[10] kjh:M[F+1]←M[F+1]+M[F+4]
[11]  M[F+5]←M[F+5]+1
[12]  r←0
[13]  →0
```

```
[14] erro:r←¯1
-------------------------------------------------------------
[0]  r←FILTCRI x;z
[1]  z←AMBIOBT 3
[2]  →(z<0)/erro
[3]  M[z]←M[z+1]←¯1
[4]  M[z+2]←x
[5]  r←z
[6]  →0
[7] erro:r←¯1
-------------------------------------------------------------
[ 0]  r←FILTEXC F;ant;atu
[ 1]  →((M[F]≠¯1)∨(M[F+1]≠¯1))/ok
[ 2] erro:r←¯1
[ 3]  →0
[ 4] ok:→(M[F]≠M[F+1])/difers
[ 5]  r←M[F]+1
[ 6]  M[F]←M[F+1]←¯1
[ 7]  →0
[ 8] difers:
[ 9]  r←M[F]+1
[10]  M[F]←M[M[F]]
-------------------------------------------------------------
[ 0]  r←FILTINS x;F;E;T;z;y
[ 1]  F←x[0] ⋄ E←x[1] ⋄ T←M[F+2]
[ 2]  z←AMBIOBT(T+1)
[ 3]  →(z<0)/erro
[ 4]  →((M[F]≠¯1)∨(M[F+1]≠¯1))/naovaz
[ 5]  M[F]←M[F+1]←z
[ 6]  M[z]←¯1
[ 7]  →preencg
[ 8] naovaz:
[ 9]  M[z]←¯1
[10]  M[M[F+1]]←z
[11]  M[F+1]←z
[12] preencg:y←0
[13] testa:→(y≥T)/acabou
[14]  M[z+1+y]←M[E+y]
[15]  →(y=y←y+1)/testa
[16] acabou:r←0
[17]  →0
[18] erro:r←¯1
-------------------------------------------------------------
[ 0]  r←acerta linha;indx;indy;vals
[ 1]  indx←(linha='x')/⍳⍴linha
[ 2]  →(0=⍴indx)/conta
[ 3]  indy←indx+1
[ 4]  linha[indy]←vals←'0'⍕2+?¯1+⍴((2×⍴indy)⍴1 0)⍀linha[indy]
[ 5]  linha[indx]←' '
[ 6] conta:indx←(linha='y')/⍳⍴linha
[ 7]  →(0=⍴indx)/fimcaca
[ 8]  indy←,indx∘.+1 2
[ 9]  linha[indy]←vals←'00'⍕80+?⍴((2×⍴indx)⍴1 0)⍀linha[indx+2]
[10]  linha[indx]←' '
[11] fimcaca:indx←(linha='z')/⍳⍴linha
[12]  →(0=⍴indx)/fim
[13]  indy←,indx∘.+1 2
[14]  linha[indy]←vals←'00'⍕(⍴,indx)↑ALEATORIOS
[15]  ALEATORIOS←(⍴,indx)↓ALEATORIOS
[16]  linha[indx]←' '
[17] fim:r←linha
-------------------------------------------------------------
[ 0]  r←arrumac x;y
```

```
[ 1]  y←1↑⍴x
[ 2]  →(y>9)/dez
[ 3]  r←(1 0⍕(y,1)⍴⍳y),':',x
[ 4]  →fim
[ 5] dez:→(y>99)/cem
[ 6]  r←(2 0⍕(y,1)⍴⍳y),':',x
[ 7]  →fim
[ 8] cem:r←(3 0⍕(y,1)⍴⍳y),':',x
[ 9] fim:
-------------------------------------------------------------
[0]  r←chutainds;inds;a1
[1]  inds←⍳80
[2]  inds←(M[inds]≠0)/inds
[3]  a1←5?⍴inds
[4]  a1←a1[⍋a1]
[5]  r←inds[a1],M[inds[a1]]
-------------------------------------------------------------
[0]  faz y
[1] teste:→(0=1↑⍴y)/0
[2]  ⍎y[1;]
[3]  y←1 0↓y
[4]  →teste
-------------------------------------------------------------
[ 0]  r←fazexemplo
[ 1]  AMBICRM 100
[ 2]  r←ve
[ 3]  i←0
[ 4] l1:→(i≥20)/fim
[ 5]  r←r,[0]1 55⍴55↑m[i;]
[ 6]  ⍎m[i;]
[ 7]  r←r,[0]ve
[ 8]  m[i;]
[ 9]  ve
[10]  →(i=i←i+1)/l1
[11] fim:
-------------------------------------------------------------
[0]  fazz;i
[1]  i←0
[2] t1:→(i≥1↑⍴ROTEEXEM)/0
[3]  ('←<'edit ROTEEXEM[i;]),'⍝⍝*'
[4]  ⍎ROTEEXEM[i;]
[5]  i←i+1
[6]  →t1
-------------------------------------------------------------
[ 0]  r←qtos geracaso mat;⎕IO;tama;fazer;j;matb;lixo;i
[ 1]  ⎕IO←0
[ 2] ⍝ matriz usada em mat; 12 primeiros sempre; 30 exercicios por folha
[ 3] ⍝ executam-se obrigatoriamente as primeiras 12 linhas
[ 4] ⍝ o exercicio sempre tera 30 exercicios.
[ 5]  tama←1↑⍴mat
[ 6]  fazer←mat[⍳8;],[0]mat[(8+(qtos-8)?tama-8);]
[ 7]  j←0 ⋄ matb←(⍴fazer)⍴' '
[ 8] acabou:→(j≥qtos)/mesmo
[ 9]  fazer[j;]←acerta fazer[j;]
[10]  →(j=j←j+1)/acabou
[11] mesmo:matb←arrumac fazer
[12]  matb←'←='edit matb
[13]  lixo←AMBICRM 100
[14]  j←0
[15] acab2:→(j≥qtos)/mem2
[16]  lixo←⍎fazer[j;]
[17]  →(j=j←j+1)/acab2
[18] mem2:r←matb
```

```
------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10]  →(0=' '∈j↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80⍴80↑j↑candi
[15]  candi←j↓candi
[16]  →((⍴candi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80⍴80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
------------------------------------------------------------
[ 0]  r←ve;x;y;z;i;w
[ 1]  x←10 10⍴M
[ 2]  w←z←,y←5 0⍉x
[ 3] isca:y←10 50⍴w
[ 4]  y←(((10 4)⍴4 0⍉10×⍳10),'|'),y
[ 5]  z←((1 55⍴'    |',5 0⍉⍳10),[0]'-'),[0]y
[ 6]  z[0;2]←'M'
[ 7]  r←'¯-'edit z
------------------------------------------------------------
[ 0]  r←vex M;x;y;z;i;w;⎕IO
[ 1]  ⎕IO←0
[ 2]  x←10 10⍴M
[ 3]  w←z←,y←5 0⍉x
[ 4]  i←0
[ 5] te5:→(i≥499)/isca
[ 6]  →((z[i]=' ')∧(z[i+1]='0'))/sim
[ 7]  →soma
[ 8] sim:w[i]←w[i+1]←' '
[ 9]  i←i+1
[10]  →soma
[11] soma:→(i=i←i+1)/te5
[12] isca:y←10 50⍴w
[13]  r←(10 5⍴5 0⍉⍳10),y
[14]  r[;6 11 16 21 26 31 36 41 46 51]←'&'
[15]  r←r,'⍀'
[16]  r←r,'⍀'
------------------------------------------------------------
[ 0]  r←vexc M;cabe1;cabe2;i;rabo;w;x;y;z;⎕IO
[ 1]  ⎕IO←0
[ 2]  x←10 10⍴M
[ 3]  w←z←,y←5 0⍉x
[ 4]  i←0
[ 5] te5:→(i≥499)/isca
[ 6]  →((z[i]=' ')∧(z[i+1]='0'))/sim
[ 7]  →soma
[ 8] sim:w[i]←w[i+1]←' '
[ 9]  i←i+1
[10]  →soma
[11] soma:→(i=i←i+1)/te5
```

```
[12] isca:y←10 50ρw
[13]  r←(10 5ρ5 0⍕⍳10),y
[14]  r[;6 11 16 21 26 31 36 41 46 51]←'&'
[15]  r←r,'⍀'
[16]  r←r,'⍀'
[17]  cabe1←1 64ρ64↑'⍀begin{tabular}{r||c|c|c|c|c|c|c|c|c|}'
[18]  cabe2←1 64ρ64↑'&0&1&2&3&4&5&6&7&8&9⍀⍀ ⍀hline ⍀hline'
[19]  r←r,[1]10 7ρ' ⍀hline'
[20]  rabo←1 64ρ64↑'⍀end{tabular}⍀⍀*'
[21]  r←cabe1,[0]cabe2,[0]r,[0]rabo
-------------------------------------------------------------
[ 0]  opesq vivo323a n;CORRECAO;EVENTO;aaa;acuja;cab;dhx;esse;f;lixo1;lixonol;relat;resp;r
      esu;upag;xixo;xk;xx;ylu;yy
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  ⎕IO←0
[ 3]  opesq←10ρ' '
[ 4] qveio:
[ 5]  ⎕RL←⌊(⎕TS[6]+⎕TS[5]+⎕TS[4])*2.7364736473
[ 6]  CORRECAO←5 ⋄ EVENTO←'PL323   '
[ 7]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[2 1 0]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      3 4],⎕TS[5]+⎕TS[6]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕⍳n
[10]  FOLHALA323←ajusta80 FOLHALA323
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALA323)ρ' '
[12]  relat[0;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[13]  xk←1 ⋄ resu←0 6ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←30 80ρ' '
[16]  f←FOLHALA323
[17]  esse[0;]←80↑dhx[0;]
[18]  esse[1;]←80↑dhx[1;]
[19]  esse[2;]←80↑4 2⍕VERSAOa←3.21
[20]  esse[3;]←80↑ylu[xk-1;⍳6]
[21]  esse[4;]←80↑ylu[xk-1;6+⍳30]
[22]  cab←80↑EVENTO
[23]  →(~1=≡n)/1+⎕LC ⋄ esse[5;]←cab
[24]  esse[6;]←80↑(3 0⍕resp←xk),' ',opesq
[25]  esse[28;⍳10]←'@',esse[5;5+⍳3],esse[3;1+⍳5],'@'
[26]  esse[29;]←80↑esse[5;5+⍳3],'-',esse[3;1+⍳5],' - ',opesq[5 6],'/',opesq[8 9]
[27] inica:
[28]  xx←20 geracaso MATW
[29]  esse[7+⍳20;]←20 80↑xx
[30]  yy←chutainds
[31]  esse[27;]←80↑(2 0⍕yy[0]),'&',(2 0⍕yy[1]),'&',(2 0⍕yy[2]),'&',(2 0⍕yy[3]),'&',(2 0⍕yy
      [4]),'⍀⍀'
[32]  esse[27;]←'¯-'edit esse[27;]
[33]  resp←resp,yy[5+⍳5]
[34] continua:
[35]  resu←resu,[0](1,6)ρresp
[36]  acuja←(f[;1]='#')/⍳1↑ρf
[37]  f[acuja;]←esse[¯1+⍋,f[acuja;2 3],' ';]
[38]  relat[xk;;]←f,[0](1,1↓ρf)ρ200↑'⍀newpage'
[39]  ⍞←(⍕xk←xk+1),'-'
[40]  →testa
[41] fim:upag←(1 0+ρf)ρ' '
[42]  →(1=≡n)/elafa
[43]  upag[0;]←(1↓ρupag)↑'⍀begin{verbatim}'
[44]  upag[1;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[45]  upag[2+⍳1↑ρresu;⍳+/lixo1]←'¯-'edit(lixo1←5 0 10 0 5 0 5 0 5 0 5 0)⍕resu
[46]  upag[2+1↑ρresu;]←(1↓ρupag)↑'⍀end{verbatim}'
[47]  →terminando
[48] elafa:aaa←(ylu,'¯-'edit 4 0⍕0 1↓resu)
```

```
[49]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍬∧⍀⍬EVENTO=' ')/EVENTO),'.gpa')
[50]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[51] terminando:
[52]  upag[¯1+1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[53]  relat[¯1+1↑⍴relat;;]←upag
[54]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[55] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[56]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍬∧⍀⍬EVENTO=' ')/EVENTO),'.tex'
[57]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[58]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo324

```
[ 0]  r←acerta x;z;w;y
[ 1]  z←3 0⍕x[⍳5;]
[ 2]  z[;4]←','
[ 3]  z←'(',[2]z,[2]')'
[ 4]  z←z,'⍝'
[ 5]  z←((,z)≠' ')/,z
[ 6]  z←'⍝ 'edit z
[ 7]  w←3 0⍕x[5+⍳5;]
[ 8]  w[;4]←','
[ 9]  w←'(',[2]w,[2]')'
[10]  w←w,'⍝'
[11]  w←((,w)≠' ')/,w
[12]  w←'⍝ 'edit w
[13]  y←3 0⍕x[10+⍳5;]
[14]  y[;4]←','
[15]  y←'(',[2]y,[2]')'
[16]  y←y,'⍝'
[17]  y←((,y)≠' ')/,y
[18]  y←'⍝ 'edit y
[19]  z←42↑z
[20]  w←42↑w
[21]  y←42↑y
[22]  r←3 42⍴z,w,y
-------------------------------------------------------------
[ 0]  r←geracaso xx;or1;or2;or;de;i;pares;nodos;or3
[ 1]  nodos←xx[1]
[ 2]  pares←xx[2]
[ 3] denovo:r←(pares,2)⍴0
[ 4]  i←1
[ 5] t:→(i>pares)/fim
[ 6]  de←1+?nodos-1
[ 7]  or1←?de-1
[ 8]  or2←?de-1
[ 9]  or3←?de-1
[10]  or←or1⌈or2⌈or3
[11]  →(2∈+/r[⍳i;]=(i,2)⍴or,de)/t
[12]  r[i;]←or,de
[13]  →(i=i←i+1)/t
[14] fim:i←1
[15] t1:→(i>nodos)/fim2
[16] ⍝   →((i  ∈r[;1])  ∧(i  ∈r[;2]))/ok
[17]  →(i∈r[;2])/ok
[18]  →((i=1)∧(i∈r[;1]))/ok
[19]  →((i=nodos)∧(i∈r[;2]))/ok
[20] ⍝furou:'furou',  ⍕i
[21]  →denovo
[22] ok:→(i=i←i+1)/t1
[23] fim2:
```

```
------------------------------------------------------------
[ 0]  r←monta x;max;ori;des;aux;i
[ 1]  r←((max←⌈/,x),13)⍴0
[ 2] ⍝ r[;1]=numero; r[;2]=qtd anteces; r[;3]=qtd sucs; r[;4-13]=os sucss
[ 3]  r[;1]←⍳max
[ 4]  i←1
[ 5] t1:→(i>1↑⍴x)/fim
[ 6]  ori←x[i;1]
[ 7]  des←x[i;2]
[ 8]  aux←r[ori;3]+1
[ 9]  r[ori;3]←aux
[10]  r[ori;3+aux]←x[i;2]
[11]  r[des;2]←r[des;2]+1
[12]  →(i=i←i+1)/t1
[13] fim:
------------------------------------------------------------
[ 0]  r←resolve x;quantos;FILA;quem;vez;j;who
[ 1]  quantos←1↑⍴x
[ 2]  FILA←(x[;2]=0)/⍳quantos
[ 3]  QUEM←quem←quantos?20
[ 4]  r←⍳0
[ 5] inicio:
[ 6]  →(0=⍴FILA)/zero
[ 7] ⍝ 'fila ',  ⍕FILA
[ 8]  vez←1↑FILA
[ 9]  FILA←1↓FILA
[10]  r←r,vez
[11]  j←1
[12] t1:→(j>x[vez;3])/cab
[13]  who←x[vez;3+j]
[14]  x[who;2]←x[who;2]-1
[15]  →(x[who;2]≠0)/pula
[16]  FILA←FILA,x[who;1]
[17] pula:→(j=j←j+1)/t1
[18] cab:→inicio
[19] zero:→(12=+/r=⍳12)/zebra
[20]  →(quantos=⍴r)/ok
[21] zebra:⍞←'*'
[22]  r←-1
[23]  →fim
[24] ok:
[25] fim:
------------------------------------------------------------
[ 0]  opesq vivo324a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;relat;resp;resu;
      upag;x;xixo;xk;y;ylu;z
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←12 ⋄ EVENTO←'PL324   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA324←ajusta80 FOLHALA324
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA324)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[12]  xk←1 ⋄ resu←0 13⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←13 80⍴' '
[15]  f←FOLHALA324
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
```

```
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.31
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[12;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[13;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26] fumo:z←resolve y←monta x←geracaso 12 15
[27]  →(z=¯1)/fumo
[28]  esse[8 9 10;]←3 80↑acerta QUEM[x]
[29]  esse[11;]←80↑3 0⍕QUEM
[30]  resp←resp,QUEM[z]
[31]  resu←resu,[1]1 13⍴resp
[32]  acuja←(f[;2]='#')/⍳1↑⍴f
[33]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[34]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[35]  ⎕←(⍕xk←xk+1),'-'
[36]  →testa
[37] fim:upag←(1 0+⍴f)⍴' '
[38]  →(1=≡n)/elafa
[39]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[40]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[41]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←3 0 7 0,22⍴3 0)⍕resu
[42]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[43]  →terminando
[44] elafa:aaa←(ylu,4 0⍕0 1↓resu)
[45]  aaa[1;35 36]←2 0⍕CORRECAO
[46]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.gpa')
[47]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[48] terminando:
[49]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[50]  relat[1↑⍴relat;;]←upag
[51]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[52] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[53]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.tex'
[54]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[55]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo331

```
[0]  CRIAL x
[1]  M[x]←¯1
-------------------------------------------------------------
[0]  CRM
[1]  M←100⍴0
[2]  PPL←0
-------------------------------------------------------------
[ 0]  r←L EXCL n;li;i;ant
[ 1] ⍝ exclui o elemento n da lista L
[ 2]  li←M[0]
[ 3]  li←li+L-1
[ 4]  →(n≠0)/la
[ 5]  r←M[li]
[ 6]  M[li]←M[M[li]+1]
[ 7]  →0
[ 8] la:
[ 9]  i←1
[10]  li←M[li]
[11]  ant←li
[12]  li←M[ant+1]
```

```
[13] te:→(i=n)/achou
[14]  ant←li
[15]  li←M[li+1]
[16]  i←i+1
[17]  →te
[18] achou:r←li
[19]  M[ant+1]←M[li+1]
```

```
[0]  INSCARTAS xxx;y;i
[1]  y←M[0]+4
[2]  i←0
[3] te:→(i≥⍴xxx)/fim
[4]  y INSL xxx[i]
[5]  →(i=i←i+1)/te
[6] fim:
```

```
[0]  L INSL ELE;x
[1] ⍝ insere o elemento ELE na lista L
[2]  x←OBTEM 2
[3]  M[x+1]←M[L]
[4]  M[L]←x
[5]  M[x]←ELE
```

```
[0]  r←OBTEM x
[1]  r←PPL
[2]  PPL←PPL+x
```

```
[0]  r←embaralha;x
[1]  x←10+⍳40
[2]  r←x[40?40]
```

```
[ 0]  r←ganhoufinal tres;a;b;c;x
[ 1]  a←0 0 0 0
[ 2]  a←a,0 0 1 1
[ 3]  a←a,0 0 2 2
[ 4]  a←a,0 1 0 1
[ 5]  a←a,0 1 1 1
[ 6]  a←a,0 1 2 1
[ 7]  a←a,0 2 0 2
[ 8]  a←a,0 2 1 2
[ 9]  a←a,0 2 2 2
[10]  a←a,1 0 0 1
[11]  a←a,1 0 1 1
[12]  a←a,1 0 2 1
[13]  a←a,1 1 0 1
[14]  a←a,1 1 1 1
[15]  a←a,1 1 2 1
[16]  a←a,1 2 0 1
[17]  a←a,1 2 1 1
[18]  a←a,1 2 2 2
[19]  a←a,2 0 0 2
[20]  a←a,2 0 1 2
[21]  a←a,2 0 2 2
[22]  a←a,2 1 0 2
[23]  a←a,2 1 1 1
[24]  a←a,2 1 2 2
[25]  a←a,2 2 0 2
[26]  a←a,2 2 1 2
[27]  a←a,2 2 2 2
[28]  TABVENC←x←27 4⍴a
[29]  r←x[((3=+/(27 3⍴tres)=x[;⍳3])/⍳27);3]
```

```
[0]  r←gera2;x
```

```
[1]  M←100⍴0
[2]  x←81+?15
[3]  M[0]←x
[4]  M[x,(x+1),(x+2),(x+3),x+4]←¯1
[5]  r←4+x
[6]  PPL←1
-------------------------------------------------------------
[ 0]  gerajogo;i;BA;XU;lixo;z;xx
[ 1]  CRM
[ 2]  PPL←1
[ 3]  z←86+?8
[ 4]  CRIAL z
[ 5]  CRIAL z+1
[ 6]  CRIAL z+2
[ 7]  CRIAL z+3
[ 8]  CRIAL z+4
[ 9]  M[0]←z
[10]  i←0
[11]  BA←embaralha
[12]  XU←(3⍴z),(3⍴z+1),(3⍴z+2),(3⍴z+3),28⍴z+4
[13]  XU←XU[40?40]
[14] te:→(i>39)/fim
[15]  XU[i]INSL BA[i]
[16]  →(i=i←i+1)/te
[17] fim:xx←M=0
[18]  M[xx/⍳100]←1+(+/xx)?99
-------------------------------------------------------------
[0]  r←li insja end;y
[1]  y←M[0]+li-1
[2]  M[end+1]←M[y]
[3]  M[y]←end
-------------------------------------------------------------
[ 0]  r←limpa;lix
[ 1]  lix←M
[ 2]  r←(M>999)×M-1000×(M>999)
[ 3]  r[0]←lix[0]
[ 4] ⍝ r[81+  ⍳18]  ←lix[81+  ⍳18]
[ 5]  r[81+⍳19]←lix[81+⍳19]
-------------------------------------------------------------
[ 0]  r←gato quemganhou cartas;na;numero;prox;escala;inds;i;j1;j2;j3;j4;d1;d2;j
[ 1] ⍝ gato e o que virou. cartas sao 4: J1, J2, J3 e J4 (1+3 x 2+4)
[ 2]  na←⌊gato÷10
[ 3]  numero←gato-na×10
[ 4]  escala←13 4⍴0
[ 5]  →(numero=9)/enove
[ 6]  →viva
[ 7] enove:prox←40 30 20 10
[ 8]  inds←1 2 3 4 5 6 7 8 9
[ 9]  →unda
[10] viva:prox←numero+1+40 30 20 10
[11]  inds←(~(⍳10)∈1+numero)/⍳10
[12] unda:escala[⍳4;0]←prox
[13]  i←0
[14] te:→(i>8)/fim
[15]  escala[12-i;]←inds[i]+10 20 30 40
[16]  →(i=i←i+1)/te
[17] fim:j1←(+/escala∈cartas[0])/⍳13
[18]  j2←(+/escala∈cartas[1])/⍳13
[19]  j3←(+/escala∈cartas[2])/⍳13
[20]  j4←(+/escala∈cartas[3])/⍳13
[21]  d1←j1⌊j3
[22]  d2←j2⌊j4
[23]  →(d1=d2)/empata
```

```
[24]  →(d1<d2)/ganha1
[25]  r←2
[26]  →fimk
[27] empata:r←0
[28]  →fimk
[29] ganha1:r←1
[30] fimk:ESCALA←escala
-------------------------------------------------------------
[ 0]  r←li recu num;x;i
[ 1]  x←M[0]
[ 2]  x←x+li-1
[ 3]  cabe←M[x]
[ 4]  i←1
[ 5] te:→(i=num)/achou
[ 6]  cabe←M[cabe+1]
[ 7]  i←i+1
[ 8]  →te
[ 9] achou:r←M[cabe]
-------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10]  →(0=' '∈j↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80⍴80↑j↑candi
[15]  candi←j↓candi
[16]  →((⍴candi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80⍴80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
-------------------------------------------------------------
[ 0]  r←vex M;x;y;z;i;w;⎕IO
[ 1]  ⎕IO←0
[ 2]  x←10 10⍴M
[ 3]  w←z←,y←5 0⍉x
[ 4]  i←0
[ 5] te5:→(i≥499)/isca
[ 6]  →((z[i]=' ')∧(z[i+1]='0'))/sim
[ 7]  →soma
[ 8] sim:w[i]←w[i+1]←' '
[ 9]  i←i+1
[10]  →soma
[11] soma:→(i=i←i+1)/te5
[12] isca:y←10 50⍴w
[13]  r←(10 5⍴5 0⍉⍳10),y
[14]  r[;6 11 16 21 26 31 36 41 46 51]←'&'
[15]  r←r,'⍀'
[16]  r←r,'⍀'
-------------------------------------------------------------
[  0]  opesq vivo331a n;CORRECAO;EVENTO;aa;aaa;acuja;aka;cartas;dhx;esse;f;ga;i;ika;ika1;ik
       a2;ika3;ika4;in1;jo;k;lixo1;lixoin;lixonol;m;p1;p2;p3;px;relat;resp;resu;upag;xixo;xk
       ;ylu
```

```
[  1]  →(0≠⎕NC'opesq')/qveio
[  2]  opesq←10⍴' '
[  3] qveio:
[  4]  ⎕RL←⌊(⎕TS[6]+⎕TS[5]+⎕TS[4])*2.7364736473
[  5]  CORRECAO←6 ⋄ EVENTO←'PL331   '
[  6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[2 1 0]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
       3 4],⎕TS[5]+⎕TS[6]÷1000
[  7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[  8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕1+⍳n
[  9]  FOLHALA331←ajusta80 FOLHALA331
[ 10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA331)⍴' '
[ 11]  relat[0;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[ 12]  xk←0 ⋄ resu←0 7⍴0
[ 13] testa:→(xk≥1↑⍴ylu)/fim
[ 14]  esse←40 80⍴' '
[ 15]  f←FOLHALA331
[ 16]  esse[0;]←80↑dhx[0;]
[ 17]  esse[1;]←80↑dhx[1;]
[ 18]  esse[2;]←80↑4 2⍕VERSAOa←3.21
[ 19]  esse[3;]←80↑ylu[xk;⍳6]
[ 20]  esse[4;]←80↑ylu[xk;6+⍳30]
[ 21]  →(~1=≡n)/1+⎕LC ⋄ esse[5;]←80↑EVENTO
[ 22]  esse[6;]←80↑(3 0⍕resp←1+xk),' ',opesq
[ 23]  esse[38;⍳10]←'@',esse[5;5+⍳3],esse[3;1+⍳5],'@'
[ 24]  esse[39;]←80↑esse[5;5+⍳3],'-',esse[3;1+⍳5],' - ',opesq[5 6],'/',opesq[8 9]
[ 25] inica:
[ 26]  CRM
[ 27]  gerajogo
[ 28]  k←⍉4 3⍴(3?3),(3?3),(3?3),3?3
[ 29]  esse[7+⍳3;]←3 80↑(3 2⍴2 0⍕1+⍳3),2 0⍕1+k
[ 30]  esse[7+⍳3;2 4 6 8]←'&'
[ 31]  esse[7+⍳3;12 13]←'\'
[ 32]  jo←4 3⍴0
[ 33]  esse[10+⍳10;]←10 80↑'¯'-'edit vex M
[ 34]  i←0
[ 35] te1:→(i>3)/fin
[ 36]  jo[i;]←((i+1)recu 1),((i+1)recu 2),(i+1)recu 3
[ 37]  →(i=i←i+1)/te1
[ 38] fin:
[ 39]  ga←5 recu 2
[ 40]  p1←ga quemganhou jo[0;k[0;0]],jo[1;k[0;1]],jo[2;k[0;2]],jo[3;k[0;3]]
[ 41]  p2←ga quemganhou jo[0;k[1;0]],jo[1;k[1;1]],jo[2;k[1;2]],jo[3;k[1;3]]
[ 42]  p3←ga quemganhou jo[0;k[2;0]],jo[1;k[2;1]],jo[2;k[2;2]],jo[3;k[2;3]]
[ 43]  px←ganhoufinal p1,p2,p3
[ 44]  resp←resp,p1,p2,p3,px
[ 45]  cartas←embaralha
[ 46]  m←12?28
[ 47]  lixo←gera2
[ 48]  INSCARTAS 1000+cartas
[ 49] ⍝ ve M
[ 50]  1 insja 5 EXCL m[0]
[ 51]  1 insja 5 EXCL m[1]
[ 52]  1 insja 5 EXCL m[2]
[ 53]  2 insja 5 EXCL m[3]
[ 54]  2 insja 5 EXCL m[4]
[ 55]  2 insja 5 EXCL m[5]
[ 56]  3 insja 5 EXCL m[6]
[ 57]  3 insja 5 EXCL m[7]
[ 58]  3 insja 5 EXCL m[8]
[ 59]  4 insja 5 EXCL m[9]
[ 60]  4 insja 5 EXCL m[10]
[ 61]  4 insja 5 EXCL m[11]
[ 62] ⍝ ve M
```

```
[ 63] ⍝ '---------'
[ 64]  ika1←(1 recu 1),(1 recu 2),1 recu 3
[ 65]  ika2←(2 recu 1),(2 recu 2),2 recu 3
[ 66]  ika3←(3 recu 1),(3 recu 2),3 recu 3
[ 67]  ika4←(4 recu 1),(4 recu 2),4 recu 3
[ 68]  esse[20;]←80↑¯1↓,(3 2⍴2 0⍕ika1-1000),','
[ 69]  esse[21;]←80↑¯1↓,(3 2⍴2 0⍕ika2-1000),','
[ 70]  esse[22;]←80↑¯1↓,(3 2⍴2 0⍕ika3-1000),','
[ 71]  esse[23;]←80↑¯1↓,(3 2⍴2 0⍕ika4-1000),','
[ 72]  ika←⍳0
[ 73]  i←0
[ 74] te4:→(i≥28)/hi
[ 75]  ika←ika,5 recu i+1
[ 76]  →(i=i←i+1)/te4
[ 77] hi:ika←ika-1000
[ 78]  esse[24;]←80↑,(14 2⍴2 0⍕ika[⍳14]),','
[ 79]  esse[25;]←80↑¯1↓,(14 2⍴2 0⍕ika[14+⍳14]),','
[ 80]  esse[26+⍳10;]←10 80↑'¯'-'edit vex limpa
[ 81]  in←(M<999)/(M<999)×⍳100
[ 82]  in1←in[6?¯20+⍴in]
[ 83]  esse[36;]←80↑2 0⍕in1[0]
[ 84]  esse[37;]←80↑2 0⍕in1[1]
[ 85]  resp←resp,M[in1[0 1]]
[ 86] continua:
[ 87]  resu←resu,[0]1 7⍴resp
[ 88]  acuja←(f[;1]='#')/⍳1↑⍴f
[ 89]  f[acuja;⍳80]←esse[¯1+≢,f[acuja;2 3],' ';]
[ 90]  relat[xk+1;;]←f,[0](1,1↓⍴f)⍴200↑'⍀newpage'
[ 91]  □←(⍕xk←xk+1),'-'
[ 92]  →testa
[ 93] fim:upag←(1 0+⍴f)⍴' '
[ 94]  →(1=≡n)/elafa
[ 95]  upag[0;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[ 96]  upag[1;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[ 97]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯'-'edit(lixo1←5 0 6 0 3 0 6 0 3 0 5 0 4 0)⍕resu
[ 98]  upag[2+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[ 99]  →terminando
[100] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),'¯'-'edit 6 0⍕0 1↓resu)
[101]  aaa[0;34 35]←2 0⍕CORRECAO
[102]  lixonol←aaa ⎕FM('c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.gpa')
[103]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[104] terminando:
[105]  upag[¯1+1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[106]  relat[¯1+1↑⍴relat;;]←upag
[107]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[108] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[109]  lixonol←lixonol ⎕FM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.tex'
[110]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[111]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo332

```
[0]  r←alocaml tam;x
[1]  →((tam+PPL)>249)/erro
[2]  x←PPL
[3]  PPL←PPL+tam
[4]  r←x
[5]  →0
[6] erro:r←¯1
------------------------------------------------------------
[ 0]  r←audita;ml;l1;l2;l3;l4
```

```
[ 1] ⍝ esta funcao serve para auditar ML e descobrir os erros
[ 2]  ml←250⍴0
[ 3]  l1←ML[0]
[ 4]  r1←0 4⍴0
[ 5] testa10:→(l1=¯1)/acab20
[ 6]  r1←r1,[0]1 4⍴ML[l1+⍳4]
[ 7]  l1←ML[l1]
[ 8]  →(l1∊(¯1 0↓r1)[;0])/acab11
[ 9]  →(l1>249)/acab12
[10]  →testa10
[11] acab11:'A1'
[12]  →acab10
[13] acab12:'B1'
[14] acab20:
[15]  →(4≥⌈/r1[;2])/blz1
[16]  'D1'
[17] blz1:l2←ML[1]
[18]  r2←0 4⍴0
[19] testa20:→(l2=¯1)/acab30
[20]  r2←r2,[0]1 4⍴ML[l2+⍳4]
[21]  l2←ML[l2]
[22]  →(l2∊(¯1 0↓r2)[;0])/acab21
[23]  →(l2>249)/acab22
[24]  →testa20
[25] acab21:'A2'
[26]  →acab30
[27] acab22:'B2'
[28] acab30:
[29]  →((56≥⌈/r2[;2])∧(17≤⌊/r2[;2])∧(99≥⌈/r2[;3])∧(89≤⌊/r2[;3]))/blz2
[30]  'D2'
[31] blz2:l3←ML[2]
[32]  r3←0 3⍴0
[33] testa30:→(l3=¯1)/acab40
[34]  r3←r3,[0]1 3⍴ML[l3+⍳3]
[35]  l3←ML[l3]
[36]  →(l3∊(¯1 0↓r3)[;0])/acab31
[37]  →(l3>249)/acab32
[38]  →testa30
[39] acab31:'A3'
[40]  →acab40
[41] acab32:'B3'
[42] acab40:
[43]  →((305≥⌈/r3[;2])∧(301≤⌊/r3[;2]))/blz3
[44]  'D3'
[45] blz3:l4←ML[3]
[46]  r4←0 5⍴0
[47] testa40:→(l4=¯1)/acab50
[48]  r4←r4,[0]1 5⍴ML[l4+⍳5]
[49]  l4←ML[l4]
[50]  →(l4∊(¯1 0↓r4)[;0])/acab41
[51]  →(l4>249)/acab42
[52]  →testa40
[53] acab41:'A4'
[54]  →acab50
[55] acab42:'B4'
[56] acab50:
[57]  →((32≥⌈/r4[;1])∧(20≥⌈/r4[;4]))/blz4
[58]  'D4'
[59] blz4:
-------------------------------------------------------------
[0]  criaml
[1]  ML←?250⍴99
[2]  ML[0 1 2 3]←¯1
```

```
[3]  PPL←4
-------------------------------------------------------------
[0]  geracasol;lixo;limite
[1]  criaml
[2]  limite←220+?20
[3] t1:→(PPL>limite)/0
[4]  →(?2)/p1
[5]  lixo←inclue geranovo?4
[6] p1:→(?2)/p2
[7]  lixo←alocaml?3
[8] p2:→t1
-------------------------------------------------------------
[ 0]  r←geranovo li
[ 1]  →(li≠0)/t2
[ 2] ⍝ lista de veiculos
[ 3]  r←0,(100+?899),(1+?4),(100+?899)
[ 4]  →fim
[ 5] t2:→(li≠1)/t3
[ 6] ⍝ lista de alunos
[ 7]  r←1,(?999),(17+?40),89+?11   ⍝ alterar este 12 na passagem dos anos
[ 8]  →fim
[ 9] t3:→(li≠2)/t4
[10] ⍝ lista de alimentos
[11]  r←2,(?99),301+?5
[12]  →fim
[13] t4:   ⍝ lista de time de futebol
[14]  r←3,(1+?32),(10+?70),(10+?70),1+?20
[15] fim:
-------------------------------------------------------------
[ 0]  r←inclue fulano;x;ant;alfa;y
[ 1]  x←alocaml(⍴fulano)
[ 2]  →(x=¯1)/erro
[ 3]  ant←fulano[0]
[ 4]  y←ML[fulano[0]]
[ 5] naoa:→(y=¯1)/achou
[ 6]  ant←y
[ 7]  →(y=y←ML[y])/naoa
[ 8] achou:
[ 9]  →(0<?2)/frente
[10]  ML[ant]←x
[11]  ML[x+⍳⍴fulano]←¯1,1↓fulano
[12]  r←0
[13]  →0
[14] erro:r←-1
[15]  →0
[16] frente:alfa←ML[fulano[0]]
[17]  ML[fulano[0]]←x
[18]  ML[x+⍳⍴fulano]←alfa,1↓fulano
[19]  r←1
[20]  →0
-------------------------------------------------------------
[0]  r←mostraml nl;a;b;c;d
[1]  a←1 56⍴('      '),5 0⍕⍳10
[2]  b←1 56⍴'-'
[3]  c←25 5⍴5 0⍕⍳25
[4]  d←25 1⍴'|'
[5]  r←((nl+3),56)⍴a,[0]b,[0]c,d,'¯-'edit(5 0⍕25 10⍴ML)
-------------------------------------------------------------
[ 0]  r←percorre li;qtd;y
[ 1]  y←ML[li]
[ 2]  qtd←0
[ 3]  →((li=0)∨(li=1))/lista4
[ 4]  →(li=2)/lista3
```

```
[ 5] lista5:r←0 6ρ0
[ 6] te1:→((y=¯1)∨(qtd>30))/fi1
[ 7]  r←r,[0]1 6ρy,ML[y+ι5]
[ 8]  y←ML[y] ⋄ qtd←qtd+1
[ 9]  →te1
[10] lista4:r←0 5ρ0
[11] te2:→((y=¯1)∨(qtd>30))/fi1
[12]  r←r,[0]1 5ρy,ML[y+ι4]
[13]  y←ML[y] ⋄ qtd←qtd+1
[14]  →te2
[15] lista3:r←0 4ρ0
[16] te3:→((y=¯1)∨(qtd>30))/fi1
[17]  r←r,[0]1 4ρy,ML[y+ι3]
[18]  y←ML[y] ⋄ qtd←qtd+1
[19]  →te3
[20] fi1:
-------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80ρ' '
[ 6] te:→(i≥⎕IO+1↑ρzz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>ρcandi)/eca
[ 9]  j←qt
[10]  →(0=' 'ϵj↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80ρ80↑j↑candi
[15]  candi←j↓candi
[16]  →((ρcandi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80ρ80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
-------------------------------------------------------------
[ 0]  opesq vivo332a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;ylu;z0;z1;z2;z3
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕IO←0
[ 5]  ⎕RL←⌊(⎕TS[6]+⎕TS[5]+⎕TS[4])*2.7364736473
[ 6]  CORRECAO←8 ⋄ EVENTO←'PL332   '
[ 7]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[2 1 0]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      3 4],⎕TS[5]+⎕TS[6]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎ιn
[10] ΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑ
[11]  ylu←n grupo ylu
[12] ΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑ
[13]  FOLHALA332←ajusta80 FOLHALA332
[14]  relat←((2+1↑ρylu),1 0+ρFOLHALA332)ρ' '
[15]  relat[0;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLOI'
[16]  xk←0 ⋄ resu←0 9ρ0
[17] testa:→((xk+1)>1↑ρylu)/fim
[18]  esse←36 80ρ' '
[19]  f←FOLHALA332
[20]  esse[0;]←80↑dhx[0;]
```

```
[21]  esse[1;]←80↑dhx[1;]
[22]  esse[2;]←80↑4 2⍕VERSAOa←3.3
[23]  esse[3;]←80↑ylu[xk;⍳6]
[24] ⍝⍝⍝
```

```
[16]  →(quem[1]=0)/z1
[17]  →(quem[1]=1)/u1
[18]  →(quem[1]=2)/d1
[19] t1:ML[x1←p3[¯1+k1+?(1↑ρp3)-k1←⌊0.5×1↑ρp3;1]]←300+?200
[20]  →fim1
[21] d1:ML[x1←p2[¯1+k1+?(1↑ρp2)-k1←⌊0.5×1↑ρp2;1]]←300+?200
[22]  →fim1
[23] u1:ML[x1←p1[¯1+k1+?(1↑ρp1)-k1←⌊0.5×1↑ρp1;1]]←300+?200
[24]  →fim1
[25] z1:ML[x1←p0[¯1+k1+?(1↑ρp0)-k1←⌊0.5×1↑ρp0;1]]←300+?200
[26] fim1:r←r,[0]1 2ρ(1+quem[1]),x1
[27] ⍝ erro3: juntacao
[28]  ⍞'j1  ←p',(,'0'⍕quem[3])
[29]  →(quem[2]=0)/z2
[30]  →(quem[2]=1)/u2
[31]  →(quem[2]=2)/d2
[32] t2:ML[x1←p3[¯1+k1+?(1↑ρp3)-k1←⌊0.5×1↑ρp3;1]]←j1[?¯3+1↑ρj1;0]
[33]  →fim2
[34] d2:ML[x1←p2[¯1+k1+?(1↑ρp2)-k1←⌊0.5×1↑ρp2;1]]←j1[?¯3+1↑ρj1;0]
[35]  →fim2
[36] u2:ML[x1←p1[¯1+k1+?(1↑ρp1)-k1←⌊0.5×1↑ρp1;1]]←j1[?¯3+1↑ρj1;0]
[37]  →fim2
[38] z2:ML[x1←p0[¯1+k1+?(1↑ρp0)-k1←⌊0.5×1↑ρp0;1]]←j1[?¯3+1↑ρj1;0]
[39] fim2:r←r,[0]1 2ρ(1+quem[2]),x1
[40] ⍝ erro 4: campo invalido
[41]  →(quem[3]=0)/z3
[42]  →(quem[3]=1)/u3
[43]  →(quem[3]=2)/d3
[44] t3:ML[x1←4+p3[¯1+k1+?(1↑ρp3)-k1←⌊0.5×1↑ρp3;0]]←100+?60
[45]  →fim3
[46] d3:ML[x1←2+p2[¯1+k1+?(1↑ρp2)-k1←⌊0.5×1↑ρp2;0]]←100+?60
[47]  →fim3
[48] u3:ML[x1←2+p1[¯1+k1+?(1↑ρp1)-k1←⌊0.5×1↑ρp1;0]]←10+?6
[49]  →fim3
[50] z3:ML[x1←2+p0[¯1+k1+?(1↑ρp0)-k1←⌊0.5×1↑ρp0;0]]←100+?60
[51] fim3:r←r,[0]1 2ρ(1+quem[3]),x1
-------------------------------------------------------------
```

vivo333

```
[0]  r←AUTTIT;ALFA
[1]  ALFA←'ABCDEFGHIJKLMNOPQRSTUVXYZ'
[2]  r←ALFA[?6ρρALFA]
-------------------------------------------------------------
[ 0]  r←CIDADE
[ 1]  t←30 10ρ' '
[ 2]  t[1;]←10↑'LONDRES'
[ 3]  t[2;]←10↑'MADRID'
[ 4]  t[3;]←10↑'FLORIPA'
[ 5]  t[4;]←10↑'CURITIBA'
[ 6]  t[5;]←10↑'SAO PAULO'
[ 7]  t[6;]←10↑'NEW YORK'
[ 8]  t[7;]←10↑'PARIS'
[ 9]  t[8;]←10↑'GENEBRA'
[10]  t[9;]←10↑'MORRETES'
[11]  t[10;]←10↑'MATINHOS'
[12]  t[11;]←10↑'MARINGA'
[13]  t[12;]←10↑'JOINVILLE'
[14]  t[13;]←10↑'BARCELONA'
[15]  t[14;]←10↑'LYON'
[16]  t[15;]←10↑'EDINBURGO'
[17]  t[16;]←10↑'ORLANDO'
```

```
[18]  t[17;]←10↑'CAIOBA'
[19]  t[18;]←10↑'BLUMENAU'
[20]  t[19;]←10↑'LONDRINA'
[21]  t[20;]←10↑'CASCAVEL'
[22]  t[21;]←10↑'POMERODE'
[23]  t[22;]←10↑'VALENCIA'
[24]  t[23;]←10↑'DUBLIN'
[25]  t[24;]←10↑'BERLIM'
[26]  t[25;]←10↑'CHICAGO'
[27]  t[26;]←10↑'COLUMBUS'
[28]  t[27;]←10↑'SALVADOR'
[29]  t[28;]←10↑'RECIFE'
[30]  t[29;]←10↑'BRASILIA'
[31]  t[30;]←10↑'CUIABA'
[32]  r←t[?30;]
-------------------------------------------------------------
[0]  r←CRIAV
[1]  r←0 44ρ' '
[2]  VI←5ρ¯1
-------------------------------------------------------------
[ 0]  r←ESTUFA x
[ 1]  r←((1↑ρx),66)ρ' '
[ 2]  r[;ι6]←x[;ι6]
[ 3]  r[;8+ι2]←x[;6+ι2]
[ 4]  r[;13+ι10]←x[;8+ι10]
[ 5]  r[;25+ι2]←x[;18+ι2]
[ 6]  r[;30+ι5]←x[;20+ι5]
[ 7]  r[;37+ι2]←x[;25+ι2]
[ 8]  r[;42+ι3]←x[;27+ι3]
[ 9]  r[;47+ι2]←x[;30+ι2]
[10]  r[;52+ι10]←x[;32+ι10]
[11]  r[;64+ι2]←x[;42+ι2]
[12]  r[;7 11 24 28 36 40 46 50 63]←'&'
[13]  r←((1↑ρx),68)↑r
[14]  r[;67 68]←'↓'
[15]  r←(((1↑ρx),3)ρ3 0⍕ι1↑ρx),'&',r
-------------------------------------------------------------
[0]  r←EXPANDE e
[1]  r←e[ι6],'  ',e[6+ι10],'  ',e[16+ι5],'  ',e[21+ι3],'  ',e[24+ι10],'  '
-------------------------------------------------------------
[ 0]  r←IDIOMA;t
[ 1]  t←30 10ρ' '
[ 2]  t[1;]←10↑'PORTUGUES'
[ 3]  t[2;]←10↑'ESPANHOL'
[ 4]  t[3;]←10↑'INGLES'
[ 5]  t[4;]←10↑'FRANCES'
[ 6]  t[5;]←10↑'SUECO'
[ 7]  t[6;]←10↑'CATALAO'
[ 8]  t[7;]←10↑'BASCO'
[ 9]  t[8;]←10↑'CROATA'
[10]  t[9;]←10↑'HUNGARO'
[11]  t[10;]←10↑'TCHECO'
[12]  t[11;]←10↑'VALAO'
[13]  t[12;]←10↑'FLAMENGO'
[14]  t[13;]←10↑'TUPI'
[15]  t[14;]←10↑'LATIM'
[16]  t[15;]←10↑'ALEMAO'
[17]  t[16;]←10↑'NORUEGUES'
[18]  t[17;]←10↑'SERVO'
[19]  t[18;]←10↑'CROATA'
[20]  t[19;]←10↑'HOLANDES'
[21]  t[20;]←10↑'CHINES'
[22]  t[21;]←10↑'IIDICHE'
```

```
[23]  t[22;]←10↑'JAPONES'
[24]  t[23;]←10↑'FINLANDES'
[25]  t[24;]←10↑'RUSSO'
[26]  t[25;]←10↑'ARABE'
[27]  t[26;]←10↑'ITALIANO'
[28]  t[27;]←10↑'ALBANES'
[29]  t[28;]←10↑'GUARANI'
[30]  t[29;]←10↑'COREANO'
[31]  t[30;]←10↑'AFRIKANER'
[32]  r←t[?30;]
-------------------------------------------------------------
[ 0]  r←t INCLUI e;ant;x
[ 1]  r←t,[1]EXPANDE e
[ 2] ⍝ poe no lugar o titulo
[ 3]  ant←¯1
[ 4]  x←VI[1]
[ 5] procura1:→(x=¯1)/achou1
[ 6]  →(e[⍳6]MENOR t[x;⍳6])/achou1
[ 7]  ant←x
[ 8]  x←⍎t[x;6+⍳2]
[ 9]  →procura1
[10] achou1:r[1↑⍴r;6+⍳2]←2 0⍴x
[11]  →(ant≠¯1)/viva1
[12]  VI[1]←1↑⍴r
[13]  →volta1
[14] viva1:r[ant;6+⍳2]←2 0⍴1↑⍴r
[15] volta1:
[16] ⍝ poe no lugar o idioma
[17]  ant←¯1
[18]  x←VI[2]
[19] procura2:→(x=¯1)/achou2
[20]  →(e[6+⍳10]MENOR t[x;8+⍳10])/achou2
[21]  ant←x
[22]  x←⍎t[x;18+⍳2]
[23]  →procura2
[24] achou2:r[1↑⍴r;18+⍳2]←2 0⍴x
[25]  →(ant≠¯1)/viva2
[26]  VI[2]←1↑⍴r
[27]  →volta2
[28] viva2:r[ant;18+⍳2]←2 0⍴1↑⍴r
[29] volta2:
[30] ⍝ poe no lugar o preco
[31]  ant←¯1
[32]  x←VI[3]
[33] procura3:→(x=¯1)/achou3
[34]  →((⍎e[16+⍳5])<⍎t[x;20+⍳5])/achou3
[35]  ant←x
[36]  x←⍎t[x;25+⍳2]
[37]  →procura3
[38] achou3:r[1↑⍴r;25+⍳2]←2 0⍴x
[39]  →(ant≠¯1)/viva3
[40]  VI[3]←1↑⍴r
[41]  →volta3
[42] viva3:r[ant;25+⍳2]←2 0⍴1↑⍴r
[43] volta3:
[44] ⍝ poe no lugar as paginas
[45]  ant←¯1
[46]  x←VI[4]
[47] procura4:→(x=¯1)/achou4
[48]  →((⍎e[21+⍳3])<⍎t[x;27+⍳3])/achou4
[49]  ant←x
[50]  x←⍎t[x;30+⍳2]
[51]  →procura4
```

```
[52] achou4:r[1↑ρr;30+ι2]←2 0⍕x
[53]  →(ant≠¯1)/viva4
[54]  VI[4]←1↑ρr
[55]  →volta4
[56] viva4:r[ant;30+ι2]←2 0⍕1↑ρr
[57] volta4:
[58] ⍝ poe no lugar a cidade
[59]  ant←¯1
[60]  x←VI[5]
[61] procura5:→(x=¯1)/achou5
[62]  →(e[24+ι10]MENOR t[x;32+ι10])/achou5
[63]  ant←x
[64]  x←⍪t[x;42+ι2]
[65]  →procura5
[66] achou5:r[1↑ρr;42+ι2]←2 0⍕x
[67]  →(ant≠¯1)/viva5
[68]  VI[5]←1↑ρr
[69]  →volta5
[70] viva5:r[ant;42+ι2]←2 0⍕1↑ρr
[71] volta5:
------------------------------------------------------------
[ 0]  r←a MENOR b;i
[ 1]  a←,a
[ 2]  b←,b
[ 3]  r←0
[ 4]  i←1
[ 5] cuca:→((i>ρa)∨(i>ρb))/acabou
[ 6]  →((⎕AVι⍺[i])<⎕AVι⍵[i])/emes
[ 7]  →((⎕AVι⍺[i])>⎕AVι⍵[i])/emes2
[ 8] ⍝ i
[ 9]  →(i=i←i+1)/cuca
[10] emes:r←1
[11]  →acabou
[12] emes2:r←0
[13]  →acabou
[14] acabou:
------------------------------------------------------------
[0]  r←NOVOL
[1]  r←AUTTIT,IDIOMA,(5 2⍕PRECO),(3 0⍕PAGS),CIDADE
------------------------------------------------------------
[0]  r←PAGS
[1]  r←15+?200
------------------------------------------------------------
[0]  r←PRECO
[1]  r←(800+?4000)÷100
------------------------------------------------------------
[ 0]  cavaleiro333a n;acuja;esse;f;lixo1;relat;resp;x;xk;y;z
[ 1]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 2]  FOLHALA333←ajusta80 FOLHALA333
[ 3]  relat←ΔFM'c:\apl2\VIVOBLO1'
[ 4]  xk←1
[ 5] testa:→(xk>n)/fim
[ 6]  esse←37 80ρ' '
[ 7]  f←FOLHALA333
[ 8]  esse[1;ιρx]←x←'  --  Cavaleiros da Tavola Redonda'
[ 9]  esse[3;]←80↑4 2⍕3.16
[10]  esse[36;ι8]←'@000000@'
[11] inica:
[12]  z←1 ⋄ y←CRIAV
[13] fica:→(z>25)/aca
[14]  y←y INCLUI NOVOL
[15]  →(z=z←z+1)/fica
[16] aca:
```

```
[17]  esse[8;]←80↑('T=&',2 0⍕VI[1]),('&I=&',2 0⍕VI[2]),('&P=&',2 0⍕VI[3]),('&Pa=&',2 0⍕VI[
      4]),('&C=&',2 0⍕VI[5]),'⍀⍀'
[18]  esse[8+⍳25;⍳72]←'¯'-'edit ESTUFA y
[19]  q←NOVOL
[20]  y←y INCLUI q
[21]  esse[34;]←80↑cc←'Livro=',q[⍳6],' Idioma=',q[6+⍳10],' Preco=',q[16+⍳5],' Pags=',q[21+
      ⍳3],'⍀⍀ Cidade=',q[24+⍳10]
[22]  pou←7 8 45 19 20 45 26 27 45 31 32 45 43 44 45
[23]  resp←⍞,(y,' ')[26;pou]
[24]  w←NOVOL
[25]  y←y INCLUI w
[26]  esse[35;]←80↑cc←'Livro=',w[⍳6],' Idioma=',w[6+⍳10],' Preco=',w[16+⍳5],' Pags=',w[21+
      ⍳3],'⍀⍀ Cidade=',w[24+⍳10]
[27]  resp←resp,⍞,(y,' ')[27;pou]
[28] continua:
[29]  resp←'¯'-'edit⍕resp
[30]  acuja←(f[;2]='#')/⍳1↑⍴f
[31]  f[acuja;⍳80]←esse[⍞,f[acuja;3 4],' ';]
[32]  ⍞←(⍕xk←xk+1),'-'
[33]  f←(((1↑⍴relat),1↓⍴f)↑relat),[1]f
[34]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'⍀end{document}'
[35]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'%',resp
[36]  lixo1←f ⎕FM'c:⍀apl2⍀CA333a',('00'⍕xk-1),'.tex'
[37]  →testa
[38] fim:
------------------------------------------------------------
[ 0]  opesq vivo333a n;CORRECAO;EVENTO;aaa;acuja;cc;dhx;esse;f;lixo1;lixonol;mak;nomes;pou
      ;q;ql39;qlinha;relat;resp;resu;t;upag;w;xixo;xk;y;ylu;z
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←10 ⋄ EVENTO←'PL333   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA333←ajusta80 FOLHALA333
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA333)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 11⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←37 80⍴' '
[16]  f←FOLHALA333
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←3.16
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[36;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[37;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  z←1 ⋄ y←CRIAV
```

```
[35] fica:→(z>25)/aca
[36]  y←y INCLUI NOVOL
[37]  →(z=z←z+1)/fica
[38] aca:
[39]  esse[8;]←80↑('T=&',2 0⍕VI[1]),('&I=&',2 0⍕VI[2]),('&P=&',2 0⍕VI[3]),('&Pa=&',2 0⍕VI[
      4]),('&C=&',2 0⍕VI[5]),'⍀⍀'
[40]  esse[8+⍳25;⍳72]←'¯-'edit ESTUFA y
[41]  q←NOVOL
[42]  y←y INCLUI q
[43]  esse[34;]←80↑cc←'Livro=',q[⍳6],' Idioma=',q[6+⍳10],' Preco=',q[16+⍳5],' Pags=',q[21+
      ⍳3],'⍀⍀ Cidade=',q[24+⍳10]
[44]  pou←7 8 45 19 20 45 26 27 45 31 32 45 43 44 45
[45]  resp←resp,⍞,(y,' ')[26;pou]
[46]  w←NOVOL
[47]  y←y INCLUI w
[48]  esse[35;]←80↑cc←'Livro=',w[⍳6],' Idioma=',w[6+⍳10],' Preco=',w[16+⍳5],' Pags=',w[21+
      ⍳3],'⍀⍀ Cidade=',w[24+⍳10]
[49]  resp←resp,⍞,(y,' ')[27;pou]
[50] continua:
[51]  resu←resu,[1](1,11)⍴resp
[52]  acuja←(f[;2]='#')/⍳1↑⍴f
[53]  f[acuja;⍳80]←esse[⍞,f[acuja;3 4],' ';]
[54]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[55]  ⎕←(⍕xk←xk+1),'-'
[56]  →testa
[57] fim:upag←(1 0+⍴f)⍴' '
[58]  mak←5 0 10 0 5 0 5 0 5 0 5 0 10 0 5 0 5 0 5 0 5 0
[59]  →(1=≡n)/elafa
[60]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[61]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[62]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←mak)⍕resu
[63]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[64]  →terminando
[65] elafa:aaa←(ylu[;⍳36],'¯-'edit(2↓mak)⍕0 1↓resu)
[66]  aaa[1;35 36]←2 0⍕CORRECAO
[67]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[68]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[69] terminando:
[70]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[71]  relat[1↑⍴relat;;]←upag
[72]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[73] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[74]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[75]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[76]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo341

```
[0]  r←AMBIOBT x;ppltemp;⎕IO
[1]  ⎕IO←0
[2] ⍝  →((PPL+x)>99)/erro
[3]  →((PPL+x)>¯1+⍴M)/erro
[4]  ppltemp←PPL
[5]  PPL←PPL+x
[6]  r←ppltemp
[7]  →0
[8] erro:r←-1
-------------------------------------------------------------
[0]  CRIAM;⎕IO
[1]  ⎕IO←0
[2]  M←100⍴0
```

```
[3]  PPL←0
-------------------------------------------------------------
[0]  r←LIDUCRI2;z;⎕IO
[1]  ⎕IO←0
[2]  z←AMBIOBT 4
[3]  →(z<0)/erro
[4]  M[z]←M[z+1]←-1
[5]  M[z+2]←1 ⋄ M[z+3]←0
[6]  r←z
[7]  →0
[8] erro:r←-1
-------------------------------------------------------------
[ 0]  r←LIDUINS2 x;L;onde;E;y;z;k;konde;kondeant;⎕IO
[ 1]  ⎕IO←0
[ 2] ⍝ x[0]=fila, x[1]=onde, x[2]=endereco dos dados a inserir
[ 3] ⍝ se x[1]: 0=insere a esquerda, z>n.elementos da lista, insere a direita
[ 4] ⍝ se z, onde   |z  |<n. elem. e z>0 insere a direita de z e se   |z  |<0 insere
[ 5] ⍝ a esquerda de z.
[ 6]  L←x[0] ⋄ onde←x[1] ⋄ E←x[2]
[ 7]  →(onde≥0)/ok33
[ 8]  onde←(|onde)-1
[ 9] ok33:z←AMBIOBT 2+M[L+2]
[10]  →(z<0)/erro
[11]  →(M[L+3]≠0)/temmais
[12]  M[z]←M[z+1]←-1 ⋄ M[L]←M[L+1]←z
[13]  →preenche
[14] temmais:→(onde≠0)/naoesq
[15] esquerda:
[16]  M[z+1]←-1
[17]  M[z]←M[L]
[18]  M[M[L]+1]←z
[19]  M[L]←z
[20]  →preenche
[21] naoesq:→(onde<M[L+3])/meio
[22] direita:
[23]  M[z]←-1
[24]  M[z+1]←M[L+1]
[25]  M[M[L+1]]←z
[26]  M[L+1]←z
[27]  →preenche
[28] meio:k←0 ⋄ konde←M[L]
[29] busca:→(k≥onde)/achou
[30]  kondeant←konde
[31]  konde←M[konde]
[32]  →(k=k←k+1)/busca
[33] achou:
[34]  M[z]←konde
[35]  M[z+1]←kondeant
[36]  M[kondeant]←z
[37]  M[konde+1]←z
[38]  →preenche
[39] preenche:y←0
[40] testa:→(y≥M[L+2])/cabou
[41]  M[z+2+y]←E
[42]  →(y=y←y+1)/testa
[43] cabou:M[L+3]←M[L+3]+1
[44]  r←z
[45]  →0
[46] erro:r←-1
[47]  →0
-------------------------------------------------------------
[0]  r←botaitem z
[1]  r←(((1↑⍴z),6)⍴'⍀item '),z
```

```
------------------------------------------------------------
[0]  r←geracaso
[1]  r←12 3ρ0
[2]  r[;1]←((12ρ0),(8ρ4))[12?20]
[3]  r[;2]←(0 1 2 3 4 5)[?12ρ6]
[4]  r[;3]←12?99
------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80ρ' '
[ 6] te:→(i≥⎕IO+1↑ρzz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>ρcandi)/eca
[ 9]  j←qt
[10]  →(0=' 'ϵj↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80ρ80↑j↑candi
[15]  candi←j↓candi
[16]  →((ρcandi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80ρ80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
------------------------------------------------------------
[0]  r←resolvecaso x;i
[1]  CRIAM
[2]  lixo←LIDUCRI2
[3]  lixo←LIDUCRI2
[4]  i←1
[5] volta:→(i>12)/fim
[6]  lixo←LIDUINS2 x[i;]
[7]  →(i=i←i+1)/volta
[8] fim:r←44↑M
------------------------------------------------------------
------------------------------------------------------------
[ 0]  r←traduzcaso x;i;k;c0;c4;fra
[ 1]  i←1
[ 2]  k←12 60ρ' '
[ 3]  c0←c4←0
[ 4] volta:→(i>12)/fimmesmo
[ 5]  fra←'Insira, na lista ',(1 0⍕x[i;1]),', o elemento ',(2 0⍕x[i;3])
[ 6]  →(x[i;1]=4)/quatro
[ 7] zero:→(x[i;2]≥c0)/direita0
[ 8]  →(x[i;2]≠0)/generico0
[ 9]  fra←fra,' no inicio da lista'
[10]  →fim0
[11] generico0:
[12]  fra←fra,' entre ',(1 0⍕x[i;2]),' e ',1 0⍕x[i;2]+1
[13]  →fim0
[14] direita0:
[15]  fra←fra,' ao final da lista'
[16] fim0:
[17]  c0←c0+1
[18]  →fim
[19] quatro:
[20]  →(x[i;2]≥c4)/direita4
[21]  →(x[i;2]≠0)/generico4
```

```
[22]  fra←fra,' no inicio da lista'
[23]  →fim4
[24] generico4:
[25]  fra←fra,' entre ',(1 0⍕x[i;2]),' e ',1 0⍕x[i;2]+1
[26]  →fim4
[27] direita4:
[28]  fra←fra,' ao final da lista'
[29]  →fim4
[30] fim4:
[31]  c4←c4+1
[32] fim:
[33]  k[i;]←60↑fra
[34]  →(i=i←i+1)/volta
[35] fimmesmo:
[36]  r←k
-------------------------------------------------------------
[0]  r←ve;z
[1]  z←4 0⍕10 10⍴M
[2]  r←4 0⍕¯1+⍳10
[3]  r←r,[1]1 40⍴'-'
[4]  r←r,[1]z
[5]  r←(12 4⍴(8⍴' '),4 0⍕¯1+⍳10),(12 1⍴' +||||||||||'),r
-------------------------------------------------------------
[ 0]  opesq vivo341a n;CORRECAO;EVENTO;aaa;acuja;ad;df;dhx;esse;f;inds;lixo;lixo1;lixonol;
      relat;resp;resu;upag;vetm;xixo;xk;ylu;yy
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←5 ⋄ EVENTO←'PL341   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA341←ajusta80 FOLHALA341
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA341)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[12]  xk←1 ⋄ resu←0 6⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←20 80⍴' '
[15]  f←FOLHALA341
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.22
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23] inica:
[24]  inds←5?44
[25]  inds←inds[⍋inds]
[26]  yy←geracaso
[27]  esse[7+⍳12;]←12 80↑botaitem traduzcaso yy
[28]  vetm←resolvecaso yy
[29]  resp←resp,vetm[inds]
[30]  inds←inds-1
[31]  ad←2 0⍕inds
[32]  df←'M[',ad[1 2],']&M[',ad[3 4],']&M[',ad[5 6]
[33]  df←df,']&M[',ad[7 8],']&M[',ad[9 10],']⍀⍀'
[34]  esse[20;]←80↑df
[35] continua:
[36]  resu←resu,[1](1,6)⍴resp
[37]  acuja←(f[;2]='#')/⍳1↑⍴f
```

```
[38]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[39]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[40]  ⍞←(⍕xk←xk+1),'-'
[41]  →testa
[42] fim:upag←(1 0+⍴f)⍴' '
[43]  →(1=≡n)/elafa
[44]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[45]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[46]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯'-'edit(lixo1←5 0 10 0 5 0 5 0 5 0 5 0)⍕resu
[47]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[48]  →terminando
[49] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),'¯'-'edit 5 0⍕0 1↓resu)
[50]  aaa[1;35 36]←2 0⍕CORRECAO
[51]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[58]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo342

```
[0]  r←BUSCA lisnum;i;x
[1]  i←1 ⋄ r←'' ⋄ x←pointers[lisnum[1];1]
[2] inica:→(¯1=x)/acabou
[3]  r←⍪lde[lisnum[1];x;⍳10]
[4]  →(i=lisnum[2])/acabou
[5]  x←⍋lde[lisnum[1];x;11 12]
[6]  →(i=i←i+1)/inica
[7] acabou:
------------------------------------------------------------
[0]  CRIALDES
[1]  pointers←3 5⍴¯1 ¯1 0 10 1 ¯1 ¯1 0 10 1 ¯1 ¯1 0 10 1
[2]  lde←3 18 14⍴' '
[3] ⍝ pointer e lde
[4] ⍝ 1 - pais
[5] ⍝ 2 - idioma
[6] ⍝ 3 - cidades
------------------------------------------------------------
[ 0]  EXCLUI lisnum;ant;aux;k;pro;lista;numero
[ 1] ⍝ 'EXCLUI   ',  ⍕lisnum
[ 2]  lista←lisnum[1] ⋄ numero←lisnum[2]
[ 3]  →(pointers[lista;3]>1)/temmais
[ 4] temum:pointers[lista;⍳3]←¯1 ¯1 0
[ 5]  →cabou
[ 6] temmais:→(numero≠1)/prafrente
[ 7]  pointers[lista;1]←⍋lde[lista;pointers[lista;1];11 12]
[ 8]  lde[lista;pointers[lista;1];13 14]←'¯1'
[ 9]  →cabou
[10] prafrente:→(numero<pointers[lista;3])/meio
[11]  pointers[lista;2]←⍋lde[lista;pointers[lista;2];13 14]
[12]  lde[lista;pointers[lista;2];11 12]←'¯1'
[13]  →cabou
[14] meio:k←1
[15]  aux←pointers[lista;1]
[16] volta:→(k≥numero)/achou
[17]  ant←aux
```

```
[18]  aux←⍋lde[lista;aux;11 12]
[19]  →(k=k←k+1)/volta
[20] achou:pro←⍋lde[lista;aux;11 12]
[21]  lde[lista;ant;11 12]←lde[lista;aux;11 12]
[22]  lde[lista;pro;13 14]←lde[lista;aux;13 14]
[23] cabou:pointers[lista;3]←pointers[lista;3]-1
-------------------------------------------------------------
[ 0]  lispos INSERE elemento;ant;aux;lista;posicao;proximo;k
[ 1] ⍝ 'INSERE ',  ⍕lispos
[ 2] ⍝ insere na lispos [1] o elemento "elemento" na posicao lispos[2]
[ 3]  →(lispos[2]≥0)/pos
[ 4]  lispos[2]←(lispos[2]×¯1)-1
[ 5] pos:lista←lispos[1] ⋄ posicao←lispos[2] ⋄ elemento←,elemento
[ 6]  →(pointers[lista;3]≠0)/naovazia
[ 7]  pointers[lista;⍳3]←1   ⍝ 1 1 1
[ 8]  lde[lista;1;]←elemento,'¯1¯1'
[ 9]  →cabou
[10] naovazia:pointers[lista;5]←proximo←1+pointers[lista;5]
[11]  pointers[lista;3]←pointers[lista;3]+1
[12]  lde[lista;proximo;⍳10]←elemento
[13]  →(posicao≠0)/naozero
[14]  lde[lista;proximo;11 12]←2 0⍕pointers[lista;1]
[15]  lde[lista;proximo;13 14]←2 0⍕¯1
[16]  lde[lista;pointers[lista;1];13 14]←2 0⍕proximo
[17]  pointers[lista;1]←proximo
[18]  →cabou
[19] naozero:
[20]  →(posicao<pointers[lista;3]-1)/meio
[21]  lde[lista;proximo;11 12]←2 0⍕¯1
[22]  lde[lista;proximo;13 14]←2 0⍕pointers[lista;2]
[23]  lde[lista;pointers[lista;2];11 12]←2 0⍕proximo
[24]  pointers[lista;2]←proximo
[25]  →cabou
[26] meio:k←0
[27]  aux←pointers[lista;1]
[28] testara:→(k≥posicao)/achou
[29]  ant←aux
[30]  aux←⍋lde[lista;aux;11 12]
[31]  →(k=k←k+1)/testara
[32] achou:lde[lista;proximo;11 12]←2 0⍕aux
[33]  lde[lista;proximo;13 14]←2 0⍕ant
[34]  lde[lista;ant;11 12]←2 0⍕proximo
[35]  lde[lista;aux;13 14]←2 0⍕proximo
[36] cabou:
-------------------------------------------------------------
[ 0]  r←MANDACID x;t
[ 1]  t←30 10⍴' '
[ 2]  t[1;]←10↑'LONDRES'
[ 3]  t[2;]←10↑'MADRID'
[ 4]  t[3;]←10↑'FLORIPA'
[ 5]  t[4;]←10↑'CURITIBA'
[ 6]  t[5;]←10↑'SAO PAULO'
[ 7]  t[6;]←10↑'NEW YORK'
[ 8]  t[7;]←10↑'PARIS'
[ 9]  t[8;]←10↑'GENEBRA'
[10]  t[9;]←10↑'MORRETES'
[11]  t[10;]←10↑'MATINHOS'
[12]  t[11;]←10↑'MARINGA'
[13]  t[12;]←10↑'JOINVILLE'
[14]  t[13;]←10↑'BARCELONA'
[15]  t[14;]←10↑'LYON'
[16]  t[15;]←10↑'EDINBURGO'
[17]  t[16;]←10↑'ORLANDO'
```

```
[18]  t[17;]←10↑'CAIOBA'
[19]  t[18;]←10↑'BLUMENAU'
[20]  t[19;]←10↑'LONDRINA'
[21]  t[20;]←10↑'CASCAVEL'
[22]  t[21;]←10↑'POMERODE'
[23]  t[22;]←10↑'VALENCIA'
[24]  t[23;]←10↑'DUBLIN'
[25]  t[24;]←10↑'BERLIM'
[26]  t[25;]←10↑'CHICAGO'
[27]  t[26;]←10↑'COLUMBUS'
[28]  t[27;]←10↑'SALVADOR'
[29]  t[28;]←10↑'RECIFE'
[30]  t[29;]←10↑'BRASILIA'
[31]  t[30;]←10↑'CUIABA'
[32]  r←t[x?30;]
-------------------------------------------------------------
[ 0]  r←MANDAIDIO x;t
[ 1]  t←30 10⍴' '
[ 2]  t[1;]←10↑'PORTUGUES'
[ 3]  t[2;]←10↑'ESPANHOL'
[ 4]  t[3;]←10↑'INGLES'
[ 5]  t[4;]←10↑'FRANCES'
[ 6]  t[5;]←10↑'SUECO'
[ 7]  t[6;]←10↑'CATALAO'
[ 8]  t[7;]←10↑'BASCO'
[ 9]  t[8;]←10↑'PARSI'
[10]  t[9;]←10↑'HUNGARO'
[11]  t[10;]←10↑'TCHECO'
[12]  t[11;]←10↑'VALAO'
[13]  t[12;]←10↑'FLAMENGO'
[14]  t[13;]←10↑'TUPI'
[15]  t[14;]←10↑'LATIM'
[16]  t[15;]←10↑'ALEMAO'
[17]  t[16;]←10↑'NORUEGUES'
[18]  t[17;]←10↑'SERVO'
[19]  t[18;]←10↑'CROATA'
[20]  t[19;]←10↑'HOLANDES'
[21]  t[20;]←10↑'CHINES'
[22]  t[21;]←10↑'IIDICHE'
[23]  t[22;]←10↑'JAPONES'
[24]  t[23;]←10↑'FINLANDES'
[25]  t[24;]←10↑'RUSSO'
[26]  t[25;]←10↑'ARABE'
[27]  t[26;]←10↑'ITALIANO'
[28]  t[27;]←10↑'ALBANES'
[29]  t[28;]←10↑'GUARANI'
[30]  t[29;]←10↑'COREANO'
[31]  t[30;]←10↑'AFRIKANER'
[32]  r←t[x?30;]
-------------------------------------------------------------
[ 0]  r←MANDAPAI x;t
[ 1]  t←30 10⍴' '
[ 2]  t[1;]←10↑'BRASIL'
[ 3]  t[2;]←10↑'ESPANHA'
[ 4]  t[3;]←10↑'INGLATERRA'
[ 5]  t[4;]←10↑'FRANCA'
[ 6]  t[5;]←10↑'SUECIA'
[ 7]  t[6;]←10↑'BOLIVIA'
[ 8]  t[7;]←10↑'EGITO'
[ 9]  t[8;]←10↑'CROACIA'
[10]  t[9;]←10↑'HUNGRIA'
[11]  t[10;]←10↑'R. TCHECA'
[12]  t[11;]←10↑'B. FASO'
```

```
[13]  t[12;]←10↑'GABAO'
[14]  t[13;]←10↑'CHILE'
[15]  t[14;]←10↑'ALBANIA'
[16]  t[15;]←10↑'ALEMANHA'
[17]  t[16;]←10↑'NORUEGA'
[18]  t[17;]←10↑'SERVIA'
[19]  t[18;]←10↑'ARGENTINA'
[20]  t[19;]←10↑'HOLANDA'
[21]  t[20;]←10↑'CHINA'
[22]  t[21;]←10↑'LIBERIA'
[23]  t[22;]←10↑'JAPAO'
[24]  t[23;]←10↑'FINLANDIA'
[25]  t[24;]←10↑'RUSSIA'
[26]  t[25;]←10↑'IEMEN'
[27]  t[26;]←10↑'ITALIA'
[28]  t[27;]←10↑'PARAGUAI'
[29]  t[28;]←10↑'URUGUAI'
[30]  t[29;]←10↑'BELGICA'
[31]  t[30;]←10↑'UGANDA'
[32]  r←t[x?30;]
-------------------------------------------------------------
[0]  r←acertaph x
[1]  r←'    cabeça: ',('¯-'edit 2 0⍕x[1]),(10⍴' ')
[2]  r←r,'    cabeça: ',('¯-'edit 2 0⍕x[2]),(10⍴' ')
[3]  r←r,'    cabeça: ',('¯-'edit 2 0⍕x[3])
-------------------------------------------------------------
[0]  r←acertapt x
[1]  r←'    cauda: ',('¯-'edit 2 0⍕x[1]),(11⍴' ')
[2]  r←r,'    cauda: ',('¯-'edit 2 0⍕x[2]),(11⍴' ')
[3]  r←r,'    cauda: ',('¯-'edit 2 0⍕x[3])
-------------------------------------------------------------
[  0]  opesq vivo342a n;CORRECAO;EVENTO;aaa;acuja;cc;dhx;esse;f;i;lixo1;lixonol;pic;pou;q;r
       elat;resp;resu;tabaux1;tabaux2;tabaux3;upag;w;x;xixo;xk;xonde;xtodos;ylu;z
[  1]  →(0≠⎕NC'opesq')/qveio
[  2]  opesq←10⍴' '
[  3] qveio:
[  4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[  5]  CORRECAO←10 ⋄ EVENTO←'PL342   '
[  6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
       4 5],⎕TS[6]+⎕TS[7]÷1000
[  7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[  8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[  9]  FOLHALA342←ajusta80 FOLHALA342
[ 10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA342)⍴' '
[ 11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[ 12]  xk←1 ⋄ resu←0 11⍴0
[ 13] testa:→(xk>1↑⍴ylu)/fim
[ 14]  esse←38 80⍴' '
[ 15]  f←FOLHALA342
[ 16]  esse[1;]←80↑dhx[1;]
[ 17]  esse[2;]←80↑dhx[2;]
[ 18]  esse[3;]←80↑4 2⍕VERSAOa←3.27
[ 19]  esse[4;]←80↑ylu[xk;⍳6]
[ 20]  esse[5;]←80↑ylu[xk;6+⍳30]
[ 21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[ 22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[ 23]  esse[37;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[ 24]  esse[38;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[ 25] inica:
[ 26]  xtodos←xonde←6⍴0
[ 27]  pic←3 16 10⍴' '
[ 28]  pic[1;;]←MANDAPAI 16
[ 29]  pic[2;;]←MANDAIDIO 16
```

```
[ 30]  pic[3;;]←MANDACID 16
[ 31]  CRIALDES
[ 32]  i←0
[ 33] vol1:→(i>29)/id
[ 34]  ((1+⌊i÷10),¯2+?9)INSERE pic[(1+⌊i÷10);(1+10|i);]
[ 35]  →(i=i←i+1)/vol1
[ 36] id:esse[8;]←80↑acertaph,pointers[;1]
[ 37]  esse[9;]←80↑acertapt,pointers[;2]
[ 38]  esse[9+⍳10;(4+⍳10),(15+⍳2),(19+⍳2)]←'¯-'edit lde[1;⍳10;]
[ 39]  esse[9+⍳10;(28+⍳10),(39+⍳2),(43+⍳2)]←'¯-'edit lde[2;⍳10;]
[ 40]  esse[9+⍳10;(52+⍳10),(63+⍳2),(67+⍳2)]←'¯-'edit lde[3;⍳10;]
[ 41]  tabaux1←TABAUX1
[ 42]  tabaux2←TABAUX2
[ 43]  tabaux3←TABAUX3
[ 44]  i←1
[ 45] tes:→(i>4)/fim4
[ 46]  x←?29
[ 47]  tabaux1[i;12+⍳10]←BUSCA(1+⌊x÷10),1+10|x
[ 48]  EXCLUI(1+⌊x÷10),1+10|x
[ 49]  tabaux1[i;33]←1 0⍕1+⌊x÷10
[ 50]  →(i=i←i+1)/tes
[ 51] fim4:esse[19+⍳4;]←4 80↑tabaux1
[ 52]  i←1
[ 53] tes3:→(i>6)/fim2
[ 54]  x←?29
[ 55]  pointers[1+⌊x÷10;4]←pointers[1+⌊x÷10;4]+1
[ 56]  aaa←pic[(1+⌊x÷10);pointers[1+⌊x÷10;4];]
[ 57]  tabaux2[i;12+⍳10]←tabaux3[i;⍳10]←aaa
[ 58]  tabaux2[i;33]←1 0⍕1+⌊x÷10
[ 59]  tabaux2[i;46+⍳2]←2 0⍕1+10|x
[ 60]  ((1+⌊x÷10),(1+10|x))INSERE aaa
[ 61]  xonde[i]←pointers[(1+⌊x÷10);4]
[ 62]  xtodos[i]←x
[ 63]  →(i=i←i+1)/tes3
[ 64] fim2:
[ 65]  tabaux3[1;22 23 40 41]←'¯-'edit lde[(1+⌊xtodos[1]÷10);xonde[1];11 12 13 14]
[ 66]  esse[23+⍳6;]←6 80↑tabaux2
[ 67]  esse[29+⍳6;]←6 80↑tabaux3
[ 68]  i←2
[ 69] th:→(i>6)/fimth
[ 70]  resp←resp,⍕(lde,' ')[(1+⌊xtodos[i]÷10);xonde[i];11 12 15 13 14]
[ 71]  →(i=i←i+1)/th
[ 72] fimth:
[ 73]  resu←resu,[1]1 11⍴resp
[ 74]  acuja←(f[;2]='#')/⍳1↑⍴f
[ 75]  f[acuja;⍳80]←esse[⍕,f[acuja;3 4],' ';]
[ 76]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[ 77]  □←(⍕xk←xk+1),'-'
[ 78]  →testa
[ 79] fim:upag←(1 0+⍴f)⍴' '
[ 80]  →(1=≡n)/elafa
[ 81]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[ 82]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[ 83]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←4 0 6 0,18⍴3 0 5 0)⍕resu
[ 84]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[ 85] ⍝ n[1 2]PRINTFL 1 numera '  ¯-' edit lde[1;;],' ',lde[2;;],' ',lde[3;;]
[ 86] ⍝ n[1 2]PRINTFL '  ¯-' edit 5 0⍕pointers
[ 87] ⍝ o trecho acima era a impressao da ultima folha
[ 88]  →terminando
[ 89] elafa:aaa←(⍳lu,'¯-'edit(20⍴6 0 4 0)⍕0 1↓resu)
[ 90]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[ 91]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[ 92] terminando:
```

```
[ 93]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[ 94]  relat[1↑⍴relat;;]←upag
[ 95]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[ 96] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[ 97]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[ 98]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[ 99]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo343

```
[ 0]  r←criacaso nn;x;n;z;aa;cc;w
[ 1]  →(nn≠1)/outro1
[ 2]  x←geraanimal
[ 3]  →fundao
[ 4] outro1:
[ 5]  →(nn≠2)/outro2
[ 6]  x←geracarro
[ 7]  →fundao
[ 8] outro2:
[ 9]  x←geralivro
[10]  →fundao
[11] fundao:
[12]  cc←(2 0⍕¯1+1↑⍴x),'&      &  &   &      &  &   &      &  &   &      &  &  ⍀⍀ ⍀cline{2
      -13}'
[13]  r←4 11 72⍴' '
[14]  r[1;;]←11 72↑aa←(mtlatex criacursores ¯1 0↓x),[1]1 72⍴72↑cc
[15]  r[2;;]←11 72↑x[1↑⍴x;]
[16]  r[3;;]←11 72↑mtlatex z←criacursores x
[17]  n←1+?5
[18]  r[2;2;1]←1 0⍕n
[19]  r[2;3;1]←1 0⍕¯2+1↑⍴x
[20]  z←(n,7 8)eliminalinha z
[21]  z←(n,9 10)eliminalinha z
[22]  z←(n,17 18)eliminalinha z
[23]  z←(n,19 20)eliminalinha z
[24]  z←(n,27 28)eliminalinha z
[25]  z←(n,29 30)eliminalinha z
[26]  z←(n,37 38)eliminalinha z
[27]  z←(n,39 40)eliminalinha z
[28]  r[4;;]←w←11 72↑mtlatex z
[29]  r[2;11;]←72↑w[2;11 12],w[3;14 15],w[4;25 26],w[5;28 29],w[6;39 40],w[7;42 43],w[8;53
       54],w[9;56 57]
[30]  →0
-------------------------------------------------------------
[ 0]  r←criacursores x;cabe;z;up;do;w;i
[ 1]  z←x
[ 2]  cabe←z[1;]
[ 3]  z[1;]←' '
[ 4]  w←1 0↓z
[ 5]  up←(⎕AV⍋w[;⍳6]somadoı1↑⍴w)
[ 6]  z[;7 8]←criaupdo up
[ 7]  do←(⎕AV⍒w[;⍳6]somadoı1↑⍴w)
[ 8]  z[;9 10]←criaupdo do
[ 9] ⍝
[10]  up←(⎕AV⍋w[;10+⍳6]somadoı1↑⍴w)
[11]  z[;17 18]←criaupdo up
[12]  do←(⎕AV⍒w[;10+⍳6]somadoı1↑⍴w)
[13]  z[;19 20]←criaupdo do
[14] ⍝
[15]  up←(⎕AV⍋w[;20+⍳6]somadoı1↑⍴w)
[16]  z[;27 28]←criaupdo up
```

```
[17]  do←(⎕AV⍕w[;20+⍳6]somadoı1↑ρw)
[18]  z[;29 30]←criaupdo do
[19] ⍝
[20]  up←(⎕AV⍋w[;30+⍳6]somadoı1↑ρw)
[21]  z[;37 38]←criaupdo up
[22]  do←(⎕AV⍕w[;30+⍳6]somadoı1↑ρw)
[23]  z[;39 40]←criaupdo do
[24]  r←cabe,[1]z
-------------------------------------------------------------
[ 0]  r←criaupdo x;i
[ 1]  r←((ρx),2)ρ' '
[ 2] ⍝r[1;]←2 0⍕x[1]
[ 3]  i←2
[ 4] t1:→(i>ρx)/y1
[ 5]  r[x[i-1];]←2 0⍕x[i]
[ 6]  i←i+1
[ 7]  →t1
[ 8] y1:r[x[i-1];]←' 0'
[ 9]  r←(1 2ρ2 0⍕x[1]),[1]r
-------------------------------------------------------------
[ 0]  r←n eliminalinha x;i
[ 1]  r←x
[ 2]  i←2
[ 3] t1:→(i>1↑ρx)/fim
[ 4]  →(n[1]=⍪r[i;n[2 3]])/achou
[ 5]  i←i+1
[ 6]  →t1
[ 7] achou:
[ 8]  r[i;n[2 3]]←r[2+n[1];n[2 3]]
[ 9] fim:
-------------------------------------------------------------
[ 0]  r←geraanimal;animal;cor;idade;nomes;qt;ca;x
[ 1]  qt←6+?3
[ 2]  nomes←sen2vec'binho fifi bola mimi toto xuxa yuri alex ari feio piupiu neto'
[ 3]  animal←sen2vec'cao gato furao cao cao gato cagado pomba cobra lebre'
[ 4]  cor←sen2vec'preto bege branco marrom azul pardo cinza claro'
[ 5]  idade←sen2vec'08 02 03 05 11 01 04 01 02 01 03 02 03 04 01 02 03 01 02 03'
[ 6]  ca←1 40ρ(10↑'animal'),(10↑'nome'),(10↑'cor'),10↑'idade'
[ 7]  x←(qt,40)ρ' '
[ 8]  x[;⍳10]←(qt,10)↑⊃nomes[qt?ρnomes]
[ 9]  x[;10+⍳10]←(qt,10)↑⊃animal[?qtρρanimal]
[10]  x[;20+⍳10]←(qt,10)↑⊃cor[?qtρρcor]
[11]  x[;30+⍳10]←(qt,10)↑⊃idade[?qtρρidade]
[12]  r←ca,[1]x
-------------------------------------------------------------
[ 0]  r←geracarro;animal;cor;idade;nomes;qt;ca;x
[ 1]  qt←6+?3
[ 2]  nomes←sen2vec'0032 4476 2212 2019 2324 3132 6000 8000 7001 7002 7003 6090'
[ 3]  animal←sen2vec'uno fiat dkw combi rural fusca corsa vw gm jeep'
[ 4]  cor←sen2vec'gasol alc flex gasol diese gasol butan alc alc'
[ 5]  idade←sen2vec'112 132 142 167 650 340 230 190 980 870 540 332 444 111'
[ 6]  ca←1 40ρ(10↑'placa'),(10↑'marca'),(10↑'comb'),10↑'km'
[ 7]  x←(qt,40)ρ' '
[ 8]  x[;⍳10]←(qt,10)↑⊃nomes[qt?ρnomes]
[ 9]  x[;10+⍳10]←(qt,10)↑⊃animal[?qtρρanimal]
[10]  x[;20+⍳10]←(qt,10)↑⊃cor[?qtρρcor]
[11]  x[;30+⍳10]←(qt,10)↑⊃idade[?qtρρidade]
[12]  r←ca,[1]x
-------------------------------------------------------------
[ 0]  r←geralivro;animal;cor;idade;nomes;qt;ca;x
[ 1]  qt←6+?3
[ 2]  nomes←sen2vec'xico ze1 ze2 alba ana ro giz lapis dji souza lima pele'
[ 3]  animal←sen2vec'sou vai linda caiu anao zica fe aril ceva licor cafe'
```

```
[ 4]  cor←sen2vec'010 980 765 450 341 232 200 300 401 402 403 506 280 987'
[ 5]  idade←sen2vec'20.50 32.00 33.00 45.00 18.50 18.60 18.70 20.00 21.00 67.00 48.00 70.0
      0'
[ 6]  ca←1 40⍴(10↑'autor'),(10↑'titulo'),(10↑'pags'),10↑'preco'
[ 7]  x←(qt,40)⍴' '
[ 8]  x[;⍳10]←(qt,10)↑⊃nomes[qt?⍴nomes]
[ 9]  x[;10+⍳10]←(qt,10)↑⊃animal[?qt⍴⍴animal]
[10]  x[;20+⍳10]←(qt,10)↑⊃cor[?qt⍴⍴cor]
[11]  x[;30+⍳10]←(qt,10)↑⊃idade[?qt⍴⍴idade]
[12]  r←ca,[1]x
-------------------------------------------------------------
[0]  r←limpacols x
[1]  r←x
[2]  r[1+⍳¯1+1↑⍴x;11 12 14 15 25 26 28 29 39 40 42 43 53 54 56 57]←' '
-------------------------------------------------------------
[ 0]  r←mt x;aa;bb;vbar;volta
[ 1]  r←(0 19+⍴x)↑x
[ 2]  r[1;⍳3]←' '
[ 3]  bb←1 1 1 1 1 1 0 1 1 0 1 1 0 0
[ 4]  →(4=+/x[2;⍳4]=' ')/tem
[ 5] naotem:r[aa;⍳3]←(2 0⍕((⍴aa←1↓⍳1↑⍴x),1)⍴⍳¯1+1↑⍴x),'.'
[ 6]  r[;3+⍳¯3+1↓⍴r]←(bb,bb,bb,bb)⍀x
[ 7]  →0
[ 8] tem:r[aa;⍳3]←(2 0⍕((⍴aa←2↓⍳1↑⍴x),1)⍴⍳¯2+1↑⍴x),'.'
[ 9]  r[;3+⍳¯3+1↓⍴r]←(bb,bb,bb,bb)⍀x
-------------------------------------------------------------
[ 0]  r←mtlatex x;aa;bb
[ 1]  r←(0 19+⍴x)↑x
[ 2]  r[1;⍳3]←' '
[ 3]  bb←1 1 1 1 1 1 0 1 1 0 1 1 0 0
[ 4]  →(4=+/x[2;⍳4]=' ')/tem
[ 5] naotem:r[aa;⍳3]←(2 0⍕((⍴aa←1↓⍳1↑⍴x),1)⍴⍳¯1+1↑⍴x),'.'
[ 6]  r[;3+⍳¯3+1↓⍴r]←(bb,bb,bb,bb)⍀x
[ 7]  →junta
[ 8] tem:r[aa;⍳3]←(2 0⍕((⍴aa←2↓⍳1↑⍴x),1)⍴⍳¯2+1↑⍴x),'.'
[ 9]  r[;3+⍳¯3+1↓⍴r]←(bb,bb,bb,bb)⍀x
[10]  →junta
[11] junta:r[;3 10 13 17 24 27 31 38 41 45 52 55]←'&'
[12]  r[;58 59]←'⍀'
[13]  r←r,[2]((1↑⍴r),13)⍴' ⍀cline{2-13}'
[14]  r[1;11 12 25 26 39 40 53 54]←8⍴'⍀K'
[15]  r[1;14 15 28 29 42 43 56 57]←8⍴'⍀M'
-------------------------------------------------------------
[0]  r←sen2vec sen
[1]  r←(sen≠' ')⊂sen
-------------------------------------------------------------
[0]  r←a somado b;i
[1]  r←(0 2+⍴a)⍴' '
[2]  i←1
[3] t1:→(i>1↑⍴r)/fim
[4]  r[i;]←trim a[i;],'00'⍕b[i]
[5]  i←i+1
[6]  →t1
[7] fim:
-------------------------------------------------------------
[0]  r←vec2sen vec
[1]  r←∈' ',''vec
-------------------------------------------------------------
[ 0]  opesq vivo343a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kj;lixo1;lixonol;nomes;num
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
```

```
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←8 ⋄ EVENTO←'PL343   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA343←ajusta80 FOLHALA343
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA343)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[13]  xk←1 ⋄ resu←0 37⍴' '
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←79 80⍴' '
[16]  f←FOLHALA343
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.02
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:
[28]  esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[32]  esse[78;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[79;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] ini1:
[35]  kj←criacaso 2
[36]  esse[7+⍳11;]←11 80↑limpacols kj[1;;]
[37]  esse[19;]←80↑'\verb+',(trim kj[2;1;]),'+'
[38]  esse[19+⍳11;]←11 80↑limpacols kj[3;;]
[39]  esse[31;1]←kj[2;2;1]
[40]  esse[31+⍳11;]←11 80↑limpacols kj[4;;]
[41]  resp←(3 0⍕resp),'-',kj[2;11;⍳16],'-'
[42]  kj←criacaso 3
[43]  esse[42+⍳11;]←11 80↑limpacols kj[1;;]
[44]  esse[54;]←80↑'\verb+',(trim kj[2;1;]),'+'
[45]  esse[54+⍳11;]←11 80↑limpacols kj[3;;]
[46]  esse[66;1]←kj[2;2;1]
[47]  esse[66+⍳11;]←11 80↑limpacols kj[4;;]
[48]  resp←resp,kj[2;11;⍳16]
[49]  resu←resu,[1]1 37⍴resp
[50]  acuja←(f[;2]='#')/⍳1↑⍴f
[51]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[52]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[53]  ⍞←(⍕xk←xk+1),'-'
[54]  →testa
[55] fim:upag←(1 0+⍴f)⍴' '
[56]  →(1=≡n)/elafa
[57]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[58]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[59]  upag[2+⍳1↑⍴resu;⍳37]←resu
[60]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[61]  →terminando
[62] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[63]  aaa[1;35 36]←2 0⍕CORRECAO
[64]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[65]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
```

```
[66] terminando:
[67]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[68]  relat[1↑⍴relat;;]←upag
[69]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[70] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[71]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[72]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo411

```
[0]  r←AMBICRM;⎕IO
[1]  M←100⍴0
[2]  ⎕IO←0
[3]  PPVELHO←PPL←0
[4] ⍝  →(x  ≠100)/fim
[5] ⍝M[80+  ⍳20]  ←1+  ⍳20
[6] fim:r←0
-------------------------------------------------------------
[0]  r←AMBIOBT x;ppltemp;⎕IO
[1] ⍝  →((PPL+x)>99)/erro
[2]  ⎕IO←0
[3]  →((PPL+x)>¯1+⍴M)/erro
[4]  ppltemp←PPL
[5]  PPL←PPL+x
[6]  r←ppltemp
[7]  →0
[8] erro:r←-1
-------------------------------------------------------------
[0]  r←ARBICRI;z;⎕IO
[1]  ⎕IO←0
[2]  z←AMBIOBT 1
[3]  →(z<0)/erro
[4]  M[z]←-1
[5] ⍝ M[z+1]  ←x
[6]  r←z
[7]  →0
[8] erro:r←1
-------------------------------------------------------------
[ 0]  r←ARBIINS x;⎕IO;y;V;A;esq;point
[ 1] ⍝ esta funcao recebe o endereco de uma arvore (1. op) e um valor
[ 2] ⍝ que supostamente nao esta na arvore, e insere-o na modalidade
[ 3] ⍝ de IN-ORDER da esquerda para a direita.
[ 4] ⍝ Se os dados estiverem todos ordenados, a arvore gerada e' degenerada
[ 5] ⍝ A maneira de construir uma arvore balanceada e':
[ 6] ⍝ 1. ordenar o vetor de entrada
[ 7] ⍝ 2. pegar o elemento central
[ 8] ⍝ 3. A seguir os dois centrais dos dois segmentos
[ 9] ⍝ 4. A seguir os quatro centrais dos quatro segmentos...
[10] ⍝ E' muito parecido (em conceito) com o quick-sort
[11] ⍝ x[0] e' a arvore; x[1] e' o valor a inserir como nodo
[12]  ⎕IO←0 ⋄ A←x[0] ⋄ V←x[1]
[13]  y←AMBIOBT 3
[14]  →(y<0)/erro
[15]  M[y]←M[y+1]←¯1
[16]  M[y+2]←V
[17]  →(M[A]≠¯1)/cheio0
[18]  M[A]←y
[19]  →termina
[20] cheio0:A←M[A]
[21] cheio:→(A=¯1)/cabou
[22]  point←A
```

```
[23]  →(V<M[A+2])/emenor
[24]  A←M[A+1]
[25]  →(esq=esq←0)/cheio
[26] emenor:A←M[A]
[27]  →(esq=esq←1)/cheio
[28] cabou:
[29]  →(esq)/esquerdo
[30] direito:M[point+1]←y
[31]  →termina
[32] esquerdo:M[point]←y
[33] termina:r←y
[34]  →0
[35] erro:r←-1
-------------------------------------------------------------
[ 0]  AVISO
[ 1]  'Para olhar as arvores de exemplo da folha 411, chame '
[ 2]  'EXEMPA, EXEMPB ou EXEMPC'
[ 3]  ''
[ 4]  ' a variavel ARVFOL contem a matriz do exemplo 1 (usando cursores) da folha 411'
[ 5]  ' para ver faca:'
[ 6]  ' ARV←ARVFOL'
[ 7]  ' R←⍳0'
[ 8]  ' OI 1 ou OP 1 ou OS 1 e depois mostre R'
[ 9]  ''
[10]  'em f:/p/n/411 tem o modulo caminha.mle que em maple resolve as arvores A e B'
[11]  ' a C fica para o aluno fazer...'
-------------------------------------------------------------
[0]  OI h
[1]  →(ARV[h;1]=¯1)/t2
[2]  OI ARV[h;1]
[3] t2:R←R,ARV[h;3]
[4]  →(ARV[h;2]=¯1)/fim
[5]  OI ARV[h;2]
[6] fim:
-------------------------------------------------------------
[0]  OP h
[1]  R←R,ARV[h;3]
[2]  →(ARV[h;1]=¯1)/t2
[3]  OP ARV[h;1]
[4] t2:→(ARV[h;2]=¯1)/fim
[5]  OP ARV[h;2]
[6] fim:
-------------------------------------------------------------
[0]  OS h
[1]  →(ARV[h;1]=¯1)/t2
[2]  OS ARV[h;1]
[3] t2:→(ARV[h;2]=¯1)/fim
[4]  OS ARV[h;2]
[5] fim:R←R,ARV[h;3]
-------------------------------------------------------------
[0]  r←acerta11 aa;bb
[1]  r←12 80⍴' '
[2]  r[;⍳2]←2 0⍕12 1⍴⍳12
[3]  r[;3 7 11]←'&'
[4]  r[;4 5 6 8 9 10 12 13 14]←aa
[5]  r[;14+⍳⍴bb]←(12,⍴bb)⍴bb←'\\ \cline{2-4}'
-------------------------------------------------------------
[  0]  alfa2 alla411a n;folha;dhx;ylu;resp;resu;xk;lixonol;esse;essafolha;lixo;flm;xa;xb;xc
      ;x;ri;guampa;yy;zzz
[  1]  lixonol←FUNSNEC411 ⎕COPY'ALLAUTIL'
[  2]  rand ⋄ CORRECAO←9 ⋄ EVENTO←8⍴' ' ⋄ guampa←1 1 2
[  3]  'serao emitidas provas a partir de ',⍕n[3]
[  4]  n[1 2]PRINTFL leiaf'ALLABLOI'
```

```
[  5]  ylu←geralu2 alfa2
[  6]  dhx←dh3
[  7]  xk←1 ⋄ resu←0 10⍴0
[  8] testa:→(xk>1↑⍴ylu)/fim
[  9]  esse←33 80⍴' '
[ 10]  flm←200 80↑FOLHALA411
[ 11]  esse[1;]←80↑dhx[1;]
[ 12]  esse[2;]←80↑dhx[2;]
[ 13]  esse[3;]←80↑4 2⍕VERSAOa←2.52
[ 14]  esse[4;]←80↑ylu[xk;⍳6]
[ 15]  esse[5;]←80↑ylu[xk;6+⍳30]
[ 16]  esse[6;]←80↑EVENTO
[ 17]  esse[7;]←80↑3 0⍕resp←¯1+xk+n[3]
[ 18] inica:
[ 19] volta:XA←xa←crarvore 12?20
[ 20]  XB←xb←crarvore 20?99
[ 21]  XC←xc←crarvore 15?30
[ 22]  esse[7+⍳12;]←acerta11'  ¯-'edit 3 0⍕xa[;⍳3]
[ 23] ⍝ flm[80+  ⍳12;6+  ⍳9]  ←'  ¯-' edit 3 0   ⍕xa[;  ⍳3]
[ 24]  esse[19+⍳10;]←'  ¯-'edit mearvore22 xb
[ 25] ⍝ flm[94+  ⍳12;15+  ⍳32]  ←'  ¯-' edit mearvore xb
[ 26]  →(70<⍴paarvore xc)/volta
[ 27]  esse[30 31;]←quebrapar paarvore xc
[ 28]  ri←9 20⍴0
[ 29]  ri[1;⍳12]←preorder xa
[ 30]  ri[2;⍳12]←inorder xa
[ 31]  ri[3;⍳12]←posorder xa
[ 32]  ri[4;]←preorder xb
[ 33]  ri[5;]←inorder xb
[ 34]  ri[6;]←posorder xb
[ 35]  ri[7;⍳15]←preorder xc
[ 36]  ri[8;⍳15]←inorder xc
[ 37]  ri[9;⍳15]←posorder xc
[ 38]  x←6+?6
[ 39]  zzz←'a-pr[',(2 0⍕x),']&'
[ 40]  resp←resp,ri[1;x]
[ 41]  x←6+?6
[ 42]  zzz←zzz,'a-in[',(2 0⍕x),']&'
[ 43]  resp←resp,ri[2;x]
[ 44]  x←6+?6
[ 45]  zzz←zzz,'a-po[',(2 0⍕x),']&'
[ 46]  resp←resp,ri[3;x]
[ 47]  x←10+?10
[ 48]  zzz←zzz,'b-pr[',(2 0⍕x),']&'
[ 49]  resp←resp,ri[4;x]
[ 50]  x←10+?10
[ 51]  zzz←zzz,'b-in[',(2 0⍕x),']⍀⍀'
[ 52]  resp←resp,ri[5;x]
[ 53]  esse[32;]←80↑zzz
[ 54]  x←10+?10
[ 55]  zzz←'b-po[',(2 0⍕x),']&'
[ 56]  resp←resp,ri[6;x]
[ 57]  x←8+?7
[ 58]  zzz←zzz,'c-pr[',(2 0⍕x),']&'
[ 59]  resp←resp,ri[7;x]
[ 60]  x←8+?7
[ 61]  zzz←zzz,'c-in[',(2 0⍕x),']&'
[ 62]  resp←resp,ri[8;x]
[ 63]  x←8+?7
[ 64]  zzz←zzz,'c-po[',(2 0⍕x),']&⍀⍀'
[ 65]  resp←resp,ri[9;x]
[ 66]  esse[33;]←80↑zzz
[ 67]  resu←resu,[1]1 10⍴resp
```

```
[ 68]  n[1 2]PRINTFL ULTIMOa←essafolha←esse montafol flm
[ 69]  n[1 2]PRINTFL 1 40ρ40↑'\newpage'
[ 70]  ⍞←(⍕xk←xk+1),'-'
[ 71]  →testa
[ 72] fim:
[ 73]  n[1 2]PRINTFL 1 40ρ40↑'\begin{verbatim}'
[ 74]  n[1 2]PRINTFL 1 126ρ126↑(10ρ'='),(' ',,dhx),(10ρ'='),'E=',EVENTO
[ 75]  n[1 2]PRINTFL 3 0 7 0 4 0 4 0 4 0 4 0 6 0 4 0 4 0 4 0⍕resu
[ 76]  n[1 2]PRINTFL INSTRUC411
[ 77]  n[1 2]PRINTFL 1 40ρ40↑'\end{verbatim}'
[ 78]  n[1 2]PRINTFL 1 40ρ40↑'\tiny'
[ 79]  n[1 2]PRINTFL 1 40ρ40↑'\begin{verbatim}'
[ 80]  n[1 2]PRINTFL 1 50ρ50↑'*** arvores da ultima folha ***'
[ 81]  n[1 2]PRINTFL guampa dearvore crarvore XA[;3]
[ 82]  n[1 2]PRINTFL guampa dearvore crarvore XB[;3]
[ 83]  n[1 2]PRINTFL guampa dearvore crarvore XC[;3]
[ 84]  n[1 2]PRINTFL 1 50ρ50↑'*** arvores do exemplo ***'
[ 85]  n[1 2]PRINTFL guampa dearvore crarvore 11 6 7 4 20 16 13 5 15 2 1 3
[ 86]  n[1 2]PRINTFL guampa dearvore crarvore 35 22 15 8 25 28 75 61 55 50 37 48 39 38 46 6
       0 74 85 79 91
[ 87]  n[1 2]PRINTF guampa dearvore crarvore 4 2 1 3 23 14 7 12 13 16 21 18 29 25 28
[ 88]  n[1 2]PRINTFL 1 40ρ40↑'\end{verbatim}'
[ 89]  →(1=isnumber alfa2)/terminando
[ 90]  ylu geragpg2 4 0⍕0 1↓resu
[ 91] terminando:
[ 92]  n[1 2]PRINTFL leiaf'ALLABLOF'
[ 93]  FECHAF
[ 94]  FUNCOES←docfuncoes FUNSNEC411
[ 95]  lixonol←⎕EX FUNSNEC411
[ 96]  lixonol←⎕EX 2 8ρ'CORRECAOEVENTO  '
[ 97]  'acabou'
-------------------------------------------------------------
[0]  r←a ate b
[1]  r←a,a+⍳b-a
-------------------------------------------------------------
[0]  r←corta x
[1]  r←(x≠' ')/x
-------------------------------------------------------------
[ 0]  r←crarvore elems;aspa;i;ealfa
[ 1] ⍝ cria uma arvore para desenho com elems / p.kantek / v2.1
[ 2] ⍝ col [1] = &fe
[ 3] ⍝ col [2] = &fd
[ 4] ⍝ col [3] = conteudo
[ 5] ⍝ col [4] = profundidade
[ 6] ⍝ col [5] = &pai
[ 7] ⍝ col [6] = largura do bloco grafico
[ 8] ⍝ col [7] = 0  ≠se bloco grafico ja foi criado (1=significa que ele e o
[ 9] ⍝           raiz do bloco. 2=ja foi usado para construir outro mais
[10] ⍝           acima
[11]  r←((⍴elems),7)ρ0 ⋄ ealfa←1 ⋄ aspa←''''
[12]  →(isnum elems)/nume
[13]  ealfa←¯1
[14]  elems←1000+⎕AV⍳elems
[15] nume:i←2 ⋄ r[1;1 2 3]←¯1,¯1,elems[1]
[16] inica:→(i>⍴elems)/acabou
[17]  r←r inarvore elems[i]
[18]  →(i=i←i+1)/inica
[19] acabou:
[20]  i←1
[21] conta:→(i>⍴elems)/mesmo
[22]  →((r[i;1]≠¯1)∨(r[i;2]≠¯1))/pula
[23]  →(ealfa=¯1)/letra
[24]  ⍞'A',('05'⍕i),'  ←',aspa,'<',(formata elems[i]),'>',aspa
```

```
[25]  →indo
[26] letra:⍎'A',('05'⍕i),'  ←',aspa,'(  ⊃',⎕AV[elems[i]-1000],'  ⊂)',aspa
[27] indo:r[i;7]←1
[28]  r[i;6]←3
[29] pula:→(i=i←i+1)/conta
[30] mesmo:
------------------------------------------------------------
[ 0]  r←e de2f d;lin;col
[ 1]  →(2=⍴⍴e)/ee
[ 2]  e←(1,⍴e)⍴e
[ 3] ee:→(2=⍴⍴d)/dd
[ 4]  d←(1,⍴d)⍴d
[ 5] dd:lin←(1↑⍴e)⌈1↑⍴d
[ 6] ⍝ col  ←(3+1  ↓  ⍴e)  ⌊3+1  ↓  ⍴d
[ 7]  col←(1↓⍴e)⌈1↓⍴d
[ 8]  e←(lin,col)↑e ⋄ d←(lin,col)↑d
[ 9] ⍝ e  ←(lin,(1  ↓  ⍴e))  ↑e  ⋄ d  ←(lin,(1  ↓  ⍴d))  ↑d
[10]  r←e,' ',d
[11]  r←((⍳4,1↓⍴r)⍴' '),[1]r
[12]  r[1;((meio 1↓⍴r)-3)+⍳5]←PAI
[13]  r[2;((meio 1↓⍴r)-2)+⍳3]←'_&_'
[14]  r[3;(ONDE1)ate ¯1+meio 1↓⍴r]←'_'
[15]  r[3;(1+meio 1↓⍴r)ate(1+ONDE2+1↓⍴e)-1]←'_'
[16]  r[3;meio 1↓⍴r]←'#'
[17]  r[3;ONDE1]←'%'
[18]  r[3;(1↓⍴e)+1+ONDE2]←'!'
[19]  r[4;ONDE1+¯1 0 1]←r[4;1+(1↓⍴e)+ONDE2+¯1 0 1]←'_#_'
------------------------------------------------------------
[ 0]  r←a dearvore b;prim;paiprim;filhos;fe;fd;X;x;aspa;ois;carac;nivel;larg
[ 1] ⍝ 'carac=1/ascii/2=apld/3=apls/4=hdup/5=vdup   niveis=1/2/3/4' v.2.1
[ 2]  r←b
[ 3]  carac←a[1] ⋄ nivel←a[2] ⋄ larg←a[3]
[ 4]  aspa←''''
[ 5] inicio:→(1=r[1;7])/acabou
[ 6]  ois←(r[;7]=1)/⍳1↑⍴r
[ 7]  →(1=⍴ois)/sotem1
[ 8]  prim←1↑(r[ois;4]=⌈/r[ois;4])/ois
[ 9]  →voltaj
[10] sotem1:prim←ois
[11] voltaj:paiprim←r[prim;5]
[12]  →(r[paiprim;3]>1000)/le
[13]  ⍎'PAI  ←',aspa,'<',(formata r[paiprim;3]),'>',aspa
[14]  →indo
[15] le:⍎'PAI  ←',aspa,'(⊃',⎕AV[r[paiprim;3]-1000],'⊂)',aspa
[16] indo:→(2=⍴filhos←((r[;5]=paiprim)∧(r[;7]=1))/⍳1↑⍴r)/tem2
[17] tem1:→(r[paiprim;1]=prim)/efe
[18] efd:fd←⍎'A','05'⍕prim
[19]  ONDE←r[prim;6]
[20]  ⍎'A',('05'⍕paiprim),'  ←defd fd'
[21]  r[paiprim;7]←1 ⋄ r[prim;7]←2 ⋄ r[paiprim;6]←3
[22]  →inicio
[23] efe:
[24]  fe←⍎'A','05'⍕prim
[25]  ONDE←r[prim;6]
[26]  ⍎'X  ←1  ↓  ⍴A',('05'⍕paiprim),'  ←defe fe'
[27]  r[paiprim;7]←1 ⋄ r[prim;7]←2 ⋄ r[paiprim;6]←X-2
[28]  →inicio
[29] tem2:
[30]  →(r[filhos[1];3]>r[filhos[2];3])/ummaior
[31]  x←filhos[1] ⋄ filhos[1]←filhos[2] ⋄ filhos[2]←x
[32] ummaior:
[33]  ONDE1←r[filhos[2];6] ⋄ ONDE2←r[filhos[1];6]
[34]  fe←⍎'A','05'⍕filhos[2]   ⍝1
```

```
[35]  fd←⍞'A','05'⍕filhos[1]   ⍝2
[36]  ⍞'X  ←1  ↓  ⍴A',('05'⍕paiprim),'  ←fe de2f fd'
[37]  r[paiprim;7]←1 ⋄ r[filhos[1];7]←r[filhos[2];7]←2 ⋄ r[paiprim;6]←meio X
[38]  →inicio
[39] acabou:MAT←r   ⍝ aqui esta a matriz de entrada devidamente ja processada
[40]  →(larg=1)/jump
[41]  AO1←(~∧/[1]((AO1=' ')∨(AO1='_')))/[2]AO1
[42] jump:AO1←'∘ 'edit AO1
[43]  AO1←'⊃ 'edit AO1
[44]  AO1←'⊂ 'edit AO1
[45]  r←carac edita AO1
[46]  x←limpa
[47]  →(nivel=4)/0
[48]  →(nivel=3)/tres
[49]  →(nivel=2)/dois
[50]  →(nivel=1)/um
[51]  'erro de nivel'
[52]  →fin
[53] um:r←((1↑⍴r)⍴1 0)/[1]r
[54]  →fin
[55] dois:r←((1↑⍴r)⍴1 1 1 0)/[1]r
[56]  →fin
[57] tres:r←((1↑⍴r)⍴1 0 1 1)/[1]r
[58]  →fin
[59] fin:
-------------------------------------------------------------
[ 0]  r←defd x
[ 1]  →(2=⍴⍴x)/esim
[ 2]  x←(1,⍴x)⍴x
[ 3] esim:r←((1↑⍴x),-(1↓⍴x)+4)↑x
[ 4]  r←((4,1↓⍴r)⍴' '),[1]r
[ 5]  r[1;⍳5]←PAI
[ 6]  r[2;2 3 4]←'_&_'
[ 7]  r[3;3]←'$'
[ 8]  r[3;4+ONDE]←'!'
[ 9]  r[3;4 ate 3+ONDE]←'_'
[10]  r[4;4+ONDE+¯1 0 1]←'_#_'
-------------------------------------------------------------
[ 0]  r←defe x
[ 1]  →(2=⍴⍴x)/esim
[ 2]  x←(1,⍴x)⍴x
[ 3] esim:r←((1↑⍴x),(1↓⍴x)+4)↑x
[ 4]  r←((4,1↓⍴r)⍴' '),[1]r
[ 5]  r[1;((1↓⍴r)-5)+⍳5]←PAI
[ 6]  r[2;((1↓⍴r)-4)+⍳3]←'_&_'
[ 7]  r[3;(1↓⍴r)-2]←'@'
[ 8]  r[3;(ONDE)ate((1↓⍴r)-3)]←'_'
[ 9]  r[3;ONDE]←'%'
[10]  r[4;ONDE+¯1 0 1]←'_#_'
-------------------------------------------------------------
[ 0]  r←qual edita tudo
[ 1]  →(qual=1)/ascii
[ 2]  →(qual=2)/apldu
[ 3]  →(qual=3)/aplsi
[ 4]  →(qual=4)/aplds
[ 5]  →(qual=5)/aplsd
[ 6]  'erro'
[ 7]  →0
[ 8] ⍝             |                        |         |
[ 9] ⍝ %=+--   #=--+--   _=---   !=--+   $=+--   @=--+   &=--+--
[10] ⍝   |                           |                       |
[11] ascii:
[12]  r←'%+'edit tudo
```

```
[13]  r←'#+'edit r
[14]  r←'_-'edit r
[15]  r←'!+'edit r
[16]  r←'$+'edit r
[17]  r←'@+'edit r
[18]  r←'&+'edit r
[19]  →0
[20] apldu:
[21]  r←('%',⎕AV[202])edit tudo
[22]  r←('#',⎕AV[203])edit r
[23]  r←('_',⎕AV[206])edit r
[24]  r←('!',⎕AV[188])edit r
[25]  r←('$',⎕AV[201])edit r
[26]  r←('@',⎕AV[189])edit r
[27]  r←('&',⎕AV[204])edit r
[28]  →0
[29] aplsi:
[30]  r←('%',⎕AV[219])edit tudo
[31]  r←('#',⎕AV[194])edit r
[32]  r←('_',⎕AV[197])edit r
[33]  r←('!',⎕AV[192])edit r
[34]  r←('$',⎕AV[193])edit r
[35]  r←('@',⎕AV[218])edit r
[36]  r←('&',⎕AV[195])edit r
[37]  →0
[38] aplds:
[39]  r←('%',⎕AV[219])edit tudo
[40]  r←('#',⎕AV[194])edit r
[41]  r←('_',⎕AV[197])edit r
[42]  r←('!',⎕AV[192])edit r
[43]  r←('$',⎕AV[193])edit r
[44]  r←('@',⎕AV[218])edit r
[45]  r←('&',⎕AV[195])edit r
[46]  →0
[47] aplsd:
[48]  r←('%',⎕AV[215])edit tudo
[49]  r←('#',⎕AV[209])edit r
[50]  r←('_',⎕AV[197])edit r
[51]  r←('!',⎕AV[184])edit r
[52]  r←('$',⎕AV[212])edit r
[53]  r←('@',⎕AV[190])edit r
[54]  r←('&',⎕AV[211])edit r
[55]  →0
------------------------------------------------------------
[ 0]  r←formata x
[ 1]  →(x>1000)/t4
[ 2]  →(x>99)/t3
[ 3]  →(x>9)/t2
[ 4] t1:r←'∘',(1 0⍕x),'∘'
[ 5]  →0
[ 6] t2:r←'∘',2 0⍕x
[ 7]  →0
[ 8] t3:r←3 0⍕x
[ 9]  →0
[10] t4:r←'∘',⎕AV[x-1000],'∘'
[11]  →0
------------------------------------------------------------
[0]  r←geramat;mat
[1]  mat←4 50⍴' '
[2]  mat[1;]←'≥α⍋⍒⍟⍥○⍜⊂⊥⊤∇≠÷◇→↓Δ⊃∧≤≠±⍕⍋⍒⍞ιA⌈¯⌊|⍣⍤⍨ω∨∈⍞⍞←⍴↑~≡¨∪×'
[3]  mat[2;]←'#'
[4]  mat[3;]←'aabbbbbbccccddddddddeeeeefiiiilmmmmnnnoopqqrrttttuv'
[5]  mat[4;]←'il1234gpmnocefimprtceimxocdnoaaeiodeomuequeoaiqrne'
```

```
[6]  r←mat
------------------------------------------------------------
[ 0]  r←a inarvore elem;li;ipivot;prof
[ 1]  r←a
[ 2]  li←1↑(r[;1]=0)/⍳1↑⍴r
[ 3]  r[li;]←¯1 ¯1,elem,0,0,0,0
[ 4]  ipivot←1 ⋄ prof←1
[ 5] testa:→(elem>r[ipivot;3])/maior
[ 6] menor:→(¯1=r[ipivot;1])/meok
[ 7]  prof←prof+1
[ 8]  →(ipivot=ipivot←r[ipivot;1])/testa
[ 9] meok:r[ipivot;1]←li
[10]  →fim
[11] maior:→(¯1=r[ipivot;2])/maok
[12]  prof←prof+1
[13]  →(ipivot=ipivot←r[ipivot;2])/testa
[14] maok:r[ipivot;2]←li
[15] fim:r[li;5]←ipivot
[16]  r[li;4]←prof
------------------------------------------------------------
[0]  r←inorder x;lixo
[1] ⍝ devolve os nodos de x em inorder (fe,raiz,fd)
[2]  ARV←x
[3]  R←''
[4]  OI 1
[5]  r←R
[6]  lixo←⎕EX 2 3⍴'ARVR  '
[7]  lixo←limpa
------------------------------------------------------------
[0]  r←limpa
[1]  r←⎕EX 20 3⍴'A01A02A03A04A05A06A07A08A09A10A11A12A13A14A15A16A17A18A19A20'
[2]  r←⎕EX 20 3⍴'A21A22A23A24A25A26A27A28A29A30A31A32A33A34A35A36A37A38A39A40'
[3]  r←⎕EX 20 3⍴'A41A42A43A44A45A46A47A48A49A50A51A52A53A54A55A56A57A58A59A60'
[4]  r←⎕EX 10 5⍴'ONDE ONDE1PAI  ONDE2'
[5]  r←⎕EX 2 10⍴'PPL       PPVELHO   '
------------------------------------------------------------
[ 0]  r←mearvore22 x;lixo;i;v;inik;xx;bb
[ 1] ⍝ desenha a arvore x em uma memoria M  ∇
[ 2]  lixo←AMBICRM
[ 3]  lixo←ARBICRI
[ 4]  xx←AMBIOBT(?4)
[ 5]  v←x[;3]
[ 6]  i←1
[ 7] t1:→(i>⍴v)/fim
[ 8]  lixo←ARBIINS 0,v[i]
[ 9]  →(0≠3|i)/soma
[10]  xx←AMBIOBT(?2)
[11] soma:→(i=i←i+1)/t1
[12] fim:r←10 80⍴' '
[13]  r[;⍳2]←2 0⍕10 1⍴¯1+⍳10
[14]  r[;3 6 9 12 15 18 21 24 27 30]←'&'
[15]  r[;4 5 7 8 10 11 13 14 16 17 19 20 22 23 25 26 28 29 31 32]←2 0⍕10 10⍴M
[16]  r[;32+⍳⍴bb]←(10,⍴bb)⍴bb←'\\ \hline'
[17]  lixo←⎕EX'M'
[18]  lixo←limpa
------------------------------------------------------------
[0]  r←meio x
[1]  r←⌈x÷2
------------------------------------------------------------
[ 0]  r←paarvore x;g;t;i;lixo
[ 1] ⍝ x e a saida de crarvore; r e a arvore parentizada. * e' ausencia
[ 2]  g←300
[ 3]  r←((t←1↑⍴x),g)⍴' '
```

```
[ 4]  i←1
[ 5] l1:→(i>t)/fimf1
[ 6]  →((x[i;1]≠¯1)∨(x[i;2]≠¯1))/soma
[ 7]  r[i;]←g↑'(',(3 0⍕x[i;3]),')'
[ 8] soma:→(i=i←i+1)/l1
[ 9] fimf1:i←t
[10] l2:→(i<1)/fim
[11]  →((x[i;1]=¯1)∧(x[i;2]=¯1))/pula
[12]  →(x[i;2]=¯1)/esq
[13]  →(x[i;1]=¯1)/dir
[14] amb:r[i;]←g↑corta'(',(3 0⍕x[i;3]),(,r[x[i;1];]),,r[x[i;2];],')'
[15]  →pula
[16] dir:r[i;]←g↑corta'(',(3 0⍕x[i;3]),'()',(,r[x[i;2];]),')'
[17]  →pula
[18] esq:r[i;]←g↑corta'(',(3 0⍕x[i;3]),(,r[x[i;1];]),'())'
[19] pula:→(i=i←i-1)/l2
[20] fim:r←corta r[1;]
[21]  lixo←limpa
-------------------------------------------------------------
[0]  r←posorder x;lixo
[1] ⍝ devolve os nodos de x em posorder (fe,fd,raiz)
[2]  ARV←x
[3]  R←''
[4]  OS 1
[5]  r←R
[6]  lixo←⎕EX 2 3⍴'ARVR  '
[7]  lixo←limpa
-------------------------------------------------------------
[0]  r←preorder x;lixo
[1] ⍝ devolve os nodos de x em preorder (raiz,fe,fd)
[2]  ARV←x
[3]  R←''
[4]  OP 1
[5]  r←R
[6]  lixo←⎕EX 2 3⍴'ARVR  '
[7]  lixo←limpa
-------------------------------------------------------------
[0]  r←quebrapar x;zz
[1]  zz←⌊(⍴x)÷2
[2]  r←2 80⍴(80↑zz↑x),80↑zz↓x
-------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10]  →(0=' '∊j↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80⍴80↑j↑candi
[15]  candi←j↓candi
[16]  →((⍴candi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80⍴80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
```

```
------------------------------------------------------------
[ 0]  x←resto411;y;z;w;t;guampa
[ 1]  guampa←1 1 2
[ 2]  x←100 80⍴' '
[ 3]  x[1;]←1 80⍴80↑'*** arvores da ultima folha ***'
[ 4]  y←guampa dearvore crarvore XA[;3]
[ 5]  x[1+⍳1↑⍴y;]←((1↑⍴y),80)↑y
[ 6]  z←guampa dearvore crarvore XB[;3]
[ 7]  x[(1+1↑⍴y)+⍳1↑⍴z;]←((1↑⍴z),80)↑z
[ 8]  w←guampa dearvore crarvore XC[;3]
[ 9]  x[(1+(1↑⍴z)+1↑⍴y)+⍳1↑⍴w;]←((1↑⍴w),80)↑w
[10]  t←1+(1↑⍴z)+(1↑⍴y)+(1↑⍴w)
[11]  x[t+1;]←1 80⍴80↑'*** arvores do exemplo ***'
[12]  t←t+1
[13]  y←guampa dearvore crarvore 11 6 7 4 20 16 13 5 15 2 1 3
[14]  x[t+⍳1↑⍴y;]←((1↑⍴y),80)↑y
[15]  z←guampa dearvore crarvore 35 22 15 8 25 28 75 61 55 50 37 48 39 38 46 60 74 85 79 9
      1
[16]  x[(t+1↑⍴y)+⍳1↑⍴z;]←((1↑⍴z),80)↑z
[17]  w←guampa dearvore crarvore 4 2 1 3 23 14 7 12 13 16 21 18 29 25 28
[18]  x[(t+(1↑⍴z)+1↑⍴y)+⍳1↑⍴w;]←((1↑⍴w),80)↑w
[19]  x←(~⍵∧⍀⍵100=+/[1]x=' ')/[2]x
[20]  x←(~⍵∧⍀⍵(1↓⍴x)=+/[2]x=' ')/[1]x
------------------------------------------------------------
[ 0]  opesq vivo411a n;EVENTO;ylu;guampa;relat;f;resp;xk;esse;dhx;resu;xa;xb;xc;ri;x;zzz;a
      cuja;upag;lixonol;lixo1;aaa
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL411   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA411)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[11]  guampa←1 1 2
[12]  xk←1 ⋄ resu←0 10⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←35 80⍴' '
[15]  f←FOLHALA411
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←3.55
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍎resp←xk),'-',opesq
[23]  esse[34;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[35;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26] volta:XA←xa←crarvore 12?20
[27]  XB←xb←crarvore 20?99
[28]  XC←xc←crarvore 15?30
[29]  esse[7+⍳12;]←acerta11'¯-'edit 3 0⍎xa[;⍳3]
[30]  esse[19+⍳10;]←'¯-'edit mearvore22 xb
[31]  →(70≥⍴paarvore xc)/blz22
[32]  ⍞←'*'
[33]  →volta
[34] blz22:esse[30 31;]←quebrapar paarvore xc
[35]  ri←9 20⍴0
[36]  ri[1;⍳12]←preorder xa
```

```
[37]  ri[2;⍳12]←inorder xa
[38]  ri[3;⍳12]←posorder xa
[39]  ri[4;]←preorder xb
[40]  ri[5;]←inorder xb
[41]  ri[6;]←posorder xb
[42]  ri[7;⍳15]←preorder xc
[43]  ri[8;⍳15]←inorder xc
[44]  ri[9;⍳15]←posorder xc
[45]  x←6+?6
[46]  zzz←'a-pr[',(2 0⍕x),']&'
[47]  resp←resp,ri[1;x]
[48]  x←6+?6
[49]  zzz←zzz,'a-in[',(2 0⍕x),']&'
[50]  resp←resp,ri[2;x]
[51]  x←6+?6
[52]  zzz←zzz,'a-po[',(2 0⍕x),']&'
[53]  resp←resp,ri[3;x]
[54]  x←10+?10
[55]  zzz←zzz,'b-pr[',(2 0⍕x),']&'
[56]  resp←resp,ri[4;x]
[57]  x←10+?10
[58]  zzz←zzz,'b-in[',(2 0⍕x),']⍀⍀'
[59]  resp←resp,ri[5;x]
[60]  esse[32;]←80↑zzz
[61]  x←10+?10
[62]  zzz←'b-po[',(2 0⍕x),']&'
[63]  resp←resp,ri[6;x]
[64]  x←8+?7
[65]  zzz←zzz,'c-pr[',(2 0⍕x),']&'
[66]  resp←resp,ri[7;x]
[67]  x←8+?7
[68]  zzz←zzz,'c-in[',(2 0⍕x),']&'
[69]  resp←resp,ri[8;x]
[70]  x←8+?7
[71]  zzz←zzz,'c-po[',(2 0⍕x),']&⍀⍀'
[72]  resp←resp,ri[9;x]
[73]  esse[33;]←80↑zzz
[74]  resu←resu,[1]1 10⍴resp
[75]  acuja←(f[;2]='#')/⍳1↑⍴f
[76]  f[acuja;⍳80]←esse[⌽,f[acuja;3 4],' ';]
[77]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[78]  □←(⍕xk←xk+1),'-'
[79]  →testa
[80] fim:upag←(1 0+⍴f)⍴' '
[81]  →(1=≡n)/elafa
[82]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[83]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[84]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 7 0 3 0 3 0 7 0 3 0 3 0 7 0 3 0 3 0)⍕resu
[85]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[86]  →terminando
[87] elafa:aaa←(ylu,3 0 3 0 3 0 6 0 3 0 3 0 6 0 3 0 3 0⍕0 1↓resu)
[88]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[89]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[90] terminando:
[91]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[92]  relat[1↑⍴relat;;]←upag
[93]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.t
      ex'
[94]  lixonol←□EX 2 10⍴'quantos   matriz    '
[95]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
[96]  'se quiser os dados da ultima folha e do exemplo, chame resto411'
------------------------------------------------------------
```

vivo412

```
[0]  r←arruma88 aa;rr
[1]  r←30 80⍴' '
[2]  r[;1 2]←2 0⍕30 1⍴⍳30
[3]  r[;3 6 9 12 15 18 21]←'&'
[4]  r[;4 5 7 8 10 11 13 14 16 17 19 20 22 23]←'¯'-'edit 2 0⍕aa
[5]  r[;23+⍳⍴rr]←(30,⍴rr)⍴rr←'⍀⍀ ⍀cline{2-8}'
------------------------------------------------------------
[ 0]  r←a converte dados;mat;i
[ 1]  →(a∈dados)/temsim
[ 2]  r←dados
[ 3]  →0
[ 4] temsim:
[ 5]  r←''
[ 6]  mat←4 50⍴' '
[ 7]  mat[1;]←'≥α⌽⍉⍟○⍬⊂⊥⍑∇≠÷◊→↓Δ⊃∧≤≠±⍕⍋⍒⍞⍳⍝⌈¯⌊|⍒⍤⍨ω∨∈⍇⍁←⍴↑~≡¨∪×'
[ 8]  mat[2;]←urca[1]
[ 9]  mat[3;]←'aabbbbbbccccddddddddeeeeefiiiilmmmmnnnoopqqrrttttuv'
[10]  mat[4;]←'il1234gpmnocefimprtceimxocdnoaaeiodeomuequeoaiqrne'
[11]  mat←⍉mat
[12]  i←1
[13] testa:→(i>⍴dados)/fim8
[14]  →(dados[i]=a)/esim
[15]  r←r,dados[i]
[16]  →(i=i←i+1)/testa
[17] esim:r←r,mat[((2=,+/[2](50 2⍴dados[i+1],dados[i+2])=mat[;3 4])/⍳50);1]
[18]  →(i=i←i+3)/testa
[19] fim8:
------------------------------------------------------------
[ 0]  r←gera6 tam;i;pai;x;y;qu
[ 1]  r←(tam,7)⍴0
[ 2]  r[;7]←qu←tam?99
[ 3]  r[;⍳6]←¯1
[ 4] inicio:i←2 ⋄ pai←1
[ 5] fim:→(i>tam)/uca
[ 6]  x←quantosfilhos6
[ 7]  y←0
[ 8] uga:→(y≥x)/prox
[ 9]  r[pai;1+y]←i
[10]  y←y+1
[11]  i←i+1
[12]  →(i>tam)/uca
[13]  →uga
[14] prox:pai←i-1
[15]  →fim
[16] uca:
------------------------------------------------------------
[ 0]  r←geraqniv3 mat;mat1;i;loop;xin;max;qual
[ 1]  mat1←((1↑⍴mat),4)↑mat
[ 2]  i←1
[ 3] ini:→(i>1↑⍴mat)/fim
[ 4]  loop←0
[ 5]  xin←i
[ 6] coma:→(xin=1)/aca
[ 7]  xin←⌊/(mat[;1]⍳xin),(mat[;2]⍳xin)
[ 8]  loop←loop+1
[ 9]  →coma
[10] aca:mat1[i;4]←loop
[11]  →(i=i←i+1)/ini
[12] fim:max←⌈/mat1[;4]
[13]  qual←max-?5
[14]  r←qual,,mat[((mat1[;4]=qual)/⍳30);3]
```

```
------------------------------------------------------------
[ 0]  r←geraqniv6 mat;mat1;i;loop;xin;max;qual
[ 1]  mat1←((1↑⍴mat),8)↑mat
[ 2]  i←1
[ 3] ini:→(i>1↑⍴mat)/fim
[ 4]  loop←0
[ 5]  xin←i
[ 6] coma:→(xin=1)/aca
[ 7]  xin←⌊/(mat[;1]⍳xin),(mat[;2]⍳xin),(mat[;3]⍳xin),(mat[;4]⍳xin),(mat[;5]⍳xin),mat[;6]⍳
      xin
[ 8]  loop←loop+1
[ 9]  →coma
[10] aca:mat1[i;8]←loop
[11]  →(i=i←i+1)/ini
[12] fim:max←⌈/mat1[;8]
[13]  qual←max-?3
[14]  r←qual,+/mat1[;8]=qual
------------------------------------------------------------
[ 0]  r←g gerax n;ca;i;j
[ 1]  r←(n,g+1)⍴¯1
[ 2]  r[;g+1]←n?99
[ 3]  ca←1+⍳n-1
[ 4]  i←1
[ 5] tf:→(i>n)/fim
[ 6]  →((5<?10)∧(ca[1]>i+5))/ufa
[ 7]  j←1
[ 8] rg:→(j>g)/ufa
[ 9] simounao:→(3<?10)/nao
[10]  →(ca[1]≤i)/nao
[11] sim:r[i;j]←1↑ca
[12]  ca←1↓ca
[13]  →(0=⍴ca)/fimmesmo
[14] nao:→(j=j←j+1)/rg
[15] ufa:→(i=i←i+1)/tf
[16] fim:
[17]  →(0=⍴ca)/fimmesmo
[18]  r←-1
[19]  →0
[20] fimmesmo:
------------------------------------------------------------
[0]  r←quantosfilhos6
[1]  r←(0 0 1 1 2 2 3 4 5 6)[?10]
------------------------------------------------------------
[0]  r←i temfilho mar;k
[1] ⍝r  ←mar[i;1]  era assim
[2]  k←1 ⋄ r←-1
[3] tk:→(k≥1↓⍴mar)/aca
[4]  →(mar[i;k]=¯1)/soma
[5]  r←mar[i;k]
[6]  →0
[7] soma:→(k=k←k+1)/tk
[8] aca:
------------------------------------------------------------
[0]  r←i temirmao mar;j;onde;uga
[1]  j←1
[2] tes:→(i∈mar[j;⍳6])/achou
[3]  →(j=j←j+1)/tes
[4] achou:uga←(mar[j;⍳6]≠¯1)/mar[j;⍳6]
[5]  onde←uga⍳i
[6]  r←(uga,¯1)[onde+1]
------------------------------------------------------------
[0]  r←transforma mar;i
[1]  r←((1↑⍴mar),3)⍴¯1
```

```
[2]  r[;3]←mar[;7]
[3]  r[1;2]←2
[4]  i←2
[5] ini:→(i>1↑⍴mar)/fim
[6]  r[i;1 2]←(i temirmao mar),(i temfilho mar)
[7]  →(i=i←i+1)/ini
[8] fim:
-------------------------------------------------------------
[ 0]  opesq vivo412a n;CORRECAO;EVENTO;aaa;aaa;acuja;dhx;esse;f;lixo1;lixonol;mata;matr;re
      lat;resp;resu;u;ulala;upag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←4 ⋄ EVENTO←'PL412   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA412←ajusta80 FOLHALA412
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA412)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[12]  xk←1 ⋄ resu←0 5⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←43 80⍴' '
[15]  f←FOLHALA412
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←3.33
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[23]  esse[42;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[43;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  →(30≥?100)/antigo   ⍝ % de ir pelo novo ou velho
[27] novo:mata←6 gerax 30
[28]  →(0≠⍴⍴mata)/beleza
[29]  ⍞←'k'
[30]  →novo
[31] antigo:mata←gera6 30
[32] beleza:
[33]  esse[7+⍳30;]←arruma88 mata
[34]  MATR←matr←transforma mata
[35]  aaa←geraqniv6 mata
[36]  esse[38;]←80↑2 0⍎aaa[1]
[37]  resp←resp,aaa[2]
[38]  aaa←geraqniv3 matr
[39]  esse[39;]←80↑2 0⍎aaa[1]
[40]  resp←resp,aaa[2]
[41]  aaa←20+2?10
[42]  esse[40;]←80↑2 0⍎aaa[1]
[43]  esse[41;]←80↑2 0⍎aaa[2]
[44]  resp←resp,matr[aaa[1];2],matr[aaa[2];1]
[45] continua:
[46]  resu←resu,[1]1 5⍴resp
[47]  acuja←(f[;2]='#')/⍳1↑⍴f
[48]  f[acuja;⍳80]←esse[⍤,f[acuja;3 4],' ';]
[49]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[50]  ⍞←(⍎xk←xk+1),'-'
[51]  →testa
[52] fim:upag←(1 0+⍴f)⍴' '
```

```
[53]  →(1=≡n)/elafa
[54]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[55]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[56]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←5 0 10 0 5 0 5 0 5 0)⍕resu
[57]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[58]  →terminando
[59] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),5 0⍕0 1↓resu)
[60]  aaa[1;35 36]←2 0⍕CORRECAO
[61]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[62]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[63] terminando:
[64]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[65]  relat[1↑⍴relat;;]←upag
[66]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[67]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[68]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[69]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
[70]  'ultimo resultado em MATR'
-------------------------------------------------------------
```

vivo421

```
[0]  OS h
[1]  →(ARV[h;1]=¯1)/t2
[2]  OS ARV[h;1]
[3] t2:→(ARV[h;2]=¯1)/fim
[4]  OS ARV[h;2]
[5] fim:R←R,ARV[h;3]
-------------------------------------------------------------
[0]  PARA_CRIAR_ARV_LATEX
[1]  'para cria arvores latex'
[2]  'arrumalatex geralatex crarvore 8 5 10 3 7'
[3]  'corte e cole o resultado'
-------------------------------------------------------------
[0]  r←arrumalatex x
[1]  r←x[⍳¯1+1↑⍴x;]
[2]  r←r,[1]1 60⍴60↑'\fbox{'
[3]  r←r,[1]1 60⍴x[1↑⍴x;]
[4]  r←r,[1]1 60⍴60↑'}'
-------------------------------------------------------------
[0]  r←a ate b
[1]  r←a,a+⍳b-a
-------------------------------------------------------------
[ 0]  r←crarvore elems;aspa;i;ealfa
[ 1] ⍝ cria uma arvore para desenho com elems / p.kantek / v2.1
[ 2] ⍝ col [1] = &fe
[ 3] ⍝ col [2] = &fd
[ 4] ⍝ col [3] = conteudo
[ 5] ⍝ col [4] = profundidade
[ 6] ⍝ col [5] = &pai
[ 7] ⍝ col [6] = largura do bloco grafico
[ 8] ⍝ col [7] = 0  ≠se bloco grafico ja foi criado (1=significa que ele e o
[ 9] ⍝           raiz do bloco. 2=ja foi usado para construir outro mais
[10] ⍝           acima
[11]  r←((⍴elems),7)⍴0 ⋄ ealfa←1 ⋄ aspa←''''
[12]  →(isnum elems)/nume
[13]  ealfa←¯1
[14]  elems←1000+⎕AV⍳elems
[15] nume:i←2 ⋄ r[1;1 2 3]←¯1,¯1,elems[1]
[16] inica:→(i>⍴elems)/acabou
[17]  r←r inarvore elems[i]
[18]  →(i=i←i+1)/inica
```

```
[19] acabou:
[20]  i←1
[21] conta:→(i>⍴elems)/mesmo
[22]  →((r[i;1]≠¯1)∨(r[i;2]≠¯1))/pula
[23]  →(ealfa=¯1)/letra
[24]  ⍞'A',('05'⍕i),'←',aspa,'<',(formata elems[i]),'>',aspa
[25]  →indo
[26] letra:⍞'A',('05'⍕i),'←',aspa,'(⊃',⎕AV[elems[i]-1000],'⊂)',aspa
[27] indo:r[i;7]←1
[28]  r[i;6]←3
[29] pula:→(i=i←i+1)/conta
[30] mesmo:
------------------------------------------------------------
[ 0]  r←e de2f d;lin;col
[ 1]  →(2=⍴⍴e)/ee
[ 2]  e←(1,⍴e)⍴e
[ 3] ee:→(2=⍴⍴d)/dd
[ 4]  d←(1,⍴d)⍴d
[ 5] dd:lin←(1↑⍴e)⌈1↑⍴d
[ 6] ⍝ col  ←(3+1  ↓  ⍴e)  ⌊3+1  ↓  ⍴d
[ 7]  col←(1↓⍴e)⌈1↓⍴d
[ 8]  e←(lin,col)↑e ⋄ d←(lin,col)↑d
[ 9] ⍝ e  ←(lin,(1  ↓  ⍴e))  ↑e   ⋄ d  ←(lin,(1  ↓  ⍴d))  ↑d
[10]  r←e,' ',d
[11]  r←((4,1↓⍴r)⍴' '),[1]r
[12]  r[1;((meio 1↓⍴r)-3)+⍳5]←PAI
[13]  r[2;((meio 1↓⍴r)-2)+⍳3]←'_&_'
[14]  r[3;(ONDE1)ate ¯1+meio 1↓⍴r]←'_'
[15]  r[3;(1+meio 1↓⍴r)ate(1+ONDE2+1↓⍴e)-1]←'_'
[16]  r[3;meio 1↓⍴r]←'#'
[17]  r[3;ONDE1]←'%'
[18]  r[3;(1↓⍴e)+1+ONDE2]←'!'
[19]  r[4;ONDE1+¯1 0 1]←r[4;1+(1↓⍴e)+ONDE2+¯1 0 1]←'_#_'
------------------------------------------------------------
[ 0]  r←a dearvore b;prim;paiprim;filhos;fe;fd;X;x;aspa;ois;carac;nivel;larg
[ 1] ⍝ 'carac=1/ascii/2=apld/3=apls/4=hdup/5=vdup   niveis=1/2/3/4' v.2.1
[ 2]  r←b
[ 3]  carac←a[1] ⋄ nivel←a[2] ⋄ larg←a[3]
[ 4]  aspa←''''
[ 5] inicio:→(1=r[1;7])/acabou
[ 6]  ois←(r[;7]=1)/⍳1↑⍴r
[ 7]  →(1=⍴ois)/sotem1
[ 8]  prim←1↑(r[ois;4]=⌈/r[ois;4])/ois
[ 9]  →voltaj
[10] sotem1:prim←ois
[11] voltaj:paiprim←r[prim;5]
[12]  →(r[paiprim;3]>1000)/le
[13]  ⍞'PAI←',aspa,'<',(formata r[paiprim;3]),'>',aspa
[14]  →indo
[15] le:⍞'PAI←',aspa,'(⊃',⎕AV[r[paiprim;3]-1000],'⊂)',aspa
[16] indo:→(2=⍴filhos←((r[;5]=paiprim)∧(r[;7]=1))/⍳1↑⍴r)/tem2
[17] tem1:→(r[paiprim;1]=prim)/efe
[18] efd:fd←⍞'A','05'⍕prim
[19]  ONDE←r[prim;6]
[20]  ⍞'A',('05'⍕paiprim),'←defd fd'
[21]  r[paiprim;7]←1 ⋄ r[prim;7]←2 ⋄ r[paiprim;6]←3
[22]  →inicio
[23] efe:
[24]  fe←⍞'A','05'⍕prim
[25]  ONDE←r[prim;6]
[26]  ⍞'X←1↓⍴A',('05'⍕paiprim),'←defe fe'
[27]  r[paiprim;7]←1 ⋄ r[prim;7]←2 ⋄ r[paiprim;6]←X-2
[28]  →inicio
```

```
[29] tem2:
[30]  →(r[filhos[1];3]>r[filhos[2];3])/ummaior
[31]  x←filhos[1] ⋄ filhos[1]←filhos[2] ⋄ filhos[2]←x
[32] ummaior:
[33]  ONDE1←r[filhos[2];6] ⋄ ONDE2←r[filhos[1];6]
[34]  fe←⍎'A','05'⍕filhos[2]   ⍝1
[35]  fd←⍎'A','05'⍕filhos[1]   ⍝2
[36]  ⍎'X←1↓⍴A',('05'⍕paiprim),'←fe de2f fd'
[37]  r[paiprim;7]←1 ⋄ r[filhos[1];7]←r[filhos[2];7]←2 ⋄ r[paiprim;6]←meio X
[38]  →inicio
[39] acabou:MAT←r   ⍝ aqui esta a matriz de entrada devidamente ja processada
[40]  →(larg=1)/jump
[41]  AO1←(~∧/[1]((AO1=' ')∨(AO1='_')))/[2]AO1
[42] jump:AO1←'∘ 'edit AO1
[43]  AO1←'⊃ 'edit AO1
[44]  AO1←'⊂ 'edit AO1
[45]  r←carac edita AO1
[46]  x←limpa
[47]  →(nivel=4)/0
[48]  →(nivel=3)/tres
[49]  →(nivel=2)/dois
[50]  →(nivel=1)/um
[51]  'erro de nivel'
[52]  →fin
[53] um:r←((1↑⍴r)⍴1 0)/[1]r
[54]  →fin
[55] dois:r←((1↑⍴r)⍴1 1 1 0)/[1]r
[56]  →fin
[57] tres:r←((1↑⍴r)⍴1 0 1 1)/[1]r
[58]  →fin
[59] fin:
------------------------------------------------------------
[ 0]  r←defd x
[ 1]  →(2=⍴⍴x)/esim
[ 2]  x←(1,⍴x)⍴x
[ 3] esim:r←((1↑⍴x),-(1↓⍴x)+4)↑x
[ 4]  r←((4,1↓⍴r)⍴' '),[1]r
[ 5]  r[1;⍳5]←PAI
[ 6]  r[2;2 3 4]←'_&_'
[ 7]  r[3;3]←'$'
[ 8]  r[3;4+ONDE]←'!'
[ 9]  r[3;4 ate 3+ONDE]←'_'
[10]  r[4;4+ONDE+¯1 0 1]←'_#_'
------------------------------------------------------------
[ 0]  r←defe x
[ 1]  →(2=⍴⍴x)/esim
[ 2]  x←(1,⍴x)⍴x
[ 3] esim:r←((1↑⍴x),(1↓⍴x)+4)↑x
[ 4]  r←((4,1↓⍴r)⍴' '),[1]r
[ 5]  r[1;((1↓⍴r)-5)+⍳5]←PAI
[ 6]  r[2;((1↓⍴r)-4)+⍳3]←'_&_'
[ 7]  r[3;(1↓⍴r)-2]←'@'
[ 8]  r[3;(ONDE)ate((1↓⍴r)-3)]←'_'
[ 9]  r[3;ONDE]←'%'
[10]  r[4;ONDE+¯1 0 1]←'_#_'
------------------------------------------------------------
[ 0]  r←qual edita tudo
[ 1]  →(qual=1)/ascii
[ 2]  →(qual=2)/apldu
[ 3]  →(qual=3)/aplsi
[ 4]  →(qual=4)/aplds
[ 5]  →(qual=5)/aplsd
[ 6]  'erro'
```

```
[ 7]  →0
[ 8] ⍝              |                          |          |
[ 9] ⍝ %=+--   #=--+--   _=---   !=--+   $=+--   @=--+   &=--+--
[10] ⍝   |                              |                        |
[11] ascii:
[12]  r←'%+'edit tudo
[13]  r←'#+'edit r
[14]  r←'_-'edit r
[15]  r←'!+'edit r
[16]  r←'$+'edit r
[17]  r←'@+'edit r
[18]  r←'&+'edit r
[19]  →0
[20] apldu:
[21]  r←('%',⎕AV[202])edit tudo
[22]  r←('#',⎕AV[203])edit r
[23]  r←('_',⎕AV[206])edit r
[24]  r←('!',⎕AV[188])edit r
[25]  r←('$',⎕AV[201])edit r
[26]  r←('@',⎕AV[189])edit r
[27]  r←('&',⎕AV[204])edit r
[28]  →0
[29] aplsi:
[30]  r←('%',⎕AV[214])edit tudo
[31]  r←('#',⎕AV[208])edit r
[32]  r←('_',⎕AV[206])edit r
[33]  r←('!',⎕AV[185])edit r
[34]  r←('$',⎕AV[213])edit r
[35]  r←('@',⎕AV[191])edit r
[36]  r←('&',⎕AV[210])edit r
[37]  →0
[38] aplds:
[39]  r←('%',⎕AV[219])edit tudo
[40]  r←('#',⎕AV[194])edit r
[41]  r←('_',⎕AV[197])edit r
[42]  r←('!',⎕AV[192])edit r
[43]  r←('$',⎕AV[193])edit r
[44]  r←('@',⎕AV[218])edit r
[45]  r←('&',⎕AV[195])edit r
[46]  →0
[47] aplsd:
[48]  r←('%',⎕AV[215])edit tudo
[49]  r←('#',⎕AV[209])edit r
[50]  r←('_',⎕AV[197])edit r
[51]  r←('!',⎕AV[184])edit r
[52]  r←('$',⎕AV[212])edit r
[53]  r←('@',⎕AV[190])edit r
[54]  r←('&',⎕AV[211])edit r
[55]  →0
------------------------------------------------------------
[ 0]  r←formata x
[ 1]  →(x>1000)/t4
[ 2]  →(x>99)/t3
[ 3]  →(x>9)/t2
[ 4] t1:r←'∘',(1 0⍕x),'∘'
[ 5]  →0
[ 6] t2:r←'∘',2 0⍕x
[ 7]  →0
[ 8] t3:r←3 0⍕x
[ 9]  →0
[10] t4:r←'∘',⎕AV[x-1000],'∘'
[11]  →0
------------------------------------------------------------
```

```
[ 0]  r←geralatex arv;vv;i;l;ind
[ 1] ⍝ esta funcao recebe uma arvore criada por crarvore e devolve
[ 2] ⍝ um texto latex pronto para ser incluido la.
[ 3]  vv←posorder arv
[ 4]  i←1 ⋄ r←0 60⍴' '
[ 5] t1:→(i>⍴vv)/fim
[ 6]  l←'\node{\cntr{',(3 0⍕vv[i]),'}'
[ 7]  ind←(arv[;3]=vv[i])/⍳1↑⍴arv
[ 8]  →(2=+/arv[ind;1 2]=¯1)/naotem
[ 9]  →(arv[ind;1]=¯1)/sodir
[10]  →(arv[ind;2]=¯1)/soesq
[11]  l←l,'}'
[12]  →soma
[13] naotem:l←l,'\external}'
[14]  →soma
[15] sodir:l←l,'\rightonly}'
[16]  →soma
[17] soesq:l←l,'\leftonly}'
[18] soma:
[19]  r←r,[1]1 60⍴60↑l
[20]  →(i=i←i+1)/t1
[21] fim:r←(1 60⍴60↑'\begin{Tree}'),[1]r
[22]  r←r,[1]1 60⍴60↑'\end{Tree}'
[23]  r←r,[1]1 60⍴60↑'\hspace{\leftdist}\usebox{\TeXTree}\hspace{\rightdist}'
-------------------------------------------------------------
[ 0]  grava x;nome;lixo
[ 1] ⍝ v 0.1 . 2
[ 2]  'o nome do arquivo sera: ',nome←'Z',(,'ZI2'⎕FMT?99)
[ 3]  nome ⎕NCREATE ¯33
[ 4]  →(163≠⎕DR 1↑,x)/alfa
[ 5]  ('  ¯-'edit,((6 2⍕x),⎕TCNL),⎕TCLF)⎕NAPPEND ¯33
[ 6]  ⎕NUNTIE ¯33
[ 7]  →0
[ 8] alfa:
[ 9]  ((x,⎕TCNL),⎕TCLF)⎕NAPPEND ¯33
[10]  ⎕NUNTIE ¯33
-------------------------------------------------------------
[ 0]  r←a inarvore elem;li;ipivot;prof
[ 1]  r←a
[ 2]  li←1↑(r[;1]=0)/⍳1↑⍴r
[ 3]  r[li;]←¯1 ¯1,elem,0,0,0,0
[ 4]  ipivot←1 ⋄ prof←1
[ 5] testa:→(elem>r[ipivot;3])/maior
[ 6] menor:→(¯1=r[ipivot;1])/meok
[ 7]  prof←prof+1
[ 8]  →(ipivot=ipivot←r[ipivot;1])/testa
[ 9] meok:r[ipivot;1]←li
[10]  →fim
[11] maior:→(¯1=r[ipivot;2])/maok
[12]  prof←prof+1
[13]  →(ipivot=ipivot←r[ipivot;2])/testa
[14] maok:r[ipivot;2]←li
[15] fim:r[li;5]←ipivot
[16]  r[li;4]←prof
-------------------------------------------------------------
[0]  r←limpa
[1]  r←⎕EX 20 3⍴'A01A02A03A04A05A06A07A08A09A10A11A12A13A14A15A16A17A18A19A20'
[2]  r←⎕EX 20 3⍴'A21A22A23A24A25A26A27A28A29A30A31A32A33A34A35A36A37A38A39A40'
[3]  r←⎕EX 20 3⍴'A41A42A43A44A45A46A47A48A49A50A51A52A53A54A55A56A57A58A59A60'
[4]  r←⎕EX 10 5⍴'ONDE ONDE1PAI  ONDE2'
[5]  r←⎕EX 2 10⍴'PPL       PPVELHO   '
-------------------------------------------------------------
[0]  r←meio x
```

```
[1]  r←⌈x÷2
-------------------------------------------------------------
[0]  r←posorder x;lixo
[1] ⍝ devolve os nodos de x em posorder (fe,fd,raiz)
[2]  ARV←x
[3]  R←''
[4]  OS 1
[5]  r←R
[6]  lixo←⎕EX 2 3⍴'ARVR  '
[7]  lixo←limpa
-------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10]  →(0=' '∈j↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80⍴80↑j↑candi
[15]  candi←j↓candi
[16]  →((⍴candi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80⍴80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
-------------------------------------------------------------
[ 0]  opesq vivo421a n;CORRECAO;EVENTO;ylu;guampa;relat;f;resp;xk;esse;dhx;resu;x;ty;z;y;q
      ;w;rew;a;acuja;upag;lixonol;lixo1;aaa
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←5 ⋄ EVENTO←'PL421   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA421)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[11]  guampa←1 1 2
[12]  xk←1 ⋄ resu←0 6⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←60 80⍴' '
[15]  f←FOLHALA421
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←3.44
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍎resp←xk),'-',opesq
[23]  esse[59;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[60;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] denovo:
[26]  ty←43?99
```

```
[27]  x←31↑ty
[28] ⍝ x  ←x[  ⍋x]
[29]  x[12?31]←31↓ty
[30]  z←1 4 2 dearvore y←crarvore x
[31]  →(¯1≠1↑,z)/ok0
[32]  ⎕←'g'
[33]  →denovo
[34] ok0:
[35]  →(7<⌈/y[;4])/ok1
[36]  ⎕←'p'
[37]  →denovo
[38] ok1:→((45>1↑⍴z)∧(120>1↓⍴z))/ok2
[39]  ⎕←'f'
[40]  →denovo
[41] ok2:ARVORE←y
[42]  esse[7+⍳50;]←50 80↑arrumalatex geralatex y
[43]  w←x[⍋x]
[44]  RESPOSTA←q←w[16 8 24 4 12 20 28 2 6 10 14 18 22 26 30,¯1+2×⍳16]
[45]  rew←1,(1+4?30)
[46]  rew←rew[⍋rew]
[47]  a←2 0⍴rew
[48]  esse[58;]←80↑a[1 2],'&',a[3 4],'&',a[5 6],'&',a[7 8],'&',a[9 10],'\\'
[49]  q←q[rew]
[50]  resp←resp,q
[51]  resu←resu,[1]1 6⍴resp
[52]  acuja←(f[;2]='#')/⍳1↑⍴f
[53]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[54]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[55]  ⎕←(⍴xk←xk+1),'-'
[56]  →testa
[57] fim:upag←(1 0+⍴f)⍴' '
[58]  →(1=≡n)/elafa
[59]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[60]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[61]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 5 0 5 0 5 0)⍴resu
[62]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[63]  →terminando
[64] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),5 0⍴0 1↓resu)
[65]  aaa[1;35 36]←2 0⍴CORRECAO
[66]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[67]  '!!!!!  Arquivo GPA com ',(⍴1↑⍴aaa),' linhas e ',(⍴1↓⍴aaa),' colunas'
[68] terminando:
[69]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[70]  relat[1↑⍴relat;;]←upag
[71]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.t
      ex'
[72]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[73]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo431

```
[0]  p PREENCHE i
[1]  →(ARVORE[i;1]=¯1)/pd
[2]  (p+1)PREENCHE ARVORE[i;1]
[3] pd:→(ARVORE[i;2]=¯1)/pe
[4]  (p+1)PREENCHE ARVORE[i;2]
[5] pe:ARVORE[i;4]←p
-------------------------------------------------------------
[0]  r←acerta77 ar;rr
[1]  r←20 80⍴' '
[2]  r[;⍳2]←2 0⍴20 1⍴⍳20
```

```
[3]  r[;3 6 9 12 37 38 39 40 43 46 49]←'&'
[4]  r[;4 5 7 8 10 11]←2 0⍉ar[⍳20;⍳3]
[5]  r[1;12+⍴rr]←rr←'$\gets$ raiz'
[6]  r[;41 42]←2 0⍉20 1⍴20+⍳20
[7]  r[;44 45 47 48 50 51]←2 0⍉ar[20+⍳20;⍳3]
[8]  r[;51+⍴rr]←(20,⍴rr)⍴rr←'\\ \cline{2-4} \cline{10-12}'
-------------------------------------------------------------
[ 0]  r←qual apasc x
[ 1] ⍝ v1.0
[ 2]  →(qual=2)/edois
[ 3]  →(qual=4)/quatro
[ 4]  r←x
[ 5]  →fim
[ 6] edois:r←(⍴x)⍴'|'
[ 7]  →fim
[ 8] quatro:r←⎕AV[187 180]edit x
[ 9]  r←⎕AV[186 181]edit r
[10]  r←⎕AV[188 192]edit r
[11]  r←⎕AV[189 218]edit r
[12]  r←⎕AV[201 193]edit r
[13]  r←⎕AV[202 219]edit r
[14] fim:
-------------------------------------------------------------
[ 0]  r←criab caros;arv;i
[ 1] ⍝ esta funcao cria uma arvore binaria de x nodos numericos entre 1 e 200
[ 2] ⍝ a resposta e dada em uma matriz de 40 x 4
[ 3] ⍝ col 1: &fe, col 2: &fd, col 3: conteudo, col 4:altura do nodo
[ 4] ⍝ a arvore e uma ABD em em-ordem. A raiz esta na primeira linha
[ 5]  arv←((⍴caros),4)⍴0
[ 6]  →(1=isnum caros)/numero
[ 7]  caros←⎕AV⍳caros
[ 8]  arv[1;]←¯1,¯1,caros[1],¯1   ⍝ este -1 na pos 4 e para dizer que e arv alfa
[ 9]  →manda
[10] numero:arv[1;⍳3]←¯1,¯1,caros[1]
[11] manda:i←2
[12] testa:→(i>⍴caros)/fim
[13]  arv←caros[i]inclui arv
[14]  →(i=i←i+1)/testa
[15] fim:r←arv
-------------------------------------------------------------
[ 0]  r←qual desarb x;z;alfa;i;inds;x1;x2;x3
[ 1] ⍝ versao 1.3
[ 2] ⍝ se qual=2 desenha ASCII, se qual  ≠2, desenha APL
[ 3] ⍝ o comando a seguir: foi incluido para inverter direito e esquerdo
[ 4]  xx←x[;1] ⋄ x[;1]←x[;2] ⋄ x[;2]←xx
[ 5] ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝ qualquer problema e so tira-lo   ↑  ↑  ↑  ↑  ↑  ↑
[ 6]  z←¯1↑⌈/[1]x
[ 7]  r←((1↑⍴x),(4×z+1))⍴' '
[ 8]  x1←(0 2+⍴x)↑x
[ 9]  x1[1;5 6]←(alfa←(1+1↑⍴r)÷2),1
[10]  x1←x1 xuxa 1,alfa,z,5
[11] ⍝ neste ponto em x1 tem-se tudo o que se precisa
[12]  x2←x1[inds←⍋x1[;5];]
[13]  x2[;5]←⍳1↑⍴x1
[14]  x3←x2[x2[;3]⍳x1[;3];]
[15]  i←1
[16]  →(x[1;4]=¯1)/comealf   ⍝ 0=tudo numerico,   ¯1=alfa,   ¯2=huffman
[17]  →(x[1;4]=¯2)/hufman
[18] comeco:→(i>1↑⍴x3)/fim
[19]  r[x3[i;5];((x3[i;6]-1)+⍳3)]←'500'⍉x3[i;3]
[20]  →(i=i←i+1)/comeco
[21] comealf:→(i>1↑⍴x3)/fim
[22]  r[x3[i;5];((x3[i;6]-1)+⍳3)]←'(',⎕AV[x3[i;3]],')'
```

```
[23]  →(i=i←i+1)/comealf
[24] hufman:→(i>1↑⍴x3)/fim
[25]  →(x3[i;3]≥0)/posa
[26]  r[x3[i;5];((x3[i;6]-1)+⍳3)]←'<',⎕AV[|x3[i;3]],'>'   ⍝ negativo (letra)
[27]  →soma1
[28] posa:
[29]  r[x3[i;5];((x3[i;6]-1)+⍳3)]←'500'⍕x3[i;3]   ⍝ positivo (nodo)
[30] soma1:→(i=i←i+1)/hufman
[31] fim:
[32] ⍝ desenhar os riscos
[33]  i←1
[34] termina:→(i>1↑⍴x3)/mesmo
[35]  →((x3[i;1]=¯1)∧(x3[i;2]=¯1))/nada
[36]  →(x3[i;1]=¯1)/sodir
[37]  →(x3[i;2]=¯1)/soesq
[38] ambos:
[39]  r[(pinta x3[x3[i;1];5],x3[x3[i;2];5]);(x3[i;6]+3)]←qual apasc 2 fazedor x3[x3[i;1];5
      ],x3[x3[i;2];5],x3[i;5]
[40]  →nada
[41] sodir:r[(pinta x3[x3[i;2];5],x3[i;5]);(x3[i;6]+3)]←qual apasc 0 fazedor x3[x3[i;2];5]
      ,x3[i;5],x3[i;5]
[42]  →nada
[43] soesq:r[(pinta x3[x3[i;1];5],x3[i;5]);(x3[i;6]+3)]←qual apasc 1 fazedor x3[x3[i;1];5]
      ,x3[i;5],x3[i;5]
[44] nada:→(i=i←i+1)/termina
[45] mesmo:
------------------------------------------------------------
[0]  iar emo x;isa
[1]  →(x[iar;1]=¯1)/vaiesq
[2]  x[iar;1]emo x
[3] vaiesq:
[4]  saida←saida,x[iar;3]
[5]  →(x[iar;2]=¯1)/fim
[6]  x[iar;2]emo x
[7] fim:
------------------------------------------------------------
[ 0]  r←a fazedor b
[ 1]  b←b[⍋b]
[ 2]  r←(1+b[3]-b[1])⍴⎕AV[187]
[ 3]  →(a=0)/zero
[ 4]  →(a=1)/um
[ 5] dois:r[1]←⎕AV[202]
[ 6]  r[1+b[2]-b[1]]←⎕AV[186]
[ 7]  r[⍴r]←⎕AV[201]
[ 8]  →fim
[ 9] um:r[⍴r]←⎕AV[189]
[10]  r[1]←⎕AV[202]
[11]  →fim
[12] zero:r[1]←⎕AV[188]
[13]  r[⍴r]←⎕AV[201]
[14] fim:r←((⍴r),1)⍴r
------------------------------------------------------------
[0]  r←horizontal aa;z
[1] ⍝ aa e uma matriz nx4, criada por criab
[2] ⍝r e a sequencia de vistacao de nodos na horizontal
[3]  z←aa[;3]+aa[;4]×1000
[4]  z←⍋z
[5]  r←aa[z;3]
------------------------------------------------------------
[ 0]  r←i inclui ar;y;li;ipivot;prof
[ 1] ⍝ i e o valor a incluir na arvore ar (nao deve existir anteriormente)
[ 2] ⍝ ar e uma matriz de n x 4 no formato de criab
[ 3] ⍝ o resultado e ar com o valor i incluido
```

```
[ 4] ⍝ note-se que a ordem de inclus'ao nao e 1,2,3... e sim salteada
[ 5] ⍝  p.kantek.   v1.0  jun/99
[ 6]  y←(ar[;3]=0)/⍳1↑⍴ar
[ 7]  li←y[1?⍴y]
[ 8]  ar[li;1 2 3]←¯1,¯1,i
[ 9]  ipivot←1 ⋄ prof←1
[10] testa:→(i>ar[ipivot;3])/maior
[11] menor:→(¯1=ar[ipivot;1])/meok
[12]  prof←prof+1
[13]  →(ipivot=ipivot←ar[ipivot;1])/testa
[14] meok:ar[ipivot;1]←li
[15]  →fim
[16] maior:→(¯1=ar[ipivot;2])/maok
[17]  prof←prof+1
[18]  →(ipivot=ipivot←ar[ipivot;2])/testa
[19] maok:ar[ipivot;2]←li
[20] fim:ar[li;4]←prof
[21]  r←ar
-------------------------------------------------------------
[ 0]  r←i incluih ar;y;li;ipivot;prof
[ 1] ⍝ inclusao hipotetica. i e um valor que nao deve existir na arvore
[ 2] ⍝ se ele fosse ser incluido, onde seria ??????
[ 3] ⍝ a resposta e 0,nodo ou 1,nodo. Se 0,nodo e como filho esquerdo
[ 4] ⍝ de nodo. Se 1,nodo e como filho direito deste
[ 5] ⍝ p. kantek v.1.0 jun/99
[ 6]  ipivot←1 ⋄ prof←1
[ 7] testa:→(i>ar[ipivot;3])/maior
[ 8] menor:→(¯1=ar[ipivot;1])/meok
[ 9]  →(ipivot=ipivot←ar[ipivot;1])/testa
[10] meok:r←0,ar[ipivot;3]
[11]  →fim
[12] maior:→(¯1=ar[ipivot;2])/maok
[13]  →(ipivot=ipivot←ar[ipivot;2])/testa
[14] maok:r←1,ar[ipivot;3]
[15] fim:
-------------------------------------------------------------
[0]  r←pinta x
[1] ⍝ v 1.0
[2]  x←x[⍋x]
[3]  r←(x[1]-1)+⍳1+x[2]-x[1]
-------------------------------------------------------------
[0]  iar pos x;isa
[1]  →(x[iar;1]=¯1)/vaiesq
[2]  x[iar;1]pos x
[3] vaiesq:→(x[iar;2]=¯1)/fim
[4]  x[iar;2]pos x
[5] fim:saida←saida,x[iar;3]
-------------------------------------------------------------
[0]  iar pre x;isa
[1]  saida←saida,x[iar;3]
[2]  →(x[iar;1]=¯1)/vaiesq
[3]  x[iar;1]pre x
[4] vaiesq:→(x[iar;2]=¯1)/fim
[5]  x[iar;2]pre x
[6] fim:
-------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
```

```
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>ρcandi)/eca
[ 9]  j←qt
[10]  →(0=' 'ϵj↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80ρ80↑j↑candi
[15]  candi←j↓candi
[16]  →((ρcandi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80ρ80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
------------------------------------------------------------
[ 0]  opesq vivo431a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;pasta;xx;yy;zz;arvore;saidapre;saidapos;saidaemo;horizo;ww;aaa;lixo1;dd
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←9 ⋄ EVENTO←'PL431   '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[ 9]  relat←((2+1↑ρylu),1 0+ρFOLHALA431)ρ' '
[10]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[11]  xk←1 ⋄ resu←0 10ρ0
[12] testa:→(xk>1↑ρylu)/fim
[13]  esse←36 80ρ' '
[14]  f←FOLHALA431
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍎VERSAOa←3.32
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍎resp←xk),'-',opesq
[22]  esse[35;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[36;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25]  pasta←42?99
[26]  xx←20+?10 ⋄ yy←20+?10 ⋄ zz←20+?10 ⋄ dd←2+?3 ⋄ ww←20+?10
[27]  horizo←horizontal arvore←criab 40↑pasta
[28]  esse[7+⍳20;]←'¯-'edit acerta77 arvore
[29]  saida←''
[30]  1 pre arvore
[31]  saidapre←saida
[32]  saida←''
[33]  1 emo arvore
[34]  saidaemo←saida
[35]  saida←''
[36]  1 pos arvore
[37]  saidapos←saida
[38]  esse[28;]←80↑2 0⍎xx
[39]  resp←resp,saidapre[xx]
[40]  esse[29;]←80↑2 0⍎yy
[41]  resp←resp,saidaemo[yy]
[42]  esse[30;]←80↑2 0⍎zz
[43]  resp←resp,saidapos[zz]
[44]  esse[31;]←80↑2 0⍎pasta[41]
```

```
[45]  resp←resp,pasta[41]incluih arvore
[46]  esse[32;]←80↑2 0⍴pasta[42]
[47]  resp←resp,pasta[42]incluih arvore
[48]  esse[33;]←80↑2 0⍴dd
[49]  resp←resp,+/((arvore[;4]=dd)∧(arvore[;1]=¯1)∧(arvore[;2]=¯1))
[50]  ARVORE←((1↑⍴arvore),4)↑arvore
[51]  0 PREENCHE 1
[52]  DESENHO←2 desarb ARVORE
[53]  esse[34;]←80↑2 0⍴ww
[54]  resp←resp,horizo[ww]
[55]  resu←resu,[1]1 10⍴resp
[56]  acuja←(f[;2]='#')/⍳1↑⍴f
[57]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[58]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[59]  □←(⍴xk←xk+1),'-'
[60]  →testa
[61] fim:upag←(1 0+⍴f)⍴' '
[62]  →(1=≡n)/elafa
[63]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[64]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[65]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←(4 0 8 0,16⍴4 0))⍴resu
[66]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[67]  →terminando
[68] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),4 0⍴0 1↓resu)
[69]  aaa[1;35 36]←2 0⍴CORRECAO
[70]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[71]  '!!!!!  Arquivo GPA com ',(⍴1↑⍴aaa),' linhas e ',(⍴1↓⍴aaa),' colunas'
[72] terminando:
[73]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[74]  relat[1↑⍴relat;;]←upag
[75]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.t
      ex'
[76]  lixonol←□EX 2 10⍴'quantos   matriz    '
[77]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  r←a xuxa b;fe;fd
[ 1] ⍝ b[1] e o endereco da raiz em a; b[2] e onde este cara entrou;
[ 2] ⍝ b[3] e z (onde desloocamento = +-2*z-1) e acada vez diminui 1
[ 3] ⍝ e b[4] e a coluna de saida. cada vez +3
[ 4] ⍝ funcao recursiva para desenhar a arvore
[ 5] ⍝ p.kantek v1.0 jun/99
[ 6]  r←a
[ 7]  fe←a[b[1];1]
[ 8]  →(fe=¯1)/pulaesq
[ 9]  r[fe;5 6]←(b[2]-2*b[3]-1),b[4]
[10]  r←r xuxa fe,(b[2]-2*b[3]-1),(b[3]-1),(b[4]+4)
[11] pulaesq:fd←a[b[1];2]
[12]  →(fd=¯1)/fim
[13]  r[fd;5 6]←(b[2]+2*b[3]-1),b[4]
[14]  r←r xuxa fd,(b[2]+2*b[3]-1),(b[3]-1),(b[4]+4)
[15] fim:
------------------------------------------------------------
```

vivo432

```
[ 0]  raiz ACHA_ALT inic
[ 1]  →(inic≤A)/cont
[ 2]  A←inic+1
[ 3] cont:
[ 4]  →(ARV[raiz;1]=¯1)/ufa
[ 5]  ARV[raiz;1]ACHA_ALT inic+1
[ 6] ufa:
```

```
[ 7]  →(ARV[raiz;2]=¯1)/fim
[ 8]  ARV[raiz;2]ACHA_ALT inic+1
[ 9] fim:
------------------------------------------------------------
[ 0]  ACHA_FOLHA raiz
[ 1]  →((ARV[raiz;1]=¯1)∧(ARV[raiz;2]=¯1))/pula
[ 2]  QTD←QTD+1
[ 3] pula:
[ 4]  →(ARV[raiz;1]=¯1)/ufa
[ 5]  ACHA_FOLHA ARV[raiz;1]
[ 6] ufa:
[ 7]  →(ARV[raiz;2]=¯1)/fim
[ 8]  ACHA_FOLHA ARV[raiz;2]
[ 9] fim:
------------------------------------------------------------
[0]  AVISO
[1]  'fazer no quadro as funcoes de ACHA_ALT e ACHA_FOLHA'
[2]  ' '
[3]  ' no f:/p/n/432/criabp.mle tem o maple que cria uma abp'
------------------------------------------------------------
[ 0]  alt achaalt raiz
[ 1]  →(alt≤ALTURA)/pula
[ 2]  ALTURA←alt
[ 3] pula:
[ 4]  →(TABARV[raiz;1]=¯1)/naoesq
[ 5]  (alt+1)achaalt TABARV[raiz;1]
[ 6] naoesq:
[ 7]  →(TABARV[raiz;2]=¯1)/fim
[ 8]  (alt+1)achaalt TABARV[raiz;2]
[ 9] fim:
------------------------------------------------------------
[0]  r←achafolha;i;som
[1]  i←1 ⋄ som←0
[2] uca:→(i>ULTIMO)/fim
[3]  →(2≠+/TABARV[i;1 2]=¯1 ¯1)/pula
[4]  som←som+1
[5] pula:→(i=i←i+1)/uca
[6] fim:r←som
------------------------------------------------------------
[0]  criaabp vet;i
[1]  gearv
[2]  i←1
[3] vo:→(i>⍴vet)/fim
[4]  incabp vet[i]
[5]  →(i=i←i+1)/vo
[6] fim:ALTURA←0
[7]  0 achaalt 1
------------------------------------------------------------
[0]  r←escolhemenor els
[1]  els←els[⍋els]
[2]  r←els[8 4 12 2 6 10 14 1 3 5 7 9 11 13 15]
------------------------------------------------------------
[0]  gearv
[1]  TABARV←15 3⍴¯1
[2]  ULTIMO←0
------------------------------------------------------------
[ 0]  r←geraexe1;a;b;aux;resp;i
[ 1]  aux←5 4 11⍴0
[ 2]  aux[1;;⍳10]←1 1000 geraseq2(a←100+?800),10
[ 3]  aux[2;;⍳10]←1 1000 geraseq2 a,10
[ 4]  aux[3;;⍳10]←1 1000 geraseq2 a,10
[ 5]  aux[4;;⍳10]←1 1000 geraseq2 a,10
[ 6]  aux[5;;⍳10]←1 1000 geraseq2 a,10
```

```
[ 7]  r←5 11⍴0
[ 8]  resp←0
[ 9]  i←1
[10] tt:→(i>5)/fim
[11]  →(1=?2)/coroa
[12] erro:→(1=?2)/mais
[13] menos:aux[i;1;b]←999⌊aux[i;4;b←6+?3]+?20
[14]  aux[i;1;11]←b
[15]  →oba
[16] mais:aux[i;1;b]←1⌈aux[i;3;b←6+?3]-?20
[17]  aux[i;1;11]←b
[18] oba:
[19]  resp←resp+2*i-1
[20] coroa:→(i=i←i+1)/tt
[21] fim:r[1;1]←a
[22]  r[2;1]←resp
[23]  r[1;1+⍳10]←aux[1;1;⍳10]
[24]  r[2;1+⍳10]←aux[2;1;⍳10]
[25]  r[3;1+⍳10]←aux[3;1;⍳10]
[26]  r[4;1+⍳10]←aux[4;1;⍳10]
[27]  r[5;1+⍳10]←aux[5;1;⍳10]
[28]  AUX←aux
-------------------------------------------------------------
[ 0]  r←geraexe2;x1;x2;x3;x4;a1;a2;a3;a4
[ 1]  r←4 16⍴0
[ 2]  x1←15?99
[ 3]  x2←x1[⍋x1]
[ 4]  x3←escolhemenor x1
[ 5]  x4←quasiordena x1
[ 6]  criaabp x1
[ 7]  a1←ALTURA
[ 8]  criaabp x2
[ 9]  a2←ALTURA
[10]  criaabp x3
[11]  a3←ALTURA
[12]  criaabp x4
[13]  a4←ALTURA
[14]  r[1 2 3 4;1]←a1,a2,a3,a4
[15]  r[1;1+⍳15]←x1
[16]  r[2;1+⍳15]←x2
[17]  r[3;1+⍳15]←x3
[18]  r[4;1+⍳15]←x4
-------------------------------------------------------------
[ 0]  r←geraexe3;x1;x2;f1;f2
[ 1]  r←2 16⍴0
[ 2]  x1←15?99
[ 3]  x2←x1[⍋x1]
[ 4]  criaabp x1
[ 5]  f1←achafolha
[ 6]  criaabp x2
[ 7]  f2←achafolha
[ 8]  r[1 2;1]←f1,f2
[ 9]  r[1;1+⍳15]←x1
[10]  r[2;1+⍳15]←x2
-------------------------------------------------------------
[0]  r←geraexe4;x1;x2
[1]  r←2 15⍴0
[2]  x1←15?99
[3]  x2←escolhemenor x1
[4]  r[1;1 2 3]←x2[3 7 13]
[5]  r[2;]←x1
-------------------------------------------------------------
[ 0]  r←minmax geraseq2 obn;mi;ma;al;i;ob;n;z;rex;max;min
```

```
[ 1]  ob←obn[1] ⋄ n←obn[2]
[ 2] denovo:
[ 3]  z←⍳0 ⋄ max←⍳0 ⋄ min←⍳0
[ 4]  mi←minmax[1] ⋄ ma←minmax[2]
[ 5]  al←mi+?ma-mi
[ 6]  i←1 ⋄ rex←⍳0
[ 7] tesa:→(i>n)/aca
[ 8] ⍝ 'min=',(  ⍕mi),'   max=',(  ⍕ma),'          al=',(  ⍕al),'  ob=',  ⍕ob
[ 9]  min←min,mi ⋄ max←max,ma
[10]  →(al>ob)/cara
[11]  →(al=ob)/denovo
[12] coroa:z←z,1
[13]  mi←al
[14]  →(3>ma-mi)/denovo
[15]  al←mi+?ma-mi
[16]  →(al∈rex)/denovo
[17]  rex←rex,al
[18]  →(i=i←i+1)/tesa
[19] cara:z←z,2
[20]  ma←al
[21]  →(3>ma-mi)/denovo
[22]  al←mi+?ma-mi
[23]  →(al∈rex)/denovo
[24]  rex←rex,al
[25]  →(i=i←i+1)/tesa
[26] aca:r←(4,⍴rex)⍴rex,((1↓z),0),min,max
-------------------------------------------------------------
[ 0]  incabp valor;onde;pai;esqdir;raiz
[ 1] ⍝ TABARV = tabela de 99x3 (fe,fd,cont)/ULTIMO e' o ultimo ja usado (0=ini)
[ 2] ⍝ 'incluindo ',(  ⍕valor),' em ',  ⍕raiz
[ 3]  raiz←1
[ 4]  →(TABARV[raiz;3]≠¯1)/naovazia
[ 5] vazia:
[ 6]  TABARV[raiz;3]←valor
[ 7]  ULTIMO←ULTIMO+1
[ 8]  →fim
[ 9] naovazia:ULTIMO←ULTIMO+1
[10]  TABARV[ULTIMO;]←¯1,¯1,valor
[11]  onde←raiz
[12] busca:→(valor<TABARV[onde;3])/emenor
[13] maior:esqdir←1
[14]  pai←onde
[15]  onde←TABARV[onde;2]
[16]  →testa
[17] emenor:esqdir←0
[18]  pai←onde
[19]  onde←TABARV[onde;1]
[20] testa:→(onde≠¯1)/busca
[21]  TABARV[pai;1+esqdir]←ULTIMO
[22] fim:
-------------------------------------------------------------
[ 0]  r←quasiordena vet;x;y;z
[ 1]  vet←vet[⍋vet]
[ 2]  x←3⌈⌈(⍴vet)÷6
[ 3] novo:r←vet
[ 4]  y←x?⍴vet
[ 5]  z←r[y]
[ 6]  z←z[x?x]
[ 7]  r[y]←z
[ 8]  →((⍴vet)=+/vet=r)/novo
-------------------------------------------------------------
[ 0]  opesq vivo432a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;caso;lixo1;aaa
```

```
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←6 ⋄ EVENTO←'PL432   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA432←ajusta80 FOLHALA432
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA432)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[12]  xk←1 ⋄ resu←0 7⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←19 80⍴' '
[15]  f←FOLHALA432
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←4.17
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),'-',opesq
[23]  esse[18;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[19;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] obahh:
[26]  caso←geraexe2
[27]  esse[14 15;]←2 80↑3 0⍕caso[1 2;1+⍳15]
[28]  resp←resp,,caso[1 2;1]
[29]  caso←geraexe3
[30]  esse[16;]←80↑3 0⍕caso[1;1+⍳15]
[31]  resp←resp,caso[1;1]
[32]  caso←geraexe4
[33]  esse[17;]←80↑3 0⍕caso[2;]
[34]  resp←resp,,caso[1;1 3]
[35]  caso←geraexe1
[36]  esse[8;]←80↑4 0⍕caso[1;1]
[37]  esse[8+⍳5;]←5 80↑4 0⍕caso[;1+⍳10]
[38]  resp←resp,caso[2;1]
[39]  resu←resu,[1]1 7⍴resp
[40]  acuja←(f[;2]='#')/⍳1↑⍴f
[41]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[42]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[43]  ⍞←(⍕xk←xk+1),'-'
[44]  →testa
[45] fim:upag←(1 0+⍴f)⍴' '
[46]  →(1=≡n)/elafa
[47]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[48]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[49]  upag[2+⍳1↑⍴presu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 5 0 5 0 5 0 5 0)⍕resu
[50]  upag[3+1↑⍴presu;]←(1↓⍴upag)↑'\end{verbatim}'
[51]  →terminando
[52] elafa:aaa←(ylu,5 0⍕0 1↓resu)
[53]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[54]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[55] terminando:
[56]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[57]  relat[1↑⍴relat;;]←upag
[58]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.t
      ex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
```

vivo433

```
[ 0]  r←ajeita25;i
[ 1]  i←1 ⋄ r←0 11⍴' '
[ 2] volta:→(i>1↑⍴ALFA)/fim
[ 3]  →(ALFA[i;2]=2)/exc
[ 4]  r←r,[1]1 11⍴(1 0⍕ALFA[i;1]),' inclui',3 0⍕ALFA[i;3]
[ 5]  →soma
[ 6] exc:
[ 7]  r←r,[1]1 11⍴(1 0⍕ALFA[i;1]),' exclui',3 0⍕ALFA[i;3]
[ 8] soma:→(i=i←i+1)/volta
[ 9] fim:r←r[⍳14;],(14 20⍴' '),r[14+⍳14;]
------------------------------------------------------------
[ 0]  alfa2 alla433a n;folha;dhx;ylu;resp;resu;xk;lixonol;esse;essafolha;lixo;flm;agora;in
      ds;k1;k2;w1
[ 1]  lixonol←FUNSNEC433 ⎕COPY'ALLAUTIL'
[ 2]  rand ⋄ CORRECAO←10 ⋄ EVENTO←8⍴' '
[ 3]  'serao emitidas provas a partir de ',⍕n[3]
[ 4]  n[1 2]PRINTFL leiaf'ALLABLOI'
[ 5]  ylu←geralu2 alfa2
[ 6]  dhx←dh3
[ 7]  xk←1 ⋄ resu←0 11⍴0
[ 8] testa:→(xk>1↑⍴ylu)/fim
[ 9]  esse←38 80⍴' '
[10]  flm←200 80↑FOLHALA433
[11]  esse[1;]←80↑dhx[1;]
[12]  esse[2;]←80↑dhx[2;]
[13]  esse[3;]←80↑4 2⍕VERSAOa←2.51
[14]  esse[4;]←80↑ylu[xk;⍳6]
[15]  esse[5;]←80↑ylu[xk;6+⍳30]
[16]  esse[6;]←80↑EVENTO
[17]  esse[7;]←80↑3 0⍕resp←¯1+xk+n[3]
[18] inica:
[19]  geracaso
[20]  esse[7+⍳15;]←acerta66 RINIC[;⍳3]
[21]  esse[22+⍳14;]←14 80↑ajeita25
[22]  agora←ARV1,ARV2,ARV3
[23]  agora←((((⍴agora),1)⍴ARV1,ARV2,ARV3),0),0
[24]  agora[⍳⍴ARV1;2]←1
[25]  agora[⍳⍴ARV1;3]←⍳⍴ARV1
[26]  agora[(⍴ARV1)+⍳⍴ARV2;2]←2
[27]  agora[(⍴ARV1)+⍳⍴ARV2;3]←⍳⍴ARV2
[28]  agora[((⍴ARV1)+⍴ARV2)+⍳⍴ARV3;2]←3
[29]  agora[((⍴ARV1)+⍴ARV2)+⍳⍴ARV3;3]←⍳⍴ARV3
[30]  inds←10?1↑⍴agora
[31]  resp←resp,,agora[inds;1]
[32]  k1←agora[inds[⍳5];2] ⋄ k2←agora[inds[⍳5];3]
[33]  w1←'C',(1 0⍕k1[1]),'[',(2 0⍕k2[1]),']&'
[34]  w1←w1,'C',(1 0⍕k1[2]),'[',(2 0⍕k2[2]),']&'
[35]  w1←w1,'C',(1 0⍕k1[3]),'[',(2 0⍕k2[3]),']&'
[36]  w1←w1,'C',(1 0⍕k1[4]),'[',(2 0⍕k2[4]),']&'
[37]  w1←w1,'C',(1 0⍕k1[5]),'[',(2 0⍕k2[5]),']⍀⍀'
[38]  esse[37;]←80↑w1
[39]  k1←agora[inds[5+⍳5];2] ⋄ k2←agora[inds[5+⍳5];3]
[40]  w1←'C',(1 0⍕k1[1]),'[',(2 0⍕k2[1]),']&'
[41]  w1←w1,'C',(1 0⍕k1[2]),'[',(2 0⍕k2[2]),']&'
[42]  w1←w1,'C',(1 0⍕k1[3]),'[',(2 0⍕k2[3]),']&'
[43]  w1←w1,'C',(1 0⍕k1[4]),'[',(2 0⍕k2[4]),']&'
[44]  w1←w1,'C',(1 0⍕k1[5]),'[',(2 0⍕k2[5]),']⍀⍀'
[45]  esse[38;]←80↑w1
[46]  resu←resu,[1]1 11⍴resp
[47]  n[1 2]PRINTFL ULTIMOa←essafolha←esse montafol flm
[48]  n[1 2]PRINTFL 1 40⍴40↑'⍀newpage'
```

```
[49]  ⍞←(⍕xk←xk+1),'-'
[50]  →testa
[51] fim:
[52]  n[1 2]PRINTFL 1 40ρ40↑'\begin{verbatim}'
[53]  n[ι2]PRINTFL 1 80ρ80↑(10ρ'='),(' ',,dhx,' '),(10ρ'='),'E=',EVENTO
[54]  n[ι2]PRINTF 4 0 6 0 3 0 3 0 3 0 3 0 6 0 3 0 3 0 3 0 3 0⍕resu
[55]  n[ι2]PRINTFL INSTRUC433
[56]  n[1 2]PRINTF 1 100ρ100↑'Arv1 = ',3 0⍕ARV1
[57]  n[1 2]PRINTF 1 100ρ100↑'Arv2 = ',3 0⍕ARV2
[58]  n[1 2]PRINTF 1 100ρ100↑('Arv3 = ',3 0⍕ARV3),⎕TCNL
[59]  n[1 2]PRINTF 1 49ρ'    &fe    &fd   cont   &pai   prof    arv      #'
[60]  n[1 2]PRINTF'  ¯-'edit 7 0⍕RFINA
[61]  n[1 2]PRINTFL 1 40ρ40↑'\end{verbatim}'
[62]  →(1=isnumber alfa2)/terminando
[63]  ylu geragpg2 4 0⍕0 1↓resu
[64] terminando:
[65]  n[1 2]PRINTFL leiaf'ALLABLOF'
[66]  FECHAF
[67]  FUNCOES←docfuncoes FUNSNEC433
[68]  lixonol←⎕EX FUNSNEC433
[69]  lixonol←⎕EX 2 8ρ'CORRECAOEVENTO  '
[70]  'acabou'
------------------------------------------------------------
[ 0]  r←raiz excluiabp valor;aaux;esqdir;pai;elemx;onde;save;tempo
[ 1] ⍝ 'entrando com ',(  ⍕raiz),  ⍕valor
[ 2] ⍝ OBSERVACAO IMPORTANTE: por questoes de simplicidade (nao ha descritor
[ 3] ⍝ na arvore) NAO E POSSIVEL escluir o raiz usando esta funcao.
[ 4] ⍝ 'excluindo ',(  ⍕valor),' em ',  ⍕raiz
[ 5]  aaux←pai←raiz
[ 6]  esqdir←0
[ 7] inica:→(TABARV[aaux;3]=valor)/achou
[ 8]  →(valor<TABARV[aaux;3])/menor
[ 9] maior:esqdir←1
[10]  pai←aaux
[11]  aaux←TABARV[aaux;2]
[12]  →inica
[13] menor:esqdir←0
[14]  pai←aaux
[15]  aaux←TABARV[aaux;1]
[16]  →inica
[17] achou:elemx←aaux
[18]  →(2=+/TABARV[elemx;1 2]=¯1 ¯1)/temnenhum
[19]  →(TABARV[elemx;1]=¯1)/temdireito
[20]  →(TABARV[elemx;2]=¯1)/temesquerdo
[21] temos2:save←elemx
[22]  elemx←TABARV[elemx;2]
[23] truta:→(TABARV[elemx;1]=¯1)/achou8
[24]  elemx←TABARV[elemx;1]
[25]  →truta
[26] achou8:
[27]  tempo←raiz excluiabp TABARV[elemx;3]
[28] ⍝ 'aux=',  ⍕aaux
[29] ⍝ 'tempo=',  ⍕tempo
[30]  TABARV[aaux;3]←TABARV[tempo;3]
[31]  r←aaux
[32]  →fimdetudo
[33] temesquerdo:
[34]  TABARV[pai;1+esqdir]←TABARV[elemx;1]
[35]  r←elemx
[36]  →fimdetudo
[37] temdireito:
[38]  TABARV[pai;1+esqdir]←TABARV[elemx;2]
[39]  r←elemx
```

```
[40]  →fimdetudo
[41] temnenhum:
[42]  TABARV[pai;1+esqdir]←¯1
[43]  r←elemx
[44] fimdetudo:
------------------------------------------------------------
[0]  geraarvs
[1]  TABARV←99 3⍴¯1
[2]  ULTIMO←0
------------------------------------------------------------
[ 0]  geracaso;z;a1;a2;a3;i;j;k;v1;v2;v3;rinic;alfa;rfina;arv1;arv2;arv3;lixo
[ 1]  z←(8+?3),(8+?3)
[ 2]  z←z,30-+/z
[ 3]  a1←(z[1]+6)?50
[ 4]  a2←(z[2]+6)?70
[ 5]  a3←(z[3]+6)?50
[ 6]  geraarvs
[ 7]  TABARV[1;]←¯1 ¯1,a1[1]
[ 8]  TABARV[2;]←¯1 ¯1,a2[1]
[ 9]  TABARV[3;]←¯1 ¯1,a3[1]
[10]  ULTIMO←3
[11]  i←2 ⋄ j←2 ⋄ k←2 ⋄ v1←1 ⋄ v2←2 ⋄ v3←3
[12] t1:→(i>¯6+⍴a1)/f1
[13]  1 incluiabp a1[i]
[14]  v1←v1,ULTIMO
[15] f1:→(j>¯6+⍴a2)/f2
[16]  2 incluiabp a2[j]
[17]  v2←v2,ULTIMO
[18] f2:→(k>¯6+⍴a3)/f3
[19]  3 incluiabp a3[k]
[20]  v3←v3,ULTIMO
[21] f3:→((i>¯6+⍴a1)∧(j>¯6+⍴a2)∧(k>¯6+⍴a3))/acabou
[22]  i←i+1 ⋄ j←j+1 ⋄ k←k+1
[23]  →t1
[24] acabou:
[25]  RINIC←rinic←limtabarv
[26]  alfa←(6 2⍴1,1),6 1⍴¯6↑a1
[27]  alfa←alfa,[1](6 2⍴2 1),6 1⍴¯6↑a2
[28]  alfa←alfa,[1](6 2⍴3 1),6 1⍴¯6↑a3
[29]  alfa←alfa,[1](4 2⍴1 2),4 1⍴a1[1+4?¯7+⍴a1]
[30]  alfa←alfa,[1](4 2⍴2 2),4 1⍴a2[1+4?¯7+⍴a2]
[31]  alfa←alfa,[1](4 2⍴3 2),4 1⍴a3[1+4?¯7+⍴a3]
[32]  i←1 ⋄ ALFA←alfa←alfa[28?1↑⍴alfa;]
[33] t5:→(i>1↑⍴alfa)/ufa
[34]  →(alfa[i;2]=2)/exc
[35]  alfa[i;1]incluiabp alfa[i;3]
[36]  →pulao
[37] exc:
[38]  lixo←alfa[i;1]excluiabp alfa[i;3]
[39] pulao:→(i=i←i+1)/t5
[40] ufa:rfina←limtabarv
[41]  rfina←rfina,((1↑⍴rfina),1)⍴⍳1↑⍴rfina
[42]  rfina←(rfina[;4]≠0)/[1]rfina
[43]  RFINA←rfina
[44] ⍝ 1,2,3= fe,fd,c
[45] ⍝4= endereco do pai
[46] ⍝5= profundidade
[47] ⍝6= arvore do sujeito
[48] ⍝7= endereco original do sujeito
[49]  arv1←(rfina[;6]=1)/[1]rfina
[50]  arv2←(rfina[;6]=2)/[1]rfina
[51]  arv3←(rfina[;6]=3)/[1]rfina
[52]  arv1←arv1[⍋arv1[;3]+1000×arv1[;5];]
```

```
[53]  arv2←arv2[⍋arv2[;3]+1000×arv2[;5];]
[54]  arv3←arv3[⍋arv3[;3]+1000×arv3[;5];]
[55]  ARV1←arv1[;3]
[56]  ARV2←arv2[;3]
[57]  ARV3←arv3[;3]
------------------------------------------------------------
[ 0]  r←raiz incluiabp valor;onde;pai;esqdir
[ 1] ⍝ TABARV = tabela de 99x3 (fe,fd,cont)/ULTIMO e' o ultimo ja usado (0=ini)
[ 2] ⍝ 'incluindo ',(  ⍕valor),' em ',  ⍕raiz
[ 3]  →(TABARV[raiz;3]≠¯1)/naovazia
[ 4] vazia:
[ 5]  TABARV[raiz;3]←valor
[ 6]  ULTIMO←ULTIMO+1
[ 7]  r←0
[ 8]  →fim
[ 9] naovazia:ULTIMO←ULTIMO+1
[10]  TABARV[ULTIMO;]←¯1,¯1,valor
[11]  onde←raiz
[12] busca:→(valor<TABARV[onde;3])/emenor
[13] maior:esqdir←1
[14]  pai←onde
[15]  onde←TABARV[onde;2]
[16]  →testa
[17] emenor:esqdir←0
[18]  pai←onde
[19]  onde←TABARV[onde;1]
[20] testa:→(onde≠¯1)/busca
[21]  TABARV[pai;1+esqdir]←ULTIMO
[22] fim:
------------------------------------------------------------
[ 0]  r←limtabarv
[ 1]  r←((((TABARV[;3]≠¯1)/[1]TABARV),0),0),0
[ 2]  r[1 2 3;4]←¯1
[ 3]  r[1 2 3;6]←1 2 3
[ 4]  i←1
[ 5] te:→(i>1↑⍴r)/fim
[ 6]  →(r[i;1]=¯1)/naoesq
[ 7]  →(r[i;4]=0)/naoesq
[ 8]  r[r[i;1];6]←r[i;6]
[ 9] salta1:r[r[i;1];4]←i
[10] naoesq:
[11]  →(r[i;2]=¯1)/naodir
[12]  →(r[i;4]=0)/naodir
[13]  r[r[i;2];6]←r[i;6]
[14] salta2:r[r[i;2];4]←i
[15] naodir:→(i=i←i+1)/te
[16] fim:r[1;5]←0
[17]  i←4
[18] t3:→(i>1↑⍴r)/finzao
[19]  →(r[i;4]=0)/soma
[20]  r[i;5]←r[r[i;4];5]+1
[21] soma:→(i=i←i+1)/t3
[22] finzao:
------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
```

```
[ 9]  j←qt
[10]  →(0=' 'ϵj↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80ρ80↑j↑candi
[15]  candi←j↓candi
[16]  →((ρcandi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80ρ80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
------------------------------------------------------------
[ 0]  opesq vivo433a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;agora;inds;k1;k2;w1;lixo1;aaa
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←10 ⋄ EVENTO←'PL433   '
[ 5]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎ιn
[ 8]  relat←((2+1↑ρylu),1 0+ρFOLHALA433)ρ' '
[ 9]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLOI'
[10]  xk←1 ⋄ resu←0 11ρ0
[11] testa:→(xk>1↑ρylu)/fim
[12]  esse←40 80ρ' '
[13]  f←FOLHALA433
[14]  esse[1;]←80↑dhx[1;]
[15]  esse[2;]←80↑dhx[2;]
[16]  esse[3;]←80↑4 2⍎VERSAOa←3.54
[17]  esse[4;]←80↑ylu[xk;ι6]
[18]  esse[5;]←80↑ylu[xk;6+ι30]
[19]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[20]  esse[7;]←80↑(3 0⍎resp←xk),'-',opesq
[21]  esse[39;ι10]←'@',esse[6;5+ι3],esse[4;1+ι5],'@'
[22]  esse[40;]←80↑esse[6;5+ι3],'-',esse[4;1+ι5],' - ',opesq[6 7],'/',opesq[9 10]
[23] inica:
[24]  geracaso
[25]  esse[7+ι15;]←acerta66 RINIC[;ι3]
[26]  esse[22+ι14;]←14 80↑ajeita25
[27]  agora←ARV1,ARV2,ARV3
[28]  agora←((((ρagora),1)ρARV1,ARV2,ARV3),0),0
[29]  agora[ιρARV1;2]←1
[30]  agora[ιρARV1;3]←ιρARV1
[31]  agora[(ρARV1)+ιρARV2;2]←2
[32]  agora[(ρARV1)+ιρARV2;3]←ιρARV2
[33]  agora[((ρARV1)+ρARV2)+ιρARV3;2]←3
[34]  agora[((ρARV1)+ρARV2)+ιρARV3;3]←ιρARV3
[35]  inds←10?1↑ρagora
[36]  resp←resp,,agora[inds;1]
[37]  k1←agora[inds[ι5];2] ⋄ k2←agora[inds[ι5];3]
[38]  w1←'C',(1 0⍎k1[1]),'[',(2 0⍎k2[1]),']&'
[39]  w1←w1,'C',(1 0⍎k1[2]),'[',(2 0⍎k2[2]),']&'
[40]  w1←w1,'C',(1 0⍎k1[3]),'[',(2 0⍎k2[3]),']&'
[41]  w1←w1,'C',(1 0⍎k1[4]),'[',(2 0⍎k2[4]),']&'
[42]  w1←w1,'C',(1 0⍎k1[5]),'[',(2 0⍎k2[5]),']\\'
[43]  esse[37;]←80↑w1
[44]  k1←agora[inds[5+ι5];2] ⋄ k2←agora[inds[5+ι5];3]
[45]  w1←'C',(1 0⍎k1[1]),'[',(2 0⍎k2[1]),']&'
[46]  w1←w1,'C',(1 0⍎k1[2]),'[',(2 0⍎k2[2]),']&'
```

```
[47]  w1←w1,'C',(1 0⍕k1[3]),'[',(2 0⍕k2[3]),']&'
[48]  w1←w1,'C',(1 0⍕k1[4]),'[',(2 0⍕k2[4]),']&'
[49]  w1←w1,'C',(1 0⍕k1[5]),'[',(2 0⍕k2[5]),']⍀⍀'
[50]  esse[38;]←80↑w1
[51]  resu←resu,[1]1 11⍴resp
[52]  acuja←(f[;2]='#')/⍳1↑⍴f
[53]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[54]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[55]  ⎕←(⍕xk←xk+1),'-'
[56]  →testa
[57] fim:upag←(1 0+⍴f)⍴' '
[58]  →(1=≡n)/elafa
[59]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[60]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[61]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0,18⍴5 0)⍕resu
[62]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[63]  →terminando
[64] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),4 0⍕0 1↓resu)
[65]  aaa[1;35 36]←2 0⍕CORRECAO
[66]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.gpa')
[67]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[68] terminando:
[69]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[70]  relat[1↑⍴relat;;]←upag
[71]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)ΔFM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.t
      ex'
[72]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[73]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo434

```
[0]  AVISO
[1]  'Para matar as variaveis, chame limpavars2 e limpavars'
[2]  'Nos resultados gerados pelo programa, lembre que o primeiro número'
[3]  'é a quantidade de números a seguir...'
[4]  ''
[5]  ' veja a variavel COMO'
[6]  ' '
[7]  ' as 3 arvores (a1.jpg, a2.jpg e a3.jpg) estao em f:⍀p⍀n⍀434'
------------------------------------------------------------
[0]  OS h
[1]  →(ARV[h;1]=¯1)/t2
[2]  OS ARV[h;1]
[3] t2:→(ARV[h;2]=¯1)/fim
[4]  OS ARV[h;2]
[5] fim:R←R,ARV[h;3]
------------------------------------------------------------
[0]  niv acertac461 x
[1]  →(A1[x;1]=¯1)/naotem
[2]  (niv+1)acertac461 A1[x;1]
[3] naotem:
[4]  →(A1[x;2]=¯1)/fim
[5]  (niv+1)acertac461 A1[x;2]
[6] fim:A1[x;4]←niv
------------------------------------------------------------
[0]  niv acertac462 x
[1]  →(A2[x;1]=¯1)/naotem
[2]  (niv+1)acertac462 A2[x;1]
[3] naotem:
[4]  →(A2[x;2]=¯1)/fim
[5]  (niv+1)acertac462 A2[x;2]
```

```
[6] fim:A2[x;4]←niv
-------------------------------------------------------------
[0]  niv acertac463 x
[1]  →(A3[x;1]=¯1)/naotem
[2]  (niv+1)acertac463 A3[x;1]
[3] naotem:
[4]  →(A3[x;2]=¯1)/fim
[5]  (niv+1)acertac463 A3[x;2]
[6] fim:A3[x;4]←niv
-------------------------------------------------------------
[ 0]  r←qual apasc x
[ 1] ⍝ v1.0
[ 2]  →(qual=2)/edois
[ 3]  →(qual=4)/quatro
[ 4]  r←x
[ 5]  →fim
[ 6] edois:r←(⍴x)⍴'|'
[ 7]  →fim
[ 8] quatro:r←⎕AV[187 180]edit x
[ 9]  r←⎕AV[186 181]edit r
[10]  r←⎕AV[188 192]edit r
[11]  r←⎕AV[189 218]edit r
[12]  r←⎕AV[201 193]edit r
[13]  r←⎕AV[202 219]edit r
[14] fim:
-------------------------------------------------------------
[0]  r←quem arranca todos
[1]  r←(quem≠todos)/todos
-------------------------------------------------------------
[0]  r←arrumalatex x
[1]  r←x[⍳¯1+1↑⍴x;]
[2]  r←r,[1]1 60⍴60↑'\fbox{'
[3]  r←r,[1]1 60⍴x[1↑⍴x;]
[4]  r←r,[1]1 60⍴60↑'}'
-------------------------------------------------------------
[ 0]  r←qual desarb x;z;alfa;i;inds;x1;x2;x3
[ 1] ⍝ versao 1.3
[ 2] ⍝ se qual=2 desenha ASCII, se qual  ≠2, desenha APL
[ 3] ⍝ o comando a seguir: foi incluido para inverter direito e esquerdo
[ 4]  xx←x[;1] ⋄ x[;1]←x[;2] ⋄ x[;2]←xx
[ 5] ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝ qualquer problema e so tira-lo   ↑  ↑  ↑  ↑  ↑  ↑
[ 6]  z←¯1↑⌈/[1]x
[ 7]  r←((1↑⍴x),(4×z+1))⍴' '
[ 8]  x1←(0 2+⍴x)↑x
[ 9]  x1[1;5 6]←(alfa←(1+1↑⍴r)÷2),1
[10]  x1←x1 xuxa 1,alfa,z,5
[11] ⍝ neste ponto em x1 tem-se tudo o que se precisa
[12]  x2←x1[inds←⍋x1[;5];]
[13]  x2[;5]←⍳1↑⍴x1
[14]  x3←x2[x2[;3]⍳x1[;3];]
[15]  i←1
[16]  →(x[1;4]=¯1)/comealf   ⍝ 0=tudo numerico,   ¯1=alfa,   ¯2=huffman
[17]  →(x[1;4]=¯2)/hufman
[18] comeco:→(i>1↑⍴x3)/fim
[19]  r[x3[i;5];((x3[i;6]-1)+⍳3)]←'500'⍕x3[i;3]
[20]  →(i=i←i+1)/comeco
[21] comealf:→(i>1↑⍴x3)/fim
[22]  r[x3[i;5];((x3[i;6]-1)+⍳3)]←'(',⎕AV[x3[i;3]],')'
[23]  →(i=i←i+1)/comealf
[24] hufman:→(i>1↑⍴x3)/fim
[25]  →(x3[i;3]≥0)/posa
[26]  r[x3[i;5];((x3[i;6]-1)+⍳3)]←'<',⎕AV[|x3[i;3]],'>'   ⍝ negativo (letra)
[27]  →soma1
```

```
[28] posa:
[29]  r[x3[i;5];((x3[i;6]-1)+⍳3)]←'500'⍪x3[i;3]   ⍝ positivo (nodo)
[30] soma1:→(i=i←i+1)/hufman
[31] fim:
[32] ⍝ desenhar os riscos
[33]  i←1
[34] termina:→(i>1↑⍴x3)/mesmo
[35]  →((x3[i;1]=¯1)∧(x3[i;2]=¯1))/nada
[36]  →(x3[i;1]=¯1)/sodir
[37]  →(x3[i;2]=¯1)/soesq
[38] ambos:
[39]  r[(pinta x3[x3[i;1];5],x3[x3[i;2];5]);(x3[i;6]+3)]←qual apasc 2 fazedor x3[x3[i;1];5
      ],x3[x3[i;2];5],x3[i;5]
[40]  →nada
[41] sodir:r[(pinta x3[x3[i;2];5],x3[i;5]);(x3[i;6]+3)]←qual apasc 0 fazedor x3[x3[i;2];5]
      ,x3[i;5],x3[i;5]
[42]  →nada
[43] soesq:r[(pinta x3[x3[i;1];5],x3[i;5]);(x3[i;6]+3)]←qual apasc 1 fazedor x3[x3[i;1];5]
      ,x3[i;5],x3[i;5]
[44] nada:→(i=i←i+1)/termina
[45] mesmo:
------------------------------------------------------------
[0]  r←quem enfia todos
[1]  r←todos,quem
------------------------------------------------------------
[ 0]  r←raiz excabp1 valor;aaux;esqdir;pai;elemx;onde;save;tempo
[ 1] ⍝ 'entrando com ',(  ⍪raiz),  ⍪valor
[ 2] ⍝ OBSERVACAO IMPORTANTE: por questoes de simplicidade (nao ha descritor
[ 3] ⍝ na arvore) NAO E POSSIVEL escluir o raiz usando esta funcao.
[ 4] ⍝ 'excluindo ',(⍪valor),' em 1'
[ 5]  aaux←pai←raiz
[ 6]  esqdir←0
[ 7] inica:→(A1[aaux;3]=valor)/achou
[ 8]  →(valor<A1[aaux;3])/menor
[ 9] maior:esqdir←1
[10]  pai←aaux
[11]  aaux←A1[aaux;2]
[12]  →inica
[13] menor:esqdir←0
[14]  pai←aaux
[15]  aaux←A1[aaux;1]
[16]  →inica
[17] achou:elemx←aaux
[18]  →(2=+/A1[elemx;1 2]=¯1 ¯1)/temnenhum
[19]  →(A1[elemx;1]=¯1)/temdireito
[20]  →(A1[elemx;2]=¯1)/temesquerdo
[21] temos2:save←elemx
[22]  elemx←A1[elemx;2]
[23] truta:→(A1[elemx;1]=¯1)/achou8
[24]  elemx←A1[elemx;1]
[25]  →truta
[26] achou8:
[27]  tempo←raiz excabp1 A1[elemx;3]
[28] ⍝ 'aux=',  ⍪aaux
[29] ⍝ 'tempo=',  ⍪tempo
[30]  A1[aaux;3]←A1[tempo;3]
[31]  r←aaux
[32]  →fimdetudo
[33] temesquerdo:
[34]  A1[pai;1+esqdir]←A1[elemx;1]
[35]  r←elemx
[36]  →fimdetudo
[37] temdireito:
```

```
[38]  A1[pai;1+esqdir]←A1[elemx;2]
[39]  r←elemx
[40]  →fimdetudo
[41] temnenhum:
[42]  A1[pai;1+esqdir]←¯1
[43]  r←elemx
[44] fimdetudo:
------------------------------------------------------------
[ 0]  r←raiz excabp2 valor;aaux;esqdir;pai;elemx;onde;save;tempo
[ 1] ⍝ 'entrando com ',(  ⍕raiz),  ⍕valor
[ 2] ⍝ OBSERVACAO IMPORTANTE: por questoes de simplicidade (nao ha descritor
[ 3] ⍝ na arvore) NAO E POSSIVEL escluir o raiz usando esta funcao.
[ 4] ⍝ 'excluindo ',(⍕valor),' em 2'
[ 5]  aaux←pai←raiz
[ 6]  esqdir←0
[ 7] inica:→(A2[aaux;3]=valor)/achou
[ 8]  →(valor<A2[aaux;3])/menor
[ 9] maior:esqdir←1
[10]  pai←aaux
[11]  aaux←A2[aaux;2]
[12]  →inica
[13] menor:esqdir←0
[14]  pai←aaux
[15]  aaux←A2[aaux;1]
[16]  →inica
[17] achou:elemx←aaux
[18]  →(2=+/A2[elemx;1 2]=¯1 ¯1)/temnenhum
[19]  →(A2[elemx;1]=¯1)/temdireito
[20]  →(A2[elemx;2]=¯1)/temesquerdo
[21] temos2:save←elemx
[22]  elemx←A2[elemx;2]
[23] truta:→(A2[elemx;1]=¯1)/achou8
[24]  elemx←A2[elemx;1]
[25]  →truta
[26] achou8:
[27]  tempo←raiz excabp2 A2[elemx;3]
[28] ⍝ 'aux=',  ⍕aaux
[29] ⍝ 'tempo=',  ⍕tempo
[30]  A2[aaux;3]←A2[tempo;3]
[31]  r←aaux
[32]  →fimdetudo
[33] temesquerdo:
[34]  A2[pai;1+esqdir]←A2[elemx;1]
[35]  r←elemx
[36]  →fimdetudo
[37] temdireito:
[38]  A2[pai;1+esqdir]←A2[elemx;2]
[39]  r←elemx
[40]  →fimdetudo
[41] temnenhum:
[42]  A2[pai;1+esqdir]←¯1
[43]  r←elemx
[44] fimdetudo:
------------------------------------------------------------
[ 0]  r←raiz excabp3 valor;aaux;esqdir;pai;elemx;onde;save;tempo
[ 1] ⍝ 'entrando com ',(  ⍕raiz),  ⍕valor
[ 2] ⍝ OBSERVACAO IMPORTANTE: por questoes de simplicidade (nao ha descritor
[ 3] ⍝ na arvore) NAO E POSSIVEL escluir o raiz usando esta funcao.
[ 4] ⍝ 'excluindo ',(⍕valor),' em 3'
[ 5]  aaux←pai←raiz
[ 6]  esqdir←0
[ 7] inica:→(A3[aaux;3]=valor)/achou
[ 8]  →(valor<A3[aaux;3])/menor
```

```
[ 9] maior:esqdir←1
[10]  pai←aaux
[11]  aaux←A3[aaux;2]
[12]  →inica
[13] menor:esqdir←0
[14]  pai←aaux
[15]  aaux←A3[aaux;1]
[16]  →inica
[17] achou:elemx←aaux
[18]  →(2=+/A3[elemx;1 2]=¯1 ¯1)/temnenhum
[19]  →(A3[elemx;1]=¯1)/temdireito
[20]  →(A3[elemx;2]=¯1)/temesquerdo
[21] temos2:save←elemx
[22]  elemx←A3[elemx;2]
[23] truta:→(A3[elemx;1]=¯1)/achou8
[24]  elemx←A3[elemx;1]
[25]  →truta
[26] achou8:
[27]  tempo←raiz excabp3 A3[elemx;3]
[28] ⍝ 'aux=',  ⍕aaux
[29] ⍝ 'tempo=',  ⍕tempo
[30]  A3[aaux;3]←A3[tempo;3]
[31]  r←aaux
[32]  →fimdetudo
[33] temesquerdo:
[34]  A3[pai;1+esqdir]←A3[elemx;1]
[35]  r←elemx
[36]  →fimdetudo
[37] temdireito:
[38]  A3[pai;1+esqdir]←A3[elemx;2]
[39]  r←elemx
[40]  →fimdetudo
[41] temnenhum:
[42]  A3[pai;1+esqdir]←¯1
[43]  r←elemx
[44] fimdetudo:
-------------------------------------------------------------
[ 0]  r←a fazedor b
[ 1]  b←b[⍋b]
[ 2]  r←(1+b[3]-b[1])⍴⎕AV[187]
[ 3]  →(a=0)/zero
[ 4]  →(a=1)/um
[ 5] dois:r[1]←⎕AV[202]
[ 6]  r[1+b[2]-b[1]]←⎕AV[186]
[ 7]  r[⍴r]←⎕AV[201]
[ 8]  →fim
[ 9] um:r[⍴r]←⎕AV[189]
[10]  r[1]←⎕AV[202]
[11]  →fim
[12] zero:r[1]←⎕AV[188]
[13]  r[⍴r]←⎕AV[201]
[14] fim:r←((⍴r),1)⍴r
-------------------------------------------------------------
[ 0]  gabacaso;bb;f;bbb;ini;ord;res;lixonol
[ 1]  'espera-se em T1 os elementos da arvore 1, idem T2 e T3. T9 tem os movimentos'
[ 2]  bb←⍙FM'c:\apl2\VIVOBLO1'
[ 3]  bb←((1↑⍴bb),80)↑bb
[ 4] nica:
[ 5]  gabarito
[ 6]  f←((1↑⍴FOLHAGABA),80)↑FOLHAGABA
[ 7]  bb←⍙FM'c:\apl2\VIVOBLO1'
[ 8]  bb←((1↑⍴bb),80)↑bb
[ 9]  f[4;]←80↑⍕T1
```

```
[10]  f[7+⍳30;]←30 80↑arrumalatex geralatexe AA1
[11]  f[39+⍳30;]←30 80↑arrumalatex geralatexe A1
[12]  f[75;]←80↑3 0⍕R1
[13]  f←bb,[1]f,[1]1 80⍴80↑'\end{document}'
[14]  lixonol←f ⎕FM'c:\apl2\testa434a.tex'
[15]  f←((1↑⍴FOLHAGABA),80)↑FOLHAGABA
[16]  bb←⎕FM'c:\apl2\VIVOBLO1'
[17]  bb←((1↑⍴bb),80)↑bb
[18]  f[4;]←80↑⍕T2
[19]  f[7+⍳30;]←30 80↑arrumalatex geralatexe AA2
[20]  f[39+⍳30;]←30 80↑arrumalatex geralatexe A2
[21]  f[75;]←80↑3 0⍕R2
[22]  f←bb,[1]f,[1]1 80⍴80↑'\end{document}'
[23]  lixonol←f ⎕FM'c:\apl2\testa434b.tex'
[24]  f←((1↑⍴FOLHAGABA),80)↑FOLHAGABA
[25]  bb←⎕FM'c:\apl2\VIVOBLO1'
[26]  bb←((1↑⍴bb),80)↑bb
[27]  f[4;]←80↑⍕T3
[28]  f[7+⍳30;]←30 80↑arrumalatex geralatexe AA3
[29]  f[39+⍳30;]←30 80↑arrumalatex geralatexe A3
[30]  f[75;]←80↑3 0⍕R3
[31]  f←bb,[1]f,[1]1 80⍴80↑'\end{document}'
[32]  lixonol←f ⎕FM'c:\apl2\testa434c.tex'
[33]  '!!!!!  Arquivo TEX em c:\apl2\testa434a, b e c.tex'
[34] terminando:
-------------------------------------------------------------
[ 0]  r←gabarito;e1;e2;e3;i;j;lixo
[ 1]  'coloque em T1 os dados da arvore 1, T2...2, e T3...3'
[ 2]  'T9 (o operando) eh uma matriz de 3 colunas por nn movimentos'
[ 3]  'a resposta esta em R1, R2 e R3'
[ 4]  e1←T1
[ 5]  e2←T2
[ 6]  e3←T3
[ 7]  A1←53 3⍴0
[ 8]  A2←53 3⍴0
[ 9]  A3←53 3⍴0
[10]  A1[1;]←¯1 ¯1,e1[1]
[11]  A2[1;]←¯1 ¯1,e2[1]
[12]  A3[1;]←¯1 ¯1,e3[1]
[13]  U1←U2←U3←1
[14]  i←2
[15] t2:→(i>⍴e1)/t3
[16]  1 incabp e1[i]
[17]  →(i=i←i+1)/t2
[18] t3:
[19]  i←2
[20] t4:→(i>⍴e2)/t5
[21]  2 incabp e2[i]
[22]  →(i=i←i+1)/t4
[23] t5:
[24]  i←2
[25] t6:→(i>⍴e3)/t7
[26]  3 incabp e3[i]
[27]  →(i=i←i+1)/t6
[28] t7:
[29] acabou:
[30]  A1←(U1,4)↑A1
[31]  A2←(U2,4)↑A2
[32]  A3←(U3,4)↑A3
[33]  0 acertac461 1
[34]  0 acertac462 1
[35]  0 acertac463 1
[36]  AA1←A1
```

```
[37]  AA2←A2
[38]  AA3←A3
[39]  A1←53 3↑A1
[40]  A2←53 3↑A2
[41]  A3←53 3↑A3
[42]  j←1
[43] vorta:→(j>1↑⍴T9)/ufa
[44]  →(T9[j;2]=1)/deum
[45]  →(T9[j;2]=2)/dedois
[46] detres:
[47]  lixo←1 excabp3 T9[j;1]
[48]  →junta44
[49] dedois:
[50]  lixo←1 excabp2 T9[j;1]
[51]  →junta44
[52] deum:
[53]  lixo←1 excabp1 T9[j;1]
[54]  →junta44
[55] junta44:
[56]  T9[j;3]incabp T9[j;1]
[57]  j←j+1
[58]  →vorta
[59] ufa:
[60] ⍝-------------------------------------
[61]  B1←A1←(U1,4)↑A1
[62]  B2←A2←(U2,4)↑A2
[63]  B3←A3←(U3,4)↑A3
[64]  0 acertac461 1
[65]  0 acertac462 1
[66]  0 acertac463 1
[67]  R1←gera45 A1
[68]  R2←gera45 A2
[69]  R3←gera45 A3
------------------------------------------------------------
[0]  r←gera45 a
[1]  a[1;4]←¯1
[2]  a←(a[;4]≠0)/[1]a
[3]  a[;4]←a[;3]+a[;4]×1000
[4]  a←a[⍋a[;4];]
[5]  r←,a[;3]
------------------------------------------------------------
[  0]  r←movs geracaso4 tam;E1;E2;E3;Q;Q1;Q2;Q3;U1;U2;U3;aux;de;de1;de2;de3;e1;e2;e3;i;j;li
       xo;pa1;pa2;pa3;para;qt;quem;rm;z1;z2;z3;z9;zm
[  1]  r←3⍴' '
[  2]  Q←Q1←Q2←Q3←0 60⍴' '
[  3]  M←0 3⍴0
[  4]  pa1←pa2←pa3←de1←de2←de3←0
[  5]  z1←(¯2+⌊tam÷3)+?4
[  6]  z2←(¯2+⌊tam÷3)+?4
[  7]  z3←tam-z1+z2
[  8]  zm←z1⌈z2⌈z3
[  9]  z9←tam?99
[ 10]  I1←E1←e1←z1↑z9
[ 11]  I2←E2←e2←z2↑z1↓z9
[ 12]  I3←E3←e3←(z1+z2)↓z9
[ 13]  A1←53 3⍴0
[ 14]  A2←53 3⍴0
[ 15]  A3←53 3⍴0
[ 16]  A1[1;]←¯1 ¯1,e1[1]
[ 17]  A2[1;]←¯1 ¯1,e2[1]
[ 18]  A3[1;]←¯1 ¯1,e3[1]
[ 19]  U1←U2←U3←1
[ 20]  i←2
```

```
[ 21] t2:→(i>⍴e1)/t3
[ 22]  1 incabp e1[i]
[ 23]  →(i=i←i+1)/t2
[ 24] t3:
[ 25]  i←2
[ 26] t4:→(i>⍴e2)/t5
[ 27]  2 incabp e2[i]
[ 28]  →(i=i←i+1)/t4
[ 29] t5:
[ 30]  i←2
[ 31] t6:→(i>⍴e3)/t7
[ 32]  3 incabp e3[i]
[ 33]  →(i=i←i+1)/t6
[ 34] t7:
[ 35] acabou:
[ 36]  P1←(A1[;3]≠0)/[1]A1
[ 37]  P2←(A2[;3]≠0)/[1]A2
[ 38]  P3←(A3[;3]≠0)/[1]A3
[ 39]  j←1
[ 40] vorta:→(j>movs)/ufa
[ 41]  de←?3
[ 42]  para←(de≠⍳3)/⍳3
[ 43]  para←para[?2]
[ 44] ⍝ 'de,para  =',⍕de,para
[ 45]  →(de=1)/deum
[ 46]  →(de=2)/dedois
[ 47] detres:
[ 48]  de3←de3+1
[ 49]  quem←E3[1+?¯1+⍴E3]
[ 50]  E3←(quem≠E3)/E3
[ 51]  lixo←1 excabp3 quem
[ 52]  →junta
[ 53] dedois:
[ 54]  de2←de2+1
[ 55]  quem←E2[1+?¯1+⍴E2]
[ 56]  E2←(quem≠E2)/E2
[ 57]  lixo←1 excabp2 quem
[ 58]  →junta
[ 59] deum:
[ 60]  de1←de1+1
[ 61]  quem←E1[1+?¯1+⍴E1]
[ 62]  E1←(quem≠E1)/E1
[ 63]  lixo←1 excabp1 quem
[ 64] junta:para incabp quem
[ 65]  →(para=1)/jum
[ 66]  →(para=2)/jdois
[ 67] jtres:⍝E3←E3,quem
[ 68]  pa3←pa3+1
[ 69]  →somaj
[ 70] jdois:⍝E2←E2,quem
[ 71]  pa2←pa2+1
[ 72]  →somaj
[ 73] jum:⍝E1←E1,quem
[ 74]  pa1←pa1+1
[ 75] somaj:
[ 76]  Q←Q,[1]1 60⍴60↑'retire ',('99'⍕quem),' de ',(⍕de),' e insira-o em ',⍕para
[ 77]  →((de≠1)∧(para≠1))/lana2
[ 78]  Q1←Q1,[1]1 60⍴60↑'retire ',('99'⍕quem),' de ',(⍕de),' e insira-o em ',⍕para
[ 79] lana2:→((de≠2)∧(para≠2))/lana3
[ 80]  Q2←Q2,[1]1 60⍴60↑'retire ',('99'⍕quem),' de ',(⍕de),' e insira-o em ',⍕para
[ 81] lana3:→((de≠3)∧(para≠3))/lana4
[ 82]  Q3←Q3,[1]1 60⍴60↑'retire ',('99'⍕quem),' de ',(⍕de),' e insira-o em ',⍕para
[ 83] lana4:
```

```
[ 84]  M←M,[1]1 3⍴quem,de,para
[ 85]  j←j+1
[ 86]  →vorta
[ 87] ufa:
[ 88] ⍝-------------------------------------
[ 89]  B1←A1←(U1,4)↑A1
[ 90]  B2←A2←(U2,4)↑A2
[ 91]  B3←A3←(U3,4)↑A3
[ 92]  0 acertac461 1
[ 93]  0 acertac462 1
[ 94]  0 acertac463 1
[ 95]  R1←gera45 A1
[ 96]  R2←gera45 A2
[ 97]  R3←gera45 A3
[ 98]  rm←(⍴R1)⌈(⍴R2)⌈⍴R3
[ 99]  r[1]←⊂(3,zm+1)⍴((⍴I1),zm↑I1),((⍴I2),zm↑I2),(⍴I3),zm↑I3
[100]  r[2]←⊂Q
[101]  r[3]←⊂(3,rm+1)⍴((⍴R1),rm↑R1),((⍴R2),rm↑R2),(⍴R3),rm↑R3
-------------------------------------------------------------
[ 0]  r←geralatexe arv;vv;i;l;ind;j
[ 1] ⍝ esta funcao recebe uma arvore criada por crarvore e devolve
[ 2] ⍝ um texto latex pronto para ser incluido la.
[ 3]  vv←posorder arv
[ 4]  i←1 ⋄ r←0 60⍴' '
[ 5] t1:→(i>⍴vv)/fim
[ 6]  l←'\node{\cntr{',(3 0⍕vv[i]),'}'
[ 7]  ind←(arv[;3]=vv[i])/⍳1↑⍴arv
[ 8] ⍝------------- ↓↓↓↓↓ alteracao para acomodar as alocacoes encadeadas
[ 9]  →(1=⍴,ind)/ufaz
[10]  j←1
[11] ⍝ arv[ind;]
[12] t7:→(j>⍴ind)/uca
[13]  →(arv[ind[j];4]=0)/som7
[14]  ind←ind[j]
[15]  →ufaz
[16] som7:→(j=j←j+1)/t7
[17] ufaz:
[18] ⍝----------------↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑-----------------------
[19]  →(2=+/arv[ind;1 2]=¯1)/naotem
[20]  →(arv[ind;1]=¯1)/sodir
[21]  →(arv[ind;2]=¯1)/soesq
[22]  l←l,'}'
[23]  →soma
[24] naotem:l←l,'\external}'
[25]  →soma
[26] sodir:l←l,'\rightonly}'
[27]  →soma
[28] soesq:l←l,'\leftonly}'
[29] soma:
[30]  r←r,[1]1 60⍴60↑l
[31] uca:→(i=i←i+1)/t1
[32] fim:r←(1 60⍴60↑'\begin{Tree}'),[1]r
[33]  r←r,[1]1 60⍴60↑'\end{Tree}'
[34]  r←r,[1]1 60⍴60↑'\hspace{\leftdist}\usebox{\TeXTree}\hspace{\rightdist}'
-------------------------------------------------------------
[ 0]  arvore incabp valor;onde;pai;esqdir;A;U;qtx
[ 1] ⍝ (⍤'A','0'⍕arvore) = tabela de 50x3 (fe,fd,cont)
[ 2] ⍝ (⍤'U','0'⍕arvore) = e' o ultimo ja usado (0=ini)
[ 3] ⍝ a raiz eh sempre 1
[ 4]  ⍤'A←','A','0'⍕arvore
[ 5]  ⍤'U←','U','0'⍕arvore
[ 6]  U←U+1
[ 7]  A[U;]←¯1 ¯1,valor
```

```
[ 8]  qtx←0
[ 9]  onde←1
[10] busca:
[11]  qtx←qtx+1
[12]  →(valor<A[onde;3])/emenor
[13] maior:esqdir←1
[14]  pai←onde
[15]  onde←A[onde;2]
[16]  →testa
[17] emenor:esqdir←0
[18]  pai←onde
[19]  onde←A[onde;1]
[20] testa:→(onde≠¯1)/busca
[21]  A[pai;1+esqdir]←U
[22] ⍝---------------------------------
[23] fim:⍞('A','0'⍕arvore),'←A'
[24]  ⍞('U','0'⍕arvore),'←U'
-------------------------------------------------------------
[0]  r←limpa
[1]  r←⎕EX 20 3⍴'A01A02A03A04A05A06A07A08A09A10A11A12A13A14A15A16A17A18A19A20'
[2]  r←⎕EX 20 3⍴'A21A22A23A24A25A26A27A28A29A30A31A32A33A34A35A36A37A38A39A40'
[3]  r←⎕EX 20 3⍴'A41A42A43A44A45A46A47A48A49A50A51A52A53A54A55A56A57A58A59A60'
[4]  r←⎕EX 10 5⍴'ONDE ONDE1PAI  ONDE2'
[5]  r←⎕EX 2 10⍴'PPL       PPVELHO   '
-------------------------------------------------------------
[0]  limpavars;lixo
[1]  lixo←⎕EX 13 2⍴'A1A2A3B1B2B3I1I2I3R1R2R3M '
[2]  lixo←⎕EX 10 2⍴'P1P2P3T1T2T3T9U1U2U3'
[3]  lixo←⎕EX 3 3⍴'AA1AA2AA3'
-------------------------------------------------------------
[0]  limpavars2;lixo
[1]  lixo←⎕EX 16 2⍴'A1A2A3B1B2B3I1I2I3P1P2P3R1R2R3M '
-------------------------------------------------------------
[0]  r←pinta x
[1] ⍝ v 1.0
[2]  x←x[⍋x]
[3]  r←(x[1]-1)+⍳1+x[2]-x[1]
-------------------------------------------------------------
[0]  r←posorder x;lixo
[1] ⍝ devolve os nodos de x em posorder (fe,fd,raiz)
[2]  ARV←x
[3]  R←''
[4]  OS 1
[5]  r←R
[6]  lixo←⎕EX 2 3⍴'ARVR  '
[7]  lixo←limpa
-------------------------------------------------------------
[ 0]  r←testa;i
[ 1] ⍝ esta funcao devolve 1 se a geracao deu certo e 0 senao
[ 2]  i←1
[ 3] t1:→(i>1↑⍴M)/fim
[ 4]  →((M[i;2]=1)∧(M[i;3]=2))/v12
[ 5]  →((M[i;2]=1)∧(M[i;3]=3))/v13
[ 6]  →((M[i;2]=2)∧(M[i;3]=1))/v21
[ 7]  →((M[i;2]=2)∧(M[i;3]=3))/v23
[ 8]  →((M[i;2]=3)∧(M[i;3]=1))/v31
[ 9]  →((M[i;2]=3)∧(M[i;3]=2))/v32
[10]  'erro'
[11]  →0
[12] v12:I1←M[i;1]arranca I1
[13]  I2←M[i;1]enfia I2
[14]  →soma
[15] v13:I1←M[i;1]arranca I1
```

```
[16]  I3←M[i;1]enfia I3
[17]  →soma
[18] v21:I2←M[i;1]arranca I2
[19]  I1←M[i;1]enfia I1
[20]  →soma
[21] v23:I2←M[i;1]arranca I2
[22]  I3←M[i;1]enfia I3
[23]  →soma
[24] v31:I3←M[i;1]arranca I3
[25]  I1←M[i;1]enfia I1
[26]  →soma
[27] v32:I3←M[i;1]arranca I3
[28]  I2←M[i;1]enfia I2
[29]  →soma
[30] soma:i←i+1
[31]  →t1
[32] fim:
[33]  →(((ρI1)≠ρR1)∨((ρI2)≠ρR2)∨((ρI3)≠ρR3))/erro
[34]  r←(∧/I1[⍋I1]=R1[⍋R1])∧(∧/I2[⍋I2]=R2[⍋R2])∧(∧/I3[⍋I3]=R3[⍋R3])
[35]  →0
[36] erro:r←0
[37]  →0
-------------------------------------------------------------
[ 0]  testacaso;bb;f;bbb;ini;ord;res;lixonol
[ 1]  bb←ΔFM'c:\apl2\VIVOBLO1'
[ 2]  bb←((1↑ρbb),80)↑bb
[ 3]  f←((1↑ρFOLHATESTA),80)↑FOLHATESTA
[ 4] inica:
[ 5]  bbb←10 geracaso4 40
[ 6]  →(1=testa)/okok
[ 7]  □←'O'
[ 8]  →inica
[ 9] okok:
[10]  ini←⊃bbb[1]
[11]  ord←⊃bbb[2]
[12]  res←⊃bbb[3]
[13]  f[4;]←80↑⍕ini[1;1]↑1↓ini[1;]
[14]  f[8+⍳10;]←10 80↑((M[;2]=1)∨(M[;3]=1))/[1]ord
[15]  f[27+⍳20;]←20 80↑arrumalatex geralatexe P1
[16]  f[49+⍳20;]←20 80↑arrumalatex geralatexe A1
[17]  f[24;]←80↑⍕res[1;1]↑1↓res[1;]
[18]  f[74;]←80↑⍕ini[2;1]↑1↓ini[2;]
[19]  f[75;]←80↑⍕ini[3;1]↑1↓ini[3;]
[20]  f[79;]←80↑⍕res[2;1]↑1↓res[2;]
[21]  f[80;]←80↑⍕res[3;1]↑1↓res[3;]
[22]  f←bb,[1]f,[1]1 80ρ80↑'\end{document}'
[23]  lixonol←f ΔFM'c:\apl2\testa434.tex'
[24]  '!!!!!  Arquivo TEX em c:\apl2\testa434.tex'
[25] terminando:
-------------------------------------------------------------
[0]  r←ve x
[1]  r←1 numera(x[;3]≠0)/[1]x
-------------------------------------------------------------
[0]  r←ve1
[1]  'inicio'
[2]  I1[⍋I1]
[3]  'servicos'
[4]  Q1
[5]  'final'
[6]  R1[⍋R1]
-------------------------------------------------------------
[ 0]  opesq vivo434a n;CORRECAO;EVENTO;a;aaa;acuja;b;bbb;cas;dhx;esse;f;idx;ini;lixo1;lixo
      nol;ord;relat;res;resp;resu;upag;xixo;xk;ylu
```

```
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←10 ⋄ EVENTO←'PL434   '
[ 5]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 8]  FOLHALA434←80 ajusta FOLHALA434
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA434)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[11]  xk←1 ⋄ resu←0 6⍴0
[12] testa33:→(xk>1↑⍴ylu)/fim
[13]  esse←42 80⍴' '
[14]  f←FOLHALA434
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍎VERSAOa←1.03
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍎resp←xk),'-',opesq
[22]  esse[41;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[42;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25]  bbb←20 geracaso4 60
[26]  →(1=testa)/okok
[27]  ⎕←'O'
[28]  →inica
[29] okok:
[30]  ini←⊃bbb[1]
[31]  ord←⊃bbb[2]
[32]  res←⊃bbb[3]
[33]  esse[8;]←80↑⍎ini[1;1+⍳ini[1;1]]
[34]  esse[9;]←80↑⍎ini[2;1+⍳ini[2;1]]
[35]  esse[10;]←80↑⍎ini[3;1+⍳ini[3;1]]
[36]  esse[10+⍳20;]←20 80↑ord
[37]  cas←6 3⍴0
[38]  cas[;1]←1 1 2 2 3 3
[39]  cas[1 2;2]←b+2?b←⌊0.5×a←res[1;1]
[40]  cas[1;3]←res[1;1+cas[1;2]]
[41]  cas[2;3]←res[1;1+cas[2;2]]
[42]  cas[3 4;2]←b+2?b←⌊0.5×a←res[2;1]
[43]  cas[3;3]←res[2;1+cas[3;2]]
[44]  cas[4;3]←res[2;1+cas[4;2]]
[45]  cas[5 6;2]←b+2?b←⌊0.5×a←res[3;1]
[46]  cas[5;3]←res[3;1+cas[5;2]]
[47]  cas[6;3]←res[3;1+cas[6;2]]
[48]  idx←5?6
[49]  idx←idx[⍋idx]
[50]  esse[30+⍳5;]←5 80⍴80 0⍎cas[idx;1]
[51]  esse[35+⍳5;]←5 80⍴80 0⍎cas[idx;2]
[52]  resu←resu,[1]1 6⍴resp,cas[idx;3]
[53]  acuja←(f[;2]='#')/⍳1↑⍴f
[54]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[55]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[56]  ⎕←(⍎xk←xk+1),'-'
[57]  →testa33
[58] fim:upag←(1 0+⍴f)⍴' '
[59]  →(1=≡n)/elafa
[60]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[61]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[62]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0,8⍴5 0)⍎resu
```

```
[63]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[64]  →terminando
[65] elafa:aaa←(ylu,4 0⍕0 1↓resu)
[66]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.gpa')
[67]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[68] terminando:
[69]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[70]  relat[1↑⍴relat;;]←upag
[71]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)ΔFM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.t
      ex'
[72]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[73]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
[74]  limpavars
-------------------------------------------------------------
[ 0]  r←a xuxa b;fe;fd
[ 1] ⍝ b[1] e o endereco da raiz em a; b[2] e onde este cara entrou;
[ 2] ⍝ b[3] e z (onde desloocamento = +-2*z-1) e acada vez diminui 1
[ 3] ⍝ e b[4] e a coluna de saida. cada vez +3
[ 4] ⍝ funcao recursiva para desenhar a arvore
[ 5] ⍝ p.kantek v1.0 jun/99
[ 6]  r←a
[ 7]  fe←a[b[1];1]
[ 8]  →(fe=¯1)/pulaesq
[ 9]  r[fe;5 6]←(b[2]-2*b[3]-1),b[4]
[10]  r←r xuxa fe,(b[2]-2*b[3]-1),(b[3]-1),(b[4]+4)
[11] pulaesq:fd←a[b[1];2]
[12]  →(fd=¯1)/fim
[13]  r[fd;5 6]←(b[2]+2*b[3]-1),b[4]
[14]  r←r xuxa fd,(b[2]+2*b[3]-1),(b[3]-1),(b[4]+4)
[15] fim:
-------------------------------------------------------------
```

vivo435

```
[ 0]  LEIAME
[ 1]  'Este WS possui as seguintes funcoes:                                    '
[ 2]  '                                                                        '
[ 3]  '1. geracaso n                                                           '
[ 4]  'cria uma colecao de chaves e frequencias de   ⍴ igual a 2,n               '
[ 5]  '(a primeira linha sao as chaves ja ordenadas e a segunda as frequencias '
[ 6]  'de cada chave)                                                          '
[ 7]  '                                                                        '
[ 8]  '2. criaabpa x                                                           '
[ 9]  'monta uma arvore binaria de partilha na variavel global ABPA a partir dos'
[10]  'dados de x (x deve ter sido gerada por geracaso).                       '
[11]  'Esta funcao usar recursivamente a funcao criara. A global RAIZ tambem   '
[12]  'e usada, mas pode ser apagada. A matriz ABPA tem a seguinte descricao:  '
[13]  '&fe, &fd, chave real e chave partilha.                                  '
[14]  '                                                                        '
[15]  '3. protosol y                                                           '
[16]  'devolve 3 valores, referentes a chave de partilha do terceiro,          '
[17]  'setimo e decimo nodos da arvore y (usualmente a ABPA) no caminhamento   '
[18]  'em largura. Esta funcao ainda nao foi formalmente conferida. (Por       '
[19]  'isso o nome de PROTOtipo). Esta funcao so funciona para ABPas de 15     '
[20]  'chaves                                                                  '
[21]  '                                                                        '
[22]  '4. r  ←glatex                                                           '
[23]  'Devolve um bloco (pronto para ser gravado), contendo a descricao        '
[24]  'da arvore ABPA (global) em linguagem latex.                             '
[25]  'Usa recursivamente a funcao posabpa e as variaveis globais INDS e WORKS.'
[26]  '                                                                        '
-------------------------------------------------------------
```

```
[0]  criaabpa x;qui;y
[1]  qui←1↓⍴x
[2] ⍝ recebe uma instancia de abpa (geracaso) e devolve a abpa
[3]  ABPA←(qui,4)⍴0   ⍝ r[;1]  ←fe; r[;2]  ←fd; r[;3]  ←real; r[;4]  ←partilha
[4]  y←x
[5]  RAIZ←1
[6]  1 criara y
-------------------------------------------------------------
[ 0]  r←ra criara yy;tam;maior;prim;secu;con;quem
[ 1] ⍝ 'chamando com y=',  ⍕  ⍴yy
[ 2]  tam←1↓⍴yy
[ 3]  →(1≥tam)/umso
[ 4]  maior←⌈/yy[2;]
[ 5]  quem←(maior=yy[2;])/⍳tam
[ 6]  ABPA[ra;3]←yy[1;quem]
[ 7]  yy←(quem≠⍳tam)/[2]yy
[ 8]  tam←tam-1
[ 9]  →(tam>1)/conta
[10]  ABPA[ra;4]←yy[1;1]
[11]  ABPA[ra;1 2]←(ra+1),¯1
[12]  RAIZ←RAIZ+1
[13]  RAIZ criara yy
[14]  →0
[15] conta:
[16]  prim←yy[;⍳con←⌈tam÷2]
[17]  ABPA[ra;4]←prim[1;con]
[18]  RAIZ←RAIZ+1
[19]  ABPA[ra;1]←RAIZ
[20]  RAIZ criara prim
[21]  secu←yy[;con+⍳tam-con]
[22]  RAIZ←RAIZ+1
[23]  ABPA[ra;2]←RAIZ
[24]  RAIZ criara secu
[25]  →0
[26] umso:ABPA[ra;]←(¯1 ¯1),yy[1;1],yy[1;1]
-------------------------------------------------------------
[ 0]  r←geracaso n;in
[ 1]  →(n>30)/erro
[ 2]  r←(2,n)⍴0
[ 3]  r[1;]←30+n?69
[ 4]  r[2;n?n]←⍳n
[ 5]  in←⍋r[1;]
[ 6]  r[1;]←r[1;in]
[ 7]  r[2;]←r[2;in]
[ 8]  →0
[ 9] erro:'n deve ser menor que 31'
-------------------------------------------------------------
[ 0]  r←glatex;ta;i;j;tempo
[ 1] ⍝ esta funcao le ABPA e gera GLATEX, contendo o desenho de ABPA
[ 2]  WORKS←(ta←1↑⍴ABPA)⍴0
[ 3]  INDS←1
[ 4]  posabpa INDS
[ 5]  r←(ta,70)⍴' '
[ 6]  i←1
[ 7] tinicio:→(i>⍴WORKS)/fim
[ 8]  j←WORKS[i]
[ 9]  →(ABPA[j;3]≠ABPA[j;4])/difs
[10] igs:tempo←'\cntr{',(3 0⍕ABPA[j;3]),'}'
[11]  →pula
[12] difs:tempo←'\cntr{$\frac{',(3 0⍕ABPA[j;3]),'}{',(3 0⍕ABPA[j;4]),'}$}'
[13] pula:→((ABPA[j;1]=¯1)∧(ABPA[j;2]=¯1))/sem2
[14]  →(ABPA[j;1]=¯1)/seme
[15]  →(ABPA[j;2]=¯1)/semd
```

```
[16] tem2:→soma
[17] semd:tempo←tempo,'\leftonly'
[18]  →soma
[19] seme:tempo←tempo,'\rightonly'
[20]  →soma
[21] sem2:tempo←tempo,'\external'
[22] soma:r[i;]←70↑'\node{',tempo,'}'
[23]  →(i=i←i+1)/tinicio
[24] fim:r←(1 70ρ70↑'\begin{Tree}'),[1]r
[25]  r←r,[1]2 70ρ(70↑'\end{Tree}'),70↑'\hspace{\leftdist}\usebox{\TeXTree}\hspace{\rightd
      ist}'
-------------------------------------------------------------
[0]  posabpa xx
[1] ⍝ 'entrando com ',  ⍕xx
[2]  →(ABPA[xx;1]=¯1)/pulaesq
[3]  posabpa ABPA[xx;1]
[4] pulaesq:→(ABPA[xx;2]=¯1)/puladir
[5]  posabpa ABPA[xx;2]
[6] puladir:WORKS[INDS]←xx
[7]  INDS←INDS+1
-------------------------------------------------------------
[0]  r←protosol ab
[1] ⍝ ATENCAO: esta funcao SO funciona paraABPAs de 15 elementos
[2]  r←ABPA[ABPA[1;2];4],ABPA[ABPA[ABPA[1;2];2];4]
[3]  r←r,ABPA[ABPA[ABPA[ABPA[1;1];2];1];4]
-------------------------------------------------------------
[ 0]  opesq vivo435a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;caso1;lixo1;aaa
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←3 ⋄ EVENTO←'PL435   '
[ 5]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕⍳n
[ 8]  relat←((2+1↑ρylu),1 0+ρFOLHALA435)ρ' '
[ 9]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLOI'
[10]  xk←1 ⋄ resu←0 4ρ0
[11] testa:→(xk>1↑ρylu)/fim
[12]  esse←11 80ρ' '
[13]  f←FOLHALA435
[14]  esse[1;]←80↑dhx[1;]
[15]  esse[2;]←80↑dhx[2;]
[16]  esse[3;]←80↑4 2⍕VERSAOa←3.06
[17]  esse[4;]←80↑ylu[xk;⍳6]
[18]  esse[5;]←80↑ylu[xk;6+⍳30]
[19]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[20]  esse[7;]←80↑(3 0⍕resp←xk),'-',opesq
[21]  esse[10;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[22]  esse[11;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[23] inica:
[24]  caso1←geracaso 15
[25]  criaabpa caso1
[26]  esse[8 9;]←2 80↑(2 10ρ'chaves =  freq. =   '),3 0⍕caso1
[27]  resp←resp,protosol ABPA
[28]  resu←resu,[1]1 4ρresp
[29]  acuja←(f[;2]='#')/⍳1↑ρf
[30]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[31]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\newpage'
[32]  ⍞←(⍕xk←xk+1),'-'
[33]  →testa
[34] fim:upag←(1 0+ρf)ρ' '
```

```
[35]  →(1=≡n)/elafa
[36]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[37]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[38]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 5 0)⍉resu
[39]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[40]  →terminando
[41] elafa:aaa←(ylu,4 0⍉0 1↓resu)
[42]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[43]  '!!!!!  Arquivo GPA com ',(⍉1↑⍴aaa),' linhas e ',(⍉1↓⍴aaa),' colunas'
[44] terminando:
[45]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[46]  relat[1↑⍴relat;;]←upag
[47]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.t
      ex'
[48]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[49]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo436

```
[0]  r←acertarisk x
[1]  r←((¯1+1↓⍴x)⍴'&'),'\\'
-------------------------------------------------------------
[ 0]  r←acertatab x;d1;aa;re;i
[ 1]  d1←4÷aa←1↓⍴x
[ 2]  re←'p{',('0.0'⍉d1),'cm}|'
[ 3]  re←(9×aa)⍴re
[ 4]  re←'\begin{tabular}{||',re,'|}'
[ 5]  i←65
[ 6] t1:→(re[i]='|')/l2
[ 7]  →(i=i←i+1)/t1
[ 8] l2:r←2 80⍴(80↑i↑re),80↑(i↓re),' \hline \hline '
-------------------------------------------------------------
[0]  corrige aa
[1]  'informe ao lado da funcao quais as palavras da folha'
[2]  'literalmente, com virgulas e ponto'
[3]  'OBS: esta funcao so funciona para 4 palavras de 4 letras'
[4]  'se nao for isso, a funcao precisa ser alterada'
[5]  PALA2←4 6⍴'.*'edit',*'edit'*!'edit aa
[6]  PALA1←aa
[7]  QUAIS←quais,'*!'edit 4 5↑4 6⍴aa
-------------------------------------------------------------
[ 0]  res←ctrie1;ja;i;j;prox;raiz
[ 1]  CTRIE1←(50,⍴QUAIS)⍴0
[ 2]  i←1 ⋄ prox←2
[ 3] t1:→(i>1↑⍴PALA2)/fim
[ 4]  j←1 ⋄ raiz←1
[ 5] t2:→(PALA2[i;j]='*')/oba
[ 6]  →(0=ja←CTRIE1[raiz;QUAIS⍳PALA2[i;j]])/ezero
[ 7] naoe:raiz←ja
[ 8]  j←j+1
[ 9]  →t2
[10] ezero:→(PALA2[i;j+1]='*')/term
[11]  CTRIE1[raiz;QUAIS⍳PALA2[i;j]]←prox
[12]  →pula
[13] term:CTRIE1[raiz;QUAIS⍳PALA2[i;j]]←¯1
[14]  prox←prox-1
[15] pula:raiz←prox
[16]  prox←prox+1
[17]  j←j+1
[18]  →t2
[19] oba:→(i=i←i+1)/t1
```

```
[20] fim:CTRIE1←CTRIE1[ιprox-1;]
[21]  res←1 numerat CTRIE1
-------------------------------------------------------------
[ 0]  res←ctrie2;i;j;k;rai;novo;pala2
[ 1]  pala2←,PALA2 ⋄ pala2←'!$'edit pala2 ⋄ pala2←'* 'edit pala2
[ 2]  pala2←'$*'edit pala2 ⋄ pala2←0 ¯1↓(⍴PALA2)⍴pala2
[ 3]  CTRIE2←50 3⍴¯1 ¯1 2,200⍴0 ⋄ k←1 ⋄ rai←2
[ 4] ini8:→(pala2[1;k]='*')/acabou
[ 5]  CTRIE2[rai;]←(⎕AVι⍪pala2[1;k]),¯1,¯1 ⋄ CTRIE2[rai-1;3]←rai
[ 6]  rai←rai+1 ⋄ k←k+1
[ 7]  →ini8
[ 8] acabou:CTRIE2[rai;]←(⎕AVι'$'),¯1,¯1 ⋄ CTRIE2[rai-1;3]←rai
[ 9]  rai←rai+1 ⋄ novo←k+2 ⋄ i←2
[10] t1:→(i>1↑⍴pala2)/fim
[11]  j←1 ⋄ rai←2
[12] lop1:→((⎕AVι⍪pala2[i;j])≠CTRIE2[rai;1])/difs
[13]  j←j+1 ⋄ rai←CTRIE2[rai;3]
[14]  →lop1
[15] difs:→(pala2[i;j]≠'*')/naoe
[16]  CTRIE2[novo;]←(⎕AVι'$'),¯1 ¯1 ⋄ CTRIE2[rai;2]←novo
[17]  novo←novo+1 ⋄ i←i+1
[18]  →t1
[19] naoe:→(CTRIE2[rai;2]=¯1)/blz
[20]  rai←CTRIE2[rai;2]
[21]  →lop1
[22] blz:CTRIE2[novo;]←(⎕AVι⍪pala2[i;j]),¯1 ¯1
[23]  CTRIE2[rai;2]←novo ⋄ j←j+1 ⋄ novo←novo+1
[24] uba:→(pala2[i;j]='*')/eilo
[25]  CTRIE2[novo;]←(⎕AVι⍪pala2[i;j]),¯1 ¯1
[26]  CTRIE2[novo-1;3]←novo ⋄ j←j+1 ⋄ novo←novo+1
[27]  →uba
[28] eilo:CTRIE2[novo;]←(⎕AVι'$'),¯1 ¯1 ⋄ CTRIE2[novo-1;3]←novo
[29]  novo←novo+1 ⋄ i←i+1
[30]  →t1
[31] fim:
[32]  CTRIE2←CTRIE2[ιnovo-1;]
[33]  res←1 numera(((1↑⍴CTRIE2),1)⍴' ',⎕AV[1↓CTRIE2[;1]]),5 0⍕CTRIE2[;2 3]
-------------------------------------------------------------
[0]  exemplo2
[1]  PALA2←2 6⍴'ATE!* OBA!* '
[2]  PALA1←'ATE*,OBA*.'
[3]  QUAIS←'!ABELOT'
-------------------------------------------------------------
[0]  exemplo3
[1]  PALA2←3 6⍴'ATE!* OBA!* OLA!* '
[2]  PALA1←'ATE*,OBA*,OLA*.'
[3]  QUAIS←'!ABELOT'
-------------------------------------------------------------
[0]  exemplo4
[1]  PALA2←3 8⍴'CASA!*  CASAR!* CASARA!*'
[2]  PALA1←'CASA*,CASAR*,CASARA*.'
[3]  QUAIS←'!ACRS'
-------------------------------------------------------------
[0]  exemplo4a
[1]  PALA2←2 8⍴'CASA!*  CASAR!* '
[2]  PALA1←'CASA*,CASAR*.'
[3]  QUAIS←'!ACRS'
-------------------------------------------------------------
[ 0]  geracaso n;ind;r
[ 1]  ind←n?1↑⍴palavras1
[ 2]  ind←ind[⍋ind]
[ 3]  r←palavras1[ind;]
[ 4]  PALA2←r
```

```
[ 5]  r←r,','
[ 6]  r←,r
[ 7]  r←(r≠' ')/r
[ 8]  r←(r≠'!')/r
[ 9]  r←(¯1↓r),'.'
[10]  PALA1←r
[11]  QUAIS←quais PALA2
-------------------------------------------------------------
[0]  limpa;r
[1]  r←⎕EX'PALA1'
[2]  r←⎕EX'PALA2'
[3]  r←⎕EX'QUAIS'
[4]  r←⎕EX'CTRIE1'
[5]  r←⎕EX'CTRIE2'
-------------------------------------------------------------
[ 0]  r←alfa numerat x;⎕IO;zz;a1;a2;a3;a4;t;li
[ 1]  ⎕IO←1
[ 2]  t←3   ⍝ e fixo aqui na numerat
[ 3]  →(alfa=0)/zero
[ 4]  r←(((1↑⍴x),3)⍴3 0⍕¯1+alfa+⍳1↑⍴x),'-',(t,0)⍕x
[ 5]  →fim
[ 6] zero:r←(((1↑⍴x),3)⍴3 0⍕¯1+⍳1↑⍴x),'-',(t,0)⍕x
[ 7] fim:li←('      *',3↓((3×⍴QUAIS)⍴0 0 1)⍀QUAIS)
[ 8]  li←(2,⍴li)⍴li,'    ',200⍴' --'
[ 9]  r←li,[1]r
-------------------------------------------------------------
[0]  r←quais x
[1]  x←,x
[2]  x←(x≠' ')/x
[3]  x←(x≠'*')/x
[4]  r←((x⍳x)=⍳⍴x)/x
[5]  r←r[⎕AV⍋r]
-------------------------------------------------------------
[0]  r←vet2;ct
[1]  ct←(3≠+/0=CTRIE2)/[1]CTRIE2
[2]  r←1 numera(((1↑⍴ct),1)⍴' ',⎕AV[1↓ct[;1]]),5 0⍕ct[;2 3]
-------------------------------------------------------------
[ 0]  opesq vivo436a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;lixo;aaa;rea;reb
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←0 ⋄ EVENTO←'PL436   '
[ 5]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 8]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA436)⍴' '
[ 9]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[10]  xk←1 ⋄ resu←0 80⍴0
[11] testa:→(xk>1↑⍴ylu)/fim
[12]  esse←14 80⍴' '
[13]  f←FOLHALA436
[14]  esse[1;]←80↑dhx[1;]
[15]  esse[2;]←80↑dhx[2;]
[16]  esse[3;]←80↑4 2⍕VERSAOa←3.05
[17]  esse[4;]←80↑ylu[xk;⍳6]
[18]  esse[5;]←80↑ylu[xk;6+⍳30]
[19]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[20]  esse[7;]←80↑(3 0⍕resp←xk),'-',opesq
[21]  esse[13;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[22]  esse[14;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[23] inica:
```

```
[24]  geracaso 4
[25]  esse[8;]←80↑PALA1
[26]  rea←ctrie1
[27]  reb←ctrie2
[28]  esse[9 10;]←acertatab CTRIE1
[29]  esse[11 12;]←2 80⍴80↑acertarisk CTRIE1
[30]  resp←(5 0⍕resp),(50↑,'¯-'edit 3 0⍕CTRIE1[7;]),⎕AV[CTRIE2[10;1]],18↑'¯-'edit 3 0⍕CTRI
      E2[10;3 2]
[31]  resu←resu,[1](1,80)⍴80↑resp
[32]  acuja←(f[;2]='#')/⍳1↑⍴f
[33]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[34]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[35]  ⎕←(⍕xk←xk+1),'-'
[36]  →testa
[37] fim:upag←(1 0+⍴f)⍴' '
[38]  →(1=≡n)/elafa
[39]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[40]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[41]  upag[2+⍳1↑⍴resu;⍳80]←((1↑⍴resu),80)↑resu
[42]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[43]  →terminando
[44] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 5↓resu)
[45]  aaa[1;35 36]←2 0⍕CORRECAO
[46]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[47]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[48] terminando:
[49]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[50]  relat[1↑⍴relat;;]←upag
[51]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.t
      ex'
[52]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[53]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
[54]  'veja a variavel LEIAME com a ultima versao'
[55]  LEIAME←('¯-'edit rea)('¯-'edit reb)
-------------------------------------------------------------
```

vivo437

```
[ 0]  raiz ACHA_ALT inic
[ 1]  →(inic≤A)/cont
[ 2]  A←inic+1
[ 3] cont:
[ 4]  →(ARV[raiz;1]=¯1)/ufa
[ 5]  ARV[raiz;1]ACHA_ALT inic+1
[ 6] ufa:
[ 7]  →(ARV[raiz;2]=¯1)/fim
[ 8]  ARV[raiz;2]ACHA_ALT inic+1
[ 9] fim:
-------------------------------------------------------------
[ 0]  r←acertabrancos a;b;i
[ 1]  b←,a
[ 2]  i←1
[ 3] t1:→(i>¯1+⍴b)/fim
[ 4]  →((b[i]='<')∧(b[i+1]=' '))/troca
[ 5]  →((b[i]=' ')∧(b[i+1]='>'))/troca2
[ 6]  →((b[i]='(')∧(b[i+1]=' '))/troca3
[ 7]  →((b[i]=' ')∧(b[i+1]=')'))/troca4
[ 8]  i←i+1
[ 9]  →t1
[10] troca:b[i]←' '
[11]  b[i+1]←'<'
[12]  i←i+2
```

```
[13]  →t1
[14] troca2:b[i]←'>'
[15]  b[i+1]←' '
[16]  i←i+2
[17]  →t1
[18] troca3:b[i]←' '
[19]  b[i+1]←'('
[20]  i←i+2
[21]  →t1
[22] troca4:b[i]←')'
[23]  b[i+1]←' '
[24]  i←i+2
[25]  →t1
[26] fim:r←(⍴a)⍴b
-------------------------------------------------------------
[0]  r←a ate b
[1]  r←a,a+⍳b-a
-------------------------------------------------------------
[0]  r←a com b;l
[1]  l←(1↑⍴a)⌈1↑⍴b
[2]  r←((l,1↓⍴a)↑a),(l,1↓⍴b)↑b
[3] ⍝fconcatena duas coisas de alturas diferentes
[4] ⍝ousado junto com a crarv para mostrar abps (desenho e matriz)
-------------------------------------------------------------
[ 0]  z←qual crarvo xx;aa;zz
[ 1]  →(0≠⎕NC'qual')/iveio
[ 2]  qual←3
[ 3] iveio:
[ 4] ⍝ qual eh opcional. Se qual = 1 so imprime a arvores. Se qual=2 imprime
[ 5] ⍝ so a matriz. Se qual=3 imprime ambos. Se omitido, assume-se qual=3
[ 6] ⍝
[ 7] ⍝
[ 8] ⍝
[ 9] ⍝ gera uma arvore e uma matriz de cursores a partir dos
[10] ⍝ dados fornecidos
[11] ⍝ faca crarvo 1 3 80 45 31 22 85
[12] ⍝ 10 20⍴' '
[13] ⍝ 'elementos = ',⍕xx
[14] novo:ARV←crpeq crarvore xx
[15]  zz←2 1 1 dearvore crarvore tneg ARV[;3]
[16]  z←zz com 1 numera ARV
[17]  →(qual≠3)/oba1
[18]  →fim
[19] ⍝ arvore criada em ARV (global)
[20] ⍝ sequencia de criacao em ARV[;3]
[21] oba1:→(qual≠2)/eum
[22]  z←1 numera ARV
[23]  →fim
[24] eum:
[25]  z←dearvore crarvore tneg ARV[;3]
[26] fim:z←'¯'-'edit z
-------------------------------------------------------------
[ 0]  r←crarvore elems;aspa;i;ealfa
[ 1] ⍝ cria uma arvore para desenho com elems / p.kantek / v2.1
[ 2] ⍝ col [1] = &fe
[ 3] ⍝ col [2] = &fd
[ 4] ⍝ col [3] = conteudo
[ 5] ⍝ col [4] = profundidade
[ 6] ⍝ col [5] = &pai
[ 7] ⍝ col [6] = largura do bloco grafico
[ 8] ⍝ col [7] = 0  ≠se bloco grafico ja foi criado (1=significa que ele e o
[ 9] ⍝           raiz do bloco. 2=ja foi usado para construir outro mais
[10] ⍝           acima
```

```
[11]  r←((⍴elems),7)⍴0 ⋄ ealfa←1 ⋄ aspa←''''
[12]  →(isnum elems)/nume
[13]  ealfa←¯1
[14]  elems←1000+⎕AV⍳elems
[15] nume:i←2 ⋄ r[1;1 2 3]←¯1,¯1,elems[1]
[16] inica:→(i>⍴elems)/acabou
[17]  r←r inarvore elems[i]
[18]  →(i=i←i+1)/inica
[19] acabou:
[20]  i←1
[21] conta:→(i>⍴elems)/mesmo
[22]  →((r[i;1]≠¯1)∨(r[i;2]≠¯1))/pula
[23]  →(ealfa=¯1)/letra
[24]  ⍞'A',('05'⍕i),'←',aspa,'<',(formata elems[i]),'>',aspa
[25]  →indo
[26] letra:⍞'A',('05'⍕i),'←',aspa,'(⊃',⎕AV[elems[i]-1000],'⊂)',aspa
[27] indo:r[i;7]←1
[28]  r[i;6]←3
[29] pula:→(i=i←i+1)/conta
[30] mesmo:
------------------------------------------------------------
[0]  r←crpeq z
[1]  r←((1↑⍴z),3)↑z
[2] ⍝ esta funcao exclui as colunas 4,5,6 e 7 da arvore criada pelo crarvore
------------------------------------------------------------
[ 0]  r←e de2f d;lin;col
[ 1]  →(2=⍴⍴e)/ee
[ 2]  e←(1,⍴e)⍴e
[ 3] ee:→(2=⍴⍴d)/dd
[ 4]  d←(1,⍴d)⍴d
[ 5] dd:lin←(1↑⍴e)⌈1↑⍴d
[ 6] ⍝ col  ←(3+1  ↓  ⍴e)  ⌊3+1  ↓  ⍴d
[ 7]  col←(1↓⍴e)⌈1↓⍴d
[ 8]  e←(lin,col)↑e ⋄ d←(lin,col)↑d
[ 9] ⍝ e  ←(lin,(1  ↓  ⍴e))  ↑e   ⋄ d  ←(lin,(1  ↓  ⍴d))  ↑d
[10]  r←e,' ',d
[11]  r←((4,1↓⍴r)⍴' '),[1]r
[12]  r[1;((meio 1↓⍴r)-3)+⍳5]←PAI
[13]  r[2;((meio 1↓⍴r)-2)+⍳3]←'_&_'
[14]  r[3;(ONDE1)ate ¯1+meio 1↓⍴r]←'_'
[15]  r[3;(1+meio 1↓⍴r)ate(1+ONDE2+1↓⍴e)-1]←'_'
[16]  r[3;meio 1↓⍴r]←'#'
[17]  r[3;ONDE1]←'%'
[18]  r[3;(1↓⍴e)+1+ONDE2]←'!'
[19]  r[4;ONDE1+¯1 0 1]←r[4;1+(1↓⍴e)+ONDE2+¯1 0 1]←'_#_'
------------------------------------------------------------
[ 0]  r←a dearvore b;prim;paiprim;filhos;fe;fd;X;x;aspa;ois;carac;nivel;larg
[ 1]  →(0≠⎕NC'a')/veio
[ 2]  a←1 1 2
[ 3] ⍝ 'carac=1/ascii/2=apld/3=apls/4=hdup/5=vdup
[ 4] ⍝  niveis=1/2/3/4 1=denso...       largura=1(largo) 2(estreito)' v.2.1
[ 5] veio:r←b
[ 6]  carac←a[1] ⋄ nivel←a[2] ⋄ larg←a[3]
[ 7]  aspa←''''
[ 8] inicio:→(1=r[1;7])/acabou
[ 9]  ois←(r[;7]=1)/⍳1↑⍴r
[10]  →(1=⍴ois)/sotem1
[11]  prim←1↑(r[ois;4]=⌈/r[ois;4])/ois
[12]  →voltaj
[13] sotem1:prim←ois
[14] voltaj:paiprim←r[prim;5]
[15]  →(r[paiprim;3]>1000)/le
[16]  ⍞'PAI  ←',aspa,'<',(formata r[paiprim;3]),'>',aspa
```

```
[17]  →indo
[18] le:⍞'PAI  ←',aspa,'(⊃',⎕AV[r[paiprim;3]-1000],'⊂)',aspa
[19] indo:→(2=⍴filhos←((r[;5]=paiprim)∧(r[;7]=1))/⍳1↑⍴r)/tem2
[20] tem1:→(r[paiprim;1]=prim)/efe
[21] efd:fd←⍞'A','05'⍕prim
[22]  ONDE←r[prim;6]
[23]  ⍞'A',('05'⍕paiprim),'  ←defd fd'
[24]  r[paiprim;7]←1 ⋄ r[prim;7]←2 ⋄ r[paiprim;6]←3
[25]  →inicio
[26] efe:
[27]  fe←⍞'A','05'⍕prim
[28]  ONDE←r[prim;6]
[29]  ⍞'X  ←1  ↓  ⍴A',('05'⍕paiprim),'  ←defe fe'
[30]  r[paiprim;7]←1 ⋄ r[prim;7]←2 ⋄ r[paiprim;6]←X-2
[31]  →inicio
[32] tem2:
[33]  →(r[filhos[1];3]>r[filhos[2];3])/ummaior
[34]  x←filhos[1] ⋄ filhos[1]←filhos[2] ⋄ filhos[2]←x
[35] ummaior:
[36]  ONDE1←r[filhos[2];6] ⋄ ONDE2←r[filhos[1];6]
[37]  fe←⍞'A','05'⍕filhos[2]   ⍝1
[38]  fd←⍞'A','05'⍕filhos[1]   ⍝2
[39]  ⍞'X  ←1  ↓  ⍴A',('05'⍕paiprim),'  ←fe de2f fd'
[40]  r[paiprim;7]←1 ⋄ r[filhos[1];7]←r[filhos[2];7]←2 ⋄ r[paiprim;6]←meio X
[41]  →inicio
[42] acabou:MAT←r   ⍝ aqui esta a matriz de entrada devidamente ja processada
[43]  →(larg=1)/jump
[44]  A01←(~∧/[1]((A01=' ')∨(A01='_')))/[2]A01
[45] jump:A01←'⍝ 'edit A01
[46]  A01←'⊃ 'edit A01
[47]  A01←'⊂ 'edit A01
[48]  r←carac edita A01
[49]  x←limpa
[50]  →(nivel=4)/0
[51]  →(nivel=3)/tres
[52]  →(nivel=2)/dois
[53]  →(nivel=1)/um
[54]  'erro de nivel'
[55]  →fin
[56] um:r←((1↑⍴r)⍴1 0)/[1]r
[57]  →fin
[58] dois:r←((1↑⍴r)⍴1 1 1 0)/[1]r
[59]  →fin
[60] tres:r←((1↑⍴r)⍴1 0 1 1)/[1]r
[61]  →fin
[62] fin:r←acertabrancos r
-------------------------------------------------------------
[ 0]  r←defd x
[ 1]  →(2=⍴⍴x)/esim
[ 2]  x←(1,⍴x)⍴x
[ 3] esim:r←((1↑⍴x),-(1↓⍴x)+4)↑x
[ 4]  r←((4,1↓⍴r)⍴' '),[1]r
[ 5]  r[1;⍳5]←PAI
[ 6]  r[2;2 3 4]←'_&_'
[ 7]  r[3;3]←'$'
[ 8]  r[3;4+ONDE]←'!'
[ 9]  r[3;4 ate 3+ONDE]←'_'
[10]  r[4;4+ONDE+¯1 0 1]←'_#_'
-------------------------------------------------------------
[ 0]  r←defe x
[ 1]  →(2=⍴⍴x)/esim
[ 2]  x←(1,⍴x)⍴x
[ 3] esim:r←((1↑⍴x),(1↓⍴x)+4)↑x
```

```
[ 4]  r←((4,1↓⍴r)⍴' '),[1]r
[ 5]  r[1;((1↓⍴r)-5)+⍳5]←PAI
[ 6]  r[2;((1↓⍴r)-4)+⍳3]←'_&_'
[ 7]  r[3;(1↓⍴r)-2]←'@'
[ 8]  r[3;(ONDE)ate((1↓⍴r)-3)]←'_'
[ 9]  r[3;ONDE]←'%'
[10]  r[4;ONDE+¯1 0 1]←'_#_'
-------------------------------------------------------------
[ 0]  r←qual edita tudo
[ 1]  →(qual=1)/ascii
[ 2]  →(qual=2)/apldu
[ 3]  →(qual=3)/aplsi
[ 4]  →(qual=4)/aplds
[ 5]  →(qual=5)/aplsd
[ 6]  'erro'
[ 7]  →0
[ 8] ⍝              |                          |          |
[ 9] ⍝ %=+--   #=--+--   _=---   !=--+   $=+--   @=--+   &=--+--
[10] ⍝   |                              |                       |
[11] ascii:
[12]  r←'%+'edit tudo
[13]  r←'#+'edit r
[14]  r←'_-'edit r
[15]  r←'!+'edit r
[16]  r←'$+'edit r
[17]  r←'@+'edit r
[18]  r←'&+'edit r
[19]  →0
[20] apldu:
[21]  r←('%',⎕AV[202])edit tudo
[22]  r←('#',⎕AV[203])edit r
[23]  r←('_',⎕AV[206])edit r
[24]  r←('!',⎕AV[188])edit r
[25]  r←('$',⎕AV[201])edit r
[26]  r←('@',⎕AV[189])edit r
[27]  r←('&',⎕AV[204])edit r
[28]  →0
[29] aplsi:
[30]  r←('%',⎕AV[219])edit tudo
[31]  r←('#',⎕AV[194])edit r
[32]  r←('_',⎕AV[197])edit r
[33]  r←('!',⎕AV[192])edit r
[34]  r←('$',⎕AV[193])edit r
[35]  r←('@',⎕AV[218])edit r
[36]  r←('&',⎕AV[195])edit r
[37]  →0
[38] aplds:
[39]  r←('%',⎕AV[219])edit tudo
[40]  r←('#',⎕AV[194])edit r
[41]  r←('_',⎕AV[197])edit r
[42]  r←('!',⎕AV[192])edit r
[43]  r←('$',⎕AV[193])edit r
[44]  r←('@',⎕AV[218])edit r
[45]  r←('&',⎕AV[195])edit r
[46]  →0
[47] aplsd:
[48]  r←('%',⎕AV[215])edit tudo
[49]  r←('#',⎕AV[209])edit r
[50]  r←('_',⎕AV[197])edit r
[51]  r←('!',⎕AV[184])edit r
[52]  r←('$',⎕AV[212])edit r
[53]  r←('@',⎕AV[190])edit r
[54]  r←('&',⎕AV[211])edit r
```

```
[55]  →0
------------------------------------------------------------
[ 0]  r←formata x
[ 1]  →(x>1000)/t4
[ 2]  →(x>99)/t3
[ 3]  →(x>9)/t2
[ 4] t1:r←'∘',(1 0⍕x),'∘'
[ 5]  →0
[ 6] t2:r←'∘',2 0⍕x
[ 7]  →0
[ 8] t3:r←3 0⍕x
[ 9]  →0
[10] t4:r←'∘',⎕AV[x-1000],'∘'
[11]  →0
------------------------------------------------------------
[ 0]  r←gera437;i;lixo
[ 1]  r←10 19⍴0
[ 2]  i←1
[ 3] t1:→(i>10)/fim
[ 4]  ARV←crpeq crarvore lixo←geracasos
[ 5]  A←0
[ 6]  1 ACHA_ALT A
[ 7]  r[i;]←lixo,A,nodos3
[ 8]  i←i+1
[ 9]  →t1
[10] fim:
------------------------------------------------------------
[ 0]  r←geracasos;dado;alfa
[ 1]  dado←?3
[ 2]  r←15?99
[ 3]  →(dado=1)/eum
[ 4]  →(dado=2)/edois
[ 5] etres:
[ 6]  →0
[ 7] edois:alfa←r[⍳7]
[ 8]  alfa←alfa[⍋alfa]
[ 9]  r[⍳7]←alfa
[10]  →0
[11] eum:alfa←r[⍳10]
[12]  alfa←alfa[⍋alfa]
[13]  r[⍳10]←alfa
------------------------------------------------------------
[ 0]  r←a inarvore elem;li;ipivot;prof
[ 1]  r←a
[ 2]  li←1↑(r[;1]=0)/⍳1↑⍴r
[ 3]  r[li;]←¯1 ¯1,elem,0,0,0,0
[ 4]  ipivot←1 ⋄ prof←1
[ 5] testa:→(elem>r[ipivot;3])/maior
[ 6] menor:→(¯1=r[ipivot;1])/meok
[ 7]  prof←prof+1
[ 8]  →(ipivot=ipivot←r[ipivot;1])/testa
[ 9] meok:r[ipivot;1]←li
[10]  →fim
[11] maior:→(¯1=r[ipivot;2])/maok
[12]  prof←prof+1
[13]  →(ipivot=ipivot←r[ipivot;2])/testa
[14] maok:r[ipivot;2]←li
[15] fim:r[li;5]←ipivot
[16]  r[li;4]←prof
------------------------------------------------------------
[0]  r←limpa
[1]  r←⎕EX 20 3⍴'A01A02A03A04A05A06A07A08A09A10A11A12A13A14A15A16A17A18A19A20'
[2]  r←⎕EX 20 3⍴'A21A22A23A24A25A26A27A28A29A30A31A32A33A34A35A36A37A38A39A40'
```

```
[3]  r←⎕EX 20 3⍴'A41A42A43A44A45A46A47A48A49A50A51A52A53A54A55A56A57A58A59A60'
[4]  r←⎕EX 10 5⍴'ONDE ONDE1PAI  ONDE2'
-------------------------------------------------------------
[0]  r←meio x
[1]  r←⌈x÷2
-------------------------------------------------------------
[ 0]  r←nodos3;i
[ 1] ⍝ le a variavel global ARV e responde qtd de nodos (0, 1 e 2 filhos)
[ 2]  r←0 0 0
[ 3]  i←1
[ 4] t1:→(i>15)/fim
[ 5]  →((¯1=ARV[i;1])∧(¯1=ARV[i;2]))/tem2
[ 6]  →((¯1=ARV[i;1])∨(¯1=ARV[i;2]))/tem1
[ 7] tem0:r[3]←r[3]+1
[ 8]  →junta
[ 9] tem1:r[2]←r[2]+1
[10]  →junta
[11] tem2:r[1]←r[1]+1
[12] junta:
[13]  i←i+1
[14]  →t1
[15] fim:
-------------------------------------------------------------
[0]  r←tneg x
[1]  r←(x>0)/x
-------------------------------------------------------------
[ 0]  opesq vivo437a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL437   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA437←ajusta80 FOLHALA437
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA437)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 5⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←19 80⍴' '
[16]  f←FOLHALA437
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[18;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[19;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera437
```

```
[35]  esse[7+⍳10;]←10 80⍴3 0⍕xx[;⍳15]
[36]  resp←resp,,+/[1]xx[;15+⍳4]
[37]  resu←resu,[1]1 5⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200⍴'\clearpage'
[41]  □←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0 8 0 8 0)⍕resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],6 0⍕0 1↓resu)
[51]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←□EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo441

```
[ 0]  AVISO
[ 1]  'Canhao:lista de coisas a fazer para enriquecer a aula'
[ 2]  ' 1 Trabalhar a formula n<=t<=2n-1(numero impar)'
[ 3]  ''
[ 4]  'para fazer passo a passo'
[ 5]  '3 exemplo 5'
[ 6]  ' d->mostra a arvore ate aqui'
[ 7]  ' du 7->inclui o elemento 7 na arvore'
[ 8]  ' d -> mostra de novo a arvore'
[ 9]  ' du 10 -> inclui o 10 na arvore'
[10]  ' d -> mostra ...'
[11]  ''
[12]  ''
[13]  ''
[14]  'IMPORTANTE: a parte que pede o exercicio aos alunos'
[15]  'esta confusa, e precisa ser refeita'
------------------------------------------------------------
[0]  r←el achalincol mat
[1]  r←((∨/[2]el=mat)/⍳1↑⍴mat),((∨/[1]el=mat)/⍳1↓⍴mat)
------------------------------------------------------------
[0]  r←achaltura x;alt;ra
[1]  ra←⎕RAIZ
[2]  alt←0
[3] tes:→(x[ra;1]≠0)/achou
[4]  alt←alt+1
[5]  ra←x[ra;2+2×⎕T]
[6]  →tes
[7] achou:r←alt
------------------------------------------------------------
[ 0]  r←busca x;raiz;arvo;t;j
[ 1] ⍝fprocura chaves na arvore b, e devolve a posicao (lin,col) da chave na matriz ou ¯1
[ 2]  raiz←⎕RAIZ ⋄ arvo←⎕ARVO ⋄ t←⎕T
[ 3]  'raiz=',⍕raiz
```

```
[ 4] t1:→(arvo[raiz;1]=1)/fim
[ 5]  j←1
[ 6] t2:→(j>arvo[raiz;2])/achou
[ 7]  →(arvo[raiz;2+j]>x)/achou
[ 8]  →(arvo[raiz;2+j]=x)/ac
[ 9]  →(j=j←j+1)/t2
[10] achou:raiz←arvo[raiz;j+2+(2×t)-1]
[11]  'raiz =',⍕raiz
[12]  →t1
[13] fim:j←1
[14] t3:→(j>(2×t)-1)/naoac
[15]  →(arvo[raiz;j+2]=x)/ac
[16]  →(j=j←j+1)/t3
[17] ac:r←raiz,j+2
[18]  →0
[19] naoac:r←¯1
-------------------------------------------------------------
[ 0]  criabtree t;colus
[ 1]  ΔT←t
[ 2]  colus←2+(2×t)+(2×t)-1
[ 3]  ΔARVO←(100,colus)⍴0
[ 4]  ΔRAIZ←1
[ 5]  ΔPROX←2
[ 6]  ΔARVO[ΔRAIZ;1]←1
[ 7]  ΔARVO[;1]←1
[ 8] ⍝ explicacoes validas para t=3
[ 9] ⍝ arvo[;1] 1 se esta pagina e folha e 0 senao
[10] ⍝ arvo[;2] contador de chaves (1   ≤ ctd   ≤ 5)
[11] ⍝ arvo[;3 4 5 6 7] as 5 chaves
[12] ⍝ arvo[;8 9 10 11 12 13] os enderecos dos filhos (-1 terminador)
-------------------------------------------------------------
[ 0]  r←d;i;j;da;z;a;l
[ 1]  da←ΔARVO
[ 2]  da←(da[;2]≠0)/[1]da
[ 3]  i←1
[ 4] come:→(i>1↑⍴da)/fim
[ 5]  j←da[i;2]+1
[ 6] cuca:→(j>(¯1+2×ΔT))/juca
[ 7]  da[i;2+j]←0
[ 8]  da[i;(2+2×ΔT)+j]←0
[ 9]  →(j=j←j+1)/cuca
[10] juca:
[11]  →(i=i←i+1)/come
[12] fim:
[13]  a←2 0 2 0 5 0,(2×¯2+2×ΔT)⍴4 0
[14]  r←' ',((((1↑⍴z),2)⍴2 0⍕⍳1↑⍴z),'|',a⍕z←da[;⍳(2+¯1+2×ΔT)]),'555'⍕da[;(2+¯1+2×ΔT)+⍳(2×Δ
      T)]
[15]  r[ΔRAIZ;1]←'*'
[16]  r←'-',[1]r
[17]  r[1;⍳4]←'   +'
[18]  r←('    ',(2 0 2 0 5 0,((2×¯2+2×ΔT)⍴4 0),(4×ΔT)⍴3 0)⍕⍳1+4×ΔT),[1]r
-------------------------------------------------------------
[ 0]  du chave;s;raiz
[ 1]  raiz←ΔRAIZ
[ 2]  →(ΔARVO[ΔRAIZ;2]<¯1+2×ΔT)/ok
[ 3]  s←ΔPROX
[ 4]  ΔPROX←ΔPROX+1
[ 5]  ΔRAIZ←s
[ 6]  ΔARVO[s;1]←0
[ 7]  ΔARVO[s;2]←0
[ 8]  ΔARVO[s;2+2×ΔT]←raiz
[ 9]  sp(s,1,raiz)
[10]  s nc chave
```

```
[11]  →0
[12] ok:raiz nc chave
------------------------------------------------------------
[0]  r←t exemplo limite;i;lixo
[1]  criabtree ΔT←t
[2]  i←1 ⋄ limite←,limite
[3] fuca:→(i>ρlimite)/fim
[4]  ⍞'du ',⍕limite[i]
[5]  →(i=i←i+1)/fuca
[6] fim:r←d
[7]  ΔDADOS←limite
------------------------------------------------------------
[ 0]  r←h geratabmax t;it;jh;aa
[ 1]  r←(0,6)ρ0
[ 2]  ⎕PP←60
[ 3]  it←1
[ 4] t1:→(it>ρt)/fim
[ 5]  jh←1
[ 6] t2:→(jh>ρh)/quase
[ 7]  r←r,[1]t[it],(t[it]-1),(¯1+2×t[it]),h[jh],(aa×(2×t[it]-1)),(aa←1+(2×t[it])*h[jh])
[ 8]  jh←jh+1
[ 9]  →t2
[10] quase:it←it+1
[11]  →t1
[12] fim:r←3 0 4 0 4 0 3 0 30 0 25 0⍕r
------------------------------------------------------------
[ 0]  r←x nc chave;i;xvelho
[ 1]  i←ΔARVO[x;2]
[ 2]  →(ΔARVO[x;1]=0)/naofolha
[ 3] comeca:→((i<1)∨(chave≥ΔARVO[x;2+i]))/cabou
[ 4]  ΔARVO[x;3+i]←ΔARVO[x;2+i]
[ 5]  →(i=i←i-1)/comeca
[ 6] cabou:
[ 7]  ΔARVO[x;3+i]←chave
[ 8]  ΔARVO[x;2]←ΔARVO[x;2]+1
[ 9]  →conta
[10] naofolha:→((i<1)∨(chave≥ΔARVO[x;2+i]))/cabou2
[11]  →(i=i←i-1)/naofolha
[12] cabou2:i←i+1
[13]  xvelho←x
[14]  x←ΔARVO[x;(2+¯1+2×ΔT)+i]
[15]  →(ΔARVO[x;2]≠(¯1+2×ΔT))/termina
[16]  sp(xvelho,i,x)
[17]  →(chave≤ΔARVO[xvelho;2+i])/pula
[18]  i←i+1
[19] pula:
[20] termina:
[21]  ΔARVO[xvelho;(2+¯1+2×ΔT)+i]nc chave
[22] conta:
------------------------------------------------------------
[ 0]  r←x nclixo441 chave;i;xvelho
[ 1]  i←ΔARVO[x;2]
[ 2]  →(ΔARVO[x;1]=0)/naofolha
[ 3] comeca:→((i<1)∨(chave≥ΔARVO[x;2+i]))/cabou
[ 4]  ΔARVO[x;3+i]←ΔARVO[x;2+i]
[ 5]  →(i=i←i-1)/comeca
[ 6] cabou:
[ 7]  ΔARVO[x;3+i]←chave
[ 8]  ΔARVO[x;2]←ΔARVO[x;2]+1
[ 9]  →conta
[10] naofolha:→((i<1)∨(chave≥ΔARVO[x;2+i]))/cabou2
[11]  →(i=i←i-1)/naofolha
[12] cabou2:i←i+1
```

```
[13]  xvelho←x
[14]  x←ΔARVO[x;(2+¯1+2×ΔT)+i]
[15]  →(ΔARVO[x;2]≠(¯1+2×ΔT))/termina
[16]  sp(xvelho,i,x)
[17]  →(chave≤ΔARVO[xvelho;2+i])/pula
[18]  i←i+1
[19] pula:
[20] termina:
[21]  ΔARVO[xvelho;(2+¯1+2×ΔT)+i]nc chave
[22] conta:
------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10]  →(0=' 'ϵj↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80⍴80↑j↑candi
[15]  candi←j↓candi
[16]  →((⍴candi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80⍴80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
------------------------------------------------------------
[ 0]  sp xiy;x;i;y;z;j
[ 1]  x←xiy[1] ⋄ i←xiy[2] ⋄ y←xiy[3]
[ 2]  z←ΔPROX
[ 3]  ΔPROX←ΔPROX+1
[ 4]  ΔARVO[z;1]←ΔARVO[y;1]
[ 5]  ΔARVO[z;2]←ΔT-1
[ 6] ⍝   ΔARVO[z; 3 4]  ←  ΔARVO[y; 6 7]
[ 7]  ΔARVO[z;2+⍳ΔT-1]←ΔARVO[y;(-ΔT-1)↑⍳2+¯1+2×ΔT]
[ 8]  →(ΔARVO[y;1]≠0)/acaba2
[ 9] ⍝   ΔARVO[z; 8 9 10]  ←  ΔARVO[y; 11 12 13]
[10]  ΔARVO[z;ΔT↑(1+2×ΔT)+⍳2×ΔT]←ΔARVO[y;(-ΔT)↑(1+2×ΔT)+⍳2×ΔT]
[11] acaba2:ΔARVO[y;2]←ΔT-1
[12]  j←ΔARVO[x;2]+1
[13] testa1:→(j=i)/acaba3
[14] ⍝   ΔARVO[x;8+j]  ←  ΔARVO[x;7+j]
[15]  ΔARVO[x;(2+2×ΔT)+j]←ΔARVO[x;(¯1+2+2×ΔT)+j]
[16]  →(j=j←j-1)/testa1
[17] ⍝acaba3:  ΔARVO[x;8+i]  ←z
[18] acaba3:ΔARVO[x;(2+2×ΔT)+i]←z
[19]  j←ΔARVO[x;2]
[20] testa3:→(j≤i-1)/acaba4
[21]  ΔARVO[x;3+j]←ΔARVO[x;2+j]
[22]  →(j=j←j-1)/testa3
[23] acaba4:ΔARVO[x;2+i]←ΔARVO[y;2+ΔT]
[24]  ΔARVO[x;2]←ΔARVO[x;2]+1
------------------------------------------------------------
[ 0]  varredura k;j
[ 1] ⍝flista todas as chaves da arvore B
[ 2] ⍝recebe a linha que contem a raiz, Os dados estao em ΔARVO
```

```
[ 3]  →(ΔARVO[k;1]=1)/aca
[ 4]  j←1
[ 5] t1:→(j>1+ΔARVO[k;2])/0
[ 6]  varredura ΔARVO[k;j+2+(2×ΔT)-1]
[ 7]  →(j=1+ΔARVO[k;2])/pula
[ 8]  ⍞←(⍕ΔARVO[k;j+2]),' '  ⍝'!'
[ 9] pula:j←j+1
[10]  →t1
[11] aca:j←1
[12] t2:→(j>ΔARVO[k;2])/0
[13]  ⍞←(⍕ΔARVO[k;j+2]),' '  ⍝'-'
[14]  j←j+1
[15]  →t2
-------------------------------------------------------------
[0]  r←vebar
[1] ⍝flista a variavel ΔARVO excluindo linhas zeradas. Mantem lixo (esta certo, mas e rui
      m de ler)
[2]  r←(ΔARVO[;2]≠0)/[1]ΔARVO
-------------------------------------------------------------
[0]  r←vebar1;i
[1] ⍝ similar a vebar, mas coloca 0 onde tem lixo. Fica mais legivel de ler
[2]  r←(ΔARVO[;2]≠0)/[1]ΔARVO
[3]  i←1
[4] tg:→(i>1↑⍴r)/acav
[5]  r[i;(2+r[i;2])+⍳7-r[i;2]]←0
[6]  r[i;(9+r[i;2]+1)+⍳8-1+r[i;2]]←0
[7]  →(i=i←i+1)/tg
[8] acav:
-------------------------------------------------------------
[ 0]  opesq vivo441a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;xx;x1;x2;x3;a1;m1;m2;m3;aaa;lixo1
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←5 ⋄ EVENTO←'PL441    '
[ 5]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 8]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA441)⍴' '
[ 9]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[10]  xk←1 ⋄ resu←0 6⍴0
[11] testa:→(xk>1↑⍴ylu)/fim
[12]  esse←43 80⍴' '
[13]  f←FOLHALA441
[14]  esse[1;]←80↑dhx[1;]
[15]  esse[2;]←80↑dhx[2;]
[16]  esse[3;]←80↑4 2⍕VERSAOa←3.34
[17]  esse[4;]←80↑ylu[xk;⍳6]
[18]  esse[5;]←80↑ylu[xk;6+⍳30]
[19]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[20]  esse[7;]←80↑(3 0⍕resp←xk),'-',opesq
[21]  esse[42;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[22]  esse[43;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[23] inica:
[24] denovo:xx←30+110?170
[25]  x1←4 exemplo 100↑xx
[26]  →(30≥1↑⍴x1)/klzo
[27]  ⍞←'*'
[28]  →denovo
[29] klzo:a1←achaltura m1←vebar
[30]  x2←4 exemplo(100↑xx),xx[101]
[31]  m2←vebar1
```

```
[32]  x3←4 exemplo(100↑xx),xx[102]
[33]  m3←vebar1
[34]  esse[7+⍳30;]←30 80↑x1
[35]  esse[40;]←80↑3 0⍕xx[101]
[36]  esse[41;]←80↑3 0⍕xx[102]
[37]  resp←resp,a1,(xx[101]achalincol m2),xx[102]achalincol m3
[38]  resu←resu,[1]1 6⍴resp
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[42]  ⍞←(⍕xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 5 0 5 0 5 0)⍕resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu,4 0⍕0 1↓resu)
[52]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)ΔFM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.t
      ex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo442

```
[ 0]  AVISO
[ 1]  'para emitir o gabarito faca 3 exemplo zz'
[ 2]  ' onde zz←os 40 elementos da folha na ordem em que eles aparecem'
[ 3]  ' '
[ 4]  ' se quiser, mostre aos alunos a sequencia '
[ 5]  ' 3 exemplo x'
[ 6]  ' du y'
[ 7]  ' du z'
[ 8]  'd '
[ 9]  ' onde x,y,z... sao as chaves a incluir'
[10]  ' d e a funcao que mostra a arvore ate agora - formato de matriz'
[11]  ' PARA VER NA FORMA DE ARVORE, chame a funcao de (niladica)'
[12]  ''
[13]  ' este algoritmo foi programado com sucesso em C=btreei.c'
-------------------------------------------------------------
[0]  r←c
[1]  r←(ΔARVO[;2]≠0)/[1]ΔARVO
-------------------------------------------------------------
[ 0]  criabtree t;colus
[ 1]  ΔT←t
[ 2]  colus←2+(2×t)+(2×t)-1
[ 3]  ΔARVO←(100,colus)⍴0
[ 4]  ΔRAIZ←1
[ 5]  ΔPROX←2
[ 6]  ΔARVO[ΔRAIZ;1]←1
[ 7]  ΔARVO[;1]←1
[ 8] ⍝ explicacoes validas para t=3
[ 9] ⍝ arvo[;1] 1 se esta pagina e folha e 0 senao
[10] ⍝ arvo[;2] contador de chaves (1   ≤ ctd   ≤ 5)
```

```
[11] ⍝ arvo[;3 4 5 6 7] as 5 chaves
[12] ⍝ arvo[;8 9 10 11 12 13] os enderecos dos filhos (-1 terminador)
-------------------------------------------------------------
[ 0]  r←d;i;j;da;z;a;l
[ 1]  da←ΔARVO
[ 2]  da←(da[;2]≠0)/[1]da
[ 3]  i←1
[ 4] come:→(i>1↑⍴da)/fim
[ 5]  j←da[i;2]+1
[ 6] cuca:→(j>(¯1+2×ΔT))/juca
[ 7]  da[i;2+j]←0
[ 8]  da[i;(2+2×ΔT)+j]←0
[ 9]  →(j=j←j+1)/cuca
[10] juca:
[11]  →(i=i←i+1)/come
[12] fim:
[13]  a←2 0 2 0 5 0,(2×¯2+2×ΔT)⍴4 0
[14]  r←' ',((((1↑⍴z),2)⍴2 0⍕⍳1↑⍴z),'|',a⍕z←da[;⍳(2+¯1+2×ΔT)]),'555'⍕da[;(2+¯1+2×ΔT)+⍳(2×Δ
      T)]
[15]  r[ΔRAIZ;1]←'*'
[16]  r←'-',[1]r
[17]  r[1;⍳4]←'   +'
[18]  r←('    ',(2 0 2 0 5 0,((2×¯2+2×ΔT)⍴4 0),(4×ΔT)⍴3 0)⍕⍳1+4×ΔT),[1]r
-------------------------------------------------------------
[ 0]  r←de;icha;ifil;chaves;filhos;aux1;risca;i;aux2;tt;bs;j;aux3;raiz
[ 1]  raiz←ΔRAIZ
[ 2]  icha←2+⍳(2×ΔT)-1
[ 3]  ifil←(2+(2×ΔT)-1)+⍳2×ΔT
[ 4]  chaves←ΔARVO[raiz;2]↑ΔARVO[raiz;icha]
[ 5]  filhos←(ΔARVO[raiz;2]+1)↑ΔARVO[raiz;ifil]
[ 6]  →(ΔARVO[raiz;1]=1)/efolha
[ 7]  →(ΔARVO[ΔARVO[raiz;ifil[1]];1]=0)/tem2
[ 8]  r←escrebt raiz
[ 9]  →0
[10] efolha:
[11]  aux1←1 poequadros quadro 3 0⍕chaves
[12]  aux1[2;3 4]←2 0⍕raiz
[13]  r←aux1
[14]  →0
[15] tem2:
[16]  i←1
[17]  aux2←8 0⍴' '
[18]  risca←0⍴0
[19] t1:→(i>⍴filhos)/fim
[20]  aux1←escrebt filhos[i]
[21]  aux2←aux2,aux1
[22]  risca←risca,1↓⍴aux2
[23]  i←i+1
[24]  →t1
[25] fim:
[26]  tt←risca[⍴risca]
[27]  bs←(1,tt)⍴ttp' '
[28]  risca←¯1↓risca
[29]  j←1
[30] t2:→(j>⍴risca)/finx
[31]  bs[1;¯4+risca[j]+⍳3]←3 0⍕chaves[j]
[32]  j←j+1
[33]  →t2
[34] finx:aux3←1 poequadros quadro 0 ¯3↓bs
[35]  aux3[2;3 4]←2 0⍕raiz
[36]  r←aux3,[1]aux2
[37]  →0
-------------------------------------------------------------
```

```
[ 0]  du chave;s;raiz
[ 1]  raiz←ΔRAIZ
[ 2]  →(ΔARVO[ΔRAIZ;2]<¯1+2×ΔT)/ok
[ 3]  s←ΔPROX
[ 4]  ΔPROX←ΔPROX+1
[ 5]  ΔRAIZ←s
[ 6]  ΔARVO[s;1]←0
[ 7]  ΔARVO[s;2]←0
[ 8]  ΔARVO[s;2+2×ΔT]←raiz
[ 9]  sp(s,1,raiz)
[10]  s nc chave
[11]  →0
[12] ok:raiz nc chave
-------------------------------------------------------------
[ 0]  r←escrebt niv;i;icha;ifil;chaves;filhos;risca;raux;vv;tt;bs;j;aux1;aux2
[ 1]  i←1
[ 2]  risca←0ρ0
[ 3]  aux1←(4,0)ρ' '
[ 4]  icha←2+ι(2×ΔT)-1
[ 5]  ifil←(2+(2×ΔT)-1)+ι2×ΔT
[ 6]  chaves←ΔARVO[niv;2]↑ΔARVO[niv;icha]
[ 7]  filhos←(ΔARVO[niv;2]+1)↑ΔARVO[niv;ifil]
[ 8] t1:→(i>+/filhos≠0)/fim
[ 9]  raux←1 poequadros quadro 3 0⍕tirazero ΔARVO[filhos[i];ΔARVO[filhos[i];2]↑icha]
[10]  raux[2;3 4]←2 0⍕filhos[i]
[11]  aux1←aux1,[2]raux
[12]  aux1←aux1,[2]4 1ρ' '
[13]  risca←risca,1↓ρaux1
[14]  i←i+1
[15]  →t1
[16] fim:
[17]  tt←risca[ρrisca]
[18]  bs←(1,tt)ρttρ' '
[19]  risca←¯1↓risca
[20]  j←1
[21] t2:→(j>ρrisca)/finx
[22]  bs[1;¯4+risca[j]+ι3]←3 0⍕chaves[j]
[23]  j←j+1
[24]  →t2
[25] finx:aux2←1 poequadros quadro 0 ¯3↓bs
[26]  aux2[2;3 4]←2 0⍕niv
[27]  r←aux2,[1]aux1
-------------------------------------------------------------
[ 0]  r←t exemplo limite;i;lixo
[ 1]  limite←,limite
[ 2]  criabtree ΔT←t
[ 3]  i←1
[ 4] fuca:→(i>ρlimite)/fim
[ 5]  ⍞'du ',⍕limite[i]
[ 6]  →(i=i←i+1)/fuca
[ 7] fim:r←d
[ 8]  ΔDADOS←limite
-------------------------------------------------------------
[ 0]  r←x nc chave;i;xvelho
[ 1]  i←ΔARVO[x;2]
[ 2]  →(ΔARVO[x;1]=0)/naofolha
[ 3] comeca:→((i<1)∨(chave≥ΔARVO[x;2+i]))/cabou
[ 4]  ΔARVO[x;3+i]←ΔARVO[x;2+i]
[ 5]  →(i=i←i-1)/comeca
[ 6] cabou:
[ 7]  ΔARVO[x;3+i]←chave
[ 8]  ΔARVO[x;2]←ΔARVO[x;2]+1
[ 9]  →conta
```

```
[10] naofolha:→((i<1)∨(chave≥ΔARVO[x;2+i]))/cabou2
[11]  →(i=i←i-1)/naofolha
[12] cabou2:i←i+1
[13]  xvelho←x
[14]  x←ΔARVO[x;(2+¯1+2×ΔT)+i]
[15]  →(ΔARVO[x;2]≠(¯1+2×ΔT))/termina
[16]  sp(xvelho,i,x)
[17]  →(chave≤ΔARVO[xvelho;2+i])/pula
[18]  i←i+1
[19] pula:
[20] termina:
[21]  ΔARVO[xvelho;(2+¯1+2×ΔT)+i]nc chave
[22] conta:
------------------------------------------------------------
[ 0]  r←a poequadros b;b1;i;j;aci;aba;esq;dir
[ 1] ⍝ a=1 quadros simples, a=2 quadros duplos
[ 2]  r←(2 2+⍴b)⍴' '
[ 3]  b1←' ',((' ',[1]b),[1]' '),' '
[ 4]  i←2
[ 5] t1:→(i≥1↑⍴b1)/fim
[ 6]  j←2
[ 7] t2:→(j≥1↓⍴b1)/pu
[ 8]  →(b1[i;j]='|')/vert
[ 9]  →(b1[i;j]='-')/horiz
[10]  →(b1[i;j]='+')/cruz
[11]  r[i;j]←b1[i;j]
[12]  →soma
[13] vert:r[i;j]←(⎕AV[180 187])[a]
[14]  →soma
[15] horiz:r[i;j]←(⎕AV[197 206])[a]
[16]  →soma
[17] cruz:
[18]  aci←b1[i-1;j] ⋄ aba←b1[i+1;j] ⋄ esq←b1[i;j-1] ⋄ dir←b1[i;j+1]
[19]  →((aci='|')∧(aba='|')∧(dir='-')∧(esq='-'))/pcru
[20]  →((aci='|')∧(aba='|')∧(dir='-')∧(esq≠'-'))/pdir
[21]  →((aci='|')∧(aba='|')∧(dir≠'-')∧(esq='-'))/pesq
[22]  →((aci≠'|')∧(aba='|')∧(dir='-')∧(esq='-'))/pbai
[23]  →((aci='|')∧(aba≠'|')∧(dir='-')∧(esq='-'))/pcim
[24]  →((aci≠'|')∧(aba='|')∧(dir='-')∧(esq≠'-'))/pse
[25]  →((aci≠'|')∧(aba='|')∧(dir≠'-')∧(esq='-'))/psd
[26]  →((aci='|')∧(aba≠'|')∧(dir='-')∧(esq≠'-'))/pie
[27]  →((aci='|')∧(aba≠'|')∧(dir≠'-')∧(esq='-'))/pid
[28]  r[i;j]←'+'
[29]  →soma
[30] pcru:r[i;j]←(⎕AV[198 207])[a]
[31]  →soma
[32] pdir:r[i;j]←(⎕AV[196 205])[a]
[33]  →soma
[34] pesq:r[i;j]←(⎕AV[181 186])[a]
[35]  →soma
[36] pbai:r[i;j]←(⎕AV[195 204])[a]
[37]  →soma
[38] pcim:r[i;j]←(⎕AV[194 203])[a]
[39]  →soma
[40] pse:r[i;j]←(⎕AV[219 202])[a]
[41]  →soma
[42] psd:r[i;j]←(⎕AV[192 188])[a]
[43]  →soma
[44] pie:r[i;j]←(⎕AV[193 201])[a]
[45]  →soma
[46] pid:r[i;j]←(⎕AV[218 189])[a]
[47]  →soma
[48] soma:→(j=j←j+1)/t2
```

```
[49] pu:→(i=i←i+1)/t1
[50] fim:r←r[⍳1+1↑⍴b;⍳1+1↓⍴b]
-------------------------------------------------------------
[0]  r←quadro x
[1]  →(2=⍴⍴x)/blz
[2]  x←(1,⍴x)⍴x
[3] blz:
[4]  r←'|',(('-',[1]x),[1]'-'),'|'
[5]  r[1;1]←r[1↑⍴r;1]←r[1;1↓⍴r]←r[1↑⍴r;1↓⍴r]←'+'
-------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10]  →(0=' 'ϵj↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80⍴80↑j↑candi
[15]  candi←j↓candi
[16]  →((⍴candi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80⍴80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
-------------------------------------------------------------
[ 0]  sp xiy;x;i;y;z;j
[ 1]  x←xiy[1] ⋄ i←xiy[2] ⋄ y←xiy[3]
[ 2]  z←ΔPROX
[ 3]  ΔPROX←ΔPROX+1
[ 4]  ΔARVO[z;1]←ΔARVO[y;1]
[ 5]  ΔARVO[z;2]←ΔT-1
[ 6] ⍝   ΔARVO[z; 3 4]  ←  ΔARVO[y; 6 7]
[ 7]  ΔARVO[z;2+⍳ΔT-1]←ΔARVO[y;(-ΔT-1)↑⍳2+¯1+2×ΔT]
[ 8]  →(ΔARVO[y;1]≠0)/acaba2
[ 9] ⍝   ΔARVO[z; 8 9 10]  ←  ΔARVO[y; 11 12 13]
[10]  ΔARVO[z;ΔT↑(1+2×ΔT)+⍳2×ΔT]←ΔARVO[y;(-ΔT)↑(1+2×ΔT)+⍳2×ΔT]
[11] acaba2:ΔARVO[y;2]←ΔT-1
[12]  j←ΔARVO[x;2]+1
[13] testa1:→(j=i)/acaba3
[14] ⍝   ΔARVO[x;8+j]  ←  ΔARVO[x;7+j]
[15]  ΔARVO[x;(2+2×ΔT)+j]←ΔARVO[x;(¯1+2+2×ΔT)+j]
[16]  →(j=j←j-1)/testa1
[17] ⍝acaba3:  ΔARVO[x;8+i]  ←z
[18] acaba3:ΔARVO[x;(2+2×ΔT)+i]←z
[19]  j←ΔARVO[x;2]
[20] testa3:→(j≤i-1)/acaba4
[21]  ΔARVO[x;3+j]←ΔARVO[x;2+j]
[22]  →(j=j←j-1)/testa3
[23] acaba4:ΔARVO[x;2+i]←ΔARVO[y;2+ΔT]
[24]  ΔARVO[x;2]←ΔARVO[x;2]+1
-------------------------------------------------------------
[0]  r←tirazero x
[1]  r←(x≠0)/x
-------------------------------------------------------------
[0]  r←verbt x
```

```
------------------------------------------------------------
[ 0]  opesq vivo442a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;⎕IO;q2;q3;q4;y;lix;aaa;lixo1
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕IO←1
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←4 ⋄ EVENTO←'PL442   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA442)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[11]  xk←1 ⋄ resu←0 5⍴0
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←15 80⍴' '
[14]  f←FOLHALA442
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍕VERSAOa←3.85
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍕resp←xk),'-',opesq
[22]  esse[14;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[15;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25]  esse[11;]←80↑1 0⍕q2←2+?3
[26]  esse[12;]←80↑2 0⍕q3←7+?3
[27]  esse[13;]←80↑1 0⍕q4←2+?5
[28] ⍝ --------- montagem da pergunta ---------
[29]  lix←3 exemplo 40?99
[30]  esse[8 9 10;]←3 80↑3 42⍴(3 0⍕ΔDADOS),100⍴' '
[31]  y←c
[32]  resp←resp,y[ΔRAIZ;3],(+/y[;2]=q2),(+/y[;q3]),y[q4;2+y[q4;2]]
[33]  resu←resu,[1]1 5⍴resp
[34]  acuja←(f[;2]='#')/⍳1↑⍴f
[35]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[36]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴250↑'\newpage'
[37]  ⍞←(⍕xk←xk+1),'-'
[38]  →testa
[39] fim:upag←(1 0+⍴f)⍴' '
[40]  →(1=≡n)/elafa
[41]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[42]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[43]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 5 0 5 0)⍕resu
[44]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[45]  →terminando
[46] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),4 0⍕0 1↓resu)
[47]  aaa[1;35 36]←2 0⍕CORRECAO
[48]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∘\⍷EVENTO=' ')/EVENTO),'.gpa')
[49]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[50] terminando:
[51]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[52]  relat[1↑⍴relat;;]←upag
[53]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)ΔFM'c:\apl2\',((~⍷∘\⍷EVENTO=' ')/EVENTO),'.t
      ex'
[54]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[55]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo443

```
[0]  r←ajeita55 y;rr
[1]  r←8 80↑y
[2]  r[;9 18 27 36]←'&'
[3]  r[;45+⍳⍴rr]←(8,⍴rr)⍴rr←'⍀⍀ ⍀hline'
------------------------------------------------------------
[0]  r←c
[1]  r←(ΔARVO[;2]≠0)/[1]ΔARVO
------------------------------------------------------------
[0]  r←conserta a;i
[1]  r←3 5↑0 2↓a
[2]  i←1
[3] lo:→(i>3)/fim
[4]  r[i;]←5↑((5↑(a[i;2]⍴1),5⍴0)/r[i;]),5⍴0
[5]  →(i=i←i+1)/lo
[6] fim:
------------------------------------------------------------
[0]  r←converte gra
[1]  r←((1↑⍴gra),5)⍴0
[2]  r[;1]←⎕AV⍋gra[;⍳9]
[3]  r[;2]←⎕AV⍋gra[;9+⍳9]
[4]  r[;3]←⎕AV⍋gra[;18+⍳9]
[5]  r[;4]←⎕AV⍋gra[;27+⍳9]
[6]  r[;5]←⍋⍤1,gra[;36+⍳4],' '
------------------------------------------------------------
[ 0]  criabtree t;colus
[ 1]  ΔT←t
[ 2]  colus←2+(2×t)+(2×t)-1
[ 3]  ΔARVO←(100,colus)⍴0
[ 4]  ΔRAIZ←1
[ 5]  ΔPROX←2
[ 6]  ΔARVO[ΔRAIZ;1]←1
[ 7]  ΔARVO[;1]←1
[ 8] ⍝ explicacoes validas para t=3
[ 9] ⍝ arvo[;1] 1 se esta pagina e folha e 0 senao
[10] ⍝ arvo[;2] contador de chaves (1   ≤ ctd   ≤ 5)
[11] ⍝ arvo[;3 4 5 6 7] as 5 chaves
[12] ⍝ arvo[;8 9 10 11 12 13] os enderecos dos filhos (-1 terminador)
------------------------------------------------------------
[ 0]  du chave;s;raiz
[ 1]  raiz←ΔRAIZ
[ 2]  →(ΔARVO[ΔRAIZ;2]<¯1+2×ΔT)/ok
[ 3]  s←ΔPROX
[ 4]  ΔPROX←ΔPROX+1
[ 5]  ΔRAIZ←s
[ 6]  ΔARVO[s;1]←0
[ 7]  ΔARVO[s;2]←0
[ 8]  ΔARVO[s;2+2×ΔT]←raiz
[ 9]  sp(s,1,raiz)
[10]  s nc chave
[11]  →0
[12] ok:raiz nc chave
------------------------------------------------------------
[ 0]  r←gerada n;nome;cor;bicho;fruta
[ 1]  →(n>27)/erro
[ 2]  nome←'maria,antonio,carlos,zulmira,artur,amelia,bento,jose,paulo,'
[ 3]  nome←nome,'dante,eduardo,felix,gabi,heitor,iara,laura,nando,ofelia,'
[ 4]  nome←nome,'quirino,romeu,sueli,tatiana,fernanda,gloria,'
[ 5]  nome←nome,'juca,arlindo,xixo'
[ 6]  cor←'azul,laranja,vermelho,amarelo,cinza,branco,verde,magenta,marrom,'
[ 7]  cor←cor,'verdao,creme,roxo,violeta,ciano,sepia,azulao,rosa,dourado,'
[ 8]  cor←cor,'purpura,lilas,preto,areia,musgo,bege,prata,perola,bordo'
```

```
[ 9]  bicho←'gato,jacare,bode,cachorro,anta,zebra,aguia,pato,urubu,galinha,'
[10]  bicho←bicho,'cobra,avestruz,veado,vaca,cavalo,chopim,periquito,'
[11]  bicho←bicho,'papagaio,peru,rato,pomba,dragao,marreco,besouro,'
[12]  bicho←bicho,'cegonha,pavao,tatu'
[13]  fruta←'morango,abacaxi,abacate,banana,alface,alho,cebola,aipim,mimosa,'
[14]  fruta←fruta,'coco,chocolate,batata,cenoura,brocolis,arroz,feijao,uva,'
[15]  fruta←fruta,'jaca,goiaba,manga,couve,beterraba,figo,damasco,acerola,'
[16]  fruta←fruta,'maracuja,rabanete'
[17]  nome←levanta nome
[18]  cor←levanta cor
[19]  bicho←levanta bicho
[20]  fruta←levanta fruta
[21]  r←nome[n?27;],cor[n?27;],bicho[n?27;],fruta[n?27;],(n,4)⍴4 0⍕15+n?40
[22]  →0
[23] erro:'nao e possivel gerar mais do 27, reentre'
[24]  →0
-------------------------------------------------------------
[0]  r←levanta a;i;aa
[1]  r←50 9⍴' '
[2]  i←1
[3] t:→(0=⍴a)/acabou
[4]  aa←a[⍳¯1+a⍳',']
[5]  r[i;]←9↑aa
[6]  a←(1+⍴aa)↓a
[7]  →(i=i←i+1)/t
[8] acabou:r←(9≠+/r=' ')/[1]r
-------------------------------------------------------------
[ 0]  r←x nc chave;i;xvelho
[ 1]  i←ΔARVO[x;2]
[ 2]  →(ΔARVO[x;1]=0)/naofolha
[ 3] comeca:→((i<1)∨(chave≥ΔARVO[x;2+i]))/cabou
[ 4]  ΔARVO[x;3+i]←ΔARVO[x;2+i]
[ 5]  →(i=i←i-1)/comeca
[ 6] cabou:
[ 7]  ΔARVO[x;3+i]←chave
[ 8]  ΔARVO[x;2]←ΔARVO[x;2]+1
[ 9]  →conta
[10] naofolha:→((i<1)∨(chave≥ΔARVO[x;2+i]))/cabou2
[11]  →(i=i←i-1)/naofolha
[12] cabou2:i←i+1
[13]  xvelho←x
[14]  x←ΔARVO[x;(2+¯1+2×ΔT)+i]
[15]  →(ΔARVO[x;2]≠(¯1+2×ΔT))/termina
[16]  sp(xvelho,i,x)
[17]  →(chave≤ΔARVO[xvelho;2+i])/pula
[18]  i←i+1
[19] pula:
[20] termina:
[21]  ΔARVO[xvelho;(2+¯1+2×ΔT)+i]nc chave
[22] conta:
-------------------------------------------------------------
[0]  r←nomina x;xx;yy
[1]  xx←5 6⍴'nome  cor   animalcomidaidade '
[2]  r←xx[x;]
[3]  yy←x≠⍳5
[4]  r←r,[1]yy/[1]xx
-------------------------------------------------------------
[ 0]  r←ordem ordena caso
[ 1]  →(ordem≠1)/dois
[ 2]  r←caso[⍋AV⍋caso[;⍳9];]
[ 3]  →0
[ 4] dois:→(ordem≠2)/tres
[ 5]  r←caso[⍋AV⍋caso[;9+⍳9];]
```

```
[ 6]  →0
[ 7] tres:→(ordem≠3)/quatro
[ 8]  r←caso[⎕AV⍋caso[;18+⍳9];]
[ 9]  →0
[10] quatro:→(ordem≠4)/cinco
[11]  r←caso[⎕AV⍋caso[;27+⍳9];]
[12]  →0
[13] cinco:r←caso[⍋⍤1,caso[;36+⍳4],' ';]
-----------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10]  →(0=' 'є⍤1↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80⍴80↑⍤1↑candi
[15]  candi←⍤1↓candi
[16]  →((⍴candi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80⍴80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
-----------------------------------------------------------
[  0]  r←coluna resolve caso;aa;x;i;j;caso2;ze;A1;A2;A3;A4;A5;C1;C2;C3;C4;C5;col;lin;B1;B2;
       B3;B4;B5;R1;iba
[  1]  caso2←coluna ordena caso
[  2]  →(320≠+/,caso2=caso)/erro
[  3]  →(coluna≠1)/dois
[  4]  aa←⍳9
[  5]  →conta
[  6] dois:→(coluna≠2)/tres
[  7]  aa←9+⍳9
[  8]  →conta
[  9] tres:→(coluna≠3)/quatro
[ 10]  aa←18+⍳9
[ 11]  →conta
[ 12] quatro:→(coluna≠4)/cinco
[ 13]  aa←27+⍳9
[ 14]  →conta
[ 15] cinco:aa←36+⍳4
[ 16] conta:
[ 17] ⍝R1 contem o indice granulado
[ 18]  R1←tirab caso[1;aa],'(1:1),',caso[4;aa],'(2:1),',caso[7;aa],'(3:1)'
[ 19]  x←converte caso
[ 20] ⍝ barvores: A1=nome, A2=cor, A3=bicho, A4=comida, A5=idade
[ 21]  j←1
[ 22] ini:→(j>5)/fim
[ 23]  i←1 ⋄ criabtree 3
[ 24] t1:→(i>8)/oba1
[ 25]  du x[i;j]
[ 26]  →(i=i←i+1)/t1
[ 27] oba1:⍞'A',(1 0⍕j),'  ←c'
[ 28]  →(j=j←j+1)/ini
[ 29] fim:
```

```
[ 30] ⍝ montagem dos indices alfanumericos - arvore 1
[ 31]  C1←conserta A1
[ 32]  B1←3 100⍴' '
[ 33]  lin←1
[ 34] uv1a:→(lin>3)/f1
[ 35]  col←1
[ 36] uv1b:→(col>5)/g1
[ 37]  →(C1[lin;col]=0)/soma1
[ 38]  B1[lin;(20×col-1)+⍳20]←20↑caso[ze;⍳9],umemdois ze←x[C1[lin;col];1]
[ 39] soma1:→(col=col←col+1)/uv1b
[ 40] g1:→(lin=lin←lin+1)/uv1a
[ 41] f1:i←1
[ 42] ux1:→(i>3)/vai1
[ 43]  B1[i;]←100↑tirab B1[i;]
[ 44]  →(i=i←i+1)/ux1
[ 45] vai1:B1←3 70↑B1
[ 46]  B1[2;]←70↑'RAIZ=',B1[2;]
[ 47] ⍝ arvore 2 (cor)
[ 48]  C2←conserta A2
[ 49]  B2←3 100⍴' '
[ 50]  lin←1
[ 51] uv2a:→(lin>3)/f2
[ 52]  col←1
[ 53] uv2b:→(col>5)/g2
[ 54]  →(C2[lin;col]=0)/soma2
[ 55]  B2[lin;(20×col-1)+⍳20]←20↑caso[ze;9+⍳9],umemdois ze←x[C2[lin;col];2]
[ 56] soma2:→(col=col←col+1)/uv2b
[ 57] g2:→(lin=lin←lin+1)/uv2a
[ 58] f2:i←1
[ 59] ux2:→(i>3)/vai2
[ 60]  B2[i;]←100↑tirab B2[i;]
[ 61]  →(i=i←i+1)/ux2
[ 62] vai2:B2←3 70↑B2
[ 63]  B2[2;]←70↑'RAIZ=',B2[2;]
[ 64] ⍝ arvore 3 - animal
[ 65]  C3←conserta A3
[ 66]  B3←3 100⍴' '
[ 67]  lin←1
[ 68] uv3a:→(lin>3)/f3
[ 69]  col←1
[ 70] uv3b:→(col>5)/g3
[ 71]  →(C3[lin;col]=0)/soma3
[ 72]  B3[lin;(20×col-1)+⍳20]←20↑caso[ze;18+⍳9],umemdois ze←x[C3[lin;col];3]
[ 73] soma3:→(col=col←col+1)/uv3b
[ 74] g3:→(lin=lin←lin+1)/uv3a
[ 75] f3:i←1
[ 76] ux3:→(i>3)/vai3
[ 77]  B3[i;]←100↑tirab B3[i;]
[ 78]  →(i=i←i+1)/ux3
[ 79] vai3:B3←3 70↑B3
[ 80]  B3[2;]←70↑'RAIZ=',B3[2;]
[ 81] ⍝ arvore 4 - comida
[ 82]  C4←conserta A4
[ 83]  B4←3 100⍴' '
[ 84]  lin←1
[ 85] uv4a:→(lin>3)/f4
[ 86]  col←1
[ 87] uv4b:→(col>5)/g4
[ 88]  →(C4[lin;col]=0)/soma4
[ 89]  B4[lin;(20×col-1)+⍳20]←20↑caso[ze;27+⍳9],umemdois ze←x[C4[lin;col];4]
[ 90] soma4:→(col=col←col+1)/uv4b
[ 91] g4:→(lin=lin←lin+1)/uv4a
[ 92] f4:i←1
```

```
[ 93] ux4:→(i>3)/vai4
[ 94]  B4[i;]←100↑tirab B4[i;]
[ 95]  →(i=i←i+1)/ux4
[ 96] vai4:B4←3 70↑B4
[ 97]  B4[2;]←70↑'RAIZ=',B4[2;]
[ 98] ⍝ arvore 5 - idade
[ 99]  C5←conserta A5
[100]  B5←3 100⍴' '
[101]  lin←1
[102] uv5a:→(lin>3)/f5
[103]  col←1
[104] uv5b:→(col>5)/g5
[105]  →(C5[lin;col]=0)/soma5
[106]  B5[lin;(20×col-1)+⍳20]←20↑caso[ze;36+⍳4],umemdois ze←x[C5[lin;col];5]
[107] soma5:→(col=col←col+1)/uv5b
[108] g5:→(lin=lin←lin+1)/uv5a
[109] f5:i←1
[110] ux5:→(i>3)/vai5
[111]  B5[i;]←100↑tirab B5[i;]
[112]  →(i=i←i+1)/ux5
[113] vai5:B5←3 70↑B5
[114]  B5[2;]←70↑'RAIZ=',B5[2;]
[115] finalmente:
[116]  iba←5 ⋄ X1←R1 ⋄ X2←B2 ⋄ X3←B3 ⋄ X4←B4 ⋄ X5←B5
[117] ufa:→(iba<2)/bliz
[118]  →(iba>coluna)/soma
[119]  ⍞'X',(1 0⍕iba),'  ←B',(1 0⍕iba-1)
[120] soma:→(iba=iba←iba-1)/ufa
[121] bliz:
[122]  →0
[123] erro:' a entrada nao esta ordenada pela coluna, refaca'
-------------------------------------------------------------
[ 0]  sp xiy;x;i;y;z;j
[ 1]  x←xiy[1] ⋄ i←xiy[2] ⋄ y←xiy[3]
[ 2]  z←ΔPROX
[ 3]  ΔPROX←ΔPROX+1
[ 4]  ΔARVO[z;1]←ΔARVO[y;1]
[ 5]  ΔARVO[z;2]←ΔT-1
[ 6] ⍝   ΔARVO[z; 3 4]  ←  ΔARVO[y; 6 7]
[ 7]  ΔARVO[z;2+⍳ΔT-1]←ΔARVO[y;(-ΔT-1)↑⍳2+¯1+2×ΔT]
[ 8]  →(ΔARVO[y;1]≠0)/acaba2
[ 9] ⍝   ΔARVO[z; 8 9 10]  ←  ΔARVO[y; 11 12 13]
[10]  ΔARVO[z;ΔT↑(1+2×ΔT)+⍳2×ΔT]←ΔARVO[y;(-ΔT)↑(1+2×ΔT)+⍳2×ΔT]
[11] acaba2:ΔARVO[y;2]←ΔT-1
[12]  j←ΔARVO[x;2]+1
[13] testa1:→(j=i)/acaba3
[14] ⍝   ΔARVO[x;8+j]  ←  ΔARVO[x;7+j]
[15]  ΔARVO[x;(2+2×ΔT)+j]←ΔARVO[x;(¯1+2+2×ΔT)+j]
[16]  →(j=j←j-1)/testa1
[17] ⍝acaba3:  ΔARVO[x;8+i]  ←z
[18] acaba3:ΔARVO[x;(2+2×ΔT)+i]←z
[19]  j←ΔARVO[x;2]
[20] testa3:→(j≤i-1)/acaba4
[21]  ΔARVO[x;3+j]←ΔARVO[x;2+j]
[22]  →(j=j←j-1)/testa3
[23] acaba4:ΔARVO[x;2+i]←ΔARVO[y;2+ΔT]
[24]  ΔARVO[x;2]←ΔARVO[x;2]+1
-------------------------------------------------------------
[0]  r←tirab z
[1]  r←(z≠' ')/z
-------------------------------------------------------------
[0]  r←umemdois x
[1]  r←'(',(1 0⍕(1+⌊(x-1)÷3)),':',(1 0⍕1+3|x-1),'),'
```

```
------------------------------------------------------------
[ 0]  opesq vivo443a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;qual;i;P;I;xuxa;x;aaa
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←0 ⋄ EVENTO←'PL443   '
[ 5]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 8]  FOLHALA443←ajusta80 FOLHALA443
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA443)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[11]  xk←1 ⋄ resu←0 420⍴0
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←32 80⍴' '
[14]  f←FOLHALA443
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍎VERSAOa←3.43
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍎resp←xk),'-',opesq
[22]  esse[31;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[32;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25]  qual←?5
[26]  esse[7+⍳8;]←ajeita55 x←qual ordena gerada 8
[27]  qual resolve x
[28]  esse[16 17 18 19 20;]←5 80↑nomina qual
[29]  P←1,?4⍴3
[30]  I←⍳5
[31]  esse[21 23 25 27 29;]←5 80↑1 0⍎5 1⍴P
[32]  esse[22 24 26 28 30;]←5 80↑1 0⍎5 1⍴I
[33]  resp←1 70⍴70↑(4 0⍎resp),20⍴'-'
[34]  resp←resp,[1]1 70⍴70↑X1
[35]  i←2
[36] ff1:→(i>5)/sy
[37]  ⍎'resp  ←resp,[1]X',(1 0⍎I[i]),'[',(1 0⍎P[i]),';]'
[38]  →(i=i←i+1)/ff1
[39] sy:
[40]  resu←resu,[1]1 420⍴resp
[41]  acuja←(f[;2]='#')/⍳1↑⍴f
[42]  f[acuja;⍳80]←esse[⍎,f[acuja;3 4],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[44]  ⍞←(⍎xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+⍴f)⍴' '
[47]  →elafa ⍝→(1=≡n)/elafa
[48]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[49]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[50]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑resu
[51]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[52]  →terminando
[53] elafa:aaa←(ylu,0 70↓resu)
[54]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[55]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[56] terminando:
[57]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[58]  relat[1↑⍴relat;;]←upag
[59]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.t
```

```
      ex'
[60]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[61]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo444

```
[0]  r←quem campo i;rr;hex
[1] ⍝ usada pela funcao dump
[2]  rr←16 16⊤¯1+⎕AV⍳quem[i]
[3]  ex←'0123456789ABCDEF'
[4]  r←ex[1+rr]
------------------------------------------------------------
[ 0]  r←dump x;y;lin;end;i;j;bor;linha;cab1;cab2
[ 1] ⍝fle um arquivo e devolve o seu dump em matriz nn x 70
[ 2]  y←FILE x
[ 3]  cab1←75↑'ende    0  1  2  3  4  5  6  7   8  9  A  B  C  D  E  F  ascii'
[ 4]  cab2←75↑'----   -- -- -- -- -- -- -- --  -- -- -- -- -- -- -- --  ----------------'
[ 5]  y←,y
[ 6]  r←2 75⍴cab1,cab2
[ 7]  y←(16×⌈(⍴y)÷16)↑y
[ 8]  lin←(⍴y)÷16
[ 9]  y←(lin,16)⍴y
[10]  i←1 ⋄ end←0
[11] t1:→(i>lin)/fim
[12]  j←1 ⋄ bor←''
[13] ini:→(j>16)/oba
[14]  bor←bor,(hex2 ¯1+⎕AV⍳y[i;j]),' '
[15]  →(~j=8)/⎕LC+1 ⋄ bor←bor,' '
[16]  →(j=j←j+1)/ini
[17] oba:linha←(hexad end),'   ',bor,' ',visivel y[i;]
[18]  end←end+16
[19]  i←i+1
[20]  r←r,[1]1 75⍴75↑linha
[21]  →t1
[22] fim:
------------------------------------------------------------
[0]  r←hex2 en;rr
[1] ⍝fconverte um numero entre 0 e 255 em um byte hexadecimal
[2]  →((en>255)∨(en<0))/0
[3]  rr←16 16⊤en
[4]  r←'0123456789ABCDEF'[1+rr]
------------------------------------------------------------
[0]  r←hexad en
[1]  rr←16 16 16 16⊤en
[2]  r←'0123456789ABCDEF'[1+rr]
------------------------------------------------------------
[0]  r←visivel k;in;y
[1]  y←⎕AV⍳k
[2]  in←((y>33)∧(y<127))/⍳⍴k
[3]  r←(⍴k)⍴'.'
[4]  r[in]←k[in]
------------------------------------------------------------
[ 0]  opesq vivo444a n;CORRECAO;EVENTO;acuja;ctds;dhx;esse;f;lixonol;nom;relat;resp;resu;u
      pag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←0 ⋄ EVENTO←'PL444   '
[ 5]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
```

```
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)⍴(n,4)⍴4 0⍕⍳n
[ 8]  ylu←((4×⌈(1⍴⍴ylu)÷4),36)⍴ylu
[ 9]  relat←((2+1⍴⍴ylu),1 0+⍴F444)⍴' '
[10]  relat[1;;]←(1↓⍴relat)⍴⍙FM'c:\apl2\VIVOBLOI'
[11]  xk←1 ⋄ nom←4 9⍴'INOME.NDXIBICH.NDXICOMI.NDXICORX.NDX'
[12]  ctds←0 0 0
[13] testa:→(xk>0.25×1⍴⍴ylu)/fim
[14]  esse←14 80⍴' '
[15]  f←F444
[16]  esse[1;]←80⍴dhx[1;]
[17]  esse[2;]←80⍴dhx[2;]
[18]  esse[3;]←80⍴4 2⍕VERSAOa←3.03
[19]  esse[4;]←80⍴' '⍝ylu[xk;⍳6]
[20]  esse[5;]←80⍴' '⍝ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80⍴EVENTO
[22]  esse[7;]←80⍴(3 0⍕resp←xk),'-',opesq
[23]  esse[13;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[14;]←80⍴esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  esse[8 9 10 11;]←4 80⍴ylu[(4×¯1+xk)+⍳4;6+⍳30],' ',ylu[(4×¯1+xk)+⍳4;⍳6]
[27]  esse[12;]←1 80⍴80⍴nom[1+3|xk-1;] ⍝ deixei o 4 de fora para fazer a transparencia┤
[28]  ctds[1+3|xk-1]←ctds[1+3|xk-1]+1
[29]  acuja←(f[;2]='#')/⍳1⍴⍴f
[30]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[31]  relat[1+xk;;]←(ULTIMOa←f),[1](1,1↓⍴f)⍴200⍴'\newpage'
[32]  ⍞←(⍕xk←xk+1),'-'
[33]  →testa
[34] fim:
[35] terminando:
[36]  relat[1⍴⍴relat;1;⍳80]←80⍴'\end{document}'
[37]  lixonol←(((×/2⍴⍴relat),¯1⍴⍴relat)⍴relat)⍙FM'c:\apl2\',((~⍬∧\⍬EVENTO=' ')/EVENTO),'.t
      ex'
[38]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[39]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex)'
[40]  'imprima ',(⍕ctds[1]),' NOMES; ',(⍕ctds[2]),' BICHOS; e ',(⍕ctds[3]),' COMIDAS'
------------------------------------------------------------
```

vivo445

```
[0]  r←acer el;x
[1]  x←1?950
[2]  x←x+⍳35
[3]  x←15⍴(~x∈el)/x
[4]  x←x[15?15]
[5]  r←el[⍳205],x
------------------------------------------------------------
[0]  r←uni achalc xunda
[1] ⍝ uni e o numero de elementos do universo
[2] ⍝ xunda sao os indices que se quer obter linha e coluna
[3] ⍝ exemplo 2 3 achalc 2 5 eh: 1 2/2 2
[4]  r←((⍴xunda),2)⍴0
[5]  r[;1]←1+⌊xunda÷uni[2]
[6]  r[;2]←uni[2]|xunda
[7]  r←,r
------------------------------------------------------------
[0]  r←arregla33 x;yt
[1]  yt←2 0⍕x
[2]  r←'M[',yt[1 2],'][',yt[3 4],']&'
[3]  r←r,'M[',yt[5 6],'][',yt[7 8],']&'
[4]  r←r,'M[',yt[9 10],'][',yt[11 12],']&'
[5]  r←r,'M[',yt[13 14],'][',yt[15 16],']&'
[6]  r←r,'M[',yt[17 18],'][',yt[19 20],']\\'
```

```
[7]  r←(r≠' ')/r
-------------------------------------------------------------
[0]  r←c
[1]  r←(ΔARVO[;2]≠0)/[1]ΔARVO
-------------------------------------------------------------
[ 0]  criabtree t;colus
[ 1]  ΔT←t
[ 2]  colus←2+(2×t)+(2×t)-1
[ 3]  ΔARVO←(100,colus)ρ0
[ 4]  ΔRAIZ←1
[ 5]  ΔPROX←2
[ 6]  ΔARVO[ΔRAIZ;1]←1
[ 7]  ΔARVO[;1]←1
[ 8] ⍝ explicacoes validas para t=3
[ 9] ⍝ arvo[;1] 1 se esta pagina e folha e 0 senao
[10] ⍝ arvo[;2] contador de chaves (1   ≤ ctd   ≤ 5)
[11] ⍝ arvo[;3 4 5 6 7] as 5 chaves
[12] ⍝ arvo[;8 9 10 11 12 13] os enderecos dos filhos (-1 terminador)
-------------------------------------------------------------
[ 0]  r←d;i;j;da;z;a;l
[ 1]  da←ΔARVO
[ 2]  da←(da[;2]≠0)/[1]da
[ 3]  i←1
[ 4] come:→(i>1↑ρda)/fim
[ 5]  j←da[i;2]+1
[ 6] cuca:→(j>(¯1+2×ΔT))/juca
[ 7]  da[i;2+j]←0
[ 8]  da[i;(2+2×ΔT)+j]←0
[ 9]  →(j=j←j+1)/cuca
[10] juca:
[11]  →(i=i←i+1)/come
[12] fim:
[13]  a←2 0 2 0 5 0,(2×¯2+2×ΔT)ρ4 0
[14]  r←' ',((((1↑ρz),2)ρ2 0⍕⍳1↑ρz),'|',a⍕z←da[;⍳(2+¯1+2×ΔT)]),'555'⍕da[;(2+¯1+2×ΔT)+⍳(2×Δ
      T)]
[15]  r[ΔRAIZ;1]←'*'
[16]  r←'-',[1]r
[17]  r[1;⍳4]←'   +'
[18]  r←('    ',(2 0 2 0 5 0,((2×¯2+2×ΔT)ρ4 0),(4×ΔT)ρ3 0)⍕⍳1+4×ΔT),[1]r
-------------------------------------------------------------
[ 0]  du chave;s;raiz
[ 1]  raiz←ΔRAIZ
[ 2]  →(ΔARVO[ΔRAIZ;2]<¯1+2×ΔT)/ok
[ 3]  s←ΔPROX
[ 4]  ΔPROX←ΔPROX+1
[ 5]  ΔRAIZ←s
[ 6]  ΔARVO[s;1]←0
[ 7]  ΔARVO[s;2]←0
[ 8]  ΔARVO[s;2+2×ΔT]←raiz
[ 9]  sp(s,1,raiz)
[10]  s nc chave
[11]  →0
[12] ok:raiz nc chave
-------------------------------------------------------------
[0]  r←t exemplo limite;i;lixo
[1]  criabtree ΔT←t
[2]  i←1
[3] fuca:→(i>ρlimite)/fim
[4]  ⍞'du ',⍕limite[i]
[5]  →(i=i←i+1)/fuca
[6] fim:r←d
[7]  ΔDADOS←limite
-------------------------------------------------------------
```

```
[ 0]  r←x nc chave;i;xvelho
[ 1]  i←ΔARVO[x;2]
[ 2]  →(ΔARVO[x;1]=0)/naofolha
[ 3] comeca:→((i<1)∨(chave≥ΔARVO[x;2+i]))/cabou
[ 4]  ΔARVO[x;3+i]←ΔARVO[x;2+i]
[ 5]  →(i=i←i-1)/comeca
[ 6] cabou:
[ 7]  ΔARVO[x;3+i]←chave
[ 8]  ΔARVO[x;2]←ΔARVO[x;2]+1
[ 9]  →conta
[10] naofolha:→((i<1)∨(chave≥ΔARVO[x;2+i]))/cabou2
[11]  →(i=i←i-1)/naofolha
[12] cabou2:i←i+1
[13]  xvelho←x
[14]  x←ΔARVO[x;(2+¯1+2×ΔT)+i]
[15]  →(ΔARVO[x;2]≠(¯1+2×ΔT))/termina
[16]  sp(xvelho,i,x)
[17]  →(chave≤ΔARVO[xvelho;2+i])/pula
[18]  i←i+1
[19] pula:
[20] termina:
[21]  ΔARVO[xvelho;(2+¯1+2×ΔT)+i]nc chave
[22] conta:
-------------------------------------------------------------
[0]  setapf9
[1]  26 149 76 67 13 ⎕PFKEY 9
[2]  'feito'
-------------------------------------------------------------
[ 0]  sp xiy;x;i;y;z;j
[ 1]  x←xiy[1] ⋄ i←xiy[2] ⋄ y←xiy[3]
[ 2]  z←ΔPROX
[ 3]  ΔPROX←ΔPROX+1
[ 4]  ΔARVO[z;1]←ΔARVO[y;1]
[ 5]  ΔARVO[z;2]←ΔT-1
[ 6] ⍝   ΔARVO[z; 3 4]  ←  ΔARVO[y; 6 7]
[ 7]  ΔARVO[z;2+⍳ΔT-1]←ΔARVO[y;(-ΔT-1)↑⍳2+¯1+2×ΔT]
[ 8]  →(ΔARVO[y;1]≠0)/acaba2
[ 9] ⍝   ΔARVO[z; 8 9 10]  ←  ΔARVO[y; 11 12 13]
[10]  ΔARVO[z;ΔT↑(1+2×ΔT)+⍳2×ΔT]←ΔARVO[y;(-ΔT)↑(1+2×ΔT)+⍳2×ΔT]
[11] acaba2:ΔARVO[y;2]←ΔT-1
[12]  j←ΔARVO[x;2]+1
[13] testa1:→(j=i)/acaba3
[14] ⍝   ΔARVO[x;8+j]  ←  ΔARVO[x;7+j]
[15]  ΔARVO[x;(2+2×ΔT)+j]←ΔARVO[x;(¯1+2+2×ΔT)+j]
[16]  →(j=j←j-1)/testa1
[17] ⍝acaba3:  ΔARVO[x;8+i]  ←z
[18] acaba3:ΔARVO[x;(2+2×ΔT)+i]←z
[19]  j←ΔARVO[x;2]
[20] testa3:→(j≤i-1)/acaba4
[21]  ΔARVO[x;3+j]←ΔARVO[x;2+j]
[22]  →(j=j←j-1)/testa3
[23] acaba4:ΔARVO[x;2+i]←ΔARVO[y;2+ΔT]
[24]  ΔARVO[x;2]←ΔARVO[x;2]+1
-------------------------------------------------------------
[ 0]  opesq vivo445a n;CORRECAO;EVENTO;a1;a2;aaa;acuja;aux;dhx;elems;esse;f;inds;lix;lixo1
      ;lixonol;on;onde;q2;q3;q4;relat;resp;resu;rr;upag;xixo;xk;y;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←5 ⋄ EVENTO←'PL445   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
```

```
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA445←ajusta80 FOLHALA445
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA445)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 6⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←51 80⍴' '
[15]  f←FOLHALA445
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.9
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[50;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[51;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26] denovo:elems←220?999
[27]  elems←acer elems
[28]  lix←5 exemplo 200↑elems
[29]  →(39≥1↑⍴lix)/manda
[30]  'opps'
[31]  →denovo
[32] manda:esse[7+⍳1↑⍴lix;⍳1↓⍴lix]←lix
[33]  a1←c
[34]  lix←5 exemplo elems
[35]  a2←c
[36]  →((1↑⍴a2)≠1↑⍴a1)/beleza
[37]  'x'
[38]  →denovo
[39] beleza:a1←(⍴a2)↑a1
[40]  onde←(,a2≠a1)/⍳×/⍴a2
[41]  inds←5?⍴onde
[42]  on←onde[inds]
[43]  rr←(⍴a2)achalc on
[44]  resp←resp,(,a2)[on]
[45]  esse[47 48;]←2 80↑2 60⍴120↑4 0⍕¯20↑elems
[46]  aux←3 4 6 7 14 15 17 18 25 26 28 29 36 37 39 40 47 48 50 51
[47]  esse[49;]←80↑arregla33 rr[⍳10]
[48]  resu←resu,[1]1 6⍴resp
[49]  acuja←(f[;2]='#')/⍳1↑⍴f
[50]  f[acuja;⍳80]←esse[±,f[acuja;3 4],' ';]
[51]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[52]  ⍞←(⍕xk←xk+1),'-'
[53]  →testa
[54] fim:upag←(1 0+⍴f)⍴' '
[55]  →(1=≡n)/elafa
[56]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[57]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[58]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 5 0 5 0 5 0)⍕resu
[59]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[60]  →terminando
[61] elafa:aaa←(ylu,5 0⍕0 1↓resu)
[62]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[63]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[64] terminando:
[65]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[66]  relat[1↑⍴relat;;]←upag
[67]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[68] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[69]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
```

```
[70]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[71]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo450

```
[0]  r←acertab x
[1]  r←0⍴0
[2]  i←1
[3] t1:→(i>24)/fim
[4]  r←r,(8⍴2)⊥⍉(16⍴1 0)⍴8↑(trim x[i;]),'0000'
[5]  i←i+1
[6]  →t1
[7] fim:
-------------------------------------------------------------
[0]  r←tab achabi item
[1]  r←(4=+/tab[;2 3 4 5]=((1↑⍴tab),4)⍴item)/⍳1↑⍴tab
-------------------------------------------------------------
[0]  r←asc2bin x
[1]  r←hex2bin asc2hex x
-------------------------------------------------------------
[0]  r←asc2hex v;i
[1]  i←1 ⋄ r←''
[2] t1:→(i>⍴v)/fim
[3]  r←r,,TABASC[TABASC[;1]⍳v[i];2 3]
[4]  →(i=i←i+1)/t1
[5] fim:
-------------------------------------------------------------
[0]  r←asc2ort2hex x;i;aux;tam
[1]  i←1 ⋄ aux←''
[2] t1:→(i>⍴x)/f1
[3]  aux←aux,,TABORT[TABORT[;1]⍳x[i];2 3 4 5 6]
[4]  →(i=i←i+1)/t1
[5] f1:tam←⍴aux
[6]  aux←(8×⌈tam÷8)↑aux,7⍴'0'
[7]  r←(3 0⍕tam),bin2hex aux
-------------------------------------------------------------
[0]  r←asc2tro2hex v;i;x;tam
[1]  i←1 ⋄ x←''
[2] t1:→(i>⍴v)/fim
[3]  x←x,buscatro v[i]
[4]  →(i=i←i+1)/t1
[5] fim:tam←⍴x
[6]  x←(8×⌈tam÷8)↑x,7⍴'0'
[7]  r←(3 0⍕tam),bin2hex x
-------------------------------------------------------------
[0]  r←bin2hex a;x;i
[1]  x←((0.25×⍴a),4)⍴a
[2]  i←1 ⋄ r←''
[3] t1:→(i>1↑⍴x)/aca
[4]  r←r,TABBIN[TABBIN achabi x[i;];1]
[5]  →(i=i←i+1)/t1
[6] aca:
-------------------------------------------------------------
[ 0]  r←buscatro y;x;ind;pai
[ 1]  x←''
[ 2]  ind←ARVTRO[;7]⍳y
[ 3] uxa:pai←⍎ARVTRO[ind;5 6]
[ 4]  →(pai=¯1)/aca
[ 5]  →(ind=⍎ARVTRO[pai;1 2])/esq
[ 6]  x←'1',x
[ 7]  →pula
```

```
[ 8] esq:x←'0',x
[ 9] pula:ind←⍪ARVTRO[ind;5 6]
[10]  →uxa
[11] aca:r←x
-------------------------------------------------------------
[ 0]  r←gerarvfol;aa;vx;vv;aspa;i;zz
[ 1] ⍝ esta funcao embaralha ARVTRO, salva a arvore embaralhada em
[ 2] ⍝ ARVEMB,gera o alfabeto pronto para ir para a folha de exercicio
[ 3] ⍝ e retorna ARVTRO ao valor que tinha originalmente
[ 4]  i←1 ⋄ r←0 9⍴' ' ⋄ aspa←''''
[ 5]  vx←,ARVTRO[23+⍳24;7]
[ 6]  vx←vx[(⍴vx)?⍴vx]
[ 7]  ARVTRO[23+⍳24;7]←24 1⍴vx
[ 8]  vv←' ABCDEFGHIJLMNOPQRSTUVXZ'
[ 9] t1:→(i>24)/fi
[10]  r←r,[1]1 9⍴vv[i],8↑buscatro vv[i]
[11]  →(i=i←i+1)/t1
[12] fi:
[13]  aa←1 0 0 0 1 1 1 1 1 1 1 1 0 0 0 0
[14]  r←aa⍀r
[15]  r[;2 3 4 13]←24 4⍴'=B',aspa,aspa
[16]  zz←(100000×+/[2]r[;4+⍳8]≠' ')+acertab r[;4+⍳8]
[17]  r←r[⍋zz;]
[18]  r←r[⍳6;],r[6+⍳6;],r[12+⍳6;],r[18+⍳6;]
-------------------------------------------------------------
[0]  r←hex2bin a;i
[1]  i←1 ⋄ r←''
[2] t1:→(i>1↑⍴a)/aca
[3]  r←r,,TABBIN[TABBIN[;1]⍳a[i];2 3 4 5]
[4]  →(i=i←i+1)/t1
[5] aca:
-------------------------------------------------------------
[ 0]  opesq vivo450a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;fra1;inds;lixo;lixonol;nomes;q
      l39;qlinha;relat;resp;resu;upag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL450   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍕n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA450←ajusta80 FOLHALA450
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA450)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[13]  xk←1 ⋄ resu←0 74⍴' '
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←23 80⍴' '
[16]  f←FOLHALA450
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←3.67
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
```

```
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),'-',opesq
[31]  esse[22;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[23;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  fra1←MENSMIN20[?1↑⍴MENSMIN20;]
[35]  esse[8;]←80↑,asc2hex,fra1
[36]  resp←(3 0⍕resp),'-',,fra1   ⍝ 4+20 = 24=tamanho de resp
[37] ⍝ 2
[38]  fra1←MENSMIN6[?1↑⍴MENSMIN6;]
[39]  esse[9;]←80↑,asc2bin,fra1
[40]  resp←resp,'-',,fra1   ⍝ 24+1+6= 33
[41] ⍝ 3
[42]  inds←4?1↑⍴MENSMAI10
[43]  fra1←MENSMAI10[inds[1];]
[44]  esse[10;]←80↑(,fra1),' / tam=',(3↑lixo←asc2ort2hex,fra1)
[45]  resp←resp,'-',(1 1 0 1 1 0 1 1⍀¯6↑3↓lixo),' '   ⍝ 42
[46] ⍝ 4
[47]  fra1←MENSMAI10[inds[2];]
[48]  esse[11;]←80↑'tam=',(3↑lixo),' / ',(3↓lixo←asc2ort2hex,fra1)
[49]  resp←resp,'-',,fra1   ⍝ 53
[50] ⍝ exemplo
[51]  esse[11+⍳6;]←6 80↑gerarvfol
[52] ⍝ exemplo
[53]  lixo←asc2tro2hex,fra1←'CURITIBA'
[54]  esse[18;]←80↑((,3↓lixo),' / tam=',3↑lixo),' - ',fra1
[55] ⍝ 5
[56]  fra1←MENSMAI10[inds[4];]
[57]  esse[19;]←80↑'tam=',(3↑lixo),' / ',(3↓lixo←asc2tro2hex,fra1)
[58]  resp←resp,'-',,fra1   ⍝64
[59]  lixo←asc2tro2hex fra1←'PARANA'
[60]  esse[20;]←80↑((,fra1),' / tam=',3↑lixo),' -  ',3↓lixo
[61] ⍝ 6
[62]  fra1←MENSMAI10[inds[3];]
[63]  esse[21;]←80↑(,fra1),' / tam=',(3↑lixo←asc2tro2hex,fra1)
[64]  resp←resp,'-',(1 1 0 1 1 0 1 1⍀¯6↑3↓lixo),' ' ⍝ 74
[65]  resu←resu,[1]1 74⍴resp
[66]  acuja←(f[;2]='#')/⍳1↑⍴f
[67]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[68]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[69]  ⍞←(⍕xk←xk+1),'-'
[70]  →testa
[71] fim:upag←(1 0+⍴f)⍴' '
[72]  →(1=≡n)/elafa
[73]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[74]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[75]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑resu
[76]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[77]  →terminando
[78] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[79]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[80]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[81] terminando:
[82]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[83]  relat[1↑⍴relat;;]←upag
[84]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.t
      ex'
[85]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[86]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo451

```
[ 0]  R←criamensa;M
[ 1]  M←24⍴' '
[ 2]  M←M,23⍴'A'
[ 3]  M←M,22⍴'O'
[ 4]  M←M,21⍴'E'
[ 5]  M←M,20⍴'R'
[ 6]  M←M,19⍴'S'
[ 7]  M←M,18⍴'P'
[ 8]  M←M,17⍴'M'
[ 9]  M←M,16⍴'C'
[10]  M←M,15⍴'D'
[11]  M←M,14⍴'I'
[12]  M←M,13⍴'U'
[13]  M←M,12⍴'T'
[14]  M←M,11⍴'B'
[15]  M←M,10⍴'L'
[16]  M←M,9⍴'N'
[17]  M←M,8⍴'F'
[18]  M←M,7⍴'Q'
[19]  M←M,6⍴'G'
[20]  M←M,5⍴'H'
[21]  M←M,4⍴'J'
[22]  M←M,3⍴'V'
[23]  M←M,2⍴'X'
[24]  M←M,1⍴'Z'
[25] ⍝ M  ←M[300?300]
[26]  R←M
------------------------------------------------------------
[ 0]  r←arvore estrucha dicionario;i;oi;chave;lin
[ 1] ⍝ esta funcao monta os 1 e 0 necessarios para cada caracter de dicionario
[ 2]  ⎕←'Andamento: '
[ 3]  i←1 ⋄ r←(⍴dicionario)⍴' '
[ 4] xuxa:→(i>1↑⍴dicionario)/fim
[ 5]  oi←'' ⋄ chave←-⎕AV⍳dicionario[i;1]
[ 6] contaz:lin←(,∨/[2]chave=(0 1⍉arvore))/⍳1↑⍴arvore
[ 7]  oi←('01'[1+chave=arvore[lin;3]]),oi
[ 8]  chave←arvore[lin;1]
[ 9]  →(chave≠1↑⍴arvore)/contaz
[10]  oi←8↑oi
[11]  r[i;]←dicionario[i;1],oi
[12]  ⎕←(⍕¯1+i←i+1),'⎕'
[13]  →xuxa
[14] fim:⎕←⎕TCBS,' ',⎕TCNL
[15]  dicok←r
------------------------------------------------------------
[0]  lixo1
[1]  →(como=0)/vai
[2]  xx←ΔFM'f:⍀apl2⍀livrbloi'
[3]  xx←((1↑⍴xx),80)↑xx
[4]  f←xx,[⎕IO]f,[⎕IO]1 80⍴80↑'⍀end{document}'
[5] vai:f ΔFM'c:⍀apl2⍀L___'
------------------------------------------------------------
[0]  r←qt lixo3 aa;i;contador;aspa
[1]  i←1 ⋄ contador←8 ⋄ aspa←'''' ⋄ r←aa
[2] vo:→(i>1↑⍴aa)/fim
[3]  →(2≠+/aa[i;1 2]='⍀#')/soma
[4]  r[i;2+⍳qt]←⍪aspa,(qt⍴'0'),aspa,'⍕contador'
[5]  contador←contador+1
[6] soma:→(i=i←i+1)/vo
[7] fim:
------------------------------------------------------------
```

```
[ 0]  arvore←montarv mt;vx;i
[ 1] ⍝ esta funcao recebe mt, que e uma matriz n,2 onde na primeira coluna
[ 2] ⍝ estao as posicoes dos caracteres em  ⎕av e na segunda sua quantidade
[ 3] ⍝-------------------------------------------------------------------
[ 4] ⍝ ela devolve arvore conforme descrito em DESCREVE
[ 5] ⍝-------------------------------------------------------------------
[ 6] ⍝ v.1.0    P. Kantek     CELEPAR      1/93
[ 7] ⍝-------------------------------------------------------------------
[ 8]  ⎕←'Andamento: '
[ 9]  arvore←(0,3)⍴0
[10]  i←1
[11]  mt[;1]←-mt[;1]
[12] inicio:mt←mt[⍋mt[;2];] ⋄⍝ ordena mt em ordem crescente
[13]  →(2>1↑⍴mt)/fim
[14]  arvore←arvore,[1]3⍴i,mt[2;1],mt[1;1]
[15]  mt←mt,[1]2⍴i,mt[1;2]+mt[2;2]
[16]  mt←2 0↓mt
[17]  ⎕←(⍕¯1+i←i+1),'-'
[18]  →inicio
[19] fim:⎕←' '
-------------------------------------------------------------
[ 0]  r←dicionario montate xx;i;i1;i2;a1;a2;lixao;tex
[ 1] ⍝ dicionario e' a tabela de caracter + bits; xx e a mensagem a traduzir
[ 2]  tex←'' ⋄ i←1 ⋄ r←'' ⋄ ⎕←'Andamento: ' ⋄ qtduns←0 ⋄ qtdbits←0
[ 3] testa:→(i>1↑⍴xx)/fim
[ 4]  tex←tex,dicionario[dicionario[;1]⍳xx[i];1+⍳8]
[ 5]  ⎕←(⍕¯1+i←i+1),'-'
[ 6]  →testa
[ 7] fim:⎕←' '
[ 8]  tex←(lixao←(tex≠' ')/tex),'0000000'
[ 9]  tex←((⌊((⍴tex)÷8)),8)⍴tex
[10]  codigo←tex
[11]  'o campo codigo contem a compressao em binario '
[12]  i←1 ⋄ ⎕←'Andamento: '
[13] vai:→(i>1↑⍴tex)/finzao
[14]  i1←'0123456789ABCDEF'[1+2 2 2 2⊥(a1←⍉1 0 1 0 1 0 1 0⍉tex[i;⍳4])]
[15]  i2←'0123456789ABCDEF'[1+2 2 2 2⊥(a2←⍉1 0 1 0 1 0 1 0⍉tex[i;4+⍳4])]
[16]  qtduns←qtduns++/a1+a2
[17]  r←r,i1,i2,' '
[18]  ⎕←(⍕¯1+i←i+1),'-'
[19]  →vai
[20] finzao:qtdbits←⍴lixao
[21]  ⎕←' '
-------------------------------------------------------------
[ 0]  r←indica pesqfra xx;unicos;⎕IO;con;mt;arb;mata;maar;texto
[ 1] ⍝ xx e a frase a ser pesquisada (universo) e comprimida
[ 2] ⍝ r e o resultado (cada caractere e' um digito hexa 012...DEF)
[ 3] ⍝ se indica = 0 nao quero ver nada. Se  ≠ 0 quero ver tudo
[ 4]  ⎕IO←1 ⋄ unicos←((xx⍳xx)=⍳⍴xx)/xx ⋄⍝ unicos e um vetor nao duplicado
[ 5]   ⋄ ⋄ unicos[⎕AV⍋unicos]
[ 6] cont1:con←+/[1]xx∘.=unicos ⋄⍝ con sao as quantidades de caracteres
[ 7]  →(indica<0)/cont2 ⋄ 'caracteres e suas quantidades ' ⋄ con[⍋con]
[ 8] cont2:arvore←montarv mt←⍉(⎕AV⍳unicos),[0.5]con
[ 9]  →(indica<0)/cont3 ⋄ mt ⋄ 'arvore ' ⋄ arvore
[10] cont3:arb←⎕AV[|((,arvore)<0)/,arvore]
[11]  →(indica<0)/cont4 ⋄ 'caracteres a pesquisar' ⋄ arb
[12] cont4:mata←(((⍴arb),1)⍴arb),[2](((⍴arb),8)⍴' ')
[13]  dicionario←maar←arvore estrucha mata
[14]  →(indica<0)/cont5 ⋄ 'mapa de bits' ⋄ maar
[15] cont5:texto←maar montate xx ⋄⍝esta funcao transf. cada xx em seus bits
[16]  r←texto
[17]  →(indica<0)/cont6 ⋄ 'mensagem' ⋄ texto
[18] cont6:
```

```
------------------------------------------------------------
[ 0]  opesq vivo451a n;CORRECAO;EVENTO;aaa;acuja;asca;dhx;esse;f;lixonol;nomes;ql39;qlinha
      ;qtd1;qtd2;qtdbits;qtduns;quall;relat;resp;resu;upag;x;xixo;xk;xx;y;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  EVENTO←'PL451   '
[ 5]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 8]  ylu←n grupo ylu
[ 9]  FOLHALA451←80 ajusta FOLHALA451
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA451)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[12]  xk←1 ⋄ resu←0 80⍴' '
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←23 80⍴' '
[15]  f←FOLHALA451
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←3.57
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  →(36=1↓⍴ylu)/zebra
[21]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[22]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[23]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[24]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[25]  →maiszebra
[26] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[27] maiszebra:
[28]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[29]  esse[7;]←80↑(3 0⍎resp←xk),'-',opesq
[30]  esse[22;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[31]  esse[23;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[32] inica:
[33]  asca←2?1↑⍴frases
[34]  y←asca[1]
[35]  xx←dicionario montate trim,frases[y;]
[36]  esse[7+⍳4;]←4 80↑4 36⍴144↑xx
[37]  qtd2←qtdbits
[38]  esse[12;]←80↑3 0⍎(⍴xx)÷3
[39]  esse[13;]←80↑3 0⍎⍴trim,frases[y;]
[40]  esse[14;]←80↑3 0⍎qtd2
[41]  esse[15 16;]←2 80↑2 36⍴72↑,' /'edit trim frases[x←asca[2];]
[42]  xx←dicionario montate trim,frases[x;]
[43]  ULTIRESP←(((⍴xx)÷3),3)⍴xx
[44]  quall←((1↑⍴ULTIRESP)-6)+?4
[45]  esse[17;]←80↑,(3 0⍎⍴trim,frases[x;])
[46]  esse[18;]←80↑3 0⍎(⍴xx)÷3
[47]  esse[19;]←80↑2 0⍎quall+1
[48]  esse[20;]←80↑(,ULTIRESP)[⍳5]
[49]  esse[21;]←80↑,,ULTIRESP[quall;]
[50]  qtd1←qtduns
[51]  resu←resu,[1]1 80⍴80↑(3 0⍎xk),(73↑,frases[y;]),,ULTIRESP[quall+1;]
[52]  acuja←(f[;2]='#')/⍳1↑⍴f
[53]  f[acuja;⍳80]←esse[⌽,f[acuja;3 4],' ';]
[54]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[55]  ⍞←(⍎xk←xk+1),'-'
[56]  →testa
[57] fim:upag←(1 0+⍴f)⍴' '
[58]  →(1=≡n)/elafa
[59]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
```

```
[60]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[61]  upag[2+⍳1↑⍴resu;⍳80]←((1↑⍴resu),80)↑resu
[62]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[63]  →terminando
[64] elafa:aaa←(ylu[;⍳36],0 3↓resu)
[65]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[66]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[67] terminando:
[68]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[69]  relat[1↑⍴relat;;]←upag
[70]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.t
      ex'
[71]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[72]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo452

```
[ 0]  AVISO
[ 1]  'para construir uma arvore ad-hoc, chame ajuda452 passando a ela o vetor do'
[ 2]  'universo, construido com 1 caracter de cada apenas, do mais frequente'
[ 3]  'para o menos frequente'
[ 4]  ' '
[ 5]  ' se preferir, usea funcao verhu'
[ 6]  '   ela recebe o proprio universo e eh mais precisa, pois trata a quantidade de'
[ 7]  '   ocorrencias de cada letra e nao apenas a sua ordem de importancia'
[ 8]  ' '
[ 9]  ' por exemplo, faca verhu aaaaaaaaaaaaaaaaaaaaaabc e compare com ajuda452 abc'
[10]  '              faca tambem verhu aaaabc e compare tudo'
[11]  '  '
[12]  ' para ajudar ajuda452 abcd = verhu aaaabbbccd'
[13]  ''
[14]  ' tem agora o ajudape - que e chamado igual ao ajuda452'
[15]  ' e o verhupe que e chamado igual ao verhu'
[16]  ''
[17]  ' Para desenhar a arvore de huffman'
[18]  ' gere o exercício normalmente, e depois dele, faca'
[19]  '  criaarv2   --- e depois'
[20]  '     3 desarb arvore2'
------------------------------------------------------------
[ 0]  r←ajuda452 a;i;j;naomostra
[ 1] ⍝ a deve ser o universo 'ab...x', onde a ocorre n, b ocorre n-1... x ocorre 1'
[ 2] ⍝ veja codigo (a compressao), qtdbits=qtd de bits validos no codigo,
[ 3] ⍝ dicok = o dicionario
[ 4]  i←⍴a ⋄ j←''
[ 5] t1:→(i<1)/f
[ 6]  j←j,((1+(⍴a)-i)⍴a[i])
[ 7]  →(i=i←i-1)/t1
[ 8] f:naomostra←j
[ 9]  naomostra←¯1 pesqfra j
[10]  criaarv2
[11]  r←2 desarb arvore2
------------------------------------------------------------
[ 0]  r←ajudape x;rr;aa;i
[ 1]  rr←⍎ajudape452 x
[ 2]  r←(0,aa←1↓⍴rr)⍴' '
[ 3]  rr←'< 'edit rr
[ 4]  rr←'| 'edit rr
[ 5]  rr←'> 'edit rr
[ 6]  i←1
[ 7] t1:→(i>1↑⍴rr)/fim
[ 8]  →(aa=+/rr[i;]=' ')/pula
```

```
[ 9]  r←r,[1]rr[i;]
[10] pula:i←i+1
[11]  →t1
[12] fim:
------------------------------------------------------------
[0]  r←ajudape2 x
[1]  r←⍞⍞ajuda452 x
[2]  r←'> 'edit r
[3]  r←'< 'edit r
[4]  r←((1↓⍴r)≠+/r=' ')/[1]r
------------------------------------------------------------
[ 0]  r←ajudape452 a;i;j;naomostra
[ 1] ⍝ a deve ser o universo 'ab...x', onde a ocorre n, b ocorre n-1... x ocorre 1'
[ 2] ⍝ veja codigo (a compressao), qtdbits=qtd de bits validos no codigo,
[ 3] ⍝ dicok = o dicionario
[ 4]  i←⍴a ⋄ j←''
[ 5] t1:→(i<1)/f
[ 6]  j←j,((1+(⍴a)-i)⍴a[i])
[ 7]  →(i=i←i-1)/t1
[ 8] f:naomostra←j
[ 9]  naomostra←¯1 pesqfra j
[10]  criaarv2
[11]  r←2 desarbpe arvore2
------------------------------------------------------------
[ 0]  r←qual apasc x
[ 1] ⍝ v1.0
[ 2]  →(qual=2)/edois
[ 3]  →(qual=4)/quatro
[ 4]  r←x
[ 5]  →fim
[ 6] edois:r←(⍴x)⍴'|'
[ 7]  →fim
[ 8] quatro:r←⎕AV[187 180]edit x
[ 9]  r←⎕AV[186 181]edit r
[10]  r←⎕AV[188 192]edit r
[11]  r←⎕AV[189 218]edit r
[12]  r←⎕AV[201 193]edit r
[13]  r←⎕AV[202 219]edit r
[14] fim:
------------------------------------------------------------
[ 0]  criaarv2;y;r;i
[ 1] ⍝ Esta funcao pega a variavel arvore (criada por pesqfra)
[ 2] ⍝ e coloca a arvore pronta para desenhar em arvore2
[ 3] ⍝ a seguir, use 3 desarb arvore2
[ 4] ⍝
[ 5] ⍝
[ 6]  y←arvore
[ 7]  r←((1+2×1↑⍴y),4)⍴0
[ 8]  r[1;3 4]←(1↑⍴y),¯2
[ 9]  r[(1+⍳¯1+1↑⍴r);3]←,y[;2],y[;3]
[10]  r[1;1]←y[(1↑⍴y);2]ondeta r[;3] ⋄ r[1;2]←y[(1↑⍴y);3]ondeta r[;3]
[11]  r[r[1;1];4]←1 ⋄ r[r[1;2];4]←1   ⍝ profundidades dos filhos da raiz
[12]  i←1 ⋄ r[(1+⍳¯1+1↑⍴r);1 2]←¯1
[13] testa:→(i≥1↑⍴y)/fim
[14]  r[y[i;1]ondeta r[;3];1]←y[i;2]ondeta r[;3]
[15]  r[y[i;1]ondeta r[;3];2]←y[i;3]ondeta r[;3]
[16]  →(i=i←i+1)/testa
[17] fim:
[18]  arvore2←r
[19]  1 fazpai 1
------------------------------------------------------------
[ 0]  r←qual desarb x;z;alfa;i;inds;x1;x2;x3
[ 1] ⍝ versao 1.3
```

```
[ 2] ⍝ se qual=2 desenha ASCII, se qual  ≠2, desenha APL
[ 3] ⍝ o comando a seguir: foi incluido para inverter direito e esquerdo
[ 4]  xx←x[;1] ⋄ x[;1]←x[;2] ⋄ x[;2]←xx
[ 5] ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝ qualquer problema e so tira-lo   ↑  ↑  ↑  ↑  ↑  ↑
[ 6]  z←¯1↑⌈/[1]x
[ 7]  r←((1↑⍴x),(4×z+1))⍴' '
[ 8]  x1←(0 2+⍴x)↑x
[ 9]  x1[1;5 6]←(alfa←(1+1↑⍴r)÷2),1
[10]  x1←x1 xuxa 1,alfa,z,5
[11] ⍝ neste ponto em x1 tem-se tudo o que se precisa
[12]  x2←x1[inds←⍋x1[;5];]
[13]  x2[;5]←⍳1↑⍴x1
[14]  x3←x2[x2[;3]⍳x1[;3];]
[15]  i←1
[16]  →(x[1;4]=¯1)/comealf   ⍝ 0=tudo numerico,   ¯1=alfa,   ¯2=huffman
[17]  →(x[1;4]=¯2)/hufman
[18] comeco:→(i>1↑⍴x3)/fim
[19]  r[x3[i;5];((x3[i;6]-1)+⍳3)]←'555'⍕x3[i;3]
[20]  →(i=i←i+1)/comeco
[21] comealf:→(i>1↑⍴x3)/fim
[22]  r[x3[i;5];((x3[i;6]-1)+⍳3)]←'(',⎕AV[x3[i;3]],')'
[23]  →(i=i←i+1)/comealf
[24] hufman:→(i>1↑⍴x3)/fim
[25]  →(x3[i;3]≥0)/posa
[26]  r[x3[i;5];((x3[i;6]-1)+⍳3)]←'<',⎕AV[|x3[i;3]],'>'   ⍝ negativo (letra)
[27]  →soma1
[28] posa:
[29]  r[x3[i;5];((x3[i;6]-1)+⍳3)]←'555'⍕x3[i;3]   ⍝ positivo (nodo)
[30] soma1:→(i=i←i+1)/hufman
[31] fim:
[32] ⍝ desenhar os riscos
[33]  i←1
[34] termina:→(i>1↑⍴x3)/mesmo
[35]  →((x3[i;1]=¯1)∧(x3[i;2]=¯1))/nada
[36]  →(x3[i;1]=¯1)/sodir
[37]  →(x3[i;2]=¯1)/soesq
[38] ambos:
[39]  r[(pinta x3[x3[i;1];5],x3[x3[i;2];5]);(x3[i;6]+3)]←qual apasc 2 fazedor x3[x3[i;1];5
      ],x3[x3[i;2];5],x3[i;5]
[40]  →nada
[41] sodir:r[(pinta x3[x3[i;2];5],x3[i;5]);(x3[i;6]+3)]←qual apasc 0 fazedor x3[x3[i;2];5]
      ,x3[i;5],x3[i;5]
[42]  →nada
[43] soesq:r[(pinta x3[x3[i;1];5],x3[i;5]);(x3[i;6]+3)]←qual apasc 1 fazedor x3[x3[i;1];5]
      ,x3[i;5],x3[i;5]
[44] nada:→(i=i←i+1)/termina
[45] mesmo:
-------------------------------------------------------------
[ 0]  r←qual desarbpe x;z;alfa;i;inds;x1;x2;x3
[ 1] ⍝ versao 1.3
[ 2] ⍝ se qual=2 desenha ASCII, se qual  ≠2, desenha APL
[ 3]  z←¯1↑⌈/[1]x
[ 4]  r←((1↑⍴x),(4×z+1))⍴' '
[ 5]  x1←(0 2+⍴x)↑x
[ 6]  x1[1;5 6]←(alfa←(1+1↑⍴r)÷2),1
[ 7]  x1←x1 xuxa 1,alfa,z,5
[ 8] ⍝ neste ponto em x1 tem-se tudo o que se precisa
[ 9]  x2←x1[inds←⍋x1[;5];]
[10]  x2[;5]←⍳1↑⍴x1
[11]  x3←x2[x2[;3]⍳x1[;3];]
[12]  i←1
[13]  →(x[1;4]=¯1)/comealf   ⍝ 0=tudo numerico,   ¯1=alfa,   ¯2=huffman
[14]  →(x[1;4]=¯2)/hufman
```

```
[15] comeco:→(i>1↑⍴x3)/fim
[16]  r[x3[i;5];((x3[i;6]-1)+⍳3)]←'555'⍕x3[i;3]
[17]  →(i=i←i+1)/comeco
[18] comealf:→(i>1↑⍴x3)/fim
[19]  r[x3[i;5];((x3[i;6]-1)+⍳3)]←'(',⎕AV[x3[i;3]],')'
[20]  →(i=i←i+1)/comealf
[21] hufman:→(i>1↑⍴x3)/fim
[22]  →(x3[i;3]≥0)/posa
[23]  r[x3[i;5];((x3[i;6]-1)+⍳3)]←'<',⎕AV[|x3[i;3]],'>'   ⍝ negativo (letra)
[24]  →soma1
[25] posa:
[26]  r[x3[i;5];((x3[i;6]-1)+⍳3)]←'555'⍕x3[i;3]   ⍝ positivo (nodo)
[27] soma1:→(i=i←i+1)/hufman
[28] fim:
[29] ⍝ desenhar os riscos
[30]  i←1
[31] termina:→(i>1↑⍴x3)/mesmo
[32]  →((x3[i;1]=¯1)∧(x3[i;2]=¯1))/nada
[33]  →(x3[i;1]=¯1)/sodir
[34]  →(x3[i;2]=¯1)/soesq
[35] ambos:
[36]  r[(pinta x3[x3[i;1];5],x3[x3[i;2];5]);(x3[i;6]+3)]←qual apasc 2 fazedor x3[x3[i;1];5
      ],x3[x3[i;2];5],x3[i;5]
[37]  →nada
[38] sodir:r[(pinta x3[x3[i;2];5],x3[i;5]);(x3[i;6]+3)]←qual apasc 0 fazedor x3[x3[i;2];5]
      ,x3[i;5],x3[i;5]
[39]  →nada
[40] soesq:r[(pinta x3[x3[i;1];5],x3[i;5]);(x3[i;6]+3)]←qual apasc 1 fazedor x3[x3[i;1];5]
      ,x3[i;5],x3[i;5]
[41] nada:→(i=i←i+1)/termina
[42] mesmo:
-------------------------------------------------------------
[ 0]  r←dupltest texto;⎕IO;y;con;r1;r2
[ 1] ⍝ esta funcao recebe um texto ordena-o e devolve outro texto (universo)
[ 2] ⍝ no qual nao ha empates de ocorrencias de letras, e que deve ser usado
[ 3] ⍝ para montar a arvore (UNICA!) de Huffman.
[ 4] ⍝ se indice = 0, o programa trabalha em quiet mode, else fala tudo
[ 5]  ⎕IO←1 ⋄ y←((texto⍳texto)=⍳⍴texto)/texto   ⍝ y e o vetor nao duplicado
[ 6]  con←+/[2]y∘.=texto
[ 7]  y←y[⍒con]
[ 8]  r1←y[(,(⍳⍴y)∘.≤⍳⍴y)/,⍳(⍳⍴y)∘.[⍳⍴y]
[ 9] ⍝ r2  ←r1[(  ⍴r1)?  ⍴r1]
[10]  r2←r1
[11]  r2[(r2=' ')/⍳⍴r2]←'/'
[12]  r←r2
-------------------------------------------------------------
[ 0]  r←arvore estrucha dicionario;i;oi;chave;lin;naomostra
[ 1] ⍝ esta funcao monta os 1 e 0 necessarios para cada caracter de dicionario
[ 2]  naomostra←'Andamento: '
[ 3]  i←1 ⋄ r←(⍴dicionario)⍴' '
[ 4] xuxa:→(i>1↑⍴dicionario)/fim
[ 5]  oi←'' ⋄ chave←-⎕AV⍳dicionario[i;1]
[ 6] contaz:lin←(,∨/[2]chave=(0 1↓arvore))/⍳1↑⍴arvore
[ 7]  oi←('01'[1+chave=arvore[lin;3]]),oi
[ 8]  chave←arvore[lin;1]
[ 9]  →(chave≠1↑⍴arvore)/contaz
[10]  oi←8↑oi
[11]  r[i;]←dicionario[i;1],oi
[12]  naomostra←(⍕¯1+i←i+1),'⍝'
[13]  →xuxa
[14] fim:naomostra←' '
[15]  dicok←r
-------------------------------------------------------------
```

```
[ 0]  r←a fazedor b
[ 1]  b←b[⍋b]
[ 2]  r←(1+b[3]-b[1])⍴⎕AV[187]
[ 3]  →(a=0)/zero
[ 4]  →(a=1)/um
[ 5] dois:r[1]←⎕AV[202]
[ 6]  r[1+b[2]-b[1]]←⎕AV[186]
[ 7]  r[⍴r]←⎕AV[201]
[ 8]  →fim
[ 9] um:r[⍴r]←⎕AV[189]
[10]  r[1]←⎕AV[202]
[11]  →fim
[12] zero:r[1]←⎕AV[188]
[13]  r[⍴r]←⎕AV[201]
[14] fim:r←((⍴r),1)⍴r
------------------------------------------------------------
[0]  a fazpai b
[1]  →(arvore2[a;1]=¯1)/naoe
[2]  arvore2[arvore2[a;1];4]←b+1
[3]  arvore2[a;1]fazpai b+1
[4] naoe:
[5]  →(arvore2[a;2]=¯1)/fim
[6]  arvore2[arvore2[a;2];4]←b+1
[7]  arvore2[a;2]fazpai b+1
[8] fim:
------------------------------------------------------------
[ 0]  r←geraposcomp0942;a;b;c;d;e;f;xx;res;i
[ 1]  a←17+?10
[ 2]  b←11+?6
[ 3]  c←8+?6
[ 4]  d←3+?4
[ 5]  e←2+?2
[ 6]  f←1+?2
[ 7]  xx←verhu(a⍴'a'),(b⍴'b'),(c⍴'c'),(d⍴'d'),(e⍴'e'),f⍴'f'
[ 8]  res←0
[ 9]  i←1
[10]  dicionario
[11]  '----'
[12]  'a=',⍕a
[13]  'b=',⍕b
[14]  'c=',⍕c
[15]  'd=',⍕d
[16]  'e=',⍕e
[17]  'f=',⍕f
[18] t1:→(i>6)/fim
[19]  res←res+(⍎dicionario[i;1])×⍴trim dicionario[i;1+⍳8]
[20]  i←i+1
[21]  →t1
[22] fim:r←a,b,c,d,e,f,res
------------------------------------------------------------
[ 0]  r←gslatex arv;ta;i;j;tempo
[ 1]  WORKS←(ta←1↑⍴arv)⍴0
[ 2]  ARV←arv
[ 3]  INDS←1
[ 4]  poss INDS
[ 5]  r←(ta,70)⍴' '
[ 6]  i←1
[ 7] tinicio:→(i>⍴WORKS)/fim
[ 8]  j←WORKS[i]
[ 9]  →(ARV[j;3]<0)/letra
[10] igs:tempo←'\cntr{',(3 0⍕ARV[j;3]),' \type{square}}'
[11]  →pula
[12] letra:tempo←'\cntr{',⎕AV[|ARV[j;3]],'  \type{circle}}'
```

```
[13] pula:→((ARV[j;1]=¯1)∧(ARV[j;2]=¯1))/sem2
[14]  →(ARV[j;1]=¯1)/seme
[15]  →(ARV[j;2]=¯1)/semd
[16] tem2:→soma
[17] semd:tempo←tempo,'\leftonly'
[18]  →soma
[19] seme:tempo←tempo,'\rightonly'
[20]  →soma
[21] sem2:tempo←tempo,'\external'
[22] soma:r[i;]←70↑'\node{',tempo,'}'
[23]  →(i=i←i+1)/tinicio
[24] fim:r←(1 70⍴70↑'\begin{Tree}'),[1]r
[25]  r←r,[1]2 70⍴(70↑'\end{Tree}'),70↑'\hspace*{\leftdist}\usebox{\TeXTree}\hspace*{\righ
      tdist}'
-------------------------------------------------------------
[ 0]  arvore←montarv mt;vx;i;naomostra
[ 1] ⍝ esta funcao recebe mt, que e uma matriz n,2 onde na primeira coluna
[ 2] ⍝ estao as posicoes dos caracteres em   ⎕av e na segunda sua quantidade
[ 3] ⍝-----------------------------------------------------------------
[ 4] ⍝ ela devolve arvore conforme descrito em DESCREVE
[ 5] ⍝-----------------------------------------------------------------
[ 6] ⍝ v.1.0    P. Kantek     CELEPAR      1/93
[ 7] ⍝-----------------------------------------------------------------
[ 8]  arvore←(0,3)⍴0
[ 9]  i←1
[10]  mt[;1]←-mt[;1]
[11] inicio:mt←mt[⍋mt[;2];] ⋄⍝ ordena mt em ordem crescente
[12]  →(2>1↑⍴mt)/fim
[13]  arvore←arvore,[1]3⍴i,mt[2;1],mt[1;1]
[14]  mt←mt,[1]2⍴i,mt[1;2]+mt[2;2]
[15]  mt←2 0↓mt
[16]  naomostra←(⍕¯1+i←i+1),'-'
[17]  →inicio
[18] fim:
-------------------------------------------------------------
[ 0]  r←dicionario montate xx;i;i1;i2;a1;a2;lixao;tex;naomostra
[ 1] ⍝ dicionario e' a tabela de caracter + bits; xx e a mensagem a traduzir
[ 2]  tex←'' ⋄ i←1 ⋄ r←'' ⋄ qtduns←0 ⋄ qtdbits←0
[ 3] testa:→(i>1↑⍴xx)/fim
[ 4]  tex←tex,dicionario[dicionario[;1]⍳xx[i];1+⍳8]
[ 5]  naomostra←(⍕¯1+i←i+1),'-'
[ 6]  →testa
[ 7] fim:
[ 8]  tex←(lixao←(tex≠' ')/tex),'0000000'
[ 9]  tex←((⌊((⍴tex)÷8)),8)⍴tex
[10]  codigo←tex
[11]  naomostra←'o campo codigo contem a compressao em binario '
[12]  i←1
[13] vai:→(i>1↑⍴tex)/finzao
[14]  i1←'0123456789ABCDEF'[1+2 2 2 2⊥(a1←⍉1 0 1 0 1 0 1 0⍉tex[i;⍳4])]
[15]  i2←'0123456789ABCDEF'[1+2 2 2 2⊥(a2←⍉1 0 1 0 1 0 1 0⍉tex[i;4+⍳4])]
[16]  qtduns←qtduns++/a1+a2
[17]  r←r,i1,i2,' '
[18]  i←i+1
[19]  →vai
[20] finzao:qtdbits←⍴lixao
-------------------------------------------------------------
[0]  r←a ondeta b
[1]  r←b⍳a
-------------------------------------------------------------
[ 0]  r←indica pesqfra xx;unicos;⎕IO;con;mt;arb;mata;maar;texto;naomostra
[ 1] ⍝ xx e a frase a ser pesquisada (universo) e comprimida
[ 2] ⍝ r e o resultado (cada caractere e' um digito hexa 012...DEF)
```

```
[ 3] ⍝ se indica = 0 nao quero ver nada. Se   ≠ 0 quero ver tudo
[ 4]  ⎕IO←1 ⋄ unicos←((xx⍳xx)=⍳⍴xx)/xx ⋄⍝ unicos e um vetor nao duplicado
[ 5]   ⋄ ⋄ naomostra←unicos[⍋⎕AV⍋unicos]
[ 6] cont1:con←+/[1]xx∘.=unicos ⋄⍝ con sao as quantidades de caracteres
[ 7]  →(indica<0)/cont2 ⋄ naomostra←con[⍋con]
[ 8] cont2:arvore←montarv mt←⍉(⎕AV⍳unicos),[0.5]con
[ 9]  →(indica<0)/cont3 ⋄ mt
[10] cont3:arb←⎕AV[|((,arvore)<0)/,arvore]
[11]  →(indica<0)/cont4
[12] cont4:mata←(((⍴arb),1)⍴arb),[2](((⍴arb),8)⍴' ')
[13]  dicionario←maar←arvore estrucha mata
[14]  →(indica<0)/cont5
[15] cont5:texto←maar montate xx ⋄⍝esta funcao transf. cada xx em seus bits
[16]  r←texto
[17]  →(indica<0)/cont6
[18] cont6:
------------------------------------------------------------
[0]  r←pinta x
[1] ⍝ v 1.0
[2]  x←x[⍋x]
[3]  r←(x[1]-1)+⍳1+x[2]-x[1]
------------------------------------------------------------
[0]  poss xx
[1] ⍝ 'entrando com ',  ⍕xx
[2]  →(ARV[xx;1]=¯1)/pulaesq
[3]  poss ARV[xx;1]
[4] pulaesq:→(ARV[xx;2]=¯1)/puladir
[5]  poss ARV[xx;2]
[6] puladir:WORKS[INDS]←xx
[7]  INDS←INDS+1
------------------------------------------------------------
[0]  r←verhu x;lixo
[1]  'verifique que o operando deve ter as letras repetidas...'
[2] ⍝ x e o universo
[3]  lixo←¯1 pesqfra x
[4]  criaarv2
[5]  r←2 desarb arvore2
------------------------------------------------------------
[ 0]  r←verhupe x;lixo;rr;i;aa
[ 1]  'verifique que o operando deve ter as letras repetidas...'
[ 2] ⍝ x e o universo
[ 3]  lixo←¯1 pesqfra x
[ 4]  criaarv2
[ 5]  rr←⍉2 desarbpe arvore2
[ 6]  r←(0,aa←1↓⍴rr)⍴' '
[ 7]  rr←'< 'edit rr
[ 8]  rr←'| 'edit rr
[ 9]  rr←'> 'edit rr
[10]  i←1
[11] t1:→(i>1↑⍴rr)/fim
[12]  →(aa=+/rr[i;]=' ')/pula
[13]  r←r,[1]rr[i;]
[14] pula:i←i+1
[15]  →t1
[16] fim:
------------------------------------------------------------
[ 0]  opesq vivo452a n;CORRECAO;EVENTO;YY1;YY2;aaa;acuja;dhx;esse;f;fra;fra1;fra2;lixo;lix
      onol;nomes;ql39;qlinha;qtdbits;quall;re;relat;resp;resu;ultimo;uni;upag;xixo;xk;xx;yl
      u;yy1;yy2
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  EVENTO←'PL452   '
```

```
[ 5]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 8]  ylu←n grupo ylu
[ 9]  FOLHALA452←104 ajusta FOLHALA452
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA452)⍴' '    ⍝ era 1 4
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[12]  xk←1 ⋄ resu←0 84⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←26 80⍴' '
[15]  f←FOLHALA452
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.4
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  →(36=1↓⍴ylu)/zebra
[21]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[22]  nomes←(ql39,104)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[23]  f←(((qlinha-1),104)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[24]  '----'
[25]  ⍴f
[26]  '===='
[27]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[28]  →maiszebra
[29] zebra:
[30]  esse[5;]←80↑ylu[xk;6+⍳30]
[31] maiszebra:
[32]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[33]  esse[7;]←80↑(3 0⍕resp←xk),'-',opesq
[34]  esse[25;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[35]  esse[26;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[36] inica:
[37]  re←84⍴' '
[38]  fra←frases[2?1↑⍴frases;]
[39]  fra1←trim fra[1;] ⋄ fra2←trim fra[2;]
[40]  fra1[(fra1=' ')/⍳⍴fra1]←'/'
[41]  fra2[(fra2=' ')/⍳⍴fra2]←'/'
[42]  uni←dupltest fra1,fra2
[43]  esse[7+⍳4;]←4 80↑4 70⍴280↑' /'edit uni
[44]  xx←0 pesqfra uni
[45]  YY1←yy1←dicionario montate fra1
[46]  lixo←qtdbits
[47]  YY2←yy2←dicionario montate fra2
[48]  quall←(((⍴yy1)÷3)-6)+?4
[49]  ultimo←((((⍴yy1)÷3),3)⍴yy1)[quall+1;]
[50]  esse[23;]←80↑5↑,(((⍴yy1)÷3),3)⍴yy1
[51]  esse[12+⍳3;]←3 80↑3 48⍴144↑yy2
[52]  esse[12;]←80↑3 0⍕qtdbits
[53]  esse[16;]←80↑3 0⍕(⍴yy2)÷3
[54]  esse[17;]←80↑3 0⍕⍴fra2
[55]  esse[18 19;]←2 80↑2 50⍴100↑fra1
[56]  esse[20;]←80↑3 0⍕⍴fra1
[57]  esse[21;]←80↑3 0⍕(⍴yy1)÷3
[58]  esse[22;]←80↑2 0⍕quall+1
[59]  esse[24;]←80↑,((((⍴yy1)÷3),3)⍴yy1)[quall;]
[60]  ULTIRESP←((((⍴yy1)÷3),3)⍴yy1)
[61]  re[⍳3]←3 0⍕xk
[62]  re[4+⍳73]←73↑fra2
[63]  re[78 79]←2↑,ultimo
[64] ⍝ re[79+⍳4]←4 0⍕lixo
[65]  re[79+⍳4]←' '
[66]  resu←resu,[1]1 84⍴re
```

```
[67]  →((171≥ρyy1)∧(73≥ρfra2))/ok2
[68] erro88:'tamanho de yy1 ou fra2 maiores que 171/101. averigue...'
[69]  aaaa+bbbb
[70] ⍝------------------------------------------------------------
[71] ok2:⍝criaarv2   ⍝ este bloco desenha a arvore gerada no
[72] ⍝ 3 desarb arvore2   ⍝ terminal. desejando-se eh soh imprimir
[73] ⍝------------------------------------------------------------
[74]  acuja←(f[;2]='#')/⍳1↑ρf
[75]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[76]  relat[1+xk;;⍳104]←f,[1](1,1↓ρf)ρ200↑'⍀clearpage'
[77]  ⍞←(⍕xk←xk+1),'-'
[78]  →testa
[79] fim:upag←(1 0+ρf)ρ' '
[80]  →(1=≡n)/elafa
[81]  upag[1;]←(1↓ρupag)↑'⍀begin{verbatim}'
[82]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[83]  upag[2+⍳1↑ρresu;⍳84]←((1↑ρresu),84)↑resu  ⍝ estaria certo este 80↑ ?
[84]  upag[3+1↑ρresu;]←(1↓ρupag)↑'⍀end{verbatim}'
[85]  →terminando
[86] elafa:aaa←(ylu[;⍳36],0 3↓resu)
[87]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.gpa')
[88]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[89] terminando:
[90]  upag[1↑ρupag;]←(1↓ρupag)↑'⍀end{document}'
[91]  relat[1↑ρrelat;;]←upag
[92]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)ΔFM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.t
      ex'
[93]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[94]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  r←a xuxa b;fe;fd
[ 1] ⍝ b[1] e o endereco da raiz em a; b[2] e onde este cara entrou;
[ 2] ⍝ b[3] e z (onde desloocamento = +-2*z-1) e acada vez diminui 1
[ 3] ⍝ e b[4] e a coluna de saida. cada vez +3
[ 4] ⍝ funcao recursiva para desenhar a arvore
[ 5] ⍝ p.kantek v1.0 jun/99
[ 6]  r←a
[ 7]  fe←a[b[1];1]
[ 8]  →(fe=¯1)/pulaesq
[ 9]  r[fe;5 6]←(b[2]-2*b[3]-1),b[4]
[10]  r←r xuxa fe,(b[2]-2*b[3]-1),(b[3]-1),(b[4]+4)
[11] pulaesq:fd←a[b[1];2]
[12]  →(fd=¯1)/fim
[13]  r[fd;5 6]←(b[2]+2*b[3]-1),b[4]
[14]  r←r xuxa fd,(b[2]+2*b[3]-1),(b[3]-1),(b[4]+4)
[15] fim:
------------------------------------------------------------
```

vivo453

```
[ 0]  dhaddnode y;z;onde
[ 1]  LOG←LOG,[0]1 78ρ78↑'incluindo ',y
[ 2]  z←ULT+1
[ 3]  ULT←ULT+2
[ 4]  onde←TABDH[27]
[ 5]  ARVDH[onde;1]←z
[ 6]  ARVDH[z+⍳2;1]←¯1
[ 7]  ARVDH[z+⍳2;0]←onde
[ 8]  TABDH[UNIVERSO⍳y]←z
[ 9]  TABDH[27]←z+1
[10]  ARVDH[z;2]←0
[11]  ARVDH[z+1;2]←1
```

```
------------------------------------------------------------
[ 0]  r←dhdecodesymb;oba;n;b;CAR
[ 1]  n←RAIZ
[ 2] vorta:→(ARVDH[n;1]=¯1)/blz
[ 3]  b←1↑ST
[ 4]  ST←1↓ST
[ 5]  n←ARVDH[n;1]+b
[ 6]  →vorta
[ 7] blz:CAR←UNIVERSO[TABDHιn]
[ 8]  →(CAR≠'*')/pula
[ 9]  oba←(9ρ2)⊥9↑ST
[10]  →(256=oba)/acabou
[11]  CAR←⎕AV[oba]
[12]  ST←9↓ST
[13]  dhaddnode CAR
[14]  →pula
[15] acabou:r←'@'
[16]  →0
[17] pula:r←CAR
------------------------------------------------------------
[ 0]  r←dhdecoding in;a
[ 1]  ST←in ⋄ r←''
[ 2]  dhinit
[ 3]  a←dhdecodesymb
[ 4] vrt:→(a='@')/fin
[ 5]  r←r,a
[ 6]  dhupdate a
[ 7]  a←dhdecodesymb
[ 8]  →vrt
[ 9] fin:   ⍝limpa
------------------------------------------------------------
[ 0]  r←dhencode en;i
[ 1]  dhinit
[ 2]  i←0 ⋄ r←ι0
[ 3] t1:→(i≥ρen)/lix
[ 4]  LOG←LOG,[0]1 78ρ78↑'//////////   ',en[i],'   ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓'
[ 5]  r←r,dhencsymb en[i]
[ 6]  dhupdate en[i]
[ 7]  →(i=i←i+1)/t1
[ 8] lix:r←r,dhtrepa TABDH[27]
[ 9]  r←r,1 0 0 0 0 0 0 0 0
[10]  RESU←r
[11]  ARVORE←(ULT,3)↑ARVDH
[12] ⍝ limpa
------------------------------------------------------------
[0]  r←dhencsymb xx;S;N
[1]  N←TABDH[UNIVERSOιxx]
[2]  →(N≠¯1)/pula
[3]  N←TABDH[27]
[4] pula:r←dhtrepa N
[5]  →(TABDH[UNIVERSOιxx]≠¯1)/ufa
[6]  r←r,(9ρ2)⊤⎕AVιxx
[7]  dhaddnode xx
[8] ufa:
------------------------------------------------------------
[0]  dhinit;en
[1]  UNIVERSO←' ABCDEFGHIJKLMNOPQRSTUVWXYZ*@'
[2]  RAIZ←0 ⋄ ⎕IO←0 ⋄ ULT←0
[3]  ARVDH←(60,3)ρ0
[4]  TABDH←29ρ¯1
[5]  ARVDH[0;]←¯1 ¯1 1
[6]  TABDH[27]←0
[7]  LOG←0 78ρ' '
```

```
------------------------------------------------------------
[ 0]  dhswapnodes x;aux;antes;depois;hu;uu
[ 1]  →(x[0]=x[1])/0
[ 2]  LOG←LOG,[0],1 78⍴78↑'troca ',⍕x
[ 3]  LOG←LOG,[0]1 78⍴78↑'ANTES'
[ 4]  uu←'¯-'edit 0 numera((1+ULT),3)↑ARVDH
[ 5]  LOG←LOG,[0]((1↑⍴uu),78)↑uu
[ 6]  LOG←LOG,[0]1 78⍴78↑TABDH mostra UNIVERSO
[ 7]  LOG←LOG,[0]1 78⍴78↑2 0⍕TABDH mostra TABDH
[ 8]  aux←ARVDH[x[0];1 2]
[ 9]  antes←x[0]
[10]  ARVDH[x[0];1 2]←ARVDH[x[1];1 2]
[11]  depois←x[1]
[12]  ARVDH[x[1];1 2]←aux
[13]  hu←TABDH
[14]  hu←(antes,999)edit hu
[15]  hu←(depois,antes)edit hu
[16]  hu←(999,depois)edit hu
[17]  TABDH←hu
[18]  hu←ARVDH[;0]
[19]  hu←(antes,999)edit hu
[20]  hu←(depois,antes)edit hu
[21]  hu←(999,depois)edit hu
[22]  ARVDH[;0]←hu
[23]  LOG←LOG,[0]1 78⍴78↑'DEPOIS'
[24]  uu←'¯-'edit 0 numera((1+ULT),3)↑ARVDH
[25]  LOG←LOG,[0]((1↑⍴uu),78)↑uu
[26]  LOG←LOG,[0]1 78⍴78↑TABDH mostra UNIVERSO
[27]  LOG←LOG,[0]1 78⍴78↑2 0⍕TABDH mostra TABDH
[28]  LOG←LOG,[0]1 78⍴78↑20⍴'-'
------------------------------------------------------------
[ 0]  s←dhtrepa n
[ 1]  s←⍳0
[ 2] pula:→(n=RAIZ)/aca1
[ 3]  →(0=2|n)/par
[ 4]  s←0,s
[ 5]  →junta1
[ 6] par:s←1,s
[ 7] junta1:n←ARVDH[n;0]
[ 8]  →pula
[ 9] aca1:
------------------------------------------------------------
[ 0]  dhupdate y;n;m;uu
[ 1]  n←TABDH[UNIVERSO⍳y]
[ 2] in1:→(n=RAIZ)/aba
[ 3]  ARVDH[n;2]←ARVDH[n;2]+1
[ 4]  m←n
[ 5] uha:→(ARVDH[m-1;2]≥ARVDH[n;2])/bastou
[ 6]  m←m-1
[ 7]  →uha
[ 8] bastou:dhswapnodes m,n
[ 9]  n←ARVDH[m;0]
[10]  →in1
[11] aba:ARVDH[RAIZ;2]←ARVDH[RAIZ;2]+1
[12]  LOG←LOG,[0]1 78⍴78↑'Atualizacao de Nodo'
[13]  uu←'¯-'edit 0 numera((ULT+1),3)↑ARVDH
[14]  LOG←LOG,[0]((1↑⍴uu),78)↑uu
[15]  LOG←LOG,[0]1 78⍴78↑'========================'
------------------------------------------------------------
[ 0]  r←geracaso;aa;bb;cc;dd;ee
[ 1]  aa←gerauniver
[ 2]  bb←gerahexa dhencode aa
[ 3]  cc←gerauniver
```

```
[ 4]  dd←dhencode cc
[ 5]  ee←dhdecoding dd
[ 6]  →(cc[3]≠ee[3])/deuerro
[ 7]  r←4 30⍴' '
[ 8]  r[0;]←30↑aa
[ 9]  r[1;]←30↑bb[9 10]
[10]  r[2;]←30↑gerahexa dd
[11]  r[3;]←30↑cc[3]
[12]  →0
[13] deuerro:'houve diferenca entre a codificacao e a decodificacao. reveja'
-------------------------------------------------------------
[ 0]  r←gerahexa x;y;z;i;qq
[ 1]  y←(8×qq←⌈(⍴,x)÷8)↑x
[ 2]  z←((2×qq),4)⍴y
[ 3]  r←''
[ 4]  i←0
[ 5] t1:→(i≥1↑⍴z)/fin
[ 6]  r←r,'0123456789ABCDEF'[2 2 2 2⊥z[i;]]
[ 7]  →((i=0)∨(1≠2|i))/som
[ 8]  r←r,'.'
[ 9] som:→(i=i←i+1)/t1
[10] fin:
-------------------------------------------------------------
[0]  r←gerauniver;aa;bb;cc
[1]  aa←'ABCDEFGHIJKLMNOPQRSTUVWXYZ'
[2]  bb←aa[5?26]
[3]  cc←(3⍴bb[0]),(2⍴bb[1]),(4⍴bb[4])
[4]  r←2↓cc[(⍴cc)?⍴cc]
-------------------------------------------------------------
[0]  r←lehexa x;i;z
[1]  x←(x≠'.')/x
[2]  i←0 ⋄ r←''
[3] ufa:→(i≥⍴x)/fin
[4]  z←'0123456789ABCDEF'⍳x[i]
[5]  r←r,2 2 2 2⊤z
[6]  →(i=i←i+1)/ufa
[7] fin:
-------------------------------------------------------------
[ 0]  limpa;lixo
[ 1]  lixo←⎕EX'MAX'
[ 2]  lixo←⎕EX'RAIZ'
[ 3]  lixo←⎕EX'TABDH'
[ 4]  lixo←⎕EX'ARVDH'
[ 5]  lixo←⎕EX'UNIVERSO'
[ 6]  lixo←⎕EX'ULT'
[ 7]  lixo←⎕EX'RESP'
[ 8]  lixo←⎕EX'RESU'
[ 9]  lixo←⎕EX'ST'
[10]  lixo←⎕EX'LOG'
[11]  lixo←⎕EX'ARVORE'
-------------------------------------------------------------
[0]  r←u montape x;i
[1]  i←0 ⋄ u←u,'*' ⋄ r←(1+⌈/x)⍴' '
[2] t1:→(i≥⍴u)/aca
[3]  →(x[1]=¯1)/soma
[4]  r[x[i]]←u[i]
[5] soma:→(i=i←i+1)/t1
[6] aca:r←((⍴r),1)⍴r
-------------------------------------------------------------
[0]  r←a mostra b
[1]  r←(a≠¯1)/b
-------------------------------------------------------------
[0]  r←tiraduplo z;i;⎕IO
```

```
[1]  i←1 ⋄ r←'' ⋄ ⎕IO←1
[2] volta:→(i>⍴z)/fim
[3]  →(z[i]∈r)/tem
[4]  r←r,z[i]
[5] tem:→(i=i←i+1)/volta
[6] fim:
------------------------------------------------------------
[ 0]  opesq vivo453a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;relat;resp;resu;
      upag;xixo;xk;ylu;za
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[6]+⎕TS[5]+⎕TS[4])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL453   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[2 1 0]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      3 4],⎕TS[5]+⎕TS[6]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎1+⍳n
[ 9]  FOLHALA453←ajusta80 FOLHALA453
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA453)⍴' '
[11]  relat[0;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[12]  xk←1 ⋄ resu←0 11⍴''
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←11 80⍴' '
[15]  f←FOLHALA453
[16]  esse[0;]←80↑dhx[0;]
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑4 2⍎VERSAOa←3.02
[19]  esse[3;]←80↑ylu[xk-1;⍳6]
[20]  esse[4;]←80↑ylu[xk-1;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[5;]←80↑EVENTO
[22]  esse[6;]←80↑(3 0⍎resp←xk),' ',opesq
[23]  esse[9;⍳10]←'@',esse[5;5+⍳3],esse[3;1+⍳5],'@'
[24]  esse[10;]←80↑esse[5;5+⍳3],'-',esse[3;1+⍳5],' - ',opesq[5 6],'/',opesq[8 9]
[25] inica:
[26]  za←geracaso
[27]  esse[7;⍳30]←za[0;]
[28]  esse[8;⍳30]←za[2;]
[29] continua:
[30]  resu←resu,[0](1,11)⍴(4 0⍎resp),'  ',(,za[1;0 1]),'  ',za[3;0]
[31]  acuja←(f[;1]='#')/⍳1↑⍴f
[32]  f[acuja;⍳80]←esse[¯1+⍋,f[acuja;2 3],' ';]
[33]  relat[xk;;]←f,[0](1,1↓⍴f)⍴200↑'\newpage'
[34]  ⍞←(⍎xk←xk+1),'-'
[35]  →testa
[36] fim:upag←(1 0+⍴f)⍴' '
[37]  →(1=≡n)/elafa
[38]  upag[0;]←(1↓⍴upag)↑'\begin{verbatim}'
[39]  upag[1;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[40]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑resu
[41]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[42]  →terminando
[43] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 4↓resu)
[44]  aaa[0;34 35]←2 0⍎CORRECAO
[45]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[46]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[47] terminando:
[48]  upag[¯1+1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[49]  relat[¯1+1↑⍴relat;;]←upag
[50]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[51] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[52]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[53]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
```

```
[54]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
[55]  'veja em LOG a montagem da ultima folha'
-------------------------------------------------------------
```

vivo455

```
[ 0]  AVISO
[ 1]  'Para ter um gabarito da folha, chame :'
[ 2]  ' k gabarito 4 18 0 5 ... (os 10 valores da folha)'
[ 3]  ' '
[ 4]  ' para ter um gabarito so das letras:'
[ 5]  '  gabap 4 18 0 5... (os 10 valores)'
[ 6]  ''
[ 7]  ' a funcao gabarito ESTA ERRADA e precisa ser corrigida '
[ 8]  ' a funcao gabap - esta certa'
-------------------------------------------------------------
[0]  EXEMPLOEMSALA
[1]  ' Chame a funcao geraxemplo'
[2]  ' ela vai comprimir a mensagem IVO VIU A UVA E A VIUVA'
[3]  ' e entao este exercicio deve ser conduzido no quadro'
-------------------------------------------------------------
[ 0]  r←indices bwt tex;x;i
[ 1]  x←(2ρρtex)ρ' '
[ 2]  i←1
[ 3] t1:→(i>ρtex)/fim
[ 4]  x[i;]←(i-1)⊖tex
[ 5]  i←i+1
[ 6]  →t1
[ 7] fim:
[ 8]  BWTANTES←x
[ 9]  x←x[indices⍋x;]
[10]  BWTDEPOIS←x
[11]  i←1
[12] t2:
[13]  →((ρtex)=+/tex=x[i;])/achou
[14]  i←i+1
[15]  →t2
[16] achou:
[17]  ULTIND←i
[18]  r←,x[;ρtex]
[19]  →0
[20]  'BWT: variaveis geradas: ULTIND contem a linha da matriz que corresponde a entrada'
[21]  '                   BWTANTES a matriz gerada ANTES da ordenacao'
[22]  '                   BWTDEPOIS a matriz DEPOIS da ordenacao'
-------------------------------------------------------------
[ 0]  r←k gabap x;a;i;s;sor;mesmo;rr;incr
[ 1]  a←'.ABCDEFGHIJKLMNOPQRSTUVWXYZ'
[ 2]  i←1
[ 3]  s←⍳0
[ 4] ini:→(i>10)/fim
[ 5]  s←s,a[x[i]+1]
[ 6]  a←a[x[i]+1],(x[i]↑a),(x[i]+1)↓a
[ 7]  ' a=',a
[ 8]  i←i+1
[ 9]  →ini
[10] fim:
[11]  sor←s[⍋AV⍋s]
[12]  mesmo←s⍳sor
[13]  rr←mesmo[1]
[14]  i←2
[15]  incr←0
[16] t3:→(i>10)/oba
```

```
[17]  →(mesmo[i]=mesmo[i-1])/suba
[18]  incr←0
[19]  rr←rr,mesmo[i]
[20]  i←i+1
[21]  →t3
[22] suba:incr←incr+1
[23]  rr←rr,mesmo[i]+incr
[24]  i←i+1
[25]  →t3
[26] oba:
[27]  s
[28]  →0
[29]  rr
[30]  i←1
[31]  r←⍳0
[32] oba3:
[33]  →(i>10)/ufa
[34]  r←r,sor[k]
[35]  k←rr[k]
[36]  i←i+1
[37]  →oba3
[38] ufa:
-------------------------------------------------------------
[ 0]  r←k gabarito x;a;i;s;sor;mesmo;rr;incr
[ 1]  a←'.ABCDEFGHIJKLMNOPQRSTUVWXYZ'
[ 2]  i←1
[ 3]  s←⍳0
[ 4] ini:→(i>10)/fim
[ 5]  s←s,a[x[i]+1]
[ 6]  a←a[x[i]+1],(x[i]↑a),(x[i]+1)↓a
[ 7]  ' a=',a
[ 8]  i←i+1
[ 9]  →ini
[10] fim:
[11]  sor←s[⍋AV⍋s]
[12]  mesmo←s⍳sor
[13]  rr←mesmo[1]
[14]  i←2
[15]  incr←0
[16] t3:→(i>10)/oba
[17]  →(mesmo[i]=mesmo[i-1])/suba
[18]  incr←0
[19]  rr←rr,mesmo[i]
[20]  i←i+1
[21]  →t3
[22] suba:incr←incr+1
[23]  rr←rr,mesmo[i]+incr
[24]  i←i+1
[25]  →t3
[26] oba:
[27]  rr
[28]  i←1
[29]  r←⍳0
[30] oba3:
[31]  →(i>10)/ufa
[32]  r←r,sor[k]
[33]  k←rr[k]
[34]  i←i+1
[35]  →oba3
[36] ufa:
-------------------------------------------------------------
[0]  r←geracaso;ix;x1;x2;x3
[1]  ix←?1↑⍴MSG
```

```
[2]  x1←ALFAB bwt,MSG[ix;]
[3]  x2←ULTIND
[4]  x3←ALFAB mtf x1
[5] ⍝ x1
[6]  x1←' .'edit x1
[7]  r←(ix x2 x1 x3)
-------------------------------------------------------------
[0]  r←geraexemplo;ix;x1;x2;x3
[1]  ix←?1↑⍴MSGEX
[2]  x1←ALFAB bwt,MSGEX[ix;]
[3]  x2←ULTIND
[4]  x3←ALFAB mtf x1
[5]  x1←' .'edit x1
[6]  r←(ix x2 x1 x3)
-------------------------------------------------------------
[ 0]  r←indices invbwt tex;k;tlin;i;rr;ix
[ 1]  k←ULTIND
[ 2]  tlin←tex[indices⍋tex]
[ 3]  i←1
[ 4]  rr←⍳0
[ 5]  r←''
[ 6] t1:→(i>⍴tex)/fim
[ 7]  rr←rr,ix←tlin⍳tex[i]
[ 8]  tlin[ix]←'$'
[ 9]  i←i+1
[10]  →t1
[11] fim:ULTRR←rr
[12]  i←1
[13] t2:→(i>⍴tex)/ufa
[14]  r←r,tex[k]
[15]  k←rr[k]
[16]  i←i+1
[17]  →t2
[18] ufa:r←⌽r
-------------------------------------------------------------
[ 0]  r←indices invmtf tex;i;⎕IO;qual
[ 1]  ⎕IO←0
[ 2]  r←⍳0
[ 3]  i←0
[ 4] t1:→(i≥⍴tex)/fim
[ 5]  r←r,qual←indices[tex[i]]
[ 6] ⍝ 'achei o ',qual
[ 7]  indices←indices[tex[i]],(indices[tex[i]]≠indices)/indices
[ 8]  i←i+1
[ 9]  →t1
[10] fim:
-------------------------------------------------------------
[0]  limpavars;lixo
[1]  lixo←⎕EX'BWTANTES'
[2]  lixo←⎕EX'BWTDEPOIS'
[3]  lixo←⎕EX'INDICESMTF'
[4]  lixo←⎕EX'LISTASMTF'
[5]  lixo←⎕EX'ULTIND'
[6]  lixo←⎕EX'ULTRR'
-------------------------------------------------------------
[ 0]  r←indices mtf tex;⎕IO;lista;i;ix
[ 1]  ⎕IO←0
[ 2]  r←⍳0
[ 3]  lista←⍳⍴indices
[ 4]  LISTASMTF←(1,⍴indices)⍴lista
[ 5]  INDICESMTF←(1,⍴indices)⍴indices
[ 6]  i←0
[ 7] t1:→(i≥⍴tex)/fim
```

```
[ 8]  r←r,ix←indicesɪtex[i]
[ 9]  →(ix>26)/erro
[10]  lista←lista[ix],(lista≠lista[ix])/lista
[11]  LISTASMTF←LISTASMTF,[0]lista
[12]  indices←indices[ix],(indices≠indices[ix])/indices
[13]  INDICESMTF←INDICESMTF,[0]indices
[14] ⍝ 'achei o ',(⍕ix),'  lista ',⍕lista
[15]  i←i+1
[16]  →t1
[17] fim:
[18]  →0
[19]  'MTF: variaveis geradas: LISTASMTF - sequencia de listas geradas'
[20]  '                     INDICESMTF - como mudam os indices a cada etapa'
[21]  →0
[22] erro:'apareceu um caracter maluco'
-------------------------------------------------------------
[ 0]  opesq vivo455a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;nomes;num
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL455   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕ɪn
[ 9]  ylu←n grupo ylu
[10]  FOLHALA455←ajusta80 FOLHALA455
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA455)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 14⍴''
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←11 80⍴' '
[16]  f←FOLHALA455
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[20]  esse[4;]←80↑ylu[xk;ɪ6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[⎕IO+1]f[;ɪ4]=((1↑⍴f),4)⍴'⍀#05')/ɪ1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:
[28]  esse[5;]←80↑ylu[xk;6+ɪ30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[32]  esse[10;ɪ10]←'@',esse[6;5+ɪ3],esse[4;1+ɪ5],'@'
[33]  esse[11;]←80↑esse[6;5+ɪ3],'-',esse[4;1+ɪ5],' - ',opesq[6 7],'/',opesq[9 10]
[34] ini1:
[35]  kk←geracaso
[36]  esse[8;]←80↑3 0⍕⊃kk[4]
[37]  esse[9;]←80↑3 0⍕⊃kk[2]
[38]  resu←resu,[1]1 14⍴(3 0⍕resp),' ',,MSG[⊃kk[1];]
[39]  acuja←(f[;2]='#')/ɪ1↑⍴f
[40]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[42]  ⍞←(⍕xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+⍴f)⍴' '
```

```
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳14]←resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[52]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[59]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo456

```
[0]  r←achavetor vetor;x;i
[1]  x←1 0⍕vetor
[2]  i←1
[3] ⎕77:→(i>1↑⍴TABTOT)/fim
[4]  →(8=+/TABTOT[i;1+⍳8]=x)/achou
[5]  i←i+1
[6]  →⎕77
[7] achou:r←TABTOT[i;1]
[8] fim:
-------------------------------------------------------------
[0]  r←ajusta456 x
[1]  x←5↓x
[2]  r←(((⍴x)÷2),2)⍴x
-------------------------------------------------------------
[ 0]  r←comprime456 a;i;z;TZ
[ 1]  z←'' ⋄ r←''
[ 2]  a←,a
[ 3]  →(1=∧/a∈TABTOT[1+⍳36;1])/ok
[ 4]  'erro: existe caracter invalido...'
[ 5]  a
[ 6]  a∈TABTOT[1+⍳36;1]
[ 7]  b=b
[ 8] ok:
[ 9]  i←1
[10] t1:→(i>⍴a)/fim
[11]  →(a[i]∈QUAIS)/sim
[12] nao:z←z,TABTOT[(,TABTOT[;1])⍳'a';1+⍳8],TABTOT[(,TABTOT[;1])⍳a[i];1+⍳8]
[13]  →somai
[14] sim:z←z,TABTOT[(,TABTOT[;1])⍳a[i];1+⍳8]
[15] somai:i←i+1
[16]  →t1
[17] fim:z←(z≠' ')/z
[18]  TZ←⍴z
[19]  z←(8×⌈(⍴z)÷8)↑z,'0000000'
[20] t2:→(0=⍴z)/acabou
[21]  r←r,'0123456789ABCDEF'[1+2 2 2 2⊥⍣¯1 0 1 0 1 0 1 0⍉z[1 2 3 4]]
[22]  r←r,'0123456789ABCDEF'[1+2 2 2 2⊥⍣¯1 0 1 0 1 0 1 0⍉z[5 6 7 8]]
[23]  z←8↓z
[24]  →t2
[25] acabou:r←('00000'⍕TZ),r
-------------------------------------------------------------
[ 0]  r←descomprime456 b;z;TZ;i;raiz;aa;l1;l2;vetor
```

```
[ 1]  l1←-78 84 66 50 51 52 70 80 53 54 55 83 68 77 81 56 57 58 59 49
[ 2]  l2←'MSA123EO456RCLP789a0'
[ 3]  z←''
[ 4]  r←⍳0
[ 5]  b←,b
[ 6]  TZ←⍴5↑b
[ 7]  b←5↓b
[ 8] t1:→(0=⍴b)/fim
[ 9]  z←z,2 2 2 2⊤¯1+'0123456789ABCDEF'⍳b[1]
[10]  z←z,2 2 2 2⊤¯1+'0123456789ABCDEF'⍳b[2]
[11]  b←2↓b
[12]  →t1
[13] fim:
[14]  i←1
[15] eraiz:
[16]  →(i≥TZ)/acabou
[17]  raiz←19
[18] buscaarv:aa←ARVORE[raiz;2+z[i]]
[19]  →(aa<0)/achou
[20]  raiz←aa
[21]  i←i+1
[22]  →buscaarv
[23] achou:→(aa≠¯98)/blz
[24]  vetor←z[i+⍳8]
[25]  r←r,achavetor vetor
[26]  i←i+9
[27]  →eraiz
[28] blz:
[29]  r←r,l2[l1⍳aa]
[30]  i←i+1
[31]  →eraiz
[32] acabou:
------------------------------------------------------------
[ 0]  r←geracaso456;x;y;z;k;z1;y1
[ 1] denovo:r←6 60⍴' '
[ 2]  z1←(3?19),20
[ 3]  x←2?1↑⍴CASOS
[ 4]  →(1=∨⌿CASOS[x[2];z1]='O')/denovo
[ 5]  y←comprime456 CASOS[x[1];]
[ 6]  z←ajusta456 y
[ 7]  k←(3?1↑⍴z),1↑⍴z
[ 8]  k←k[⍋k]
[ 9]  r[1;]←60↑CASOS[x[1];]
[10]  r[2;]←60↑(¯1↓,(3 0⍕4 1⍴k),'&'),'⍀⍀'  ⍝ perguntas
[11]  r[3;]←60↑,z[k;],' ' ⍝ respostas
[12]  y1←comprime456 CASOS[x[2];]
[13]  r[4;]←60↑y1
[14]  z1←z1[⍋z1]
[15]  r[5;]←60↑(¯1↓,(3 0⍕4 1⍴z1),'&'),'⍀⍀'
[16]  r[6;]←60↑CASOS[x[2];z1]
------------------------------------------------------------
[ 0]  opesq vivo456a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;nomes;num
      ;ql39;qlinha;relat;resp;resu;rr;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL456   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
```

```
[10]  FOLHALA456←ajusta80 FOLHALA456
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA456)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 20⍴' '
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←14 80⍴' '
[16]  f←FOLHALA456
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:
[28]  esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[32]  esse[13;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[14;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] ini1:
[35]  rr←geracaso456
[36]  esse[8;]←80↑rr[1;]
[37]  esse[9;]←80↑rr[2;]
[38]  esse[10;]←80↑rr[4;⍳21]
[39]  esse[11;]←80↑rr[4;21+⍳30]
[40]  esse[12;]←80↑rr[5;]
[41]  resp←(3 0⍕resp),'-',rr[3;⍳11],'-',rr[6;⍳4]
[42]  resu←resu,[1]1 20⍴resp
[43]  acuja←(f[;2]='#')/⍳1↑⍴f
[44]  f[acuja;]←esse[⍤,f[acuja;3 4],' ';]
[45]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[46]  ⎕←(⍕xk←xk+1),'-'
[47]  →testa
[48] fim:upag←(1 0+⍴f)⍴' '
[49]  →(1=≡n)/elafa
[50]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[51]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[52]  upag[2+⍳1↑⍴presu;⍳1↓⍴presu]←resu
[53]  upag[3+1↑⍴presu;]←(1↓⍴upag)↑'\end{verbatim}'
[54]  →terminando
[55] elafa:aaa←(ylu,0 4↓resu)
[56]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[57]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴paaa),' linhas e ',(⍕1↓⍴paaa),' colunas'
[58] terminando:
[59]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[60]  relat[1↑⍴relat;;]←upag
[61]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[62] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[63]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[64]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo457

```
[0]  r←p cara x
[1] ⍝f funcao auxiliar da leitura e gravacao de arquivos BMP - P.kantek - 04/2002
[2]  r←(256*p)×¯1+⎕AV⍳x
```

```
------------------------------------------------------------
[ 0]  r←geracaso457;ima;x;z;y;w;maior;ims
[ 1]  ima←?28
[ 2]  x←readbm'c:/apl2/imagens/457/cur',('00'↑⍕ima),'.bmp'
[ 3]  y←⊃x[5]
[ 4]  z←histograma y
[ 5]  maior←⌈/z[;2]
[ 6]  w←mtarv z
[ 7]  ims←3?255
[ 8]  ims←ims[⍋ims]
[ 9]  r←4 3⍴0
[10]  r[⍳3;]←w[ims;]
[11]  r[4;1]←maior
[12]  r[4;3]←ima
------------------------------------------------------------
[ 0]  r←histograma ima;h;i;j;pix
[ 1]  h←256⍴0
[ 2]  i←1
[ 3] t1:→(i>1↑⍴ima)/fim
[ 4]  j←1
[ 5] t2:→(j>1↓⍴ima)/ufa
[ 6]  pix←1+ima[i;j]
[ 7]  h[pix]←h[pix]+1
[ 8]  j←j+1
[ 9]  →t2
[10] ufa:
[11]  i←i+1
[12]  →t1
[13] fim:
[14]  r←⍉(¯1+⍳256),[0.5]h
[15]  r←(h≠0)/[1]r
------------------------------------------------------------
[ 0]  arvore←mtarv mt;vx;i
[ 1]  arvore←(0,3)⍴0
[ 2]  i←1
[ 3]  mt[;1]←-mt[;1]
[ 4] inicio:mt←mt[⍋mt[;2];] ⋄⍝ ordena mt em ordem crescente
[ 5]  →(2>1↑⍴mt)/fim
[ 6]  arvore←arvore,[1]3⍴i,mt[2;1],mt[1;1]
[ 7]  mt←mt,[1]2⍴i,mt[1;2]+mt[2;2]
[ 8]  mt←2 0↓mt
[ 9]  i←i+1
[10]  →inicio
[11] fim:
------------------------------------------------------------
[ 0]  R←readbm file;r;TF;ID;QL;QC;QA;TM;QP;BP;NP;i;j;lixo;x;yy;xxx;k;ant;tudo;h;CA;SA;m;mr
      ;mb;mg;tc;⎕IO
[ 1] ⍝f le um arquivo BMP - P.kantek - 07/2001
[ 2] ⍝r o nome completo do arquivo com a terminacao BMP
[ 3] ⍝d R e um vetor de 6 itens.
[ 4] ⍝d R[1] e um escalar e indica 8 (mapeado) ou 24 (true-color)
[ 5] ⍝d R[2] e a variavel CA (54 bytes)
[ 6] ⍝d R[3] e a variavel SA (1 numero entre 0 e 3)
[ 7] ⍝o se R[1] = 8, R[4] e a tabela de cores devidamente empacotada
[ 8] ⍝o se R[1] = 8, R[5] e a matriz m de valores entre 0..255
[ 9] ⍝o se R[1] = 24, R[4 5 6] contem as 3 matrizes R,G,B da imagem
[10]  R←6⍴' ' ⋄ ⎕IO←1
[11]  ant←⎕TS
[12]  tudo←r←FILE file
[13]  CA←54↑tudo
[14]  TF←(3 cara r[6])+(2 cara r[5])+(1 cara r[4])+0 cara r[3]
[15]  ID←(3 cara r[14])+(2 cara r[13])+(1 cara r[12])+0 cara r[11]
[16]  QC←(3 cara r[22])+(2 cara r[21])+(1 cara r[20])+0 cara r[19]
```

```
[17] ⍝   QA←4×⌈(QC)÷4
[18]  QL←(3 cara r[26])+(2 cara r[25])+(1 cara r[24])+0 cara r[23]
[19]  QP←QL×QC
[20]  TM←(3 cara r[38])+(2 cara r[37])+(1 cara r[36])+0 cara r[35]
[21]  BP←(1 cara r[30])+0 cara r[29]
[22]  R[1]←BP ⋄ R[2]←⊂CA
[23] ⍝ SA←QA-QC
[24]  →(BP≠24)/outra
[25] ⍝============================TRUE COLOR============================
[26]  QA←4×⌈(QC×3)÷4
[27]  SA←QA-QC×3
[28]  R[3]←SA
[29]  x←tudo
[30]  k←55
[31] TRUECOLOR:i←1
[32]  mb←mg←mr←(QL,QC)⍴0
[33] t1:→(i>QL)/fim1
[34]  j←1
[35] t2:→(j>QC)/salta
[36]  mb[i;j]←0 cara x[k]
[37]  mg[i;j]←0 cara x[k+1]
[38]  mr[i;j]←0 cara x[k+2]
[39]  k←k+3
[40]  →(j=j←j+1)/t2
[41] salta:k←k+SA
[42]  h←(0=10|i)/'*'
[43]  →(i=i←i+1)/t1
[44] fim1:R[4]←⊂mr ⋄ R[5]←⊂mg ⋄ R[6]←⊂mb
[45]  →finz
[46] outra:
[47] ⍝==============================MAPEADA==========================
[48]  →(BP≠8)/naomesmo
[49]  QA←4×⌈QC÷4
[50]  SA←QA-QC
[51]  R[3]←SA
[52]  i←1
[53]  tc←256 3⍴0
[54]  x←FILE file
[55]  xxx←x[54+⍳1024]
[56] obag:→(i>256)/fica
[57]  yy←xxx[(4×i-1)+⍳3]
[58]  tc[i;]←(0 cara yy[1]),(0 cara yy[2]),0 cara yy[3]
[59]  →(i=i←i+1)/obag
[60] fica:
[61]  m←(QL,QC)⍴0
[62]  i←1
[63] t3:→(i>1↑⍴m)/fim2
[64]  xxx←x[54+1024+((QC+SA)×i-1)+⍳QC+SA]
[65]  j←1
[66] t4:→(j>QC)/sal
[67]  m[i;j]←0 cara xxx[j]
[68]  →(j=j←j+1)/t4
[69] sal:
[70]  h←(0=10|i)/'*'
[71]  →(i=i←i+1)/t3
[72] fim2:R[4]←⊂tc ⋄ R[5]←⊂m
[73] naomesmo:
[74] finz:
[75] ⍝ 'Tamanho do arquivo       TF = ',⍕TF
[76] ⍝ 'Inicio do bloco de dados ID = ',  ⍕ID
[77] ⍝ 'Quantidade de linhas     QL = ',⍕QL
[78] ⍝ 'Quantidade de colunas    QC = ',⍕QC
[79] ⍝ 'Colunas   × 3               = ',  ⍕(QC  ×3)
```

```
[80] ⍝ 'Quantidade de bytes (aj) QA = ',  ⍕QA
[81] ⍝ 'Tam da imagem justa      TM = ',  ⍕TM
[82] ⍝ 'Quantidade de PIXELS     QP = ',⍕QP
[83]  TRUECOLORUI←BP
[84] ⍝ 'BITS / pixel             BP = ',⍕BP
[85] ⍝ 'Tempo gasto em segundos     = ',7 1⍕(24 60 60 1000⊥¯4↑⎕TS-ant)÷1000
[86] naomesmo:
------------------------------------------------------------
[ 0]  opesq vivo457a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  'demora...'
[ 2] ⍝  )copy vivo457 grupo
[ 3] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 4] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 5]  →(0≠⎕NC'opesq')/qveio
[ 6]  opesq←10⍴' '
[ 7] qveio:
[ 8]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 9]  EVENTO←'PL457   '
[10]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[11]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[12]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[13] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[14]  ylu←n grupo ylu
[15] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[53] fim:upag←(1 0+ρf)ρ' '
[54]  →(1=≡n)/elafa
[55]  upag[1;]←(1↓ρupag)↑'⍀begin{verbatim}'
[56]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[57]  upag[2+⍳1↑ρresu;⍳+/lixo1]←'¯'-'edit(lixo1←4 0 10 0 9 0 5 0 9 0 5 0 9 0 5 0)⍒resu
[58]  upag[3+1↑ρresu;]←(1↓ρupag)↑'⍀end{verbatim}'
[59]  →terminando
[60] ∆∆∆∆∆∆∆∆∆∆∆↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[61] elafa:aaa←(ylu[;⍳36],'¯'-'edit 7 0 9 0 5 0 9 0 5 0 9 0 5 0⍒0 1↓resu)
[62] ∆∆∆∆∆∆∆∆∆∆∆↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[63]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[64]  '!!!!!  Arquivo GPA com ',(⍒1↑ρaaa),' linhas e ',(⍒1↓ρaaa),' colunas'
[65] terminando:
[66]  upag[1↑ρupag;]←(1↓ρupag)↑'⍀end{document}'
[67]  relat[1↑ρrelat;;]←upag
[68]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[69] ∆ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[70]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[71]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[72]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo458

```
[ 0]  AVISO
[ 1]  'Neste ws ha funcoes para desenhar qualquer arvore gerada. A ultima'
[ 2]  'gerada esta guardada na variavel B que e global'
[ 3]  'para ver a arvore, faca:'
[ 4]  '1 desenha458 B - caracteres duplos ou'
[ 5]  '0 desenha458 B - caracteres simples'
[ 6]  ''
[ 7]  'para desenhar a partir da árvore python, fazer'
[ 8]  ' desenha458 lecgerab "[[1,2,3],[4,5,6],...]"'
[ 9]  ''
[10]  'Para uma execucao adhoc, faca:'
[11]  'geraadhoc "msg_a_comprimir"'
[12]  ' dai, existirao as variaveis B=matriz da arvore'
[13]  '                            C=arvore em python'
[14]  '                            D=dicionario'
[15]  '                            E=string comprimido'
[16]  ''
[17]  'se quiser, faca  desenha458 B e verah a arvore desenhada'
-------------------------------------------------------------
[ 0]  r←a acertavertical b;nt;tt
[ 1]  nt←((1↑ρa)+1↑ρb),1↓ρb
[ 2]  r←ntρ' '
[ 3]  →((1↓ρa)≤1↓ρb)/aemenorqueb
[ 4] aemaiorqueb:
[ 5]  r[⍳1↑ρa;]←a
[ 6]  tt←(((,r[¯1+1↑ρa;])=CA[7])/⍳1↓ρa)-⌊(1↓ρb)÷2
[ 7]  r[(1↑ρa)+⍳1↑ρb;tt+⍳1↓ρb]←b
[ 8]  →ok
[ 9] aemenorqueb:
[10]  r[(1↑ρa)+⍳1↑ρb;]←b
[11]  tt←(((,r[1↑ρa;])=CA[10])/⍳1↓ρb)
[12]  tt←tt-⌊(1↓ρa)÷2
[13]  r[⍳1↑ρa;tt+⍳1↓ρa]←a
[14] ok:
-------------------------------------------------------------
[ 0]  r←arruma x;z;c;l;t;cars;ca
[ 1] nesca:z←' ',[1](((' ',[0]x),[0]' '),[1]' ')
[ 2] ∆ z←' ',[1](z,[1]' ')
```

```
[ 3] ⍝ z←' ',[1](((' ',[0]z),[0]' '),[1]' ')
[ 4]  c←1↓⍴z
[ 5]  l←1↑⍴z
[ 6]  z[;¯1+c]←z[;0]←CA[2]
[ 7]  z[0;]←z[¯1+l;]←CA[1]
[ 8]  z[0;0]←CA[3]
[ 9]  z[0;¯1+c]←CA[5]
[10]  z[¯1+l;0]←CA[4]
[11]  z[¯1+l;¯1+c]←CA[6]
[12]  t←⌊c÷2
[13]  z[0;t]←CA[10]
[14]  →((,x)∊'ABCDEFGHIJKLMNOPQRSTUVXYZW-=/')/fim
[15] naoefim:
[16]  z[¯1+l;t]←CA[7]
[17] fim:r←z
------------------------------------------------------------
[ 0]  r←ca458 x;y;i;lin;arv;w;alfa;beta
[ 1]  ⎕IO←0
[ 2]  arv←0 3⍴0
[ 3]  y←((1↑⍴x),9)⍴' '
[ 4]  i←0
[ 5]  lin←1↑⍴x
[ 6] t1:→(i≥lin)/fim
[ 7]  y[i;⍳4]←4 0⍕-⎕AV⍳,x[i;0]
[ 8]  y[i;4+⍳5]←x[i;1+⍳5]
[ 9]  i←i+1
[10]  →t1
[11] fim:
[12]  i←1
[13] t2:→(2>1↑⍴y)/fim3
[14]  y←y[⍋⍤1,y[;4+⍳5];]
[15]  w←(⍤1y[0;4+⍳5])+⍤1y[1;4+⍳5]
[16]  alfa←⍤1y[1;⍳4]
[17]  →(alfa≤0)/apos
[18]  alfa←alfa-1
[19] apos:
[20]  beta←⍤1y[0;⍳4]
[21]  →(beta≤0)/bpos
[22]  beta←beta-1
[23] bpos:
[24]  arv←arv,[0]1 3⍴(i-1),alfa,beta
[25]  y←y,[0]1 9⍴(4 0⍕i),5 0⍕w
[26]  y←2 0↓y
[27]  i←i+1
[28]  →t2
[29] fim3:
[30]  r←arv
------------------------------------------------------------
[0]  r←a centra b;t
[1]  t←1↓⍴a
[2]  r←((1,t)⍴' '),[0]a
[3]  r[0;(⌊t÷2)+⍳2]←b
------------------------------------------------------------
[0]  r←comprime458 texto;i;ind
[1]  r←''
[2]  i←0
[3] t1:→(i≥⍴texto)/fim
[4]  ind←(texto[i]=dicionario[;0])/⍳1↑⍴dicionario
[5]  r←r,trim,dicionario[ind;1+⍳8]
[6]  i←i+1
[7]  →t1
[8] fim:
------------------------------------------------------------
```

```
[ 0]  r←conta458 y;i;lin
[ 1]  ⎕IO←0
[ 2]  i←0
[ 3]  r←0 6⍴' '
[ 4] t1:→(i≥⍴y)/fim
[ 5]  →(y[i]∈r)/tem
[ 6] naotem:
[ 7]  r←r,[0]1 6⍴y[i],'    1'
[ 8]  →soma
[ 9] tem:
[10]  lin←(r[;0]=y[i])/⍳1↑⍴r
[11]  r[lin;1+⍳5]←5 0⍕1+⍎,r[lin;1+⍳5]
[12] soma:i←i+1
[13]  →t1
[14] fim:
------------------------------------------------------------
[0]  r←conv x
[1]  x[(x=' ')/⍳⍴x]←'/'
[2]  r←x
------------------------------------------------------------
[ 0]  r←p corta x;t;ii
[ 1]  ii←0
[ 2]  t←⌈(⍴x)÷2
[ 3] t5:→(3=+/x[t+ii+⍳3]='],[')/deu
[ 4]  ii←ii+1
[ 5]  →t5
[ 6] deu:→(p=2)/segunda
[ 7]  r←(t+ii+2)↑x
[ 8]  →0
[ 9] segunda:r←(t+ii+2)↓x
------------------------------------------------------------
[ 0]  r←q desenha458 x;aaa;cars;i;t;v;vj;z;z1;z2;z3;⎕IO
[ 1]  →(0≠⎕NC'q')/obaoba
[ 2]  q←1
[ 3] obaoba:
[ 4]  ⎕IO←0
[ 5]  cars←3 11⍴⎕AV[197 196 179 218 192 191 217 194 195 180 193 206 205 186 201 200 187 18
      8 203 204 185 202 43 45 124,8⍴43]
[ 6]  CA←cars[q;]
[ 7]  i←0
[ 8]  v←0 3⍴0
[ 9]  vj←0
[10] t1:⍝V←v
[11]  →(i≥1↑⍴x)/fim
[12]  v←v,[0]1 3⍴0
[13]  →((x[i;1]<0)∧(x[i;2]<0))/ambos
[14]  →((x[i;1]≥0)∧(x[i;2]<0))/soesqpos
[15]  →((x[i;1]<0)∧(x[i;2]≥0))/sodirpos
[16] nenhum:
[17]  z1←⊃v[x[i;1];2]
[18]  z2←⊃v[x[i;2];2]
[19]  z3←i ajeita((((1↑⍴z1)⌈(1↑⍴z2)),1↓⍴z1)↑z1),'o',((((1↑⍴z1)⌈(1↑⍴z2)),1↓⍴z2)↑z2)
[20]  →todos
[21] soesqpos:z1←⊃v[x[i;1];2]
[22]  z2←arruma 1 1⍴⎕AV[|x[i;2]]
[23]  z3←i ajeita((((1↑⍴z1)⌈(1↑⍴z2)),1↓⍴z1)↑z1),'o',((((1↑⍴z1)⌈(1↑⍴z2)),1↓⍴z2)↑z2)
[24]  →todos
[25] sodirpos:z1←arruma 1 1⍴⎕AV[|x[i;1]]
[26]  z2←⊃v[x[i;2];2]
[27]  z3←i ajeita((((1↑⍴z1)⌈(1↑⍴z2)),1↓⍴z1)↑z1),'o',((((1↑⍴z1)⌈(1↑⍴z2)),1↓⍴z2)↑z2)
[28]  →todos
[29] todos:
[30]  v[vj;0 1]←⍴z3
```

```
[31]  v[vj;2]←⊂'o 'edit tirab z3
[32]  vj←vj+1
[33]  i←i+1
[34]  →t1
[35] ambos:
[36]  z1←arruma 1 1ρ⎕AV[|x[i;1]]
[37]  z2←arruma 1 1ρ⎕AV[|x[i;2]]
[38]  z3←i ajeita z1,'o',z2
[39]  v[vj;0 1]←ρz3
[40]  v[vj;2]←⊂'o 'edit z3
[41]  vj←vj+1
[42]  i←i+1
[43]  →t1
[44] fim:
[45]  aaa←⊃v[i-1;2]
[46]  aaa[0;(aaa[0;]=CA[10])/⍳1↓ρaaa]←CA[1]
[47]  r←aaa
-------------------------------------------------------------
[ 0]  r←fazdic458 xx;raiz;ateaqui;arv;xica
[ 1]  ⎕IO←0
[ 2]  raiz←⊃xx[0]
[ 3]  ateaqui←⊃xx[1]
[ 4]  arv←⊃xx[2]
[ 5]  →(arv[raiz;1]≥0)/ufa
[ 6]  xica←ateaqui,'0'
[ 7]  dicionario←dicionario,[0]1 9ρ⎕AV[|arv[raiz;1]],8↑xica
[ 8]  →junta
[ 9] ufa:fazdic458(⊂arv[raiz;1]),(⊂ateaqui,'0'),⊂arv
[10] junta:
[11]  →(arv[raiz;2]≥0)/ufa2
[12]  xica←ateaqui,'1'
[13]  dicionario←dicionario,[0]1 9ρ⎕AV[|arv[raiz;2]],8↑xica
[14]  →junta2
[15] ufa2:fazdic458(⊂arv[raiz;2]),(⊂ateaqui,'1'),⊂arv
[16] junta2:
-------------------------------------------------------------
[ 0]  r←formarv458 a;i
[ 1]  ⎕IO←0
[ 2]  r←'['
[ 3]  i←0
[ 4] t1:→(i≥1↑ρa)/fim
[ 5]  r←r,'[',(⍕a[i;0]),',',('¯'-'edit⍕a[i;1]),',',('¯'-'edit⍕a[i;2]),'],'
[ 6]  i←i+1
[ 7]  →t1
[ 8] fim:r←(¯1↓r),']'
-------------------------------------------------------------
[ 0]  r←n gera458 nnn;x;y;ct;a;b;c;d;resto
[ 1]  resto←'N'
[ 2]  →(isnum n)/pulao
[ 3]  resto←1↑4↓n
[ 4] pulao:
[ 5]  ⎕IO←0
[ 6]  x←3?1↑ρLUSI
[ 7]  y←(trim LUSI[x[0];]),'-',(trim LUSI[x[1];]),'-',trim LUSI[x[2];]
[ 8]  ct←conta458 y
[ 9]  ct←ct[⍋⊂ct[;1+⍳5];]
[10]  a←ct
[11]  B←b←ca458 a
[12]  C←c←formarv458 b
[13]  dicionario←0 9ρ' '
[14]  fazdic458(⊂¯1+1↑ρb),(⊂''),⊂b
[15]  D←dicionario
[16]  d←comprime458 y
```

```
[17]  E←d
[18]  grava458(⊂c),(⊂'c:\apl2\F458',resto,('000'⍕nnn),'.myd'),⊂d
[19]  r←y
-------------------------------------------------------------
[ 0]  r←gera458exemplo nnn;x;y;ct;a;b;c;d
[ 1]  ⎕IO←0
[ 2]  x←3?1↑⍴LUSI
[ 3]  y←(trim LUSI[x[0];]),'-',(trim LUSI[x[1];]),'-',trim LUSI[x[2];]
[ 4]  ct←conta458 y
[ 5]  ct←ct[⍋⍋ct,ct[;1+⍳5];]
[ 6]  EXEMPLOa←a←ct
[ 7]  EXEMPLOb←b←ca458 a
[ 8]  EXEMPLOc←c←formarv458 b
[ 9]  dicionario←0 9⍴' '
[10]  fazdic458(⊂¯1+1↑⍴b),(⊂''),⊂b
[11]  DICIONARIOEXEMPLO←dicionario
[12]  EXEMPLOd←d←comprime458 y
[13]  grava458(⊂c),(⊂'c:\apl2\F458EXEM.myd'),⊂d
[14]  r←x
-------------------------------------------------------------
[ 0]  r←geraadhoc msg;x;y;ct;a;b;c;d;resto
[ 1]  msg←conv msg
[ 2]  ⎕IO←0
[ 3]  y←trim msg
[ 4]  ct←conta458 y
[ 5]  ct←ct[⍋⍋ct,ct[;1+⍳5];]
[ 6]  a←ct
[ 7]  B←b←ca458 a
[ 8]  C←c←formarv458 b
[ 9]  dicionario←0 9⍴' '
[10]  fazdic458(⊂¯1+1↑⍴b),(⊂''),⊂b
[11]  D←dicionario
[12]  d←comprime458 y
[13]  E←d
[14] ⍝ grava458(⊂c),(⊂'c:\apl2\F458',resto,('000'⍕nnn),'.myd'),⊂d
[15]  r←y
-------------------------------------------------------------
[ 0]  r←ind geracaprova palavra;R;i
[ 1] ⍝ ind comeca com 2836
[ 2]  r←18 75⍴' '
[ 3]  geraadhoc palavra
[ 4]  r[0;]←75↑'$QE ',(4 0⍕ind),'33      14huffman gera hexadecimal'
[ 5]  r[1;]←75↑'Suponha a palavra ou frase \texttt{',palavra,'}. '
[ 6]  r[2;]←75↑'Ao comprimi-la usando Huffman, obtivemos'
[ 7]  r[3;]←75↑'a seguinte arvore:'
[ 8]  r[4;]←75↑'\begin{verbatim}'
[ 9]  r[5;]←75↑1 corta C
[10]  r[6;]←' '
[11]  r[7;]←75↑2 corta C
[12]  r[8;]←75↑'\end{verbatim}'
[13]  r[9;]←75↑'Na qual as letras s\~ao representadas por numeros negativos, a saber'
[14]  r[10;]←75↑'-65=A, -66=B, -67=C, ... -90=Z. (-47=/ ou espaço).'
[15]  r[11;]←75↑'Os valores positivos indicam numeros de nodos, sendo que o ultimo'
[16]  r[12;]←75↑'nodo e a raiz da arvore.'
[17]  r[13;]←75↑'Voce deve comprimir a palavra acima, usando a arvore listada.'
[18]  r[14;]←75↑'Depois, converta o string binario em hexadecimal, eventualmente'
[19]  r[15;]←75↑'acrescentando \textit{stuffing bits} a direita.'
[20]  EX←((⌈(⍴E)÷8)×8)↑E,'0000000'
[21]  EX←(((⍴EX)÷8),8)⍴EX
[22]  R←''
[23]  i←0
[24] t2:→(i≥1↑⍴EX)/fim
[25]  R←R,,hex2 2 2 2 2 2 2 2 2⊥⍤,(16⍴1 0)⊤EX[i;]
```

```
[26]  i←i+1
[27]  →t2
[28] fim:
[29]  r[16;]←75↑'$QR ',(4 0⍕ind),'33'
[30]  r[17;]←75↑R
-------------------------------------------------------------
[ 0]  geramuitasprovas;z
[ 1]  z←0 75⍴' '
[ 2]  z←z,[0]2836 geracaprova'BOLINHA'
[ 3]  z←z,[0]2837 geracaprova'MELANCIA'
[ 4]  z←z,[0]2838 geracaprova'COMPUTADOR'
[ 5]  z←z,[0]2839 geracaprova'CANETAS'
[ 6]  z←z,[0]2840 geracaprova'PIADA/RUIM'
[ 7]  z←z,[0]2841 geracaprova'AMENDOIM'
[ 8]  z←z,[0]2842 geracaprova'LARANJAS'
[ 9]  z←z,[0]2843 geracaprova'TESOURAS'
[10]  z←z,[0]2844 geracaprova'BARCELONA'
[11]  z←z,[0]2845 geracaprova'RECIBOS'
[12]  z←z,[0]2846 geracaprova'CHEQUES'
[13]  z←z,[0]2847 geracaprova'MORANGO'
[14]  z←z,[0]2848 geracaprova'JA/CAIU'
[15]  z←z,[0]2849 geracaprova'BIROSCAS'
[16]  z←z,[0]2850 geracaprova'ISTAMBUL'
[17]  z←z,[0]2851 geracaprova'FIREFOX'
[18]  z←z,[0]2852 geracaprova'DECLARAMOS'
[19]  z←z,[0]2853 geracaprova'LINGUAGEM'
[20]  z←z,[0]2854 geracaprova'CELULAR'
[21]  z←z,[0]2855 geracaprova'PROGRAMA'
[22]  z←z,[0]2856 geracaprova'ABOBORA'
[23]  z←z,[0]2857 geracaprova'CIDADANIA'
[24]  z←z,[0]2858 geracaprova'ENROLADA'
[25]  z←z,[0]2859 geracaprova'ENRUGADA'
[26]  z←z,[0]2860 geracaprova'FLANELA'
[27]  z←z,[0]2861 geracaprova'FORMATAR'
[28]  z←z,[0]2862 geracaprova'INTEGRAL'
[29]  z←z,[0]2863 geracaprova'JARDINEIRA'
[30]  z←z,[0]2864 geracaprova'MATEMATICA'
[31]  z←z,[0]2865 geracaprova'PARREIRAS'
[32]  z←z,[0]2866 geracaprova'PRESENTE'
[33]  z←z,[0]2867 geracaprova'RELAMPAGO'
[34]  z←z,[0]2868 geracaprova'SABEDORIA'
[35]  z←z,[0]2869 geracaprova'RUIBARBO'
[36]  z←z,[0]2870 geracaprova'TAPEADOR'
[37]  z ΔFM'c:⍀giz⍀lixo8'
-------------------------------------------------------------
[ 0]  r←grava458 xx;a1;a2;a3;a4;aba;arv;i;onde;oque;tam;tamu;xis;xoque;lixo
[ 1]  ⎕IO←0
[ 2]  arv←⊃xx[0]
[ 3]  onde←⊃xx[1]
[ 4]  oque←⊃xx[2]
[ 5]  xis←512↑arv
[ 6]  tam←⍴oque
[ 7]  xoque←(tamu←8×⌈tam÷8)↑oque,'0000000'
[ 8]  a1←256|tam
[ 9]  tam←⌊tam÷256
[10]  a2←256|tam
[11]  tam←⌊tam÷256
[12]  a3←256|tam
[13]  tam←⌊tam÷256
[14]  a4←256|tam
[15]  xis←xis,(⎕AV[a4,a3,a2,a1])
[16]  i←0
[17] t3:→(i≥tamu)/fim
```

```
[18]  aba←(⍎xoque[i])×2*7
[19]  aba←aba+(⍎xoque[i+1])×2*6
[20]  aba←aba+(⍎xoque[i+2])×2*5
[21]  aba←aba+(⍎xoque[i+3])×2*4
[22]  aba←aba+(⍎xoque[i+4])×2*3
[23]  aba←aba+(⍎xoque[i+5])×2*2
[24]  aba←aba+(⍎xoque[i+6])×2*1
[25]  aba←aba+⍎xoque[i+7]
[26]  xis←xis,⎕AV[aba]
[27]  i←i+8
[28]  →t3
[29] fim:lixo←xis ΔFM onde
[30]  lixo←(512↓xis)ΔFM'c:\apl2\lixoult'
-------------------------------------------------------------
[0]  r←hex2 en;rr;⎕IO
[1]  ⎕IO←1
[2] ⍝fconverte um numero entre 0 e 255 em um byte hexadecimal
[3]  →((en>255)∨(en<0))/0
[4]  rr←16 16⊤en
[5]  r←'0123456789ABCDEF'[1+rr]
-------------------------------------------------------------
[ 0]  r←lecgerab c;x;fina;cand;can
[ 1]  x←1↓¯1↓c
[ 2]  r←0 3⍴0
[ 3] t1:→(2>⍴x)/fim
[ 4]  fina←1↑(x=']')/⍳⍴x
[ 5]  cand←fina↑x
[ 6]  x←fina↓x
[ 7] volta:
[ 8]  →(('['≠1↑cand)∧(','≠1↑cand))/ok1
[ 9]  cand←1↓cand
[10]  →volta
[11] ok1:
[12]  →((']'≠¯1↑cand)∧(','≠1↑cand))/ok2
[13]  cand←¯1↓cand
[14]  →ok1
[15] ok2:
[16]  cand←'-¯'edit cand
[17]  can←⍎cand
[18]  r←r,[1]1 3⍴can
[19]  →t1
[20] fim:
-------------------------------------------------------------
[0]  r←tirab x;z;b;c
[1]  z←x=' '
[2]  b←((+/[0]z)≠1↑⍴x)/[1]x
[3]  c←b=' '
[4]  r←((+/[1]c)≠1↓⍴b)/[0]b
-------------------------------------------------------------
[ 0]  opesq vivo458a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resto;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  ⎕IO←1
[ 2]  →(0≠⎕NC'opesq')/qveio
[ 3]  opesq←10⍴' '
[ 4] qveio:
[ 5]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 6]  CORRECAO←1 ⋄ EVENTO←'PL458   '
[ 7]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[10]  ylu←n grupo ylu
[11]  FOLHALA458←ajusta80 FOLHALA458
```

```
[12]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA458)⍴' '
[13]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[14]  xk←1 ⋄ resu←0 65⍴0
[15] testa:→(xk>1↑⍴ylu)/fim
[16]  esse←10 80⍴' '
[17]  f←FOLHALA458
[18]  esse[1;]←80↑dhx[1;]
[19]  esse[2;]←80↑dhx[2;]
[20]  esse[3;]←80↑4 2⍕VERSAOa←1.08
[21]  esse[4;]←80↑ylu[xk;⍳6]
[22]  →(36=1↓⍴ylu)/zebra
[23]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[24]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[25]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[26]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[27]  →maiszebra
[28] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[32]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] inica:
[35]  ⎕IO←0
[36]  xx←n gera458 xk
[37]  resto←'N'
[38]  →(isnum n)/pujj
[39]  resto←1↑4↓n
[40] pujj:
[41]  ⎕IO←1
[42]  esse[8;]←1 80⍴80↑'F458',resto,('000'⍕xk),'.myd'
[43]  resp←(3 0⍕resp),'=',xx[⍳30],'=',¯30↑xx
[44]  resu←resu,[1]1 65⍴resp
[45]  acuja←(f[;2]='#')/⍳1↑⍴f
[46]  f[acuja;⍳80]←esse[⌽,f[acuja;3 4],' ';]
[47]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[48]  ⍞←(⍕xk←xk+1),'-'
[49]  →testa
[50] fim:upag←(1 0+⍴f)⍴' '
[51]  →(1=≡n)/elafa
[52]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[53]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO,'/',opesq
[54]  upag[2+⍳1↑⍴resu;⍳65]←resu
[55]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[56]  →terminando
[57] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[58]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[59]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[60] terminando:
[61]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[62]  relat[1↑⍴relat;;]←upag
[63]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[64]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[65]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[66]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
```

---

vivo461

```
[0]  r←CRIAH N;i;j
[1]  r←N
[2]  i←⌊(⍴r)÷2
```

```
[3]  j←i
[4] testa:→(j<1)/mesmo
[5]  r←r DESCEH j
[6]  →(j=j←j-1)/testa
[7] mesmo:
------------------------------------------------------------
[ 0]  r←V DESCEH i;j;x
[ 1] ⍝ 'estou sendo chamado com i=',  ⍕i
[ 2]  r←V
[ 3]  j←2×i
[ 4]  →(j>⍴r)/cabou
[ 5]  →(j≥⍴r)/pula
[ 6]  →(r[j+1]≤r[j])/pula
[ 7]  j←j+1
[ 8] pula:→(r[i]≥r[j])/cabou
[ 9]  x←r[i]
[10]  r[i]←r[j]
[11]  r[j]←x
[12]  r←r DESCEH j
[13] cabou:
------------------------------------------------------------
[ 0]  r←EHEAP x
[ 1] ⍝ recebe um vetor suposto ser HEAP. Se for devolve 0.
[ 2] ⍝ Se nao for devolve o conteudo do pai que nao e maior que seus filhos
[ 3]  i←2 ⋄ r←0
[ 4] testa:→(i>⍴x)/fim
[ 5] ⍝ 'i=',  ⍕i
[ 6]  →(x[i]>x[⌊i÷2])/furou
[ 7]  →(i=i←i+1)/testa
[ 8] furou:r←x[⌊i÷2]
[ 9] fim:→0
------------------------------------------------------------
[0]  r←EXCLUIH N
[1]  r←N
[2]  r[1]←r[⍴r]
[3]  r←¯1↓r
[4]  r←r DESCEH 1
------------------------------------------------------------
[0]  r←N INSEREH x
[1]  r←N,x
[2]  r←r SOBEH⍴r
------------------------------------------------------------
[ 0]  r←N SOBEH i;j;x
[ 1]  r←N
[ 2]  j←⌊i÷2
[ 3]  →(j<1)/fim
[ 4]  →(r[i]≤r[j])/fim
[ 5]  x←r[i]
[ 6]  r[i]←r[j]
[ 7]  r[j]←x
[ 8]  r←r SOBEH j
[ 9] fim:
------------------------------------------------------------
[0]  lixo1
[1]  →(como=0)/vai
[2]  xx←ΔFM'f:\apl2\livrbloi'
[3]  xx←((1↑⍴xx),80)↑xx
[4]  f←xx,[□IO]f,[□IO]1 80⍴80↑'\end{document}'
[5] vai:f ΔFM'c:\apl2\L___'
------------------------------------------------------------
[0]  r←qt lixo3 aa;i;contador;aspa
[1]  i←1 ⋄ contador←8 ⋄ aspa←'''' ⋄ r←aa
[2] vo:→(i>1↑⍴aa)/fim
```

```
[3]  →(2≠+/aa[i;1 2]='⍀#')/soma
[4]  r[i;2+⍳⍴qt]←⍕aspa,(qt⍴'0'),aspa,'⍒contador'
[5]  contador←contador+1
[6] soma:→(i=i←i+1)/vo
[7] fim:
-------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10]  →(0=' '϶j↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80⍴80↑j↑candi
[15]  candi←j↓candi
[16]  →((⍴candi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80⍴80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
-------------------------------------------------------------
[0]  r←ummenoscraca x;y
[1]  y←(~(⍳99)϶x)/⍳99
[2]  r←y[?⍴y]
-------------------------------------------------------------
[ 0]  opesq vivo461a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;ggg;hhh;h;i;indices;jjj;kkk;lixo1;lixo2;www;xxx;zzz;x;y;craca;xar;respi;aaa
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←6 ⋄ EVENTO←'PL461   '
[ 5]  dhx←2 10⍴('05/05/0005'⍒+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍒+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍒⍳n
[ 8]  FOLHALA461←ajusta80 FOLHALA461
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA461)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[11]  xk←1 ⋄ resu←0 6⍴0
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←22 80⍴' '
[14]  f←FOLHALA461
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍒VERSAOa←3.36
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍒resp←xk),'-',opesq
[22]  esse[21;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[22;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25] ⍝ y   ← contem o tamanho dos heaps
[26]  y←10
[27]  esse[9;]←1 80↑1 60⍴60↑4 0⍒xxx←y?100
```

```
[28]  indices←2?y
[29]  esse[10;]←80↑'1.R[',(2 0⍕indices[1]),'], 2.R[',(2 0⍕indices[2]),']'
[30] ⍝ exercicio I ------------------------------------------------------
[31]  i←1 ⋄ lixo1←'' ⋄ respi←0 90⍴' '
[32] volta:→(i>y)/acabou
[33]  lixo1←lixo1 INSEREH xxx[i]
[34]  respi←respi,[1]1 90⍴90↑3 0⍕lixo1
[35]  →(i=i←i+1)/volta
[36] acabou:y←30
[37]  esse[8;]←80↑4 0⍕y
[38]  resp←resp,lixo1[indices]
[39] ⍝ exercicio II -----------------------------------------------------
[40]  lixo2←CRIAH craca←y?100
[41]  lixo2[15+?y-15]←ummenoscraca craca
[42]  esse[11 12 13;]←3 80↑3 40⍴120↑4 0⍕lixo2
[43]  resp←resp,EHEAP lixo2
[44] ⍝ exercicio III ----------------------------------------------------
[45] denovo:
[46]  esse[14 15 16;]←3 80↑3 40⍴120↑4 0⍕zzz←CRIAH y↑kkk←(y+1)?100
[47]  esse[17;]←80↑3 0⍕¯1↑kkk
[48]  www←zzz INSEREH(¯1↑kkk)
[49]  →(www[1]=¯1↑kkk)/denovo
[50]  resp←resp,www[¯1+1↑(~www=zzz,0)/⍳y+1]
[51] ⍝ exercicio IV -----------------------------------------------------
[52]  esse[18 19 20;]←3 80↑3 40⍴120↑4 0⍕hhh←CRIAH y↑jjj←y?100
[53]  resp←resp,hhh[¯1+(ggg=¯1↑hhh)/⍳⍴ggg←EXCLUIH hhh]
[54]  RESPI←respi
[55]  resu←resu,[1]1 6⍴resp
[56]  acuja←(f[;2]='#')/⍳1↑⍴f
[57]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[58]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴80↑'\newpage'
[59]  ⍞←(⍕xk←xk+1),'-'
[60]  →testa
[61] fim:upag←(1 0+⍴f)⍴' '
[62]  →(1=≡n)/elafa
[63]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[64]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[65]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 5 0 5 0 5 0)⍕resu
[66]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[67]  →terminando
[68] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),4 0⍕0 1↓resu)
[69]  aaa[1;35 36]←2 0⍕CORRECAO
[70]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[71]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[72] terminando:
[73]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[74]  relat[1↑⍴relat;;]←upag
[75]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.t
      ex'
[76]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[77]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
[78]  ' na variavel RESPI, o ultimo heap criado'
------------------------------------------------------------------------
[ 0]  r←Δveheap x;vv;ro;cols;i;j;lim;mat;xx
[ 1] ⍝f mostra o operando na forma de arvore binaria para inspecao visual
[ 2]  vv←1 1 4 4 4 4,(8⍴7),(16⍴10),32⍴13
[ 3]  ro←⍴x
[ 4]  →(ro>31)/erro
[ 5]  →(ro>15)/v31
[ 6]  →(ro>7)/v15
[ 7]  →(ro>3)/v7
[ 8] v3:
[ 9]  cols←(1↓⍴t3)|(,'-'=t3)/⍳×/⍴t3
```

```
[10]  r←t3
[11]  →cont
[12] v7:
[13]  cols←(1↓⍴t7)|(,'-'=t7)/⍳×/⍴t7
[14]  r←t7
[15]  →cont
[16] v15:
[17]  cols←(1↓⍴t15)|(,'-'=t15)/⍳×/⍴t15
[18]  r←t15
[19]  →cont
[20] v31:
[21]  cols←(1↓⍴t31)|(,'-'=t31)/⍳×/⍴t31
[22]  r←t31
[23] cont:
[24]  mat←⍉((⍴cols)↑vv),[0.5]cols
[25]  i←1 ⋄ xx←(2 0⍕x),100⍴' '
[26] volta:→(i>1↑⍴mat)/fim
[27]  ⍎'r[',(2 0⍕mat[i;1]),';',(2 0⍕mat[i;2]),']  ←xx[',(2 0⍕i),']'
[28]  →(i=i←i+1)/volta
[29] erro:'muito grande'
[30]  →0
[31] fim:
[32]  lim←(,mat[2×⍴x;])+¯2 2
[33]  i←1
[34] w1:→(i>1↑⍴r)/mesmo
[35]  j←1
[36] w2:→(j>1↓⍴r)/soma
[37]  →((i<lim[1])∨(j<lim[2]))/blz
[38]  r[i;j]←' '
[39] blz:→(j=j←j+1)/w2
[40] soma:→(i=i←i+1)/w1
[41] mesmo:
------------------------------------------------------------
```

vivo480

```
[ 0]  r←bin2hex x;y
[ 1] ⍝ x eh alfanumerico, e eh apanhado de 8 em 8, completando-se com zeros a direita
[ 2]  y←(8×⌈(⍴x)÷8)↑x,'0000000'
[ 3]  r←''
[ 4] t1:→(0≥⍴y)/acabou
[ 5]  r←r,'0123456789ABCDEF'[1+16 16⊤2 2 2 2 2 2 2 2⊥⍎(16⍴1 0)⍴(8↑y)]
[ 6]  y←8↓y
[ 7]  →t1
[ 8] acabou:
------------------------------------------------------------
[0]  r←dec2hex x;z
[1]  →(x=0)/zero
[2]  z←,'0123456789ABCDEF'[1+((1+⌊16⍟x)⍴16)⊤x]
[3]  →(0=2|⍴z)/ok
[4]  r←'0',z
[5]  →0
[6] ok:r←z
[7]  →0
[8] zero:r←'0'
------------------------------------------------------------
[ 0]  r←gera480;cara;a1;a2;a3;a4
[ 1]  cara←?4
[ 2]  →(cara=1)/eum
[ 3]  →(cara=2)/edois
[ 4]  →(cara=3)/etres
[ 5] equatro:
```

```
[ 6]  a1←'11110',1 0⍕¯1+?3⍴2 ⋄ a2←'10',1 0⍕¯1+?6⍴2 ⋄ a3←'10',1 0⍕¯1+?6⍴2 ⋄ a4←'10',(1 0⍕¯1
      +?5⍴2),'1'
[ 7]  r←bin2hex a1,a2,a3,a4
[ 8]  →0
[ 9] etres:
[10]  a1←'1110',1 0⍕¯1+?4⍴2 ⋄ a2←'10',1 0⍕¯1+?6⍴2 ⋄ a3←'10',(1 0⍕¯1+?5⍴2),'1'
[11]  r←bin2hex a1,a2,a3
[12]  →0
[13] edois:
[14]  a1←'110',1 0⍕¯1+?5⍴2 ⋄ a2←'10',(1 0⍕¯1+?5⍴2),'1'
[15]  r←bin2hex a1,a2
[16]  →0
[17] eum:r←dec2hex?127
-------------------------------------------------------------
[ 0]  geraquestao301;aspa;x;y
[ 1]  aspa←''''
[ 2]  'A seguir, alguns c⍀',aspa,'odigos gerados em Unicode usando o UTF-8 '
[ 3]  'UTF=Unicode Transformation Format-8. Relembrando as fam⍀',aspa,'ilias de '
[ 4]  ' 1, 2, 3 e 4 bytes que s⍀~ao:⍀⍀*'
[ 5]  ' ⍀begin{tabular}{|@{ }c@{ }|@{ }l@{ }|@{ }l@{ }|@{ }l@{ }|@{ }c@{ }|'
[ 6]  '@{ }l@{ }|@{ }l@{ }|@{ }l@{ }|@{ }l@{ }|} ⍀hline          '
[ 7]  'bits&início&fim&tamanho&byte1&byte2&byte3&byte4⍀⍀ ⍀hline  '
[ 8]  '7&U+0000&U+007F&1&⍀verb+0xxxxxxx+&&&⍀⍀ ⍀hline             '
[ 9]  '11&U+0080&U+07FF&2&⍀verb+110xxxxx+&⍀verb+10xxxxxx+&&⍀⍀ ⍀hline'
[10]  '16&U+0800&U+FFFF&3&⍀verb+1110xxxx+&⍀verb+10xxxxxx+&⍀verb+10xxxxxx+&⍀⍀ ⍀hline'
[11]  '21&U+10000&U+1FFFFF&4&⍀verb+11110xxx+&⍀verb+10xxxxxx+&⍀verb+10xxxxxx+'
[12]  '&⍀verb+10xxxxxx+⍀⍀ ⍀hline    '
[13]  '⍀end{tabular}⍀⍀*                '
[14]  'escreva os c⍀',aspa,'odigos HEXADECIMAIS de cada caracter Unicode.⍀⍀*'
[15]  x←gera480
[16]  'a) ',x,'⍀⍀*'
[17]  y←gera480
[18]  'b) ',y
[19]  RESPO←'a) ',resolve480 x
[20]  RESPO←RESPO,'        b)',resolve480 y
-------------------------------------------------------------
[ 0]  r←gertudo;a;b;c;d;e;f;g;h;i;j;k;l;m;n;o;temp
[ 1]  r←3⍴' '
[ 2]  a←gera480
[ 3]  temp←resolve480 a
[ 4]  b←⊃temp[1]
[ 5]  c←⊃temp[2]
[ 6]  d←gera480
[ 7]  temp←resolve480 d
[ 8]  e←⊃temp[1]
[ 9]  f←⊃temp[2]
[10]  g←gera480
[11]  temp←resolve480 g
[12]  h←⊃temp[1]
[13]  i←⊃temp[2]
[14]  j←gera480
[15]  temp←resolve480 j
[16]  k←⊃temp[1]
[17]  l←⊃temp[2]
[18]  m←gera480
[19]  temp←resolve480 m
[20]  n←⊃temp[1]
[21]  o←⊃temp[2]
[22]  r[1]←⊂a,d,g,j,m
[23]  r[2]←⊂b,' ',e,' ',h,' ',k,' ',n
[24]  r[3]←⊂⍕c,f,i,l,o
-------------------------------------------------------------
[0]  r←hex2bin x
```

```
[1]  x←,x
[2]  r←1 0⍎((4×⍴x)⍴2)⊤((⍴x)⍴16)⍳¯1+'0123456789ABCDEF'⍳x
-------------------------------------------------------------
[0]  r←hex2dec x
[1]  r←+/(16*⍳¯1+⍳⍴x)×¯1+'0123456789ABCDEF'⍳x
-------------------------------------------------------------
[ 0]  r←resolve480 x;q;z
[ 1]  r←2⍴0
[ 2]  →(2=⍴x)/eum
[ 3]  →(4=⍴x)/edois
[ 4]  →(6=⍴x)/etres
[ 5] equatro:
[ 6]  z←hex2bin x
[ 7]  →((7=+/z[1 2 3 4 9 17 25]='1')∧(4=+/z[5 10 18 26]='0'))/ok1
[ 8]  'deu xabu 1'
[ 9]  →0
[10] ok1:q←bin2hex'000',z[6 7 8 11 12 13 14 15 16 19 20 21 22 23 24 27 28 29 30 31 32]
[11]  r[1]←⊂q
[12]  r[2]←⊂hex2dec q
[13]  →0
[14] etres:
[15]  z←hex2bin x
[16]  →((5=+/z[1 2 3 9 17]='1')∧(3=+/z[4 10 18]='0'))/ok2
[17]  'deu xabu 2'
[18]  →0
[19] ok2:q←bin2hex z[5 6 7 8 11 12 13 14 15 16 19 20 21 22 23 24]
[20]  r[1]←⊂q
[21]  r[2]←⊂hex2dec q
[22]  →0
[23] edois:
[24]  z←hex2bin x
[25]  →((3=+/z[1 2 9]='1')∧(2=+/z[3 10]='0'))/ok3
[26]  'deu xabu 3'
[27]  →0
[28] ok3:q←bin2hex'00000',z[4 5 6 7 8 11 12 13 14 15 16]
[29]  r[1]←⊂q
[30]  r[2]←⊂hex2dec q
[31]  →0
[32] eum:
[33]  z←hex2bin x
[34]  →('0'=z[1])/ok4
[35]  'deu xabu 4'
[36]  →0
[37] ok4:q←bin2hex'0',z[2 3 4 5 6 7 8]
[38]  r[1]←⊂q
[39]  r[2]←⊂hex2dec q
[40]  →0
-------------------------------------------------------------
[ 0]  opesq vivo480a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL480   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA480←ajusta80 FOLHALA480
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA480)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
```

```
[13]  xk←1 ⋄ resu←0 80⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALA480
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.2
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gertudo
[35]  esse[8;]←1 80⍴80↑⊃xx[1]
[36]  resp←(3 0⍕resp),' : ',(37↑⊃xx[2]),(37↑⊃xx[3])
[37]  resu←resu,[1]1 80⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⌽,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[41]  ⎕←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;]←resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[51]  lixonol←aaa ⍙FM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ⍙FM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo511

```
[0]  AVISO
[1]  'Ao chamar a f. 511b (nao gera exercicio) eh preciso chamar com o segundo'
[2]  'operando valido, a fim da funcao poder localizar os alunos'
[3]  ''
[4]  'entao, fazer "" vivo511b "09EDNxxx"'
------------------------------------------------------------
[ 0]  r←FBOLHA v;i;j;aux
[ 1]  EXT←(0,⍴v)⍴0
[ 2]  i←⍴v
[ 3]  j←2
[ 4] inica:→(i<2)/fim
```

```
[ 5] oba:→(j>i)/ops
[ 6]  →(v[j-1]≤v[j])/pula
[ 7]  aux←v[j]
[ 8]  v[j]←v[j-1]
[ 9]  v[j-1]←aux
[10] pula:j←j+1
[11]  →oba
[12] ops:i←i-1
[13]  j←2
[14]  EXT←EXT,[1]v
[15]  →(i≠¯2+ρv)/inica
[16]  BLZ←v
[17]  →inica
[18] fim:r←v
-------------------------------------------------------------
[ 0]  r←FBOLHAEST v;i;j;aux;mudou
[ 1]  i←ρv ⋄ mudou←1 ⋄ EXT←(0,ρv)ρ0
[ 2]  j←2
[ 3] inica:→(i<2)/fim
[ 4]  →(mudou=0)/fim
[ 5]  mudou←0
[ 6] oba:→(j>i)/ops
[ 7]  →(v[j-1]≤v[j])/pula
[ 8]  aux←v[j]
[ 9]  v[j]←v[j-1]
[10]  v[j-1]←aux
[11]  mudou←1
[12] pula:j←j+1
[13]  →oba
[14] ops:i←i-1
[15]  j←2
[16]  EXT←EXT,[1]v
[17]  →(i≠¯2+ρv)/inica
[18]  BLZ←v
[19]  →inica
[20] fim:r←v
-------------------------------------------------------------
[0]  r←FIM;lixo
[1]  →(2≠⎕NC'HI')/0
[2]  r←'Duracao :',(5 1⍕((100 100 100 24 60 60 1000⊥⎕TS)-100 100 100 24 60 60 1000⊥HI)÷10
      00),' segundos'
[3]  lixo←⎕EX'HI'
-------------------------------------------------------------
[ 0]  r←FINSERCAO v;i;j;x
[ 1]  i←2 ⋄ EXT←(0,ρv)ρ0
[ 2] huj:→(i>ρv)/uba
[ 3]  x←v[i]
[ 4]  j←i-1
[ 5] test:→(j<1)/bfu
[ 6]  →(v[j]≤x)/bfu
[ 7]  v[j+1]←v[j]
[ 8]  j←j-1
[ 9]  →test
[10] bfu:
[11]  v[j+1]←x
[12]  i←i+1
[13]  EXT←EXT,[1]v
[14]  →(i≠4)/huj
[15]  BLZ←v
[16]  →huj
[17] uba:r←v
-------------------------------------------------------------
[ 0]  r←FSELECAO v;i;j;inui;cor;x
```

```
[ 1]  i←1 ⋄ EXT←(0,ρv)ρ0
[ 2] eba:→(i>ρv)/fica
[ 3]  cor←v[i]
[ 4]  inui←i
[ 5]  j←i+1
[ 6] ohhh:→(j>ρv)/opas
[ 7]  →(v[j]≥cor)/naoe
[ 8]  cor←v[j]
[ 9]  inui←j
[10] naoe:j←j+1
[11]  →ohhh
[12] opas:x←v[i]
[13]  v[i]←v[inui]
[14]  v[inui]←x
[15]  i←i+1
[16]  EXT←EXT,[1]v
[17]  →(i≠3)/eba
[18]  BLZ←v
[19]  →eba
[20] fica:r←v
-------------------------------------------------------------
[0]  INICIO
[1]  HI←⎕TS
-------------------------------------------------------------
[0]  LEIA
[1]  'Em 23 de outubro de 2009, testei o algoritmo de heapsort'
[2]  'usando a linguagem APLX (por conta dos :if e :while)'
[3]  'e funcionou exatamente como esta na folha, de prima'
-------------------------------------------------------------
[ 0]  r←geracaso;x;ii
[ 1]  r←4 12ρ0
[ 2]  r[1;⍳10]←10?99
[ 3]  x←FBOLHA r[1;⍳10]
[ 4]  r[1;11]←ii←?10
[ 5]  r[1;12]←BLZ[ii]
[ 6]  r[2;⍳10]←10?99
[ 7]  x←FBOLHAEST r[2;⍳10]
[ 8]  r[2;11]←ii←?10
[ 9]  r[2;12]←BLZ[ii]
[10]  r[3;⍳10]←10?99
[11]  x←FINSERCAO r[3;⍳10]
[12]  r[3;11]←ii←?10
[13]  r[3;12]←BLZ[ii]
[14]  r[4;⍳10]←10?99
[15]  x←FSELECAO r[4;⍳10]
[16]  r[4;11]←ii←?10
[17]  r[4;12]←BLZ[ii]
-------------------------------------------------------------
[ 0]  r←mostrabolha v;i;j;aux
[ 1]  INICIO
[ 2]  i←ρv
[ 3]  j←2
[ 4] inica:→(i<2)/fim
[ 5]  v
[ 6] oba:→(j>i)/ops
[ 7]  →(v[j-1]≤v[j])/pula
[ 8]  aux←v[j]
[ 9]  v[j]←v[j-1]
[10]  v[j-1]←aux
[11] pula:j←j+1
[12]  →oba
[13] ops:i←i-1
[14]  j←2
```

```
[15]  →(i≠¯2+⍴v)/inica
[16]  BLZ←v
[17]  →inica
[18] fim:r←v
[19]  FIM
-------------------------------------------------------------
[ 0]  r←mostrabolhae v;i;j;aux;mudou
[ 1]  i←⍴v ⋄ mudou←1 ⋄ INICIO
[ 2]  j←2
[ 3] inica:→(i<2)/fim
[ 4]  v
[ 5]  →(mudou=0)/fim
[ 6]  mudou←0
[ 7] oba:→(j>i)/ops
[ 8]  →(v[j-1]≤v[j])/pula
[ 9]  aux←v[j]
[10]  v[j]←v[j-1]
[11]  v[j-1]←aux
[12]  mudou←1
[13] pula:j←j+1
[14]  →oba
[15] ops:i←i-1
[16]  j←2
[17]  →(i≠¯2+⍴v)/inica
[18]  BLZ←v
[19]  →inica
[20] fim:r←v
[21]  FIM
-------------------------------------------------------------
[ 0]  r←mostrainse v;i;j;x
[ 1]  i←2 ⋄ INICIO
[ 2] huj:→(i>⍴v)/uba
[ 3]  v
[ 4]  x←v[i]
[ 5]  j←i-1
[ 6] test:→(j<1)/bfu
[ 7]  →(v[j]≤x)/bfu
[ 8]  v[j+1]←v[j]
[ 9]  j←j-1
[10]  →test
[11] bfu:
[12]  v[j+1]←x
[13]  i←i+1
[14]  →(i≠4)/huj
[15]  BLZ←v
[16]  →huj
[17] uba:r←v
[18]  FIM
-------------------------------------------------------------
[ 0]  r←mostrasele v;i;j;inui;cor;x
[ 1]  i←1 ⋄ INICIO
[ 2] eba:→(i>⍴v)/fica
[ 3]  v
[ 4]  cor←v[i]
[ 5]  inui←i
[ 6]  j←i+1
[ 7] ohhh:→(j>⍴v)/opas
[ 8]  →(v[j]≥cor)/naoe
[ 9]  cor←v[j]
[10]  inui←j
[11] naoe:j←j+1
[12]  →ohhh
[13] opas:x←v[i]
```

```
[14]  v[i]←v[inui]
[15]  v[inui]←x
[16]  i←i+1
[17]  →(i≠3)/eba
[18]  BLZ←v
[19]  →eba
[20] fica:r←v
[21]  FIM
------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10]  →(0=' '∈j↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80⍴80↑j↑candi
[15]  candi←j↓candi
[16]  →((⍴candi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80⍴80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
------------------------------------------------------------
[ 0]  opesq vivo511a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;caso;aaa;lixo1
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←4 ⋄ EVENTO←'PL511   '
[ 5]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 8]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA511)⍴' '
[ 9]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[10]  xk←1 ⋄ resu←0 5⍴0
[11] testa:→(xk>1↑⍴ylu)/fim
[12]  esse←15 80⍴' '
[13]  f←FOLHALA511
[14]  esse[1;]←80↑dhx[1;]
[15]  esse[2;]←80↑dhx[2;]
[16]  esse[3;]←80↑4 2⍎VERSAOa←3.21
[17]  esse[4;]←80↑ylu[xk;⍳6]
[18]  esse[5;]←80↑ylu[xk;6+⍳30]
[19]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[20]  esse[7;]←80↑(3 0⍎resp←xk),'-',opesq
[21] inica:
[22]  caso←geracaso
[23]  esse[8;]←80↑3 0⍎caso[1;⍳10]
[24]  esse[9;]←80↑30↑3 0⍎caso[1;11]
[25]  resp←resp,caso[1;12]
[26]  esse[10;]←80↑3 0⍎caso[2;⍳10]
[27]  esse[11;]←80↑3 0⍎caso[2;11]
[28]  resp←resp,caso[2;12]
```

```
[29]  esse[12;]←80↑3 0⍕caso[3;⍳10]
[30]  esse[13;]←80↑3 0⍕caso[3;11]
[31]  resp←resp,caso[3;12]
[32]  esse[14;]←80↑3 0⍕caso[4;⍳10]
[33]  esse[15;]←80↑3 0⍕caso[4;11]
[34]  resp←resp,caso[4;12]
[35]  resu←resu,[1]1 5⍴resp
[36]  acuja←(f[;2]='#')/⍳1↑⍴f
[37]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[39]  ⎕←(⍕xk←xk+1),'-'
[40]  →testa
[41] fim:upag←(1 0+⍴f)⍴' '
[42]  →(1=≡n)/elafa
[43]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[44]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[45]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←4 0 10 0 4 0 4 0 4 0)⍕resu
[46]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[47]  →terminando
[48] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),5 0⍕0 1↓resu)
[49]  aaa[1;35 36]←2 0⍕CORRECAO
[50]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[51]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[52] terminando:
[53]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[54]  relat[1↑⍴relat;;]←upag
[55]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.t
      ex'
[56]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[57]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo511b n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;num;relat
      ;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←8 ⋄ EVENTO←'PL511b  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA511b←ajusta80 FOLHALA511b
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA511b)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[12]  xk←1 ⋄ resu←0 2⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←20 80⍴' '
[15]  f←FOLHALA511b
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23] ⍝ esse[__;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24] ⍝ esse[__;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] ini1:
[26]  resu←resu,[1]1 2⍴resp
[27]  acuja←(f[;2]='#')/⍳1↑⍴f
[28]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[29]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
```

```
[30]  ⍞←(⍕xk←xk+1),'-'
[31]  →testa
[32] fim:upag←(1 0+⍴f)⍴' '
[33] terminando:
[34]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[35]  relat[1↑⍴relat;;]←upag
[36]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[37] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[38]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧.\⍷EVENTO=' ')/EVENTO),'.tex'
[39]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex)'
[40]  'NAO HA ARQUIVO GPA'
------------------------------------------------------------
[ 0]  opesq vivo519a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;num;relat
      ;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←8 ⋄ EVENTO←'PL519   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA519←ajusta80 FOLHALA519
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA519)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 2⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←20 80⍴' '
[15]  f←FOLHALA519
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←1.01
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[23] ⍝ esse[__;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24] ⍝ esse[__;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] ini1:
[26]  esse[8;]←80↑'1'
[27]  esse[9;]←80↑'1'
[28]  esse[10;]←80↑'1'
[29]  esse[11;]←80↑'1'
[30]  esse[12;]←80↑'1'
[31]  resu←resu,[1]1 2⍴resp
[32]  acuja←(f[;2]='#')/⍳1↑⍴f
[33]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[34]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[35]  ⍞←(⍕xk←xk+1),'-'
[36]  →testa
[37] fim:upag←(1 0+⍴f)⍴' '
[38]  →(1=≡n)/elafa
[39]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[40]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[41]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←4 0 8 0)⍕resu
[42]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[43]  →terminando
[44] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),4 0⍎0 1↓resu)
[45]  aaa[1;35 36]←2 0⍎CORRECAO
[46]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧.\⍷EVENTO=' ')/EVENTO),'.gpa')
[47]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[48] terminando:
```

```
[49]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[50]  relat[1↑⍴relat;;]←upag
[51]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[52] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[53]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍬∧⍀⍬EVENTO=' ')/EVENTO),'.tex'
[54]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[ 0]  ΔRAP xx;ANT;DEP;MEI;x
[ 1]  ANT←xx[1]
[ 2]  DEP←xx[2]
[ 3]  MEI←VVV[⌊(+/xx)÷2]
[ 4] inica:
[ 5] xica1:→(VVV[ANT]≥MEI)/uca
[ 6]  ANT←ANT+1
[ 7]  →xica1
[ 8] uca:→(VVV[DEP]≤MEI)/uca22
[ 9]  DEP←DEP-1
[10]  →uca
[11] uca22:→(ANT>DEP)/pula
[12]  x←VVV[DEP]
[13]  VVV[DEP]←VVV[ANT]
[14]  VVV[ANT]←x
[15]  ANT←ANT+1
[16]  DEP←DEP-1
[17] pula:→(ANT≤DEP)/inica
[18]  →(xx[1]≥DEP)/opas
[19]  ΔRAP(xx[1],DEP)
[20] opas:→(ANT≥xx[2])/fim
[21]  ΔRAP(ANT,xx[2])
[22] fim:
-------------------------------------------------------------
[ 0]  r←Δbolha v;i;j;aux
[ 1]  INICIO
[ 2]  i←⍴v
[ 3]  j←2
[ 4] inica:→(i<2)/fim
[ 5] oba:→(j>i)/ops
[ 6]  →(v[j-1]≤v[j])/pula
[ 7]  aux←v[j]
[ 8]  v[j]←v[j-1]
[ 9]  v[j-1]←aux
[10] pula:j←j+1
[11]  →oba
[12] ops:i←i-1
[13]  j←2
[14]  →(i≠¯2+⍴v)/inica
[15]  BLZ←v
[16]  →inica
[17] fim:r←v
[18]  FIM
-------------------------------------------------------------
[ 0]  r←Δbolhae v;i;j;aux;mudou
[ 1]  i←⍴v ⋄ mudou←1 ⋄ INICIO
[ 2]  j←2
[ 3] inica:→(i<2)/fim
[ 4]  →(mudou=0)/fim
[ 5]  mudou←0
[ 6] oba:→(j>i)/ops
[ 7]  →(v[j-1]≤v[j])/pula
[ 8]  aux←v[j]
[ 9]  v[j]←v[j-1]
[10]  v[j-1]←aux
[11]  mudou←1
```

```
[12] pula:j←j+1
[13]  →oba
[14] ops:i←i-1
[15]  j←2
[16]  →(i≠¯2+⍴v)/inica
[17]  BLZ←v
[18]  →inica
[19] fim:r←v
[20]  FIM
-------------------------------------------------------------
[ 0]  r←Δinse v;i;j;x
[ 1]  i←2 ⋄ INICIO
[ 2] huj:→(i>⍴v)/uba
[ 3]  x←v[i]
[ 4]  j←i-1
[ 5] test:→(j<1)/bfu
[ 6]  →(v[j]≤x)/bfu
[ 7]  v[j+1]←v[j]
[ 8]  j←j-1
[ 9]  →test
[10] bfu:
[11]  v[j+1]←x
[12]  i←i+1
[13]  →(i≠4)/huj
[14]  BLZ←v
[15]  →huj
[16] uba:r←v
[17]  FIM
-------------------------------------------------------------
[0]  r←Δquick v
[1]  INICIO
[2]  VVV←v
[3]  ΔRAP(1,⍴v)
[4]  r←VVV
[5]  FIM
-------------------------------------------------------------
[ 0]  r←Δsele v;i;j;inui;cor;x
[ 1]  i←1 ⋄ INICIO
[ 2] eba:→(i>⍴v)/fica
[ 3]  cor←v[i]
[ 4]  inui←i
[ 5]  j←i+1
[ 6] ohhh:→(j>⍴v)/opas
[ 7]  →(v[j]≥cor)/naoe
[ 8]  cor←v[j]
[ 9]  inui←j
[10] naoe:j←j+1
[11]  →ohhh
[12] opas:x←v[i]
[13]  v[i]←v[inui]
[14]  v[inui]←x
[15]  i←i+1
[16]  →(i≠3)/eba
[17]  BLZ←v
[18]  →eba
[19] fica:r←v
[20]  FIM
-------------------------------------------------------------
```

vivo512

```
[0]  r←FIM;lixo
```

```
[1]  →(2≠⎕NC'HI')/0
[2]  r←'Duracao :',(5 1⍕((100 100 100 24 60 60 1000⊥⎕TS)-100 100 100 24 60 60 1000⊥HI)÷10
      00),' segundos'
[3]  lixo←⎕EX'HI'
-------------------------------------------------------------
[0]  FQUICK v
[1]  VVV←v
[2]  UMAVEZ←0
[3]  EXT←(0,⍴v)⍴0
[4]  RAP(1,⍴v)
-------------------------------------------------------------
[ 0]  r←decrs FSHELL vet;k;h;i;v;j;uba
[ 1]  EXT←(0,1+⍴vet)⍴0
[ 2]  uba←0
[ 3]  k←1
[ 4]  decrs←,decrs
[ 5] t1:→(k>⍴decrs)/f1
[ 6]  i←h←decrs[k]
[ 7] t2:→(i≥⍴vet)/f2
[ 8]  v←vet[i+1]
[ 9]  j←i
[10] t3:   ⍝vet
[11]  →(j<h)/f3
[12]  →(vet[1+j-h]≤v)/f3
[13] ⍝ 'j= ',(  ⍕j),'                i=',  ⍕i
[14]  vet[1+j]←vet[1+j-h]
[15]  j←j-h
[16]  →t3
[17] f3:vet[1+j]←v
[18]  EXT←EXT,[1]i,vet
[19]  uba←uba+1
[20]  →(uba≠4)/viva
[21]  BLZ←vet
[22] viva:→(i=i←i+1)/t2
[23] f2:→(k=k←k+1)/t1
[24] f1:r←vet
-------------------------------------------------------------
[ 0]  r←FSORTHEAP x;i;j
[ 1]  Y←x ⋄ EXT←(0,⍴x)⍴0
[ 2]  i←⌊0.5×⍴x
[ 3] oba:→(i<1)/fim
[ 4]  (⍴Y)desceheap i
[ 5]  →(i=i←i-1)/oba
[ 6] fim:j←⍴Y
[ 7] oba2:→(j<1)/mesmo
[ 8]  Y[j]←excluiheap j
[ 9]  EXT←EXT,[1]Y
[10]  →(j≠¯1+⍴Y)/viva
[11]  BLZ←Y
[12] viva:→(j=j←j-1)/oba2
[13] mesmo:r←Y
-------------------------------------------------------------
[0]  INICIO
[1]  HI←⎕TS
-------------------------------------------------------------
[ 0]  MOSTRARAP xx;ANT;DEP;MEI;x
[ 1]  CONTADOR←CONTADOR+1
[ 2]  ANT←xx[1]
[ 3]  DEP←xx[2]
[ 4]  MEI←VVV[⌊(+/xx)÷2]
[ 5]  (2 0⍕CONTADOR),' COM=',(3 0⍕xx),' PVT=',(3 0⍕MEI),'  V=',3 0⍕VVV
[ 6] inica:
[ 7] xica1:→(VVV[ANT]≥MEI)/uca
```

```
[ 8]  ANT←ANT+1
[ 9]  →xica1
[10] uca:→(VVV[DEP]≤MEI)/uca22
[11]  DEP←DEP-1
[12]  →uca
[13] uca22:→(ANT>DEP)/pula
[14]  x←VVV[DEP]
[15]  VVV[DEP]←VVV[ANT]
[16]  VVV[ANT]←x
[17]  ANT←ANT+1
[18]  DEP←DEP-1
[19] pula:→(ANT≤DEP)/inica
[20]  →(xx[1]≥DEP)/opas
[21]  MOSTRARAP(xx[1],DEP)
[22] opas:→(ANT≥xx[2])/fim
[23]  MOSTRARAP(ANT,xx[2])
[24] fim:
-------------------------------------------------------------
[ 0]  RAP xx;ANT;DEP;MEI;x
[ 1]  ANT←xx[1]
[ 2]  DEP←xx[2]
[ 3]  MEI←VVV[⌊(+/xx)÷2]
[ 4] inica:
[ 5] xica1:→(VVV[ANT]≥MEI)/uca
[ 6]  ANT←ANT+1
[ 7]  →xica1
[ 8] uca:→(VVV[DEP]≤MEI)/uca22
[ 9]  DEP←DEP-1
[10]  →uca
[11] uca22:→(ANT>DEP)/pula
[12]  x←VVV[DEP]
[13]  VVV[DEP]←VVV[ANT]
[14]  VVV[ANT]←x
[15]  ANT←ANT+1
[16]  DEP←DEP-1
[17] pula:→(ANT≤DEP)/inica
[18]  EXT←EXT,[1]VVV
[19]  →(UMAVEZ≠0)/viva
[20]  BLZ←VVV   ⍝ A PRIMEIRA VEZ QUE CHEGA AQUI
[21]  UMAVEZ←UMAVEZ+1
[22] viva:→(xx[1]≥DEP)/opas
[23]  RAP(xx[1],DEP)
[24] opas:→(ANT≥xx[2])/fim
[25]  RAP(ANT,xx[2])
[26] fim:
-------------------------------------------------------------
[ 0]  tam desceheap i;j;x
[ 1] ⍝ 'entrando com parametro =',  ⍕i
[ 2]  j←2×i
[ 3]  →(j>tam)/cabou
[ 4]  →(j≥tam)/pula
[ 5]  →(Y[j+1]≤Y[j])/pula
[ 6]  j←j+1
[ 7] pula:→(Y[i]≥Y[j])/cabou
[ 8]  x←Y[i]
[ 9]  Y[i]←Y[j]
[10]  Y[j]←x
[11]  tam desceheap j
[12] cabou:
-------------------------------------------------------------
[0]  r←excluiheap k
[1]  r←Y[1]
[2]  Y[1]←Y[k]
```

```
[3]  k desceheap 1
-----------------------------------------------------------------
[ 0]  r←geracaso;x;ii
[ 1]  r←3 12⍴0
[ 2]  r[1;⍳10]←10?99
[ 3]  x←(4,1)FSHELL r[1;⍳10]
[ 4]  r[1;11]←ii←?10
[ 5]  r[1;12]←BLZ[ii]
[ 6]  r[2;⍳10]←10?99
[ 7]  x←FSORTHEAP r[2;⍳10]
[ 8]  r[2;11]←ii←?10
[ 9]  r[2;12]←BLZ[ii]
[10]  r[3;⍳10]←10?99
[11]  FQUICK r[3;⍳10]
[12]  r[3;11]←ii←?10
[13]  r[3;12]←BLZ[ii]
-----------------------------------------------------------------
[0]  lixo1
[1]  →(como=0)/vai
[2]  xx←ΔFM'f:⍀apl2⍀livrbloi'
[3]  xx←((1↑⍴xx),80)↑xx
[4]  f←xx,[□IO]f,[□IO]1 80⍴80↑'⍀end{document}'
[5] vai:f ΔFM'c:⍀apl2⍀L___'
-----------------------------------------------------------------
[0]  r←qt lixo3 aa;i;contador;aspa
[1]  i←1 ⋄ contador←8 ⋄ aspa←'''' ⋄ r←aa
[2] vo:→(i>1↑⍴aa)/fim
[3]  →(2≠+/aa[i;1 2]='⍀#')/soma
[4]  r[i;2+⍳⍴qt]←⍕aspa,(qt⍴'0'),aspa,'⍕contador'
[5]  contador←contador+1
[6] soma:→(i=i←i+1)/vo
[7] fim:
-----------------------------------------------------------------
[ 0]  tam mostradesceheap i;j;x
[ 1] ⍝ 'entrando com parametro =',  ⍕i
[ 2]  j←2×i
[ 3]  →(j>tam)/cabou
[ 4]  →(j≥tam)/pula
[ 5]  →(Y[j+1]≤Y[j])/pula
[ 6]  j←j+1
[ 7] pula:→(Y[i]≥Y[j])/cabou
[ 8]  x←Y[i]
[ 9]  Y[i]←Y[j]
[10]  Y[j]←x
[11]  tam mostradesceheap j
[12] cabou:
-----------------------------------------------------------------
[0]  r←mostraexcluiheap k
[1]  r←Y[1]
[2]  Y[1]←Y[k]
[3] ⍝'d=',⍕(k-1)↑Y
[4]  k desceheap 1
-----------------------------------------------------------------
[0]  r←mostraquick v
[1]  INICIO
[2]  VVV←v
[3]  CONTADOR←0
[4]  MOSTRARAP(1,⍴v)
[5]  r←VVV
[6]  FIM
-----------------------------------------------------------------
[ 0]  r←decrs mostrashell vet;k;h;i;v;j;uba
[ 1]  'vetor inicial ',⍕vet
```

```
[ 2]  INICIO
[ 3]  uba←0
[ 4]  k←1
[ 5]  decrs←,decrs
[ 6] t1:→(k>ρdecrs)/f1
[ 7]  i←h←decrs[k]
[ 8]  'entrando com H=',⍕h
[ 9] t2:→(i≥ρvet)/f2
[10]  vet
[11]  v←vet[i+1]
[12]  j←i
[13] t3:   ⍝vet
[14]  →(j<h)/f3
[15]  →(vet[1+j-h]≤v)/f3
[16] ⍝ 'j= ',(⍕j),'                i=',⍕i
[17]  vet[1+j]←vet[1+j-h]
[18]  j←j-h
[19]  →t3
[20] f3:vet[1+j]←v
[21]  uba←uba+1
[22]  →(uba≠4)/viva
[23]  BLZ←vet
[24] viva:→(i=i←i+1)/t2
[25] f2:→(k=k←k+1)/t1
[26] f1:r←vet
[27]  FIM
-------------------------------------------------------------
[ 0]  r←mostrasortheap x;i;j
[ 1]  'inicial ',⍕x
[ 2]  INICIO
[ 3]  Y←x
[ 4]  i←⌊0.5×ρx
[ 5] oba:→(i<1)/fim
[ 6]  (ρY)mostradesceheap i
[ 7]  →(i=i←i-1)/oba
[ 8] fim:j←ρY
[ 9] oba2:→(j<1)/mesmo
[10]  'a=',⍕Y
[11]  Y[j]←mostraexcluiheap j
[12]  →(j≠¯1+ρY)/viva
[13]  BLZ←Y
[14] viva:→(j=j←j-1)/oba2
[15] mesmo:r←Y
[16]  FIM
-------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80ρ' '
[ 6] te:→(i≥⎕IO+1↑ρzz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>ρcandi)/eca
[ 9]  j←qt
[10]  →(0=' 'єj↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80ρ80↑j↑candi
[15]  candi←j↓candi
[16]  →((ρcandi)=+/candi=' ')/som
[17]  →te2
```

```
[18] eca:r←r,[⎕IO]1 80ρ80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
------------------------------------------------------------
[ 0]  opesq vivo512a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;caso
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←3 ⋄ EVENTO←'PL512   '
[ 5]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[ 8]  relat←((2+1↑ρylu),1 0+ρFOLHALA512)ρ' '
[ 9]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLOI'
[10]  xk←1 ⋄ resu←0 4ρ0
[11] testa:→(xk>1↑ρylu)/fim
[12]  esse←13 80ρ' '
[13]  f←FOLHALA512
[14]  esse[1;]←80↑dhx[1;]
[15]  esse[2;]←80↑dhx[2;]
[16]  esse[3;]←80↑4 2⍎VERSAOa←3.18
[17]  esse[4;]←80↑ylu[xk;⍳6]
[18]  esse[5;]←80↑ylu[xk;6+⍳30]
[19]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[20]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[21] inica:
[22]  caso←geracaso
[23]  esse[8;]←80↑3 0⍎caso[1;⍳10]
[24]  esse[9;]←80↑3 0⍎caso[1;11]
[25]  resp←resp,caso[1;12]
[26]  esse[10;]←80↑3 0⍎caso[2;⍳10]
[27]  esse[11;]←80↑3 0⍎caso[2;11]
[28]  resp←resp,caso[2;12]
[29]  esse[12;]←80↑3 0⍎caso[3;⍳10]
[30]  esse[13;]←80↑3 0⍎caso[3;11]
[31]  resp←resp,caso[3;12]
[32]  resu←resu,[1]1 4ρresp
[33]  acuja←(f[;2]='#')/⍳1↑ρf
[34]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[35]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\newpage'
[36]  ⍞←(⍎xk←xk+1),'-'
[37]  →testa
[38] fim:upag←(1 0+ρf)ρ' '
[39]  →(1=≡n)/elafa
[40]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[41]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[42]  upag[2+⍳1↑ρresu;⍳+/lixo1]←(lixo1←4 0 10 0 4 0 4 0)⍎resu
[43]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[44]  →terminando
[45] elafa:aaa←(ylu,(((1↑ρylu),4)ρ' 0.0'),5 0⍎0 1↓resu)
[46]  aaa[1;35 36]←2 0⍎CORRECAO
[47]  lixonol←aaa ΔFM('c:\apl2\',((~⍱\⍱EVENTO=' ')/EVENTO),'.gpa')
[48]  '!!!!!  Arquivo GPA com ',(⍎1↑ρaaa),' linhas e ',(⍎1↓ρaaa),' colunas'
[49] terminando:
[50]  upag[1↑ρupag;]←(1↓ρupag)↑'\end{document}'
[51]  relat[1↑ρrelat;;]←upag
[52]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)ΔFM'c:\apl2\',((~⍱\⍱EVENTO=' ')/EVENTO),'.t
      ex'
[53]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[54]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
```

```
------------------------------------------------------------
[ 0]  ΔRAP xx;ANT;DEP;MEI;x
[ 1]  ANT←xx[1]
[ 2]  DEP←xx[2]
[ 3]  MEI←VVV[⌊(+/xx)÷2]
[ 4] inica:
[ 5] xica1:→(VVV[ANT]≥MEI)/uca
[ 6]  ANT←ANT+1
[ 7]  →xica1
[ 8] uca:→(VVV[DEP]≤MEI)/uca22
[ 9]  DEP←DEP-1
[10]  →uca
[11] uca22:→(ANT>DEP)/pula
[12]  x←VVV[DEP]
[13]  VVV[DEP]←VVV[ANT]
[14]  VVV[ANT]←x
[15]  ANT←ANT+1
[16]  DEP←DEP-1
[17] pula:→(ANT≤DEP)/inica
[18]  →(xx[1]≥DEP)/opas
[19]  ΔRAP(xx[1],DEP)
[20] opas:→(ANT≥xx[2])/fim
[21]  ΔRAP(ANT,xx[2])
[22] fim:
------------------------------------------------------------
[0]  r←Δquick v
[1]  INICIO
[2]  VVV←v
[3]  ΔRAP(1,⍴v)
[4]  r←VVV
[5]  FIM
------------------------------------------------------------
[ 0]  r←decrs Δshell vet;k;h;i;v;j;uba
[ 1]  INICIO
[ 2]  uba←0
[ 3]  k←1
[ 4]  decrs←,decrs
[ 5] t1:→(k>⍴decrs)/f1
[ 6]  i←h←decrs[k]
[ 7] t2:→(i≥⍴vet)/f2
[ 8]  v←vet[i+1]
[ 9]  j←i
[10] t3:   ⍝vet
[11]  →(j<h)/f3
[12]  →(vet[1+j-h]≤v)/f3
[13] ⍝ 'j= ',(  ⍕j),'                i=',  ⍕i
[14]  vet[1+j]←vet[1+j-h]
[15]  j←j-h
[16]  →t3
[17] f3:vet[1+j]←v
[18]  uba←uba+1
[19]  →(uba≠4)/viva
[20]  BLZ←vet
[21] viva:→(i=i←i+1)/t2
[22] f2:→(k=k←k+1)/t1
[23] f1:r←vet
[24]  FIM
------------------------------------------------------------
[ 0]  r←Δsortheap x;i;j
[ 1]  INICIO
[ 2]  Y←x
[ 3]  i←⌊0.5×⍴x
[ 4] oba:→(i<1)/fim
```

```
[ 5]  (ρY)desceheap i
[ 6]  →(i=i←i-1)/oba
[ 7] fim:j←ρY
[ 8] oba2:→(j<1)/mesmo
[ 9]  Y[j]←excluiheap j
[10]  →(j≠¯1+ρY)/viva
[11]  BLZ←Y
[12] viva:→(j=j←j-1)/oba2
[13] mesmo:r←Y
[14]  FIM
------------------------------------------------------------
```

vivo513

```
[ 0]  r←geracaso n;qtd;vc;orides;od;davez
[ 1] ⍝ n[1] e o numero de linhas de entrada e de saida
[ 2] ⍝ n[2] e a profundidade da rede de comparacao
[ 3]  r←(n[1],0)ρ0
[ 4]  qtd←1
[ 5] ini:→(qtd>n[2])/aca
[ 6]  vc←n[1]ρ1
[ 7] denovo:→((+/vc)<2)/naotem
[ 8]  orides←vc/⍳ρvc
[ 9]  od←2?ρorides
[10]  davez←n[1]ρ0
[11]  davez[orides[od]]←1
[12]  vc[orides[od]]←0
[13]  r←r,[2](n[1],1)ρdavez
[14]  →denovo
[15] naotem:r←r,[2](n[1],1)ρ0
[16]  qtd←qtd+1
[17]  →ini
[18] aca:
------------------------------------------------------------
[ 0]  r←rede resolve entr;i;vc;aux
[ 1]  i←1
[ 2]  →((⍴entr)≠1↑⍴rede)/erro
[ 3] tt:→(i>1↓⍴rede)/fim
[ 4]  →(0=+/,rede[;i])/soma
[ 5]  vc←rede[;i]/⍳⍴entr
[ 6]  →(entr[vc[1]]>entr[vc[2]])/inverte
[ 7]  →soma
[ 8] inverte:aux←entr[vc[1]]
[ 9]  entr[vc[1]]←entr[vc[2]]
[10]  entr[vc[2]]←aux
[11] soma:→(i=i←i+1)/tt
[12] fim:r←entr
[13]  →0
[14] erro:'entrada nao coincide com rede, corrija'
[15]  →0
------------------------------------------------------------
[ 0]  opesq vivo513a n;CORRECAO;EVENTO;INDS;X;Y;Z;aaa;acuja;dhx;esse;f;lixo1;lixonol;relat
      ;resp;resu;upag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←3 ⋄ EVENTO←'PL513   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
```

```
[ 9]  FOLHALA513←ajusta80 FOLHALA513
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA513)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 4⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←21 80⍴' '
[15]  f←FOLHALA513
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.15
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+□LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23] inica:
[24]  X←geracaso 10,5
[25]  Y←X resolve Z←10?20
[26]  INDS←3?10
[27]  INDS←INDS[⍋INDS]
[28]  esse[7+⍳10;]←10 80↑2 0⍕X
[29]  esse[18;]←80↑4 0⍕Z
[30]  esse[18+⍳3;]←3 80↑3 4⍴4 0⍕INDS
[31]  resp←resp,Y[INDS]
[32]  resu←resu,[1]1 4⍴resp
[33]  acuja←(f[;2]='#')/⍳1↑⍴f
[34]  f[acuja;⍳80]←esse[⌽,f[acuja;3 4],' ';]
[35]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[36]  □←(⍕xk←xk+1),'-'
[37]  →testa
[38] fim:upag←(1 0+⍴f)⍴' '
[39]  →(1=≡n)/elafa
[40]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[41]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[42]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←4 0 10 0 4 0 4 0)⍕resu
[43]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[44]  →terminando
[45] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),5 0⍕0 1↓resu)
[46]  aaa[1;35 36]←2 0⍕CORRECAO
[47]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[48]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[49] terminando:
[50]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[51]  relat[1↑⍴relat;;]←upag
[52]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[53] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[54]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[55]  lixonol←□EX 2 10⍴'quantos   matriz    '
[56]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo521

```
[ 0]  r←vetor achap elem;x;qtos
[ 1] ⍝ se elem   ∈ vetor, volta o numero de acessos necessarios para chegar la
[ 2] ⍝ se nao pertence volta (negativo) o numero de acessos necessarios
[ 3] ⍝ para chegar nessa conclusao
[ 4]  x←1+23|elem
[ 5]  qtos←1
[ 6] testa:→(vetor[x]=0)/devolveneg
[ 7]  →(elem=⌊|vetor[x])/devolvepos
[ 8]  →(vetor[x]=⌊vetor[x])/devolveneg
[ 9]  qtos←qtos+1
```

```
[10]  x←⍤⍣23+100×(|vetor[x])-⌊|vetor[x]
[11]  →testa
[12] devolveneg:r←-qtos
[13]  →0
[14] devolvepos:r←qtos
------------------------------------------------------------
[ 0]  r←vetor achat elem;y;qtos
[ 1]  y←1+(23|elem)+(11|elem)
[ 2]  qtos←1
[ 3] volta:→(vetor[y]=elem)/achoupos
[ 4]  →(vetor[y]=0)/achouneg
[ 5]  y←y+1
[ 6]  →(y<44)/beleza
[ 7]  y←1
[ 8] beleza:qtos←qtos+1
[ 9]  →volta
[10] achoupos:r←qtos
[11]  →0
[12] achouneg:r←-qtos
------------------------------------------------------------
[ 0]  r←format521 x;i;j;lin
[ 1]  i←1
[ 2]  r←0 52⍴' '
[ 3] t1:→(i>1↑⍴x)/aca
[ 4]  lin←''
[ 5]  j←1
[ 6] t2:→(j>9)/ufa
[ 7]  →((j=1)∨(j=6)∨(j=7)∨(j=8)∨(j=9))/deq
[ 8] de8:→(x[i;j]=⌊x[i;j])/semz
[ 9]  lin←lin,8 2⍤⍣x[i;j]
[10]  →som1
[11] semz:lin←lin,8 0⍤⍣x[i;j]
[12]  →som1
[13] deq:lin←lin,4 0⍤⍣x[i;j]
[14] som1:→(j=j←j+1)/t2
[15] ufa:
[16]  r←r,[1]1 52⍴lin
[17]  →(i=i←i+1)/t1
[18] aca:
------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10]  →(0=' '∈j↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80⍴80↑j↑candi
[15]  candi←j↓candi
[16]  →((⍴candi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80⍴80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
------------------------------------------------------------
```

```
[ 0]  resolvei x;conts;onde
[ 1] ⍝ x e um vetor de 30 numeros.   ΔP e a area primaria e   ΔS a secundaria
[ 2]  i←1 ⋄ ΔP←23⍴0 ⋄ ΔS←20⍴0 ⋄ conts←1 ⋄ onde←0
[ 3] testa:→(i>30)/fim
[ 4] ⍝ '  ΔP',  ⍕  ΔP
[ 5] ⍝ '  ΔS',  ⍕  ΔS
[ 6] ⍝ x[i],i,conts,onde
[ 7]  →(ΔP[1+23|x[i]]=0)/ok
[ 8]  ΔS[conts]←x[i]
[ 9]  →(ΔP[1+23|x[i]]<0)/nega
[10] posi:
[11]  ΔP[1+23|x[i]]←¯1×ΔP[1+23|x[i]]+conts÷100
[12]  conts←conts+1
[13]  →soma
[14] nega:
[15]  onde←⍎⍕100×(¯1×ΔP[1+23|x[i]])-⌊¯1×ΔP[1+23|x[i]]
[16] ⍝ 'onde ',⍕onde
[17] voltar:→(ΔS[onde]≥0)/achou
[18]  onde←⍎⍕100×(-ΔS[onde])-⌊-ΔS[onde]
[19]  →voltar
[20] achou:ΔS[onde]←¯1×ΔS[onde]+conts÷100
[21]  conts←conts+1
[22]  →soma
[23] ok:ΔP[1+23|x[i]]←x[i]
[24] soma:→(i=i←i+1)/testa
[25] fim:   ⍝'veja   ΔP e   ΔS'
------------------------------------------------------------
[ 0]  resolveii x;i;y
[ 1] ⍝ area primaria de tamanho 43, enderecamento aberto.
[ 2]  i←1 ⋄ ΔT←43⍴0
[ 3] testa:→(i>30)/fim
[ 4]  y←1+(23|x[i])+(11|x[i])
[ 5]  →(ΔT[y]≠0)/colisao
[ 6]  ΔT[y]←x[i]
[ 7]  →soma
[ 8] colisao:y←y+1
[ 9]  →(y>43)/over
[10]  →(ΔT[y]=0)/bingo
[11]  →colisao
[12] over:y←0
[13]  →colisao
[14] bingo:ΔT[y]←x[i]
[15] soma:→(i=i←i+1)/testa
[16] fim:
------------------------------------------------------------
[ 0]  opesq vivo521a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;x;xx;inds;yy;quem;i
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←0 ⋄ EVENTO←'PL521   '
[ 5]  dhx←2 10⍴('05/05/0005'⍎⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍕⍳n
[ 8]  FOLHALA521←ajusta80 FOLHALA521
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA521)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[11]  xk←1 ⋄ resu←0 9⍴0
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←17 80⍴' '
[14]  f←FOLHALA521
[15]  esse[1;]←80↑dhx[1;]
```

```
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍕VERSAOa←3.62
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[22]  esse[16;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[17;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25]  xx←30?99
[26]  esse[8 9;]←2 80↑2 45⍴3 0⍕xx
[27]  resolvei xx
[28]  inds←2?23
[29]  esse[10;]←80↑' P[',(2 0⍕inds[1]),']   P[',(2 0⍕inds[2]),']'
[30]  resp←resp,ΔP[inds]
[31]  inds←2?10
[32]  esse[10;42+⍳38]←38↑'S[',(2 0⍕inds[1]),']   S[',(2 0⍕inds[2]),']'
[33]  resp←resp,ΔS[inds]
[34]  yy←xx,10?99
[35]  quem←yy[1?40]
[36]  esse[11;]←80↑2 0⍕quem
[37]  resp←resp,(ΔP,ΔS)achap quem
[38] ⍝-----------------------------------------------------------------
[39]  xx←30?99
[40]  inds←2?40
[41]  esse[14;]←80↑' Q[',(2 0⍕inds[1]),']     Q[',(2 0⍕inds[2]),']'
[42]  resolveii xx
[43]  esse[12 13;]←2 80↑2 45⍴3 0⍕xx
[44]  resp←resp,ΔT[inds]
[45]  yy←xx,10?99
[46]  quem←yy[1?40]
[47]  esse[15;]←80↑2 0⍕quem
[48]  resp←resp,ΔT achat quem
[49]  resu←resu,[1](1,9)⍴resp
[50]  acuja←(f[;2]='#')/⍳1↑⍴f
[51]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[52]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[53]  ⎕←(⍕xk←xk+1),'-'
[54]  →testa
[55] fim:upag←(1 0+⍴f)⍴' '
[56]  →(1=≡n)/elafa
[57]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[58]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[59] ⍝upag[2+⍳1↑⍴resu;⍳¯8++/lixo1]←'¯-' edit(lixo1←4 0 8 2 8 2 8 2 8 2 4 0 4 0 4 0 4 0)⍕re
      su
[60]  lixo1←4 0 8 2 8 2 8 2 8 2 4 0 4 0 4 0 4 0
[61]  upag[2+⍳1↑⍴resu;⍳¯8++/lixo1]←'¯-'edit format521 resu
[62]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[63]  →terminando
[64] elafa:
[65] ⍝aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),'¯-' edit 0 4↓4 0 8 2 8 2 8 2 8 2 4 0 4 0 4 0 4 0⍕res
      u)
[66]  aaa←(ylu,'¯-'edit 0 4↓format521 resu)
[67]  aaa[1;35 36]←2 0⍕CORRECAO
[68]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[69]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[70] terminando:
[71]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[72]  relat[1↑⍴relat;;]←upag
[73]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.t
      ex'
[74]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[75]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
```

```
[76]  'vide a variavel INSTRUC521, bem como ΔP, ΔS, e ΔT (ultima folha)'
------------------------------------------------------------
```

vivo531

```
[0]  AVISO
[1]  'leia, estude e leve para a aula o texto INSTRUC531'
------------------------------------------------------------
[ 0]  r←padrao BC alfabeto;j
[ 1]  r←(⍴alfabeto)⍴0
[ 2]  j←1
[ 3] t1:→(j>(⍴padrao))/aca
[ 4]  →(~padrao[j]∈alfabeto)/somando
[ 5]  r[alfabeto⍳padrao[j]]←j
[ 6] somando:→(j=j←j+1)/t1
[ 7] aca:
------------------------------------------------------------
[ 0]  r←padrao BM texto;alfa;tabela1;tabela2;s;j;salto;i
[ 1]  r←⍳0 ⋄ SAL1←SAL2←SALJ←SALTO←⍳0 ⋄ ALFA←alfa←devalfa texto ⋄ CONTBM←0 ⋄ LET1←LET2←''
[ 2]  TABELA1←tabela1←padrao BC alfa ⋄ TABELA2←tabela2←GS padrao ⋄ i←0
[ 3] t1:→(i>(⍴texto)-⍴padrao)/fi
[ 4]  j←⍴padrao
[ 5] t2:→(j≤0)/fi2
[ 6]  →(padrao[j]≠texto[i+j])/fi2
[ 7]  CONTBM←CONTBM+1
[ 8]  →(j=j←j-1)/t2
[ 9] fi2:
[10]  CONTBM←CONTBM+1
[11]  →(j≠0)/senao
[12]  r←r,i+1
[13]  SALTO←SALTO,-⍴padrao
[14]  SAL1←SAL1,0 ⋄ SAL2←SAL2,0 ⋄ SALJ←SALJ,0
[15]  LET1←LET1,'!'
[16]  LET2←LET2,'!'
[17]  i←i+⍴padrao
[18]  →t1
[19] senao:salto←tabela2[j]⌈(j)-tabela1[(alfa⍳texto)[i+j]]
[20]  LET1←LET1,texto[i+j]
[21]  LET2←LET2,padrao[j]
[22]  SAL2←SAL2,tabela2[j]
[23]  SALJ←SALJ,j
[24]  SAL1←SAL1,(j)-tabela1[(alfa⍳texto)[i+j]]
[25] ⍝ 'salto de = ',  ⍕salto
[26]  SALTO←SALTO,salto
[27]  i←i+salto
[28]  →t1
[29] fi:
------------------------------------------------------------
[ 0]  r←padrao BRUTA texto;i;aux;j
[ 1]  i←1 ⋄ r←⍳0 ⋄ CONTBRU←0
[ 2] t1:→(i>1+(⍴texto)-⍴padrao)/aca
[ 3]  aux←0
[ 4]  j←1
[ 5] t2:→(j>⍴padrao)/oba
[ 6]  →(texto[aux+i]≠padrao[j])/oba
[ 7]  CONTBRU←CONTBRU+1
[ 8]  aux←aux+1
[ 9]  →(j=j←j+1)/t2
[10] oba:→(j≠1+⍴padrao)/nao
[11]  r←r,i
[12]  i←i+⍴padrao   ⍝ poderia ser +1 caso a definicao seja outra
[13]  →t1
```

```
[14] nao:
[15]  CONTBRU←CONTBRU+1
[16]  →(i=i←i+1)/t1
[17] aca:
-------------------------------------------------------------
[ 0]  r←GS padrao;pi;plinha;pilinha;j;l
[ 1]  pi←PI padrao
[ 2]  plinha←⊖padrao
[ 3]  pilinha←PI plinha
[ 4]  r←(⍴padrao)⍴(⍴padrao)-pi[⍴padrao]
[ 5] aca:l←1
[ 6] vo1:→(l>⍴padrao)/fim
[ 7]  j←(⍴padrao)-pilinha[l]
[ 8]  →(r[j]≤l-pilinha[l])/ju
[ 9]  r[j]←l-pilinha[l]
[10] ju:→(l=l←l+1)/vo1
[11] fim:
-------------------------------------------------------------
[ 0]  r←pad MOSTRA tex;i;salto;lar;somsa;men;aux;lixo
[ 1] ⍝ assume-se a vvel global SALTO para mostrar o andamento
[ 2]  lixo←pad BM tex
[ 3]  salto←SALTO ⋄ lar←50⌈20+⍴tex
[ 4]  r←(1,lar)⍴tex,70⍴' '
[ 5]  i←1 ⋄ somsa←0 ⋄ men←⍴pad
[ 6]  r←r,[1](1,lar)⍴lar↑'     ',(((2×⍴ALFA)⍴1 0)⍀ALFA),'    ',((2×⍴pad)⍴1 0)⍀pad
[ 7]  r←r,[1](1,lar)⍴lar↑' T1=',(2 0⍕TABELA1),' T2=',2 0⍕TABELA2
[ 8] t1:→(i>⍴SALTO)/fim
[ 9]  r←r,[1](1,lar)⍴tex,70⍴' '
[10]  r←r,[1](1,lar)⍴lar↑(-men+somsa)↑'='
[11]  r←r,[1](1,lar)⍴lar↑(-men+somsa)↑pad
[12]  →(salto[i]>0)/achou
[13]  r←r,[1](1,lar)⍴lar↑'     S=',(⍕|salto[i]),' *** ACHOU *** '
[14]  →pula
[15] achou:
[16]  aux←'S=s1 max s2=',(⍕salto[i]),' T1:(',LET1[i],'), j=',(⍕SALJ[i]),', s1=',(⍕SAL1[i])
[17]  aux←aux,'; T2:(',LET2[i],'), s2=',(⍕SAL2[i])
[18]  r←r,[1](1,lar)⍴lar↑aux
[19] pula:r←r,[1](1⍴lar)⍴lar↑'--------------------------------'
[20]  somsa←somsa+|salto[i]
[21]  →(i=i←i+1)/t1
[22] fim:r←r,[1](1,lar)⍴lar↑'Numero de saltos ',⍕CONTBM
-------------------------------------------------------------
[ 0]  r←PI padrao;k;q
[ 1]  r←(⍴padrao)⍴0
[ 2]  k←0
[ 3]  q←2
[ 4] t1:→(q>(⍴padrao))/aca
[ 5] t2:→(k≤0)/ufa
[ 6] ⍝ 'k=',(  ⍕k),' P[k]=',padrao[k],' q=',(  ⍕q),' P[q]=',padrao[q],' r=',  ⍕r
[ 7]  →(padrao[k+1]=padrao[q])/ufa
[ 8] ⍝ '  ∘'
[ 9]  k←r[k]
[10]  →t2
[11] ufa:→(padrao[k+1]≠padrao[q])/ju
[12]  k←k+1
[13] ju:r[q]←k
[14]  →(q=q←q+1)/t1
[15] aca:
-------------------------------------------------------------
[ 0]  r←achapadrao frase;z;p;x;pal;manda;w
[ 1] ⍝ esta funcao recebe uma frase, ajeita-a e descobre um padrao, devolvendo
[ 2] ⍝ os dois em uma matriz. r e a nova frase e o padrao esta em PADRAO
[ 3]  z←(p=' ')/⍳⍴p←trim frase
```

```
[ 4]  →(5>ρz)/deuxabu
[ 5]  x←2↑(?2)↓z
[ 6]  pal←p[x[1]+⍳¯1+x[2]-x[1]]
[ 7]  PADRAO←pal
[ 8]  →(3>ρPADRAO)/deuxabu
[ 9]  →(9<ρPADRAO)/deuxabu
[10]  manda←(z[w]ρ1),((1+ρpal)ρ0),((ρp)-z[w←2+?3])ρ1
[11]  p←manda⍀p
[12]  pal[?ρpal]←'ABCDEFGHIJKLMNOPQRSTUVWXYZ'[?26]
[13]  p[(~manda)/⍳ρp]←pal,' '
[14]  r←p
[15]  →0
[16] deuxabu:r←' '
------------------------------------------------------------
[ 0]  cavaleiro531a n;acuja;esse;f;frase;lixo1;lixo2;relat;resp;x;xk
[ 1]  □RL←⌊(□TS[7]+□TS[6]+□TS[5])*2.7364736473
[ 2]  FOLHALA531←ajusta80 FOLHALA531
[ 3]  relat←ΔFM'c:⍀apl2⍀VIVOBLOI'
[ 4]  xk←1
[ 5] testa:→(xk>n)/fim
[ 6]  esse←13 80ρ' '
[ 7]  f←FOLHALA531
[ 8]  esse[1;⍳ρx]←x←' ----- Cavaleiros da Tavola Redonda ---'
[ 9]  esse[3;]←80↑4 2⍕3.44
[10] inica:
[11] ⍝------------------------------
[12] volta:frase←,IJUCA[?1↑ρIJUCA;]
[13]  frase←achapadrao frase
[14]  →(' '≠1↑frase)/blz
[15]  ⍞←'*'
[16]  →volta
[17] blz:
[18]  lixo1←PADRAO BRUTA frase
[19]  lixo2←PADRAO BM frase
[20]  →((ρlixo1)=+/lixo1=lixo2)/okok
[21]  ⍞←'  □'
[22]  →volta
[23] okok:
[24]  esse[8;]←esse[10;]←80↑'T=',frase
[25]  esse[9;]←esse[11;]←80↑'P=',PADRAO
[26]  esse[13;4+⍳ρ2 0⍕TABELA1]←2 0⍕TABELA1
[27]  esse[12;5+⍳2×ρALFA]←((2×ρALFA)ρ1 0)⍀ALFA
[28]  esse[13;50+⍳ρ2 0⍕TABELA2]←2 0⍕TABELA2
[29]  esse[12;51+⍳2×ρPADRAO]←((2×ρPADRAO)ρ1 0)⍀PADRAO
[30]  resp←CONTBRU,CONTBM
[31]  acuja←(f[;2]='#')/⍳1↑ρf
[32]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[33]  ⍞←(⍕xk←xk+1),'-'
[34]  f←(((1↑ρrelat),1↓ρf)↑relat),[1]f
[35]  f←f,[1](1,1↓ρf)ρ(1↓ρf)↑'⍀end{document}'
[36]  f←f,[1](1,1↓ρf)ρ(1↓ρf)↑'%',⍕resp
[37]  lixo1←f ΔFM'c:⍀apl2⍀CA531a',('00'⍕xk-1),'.tex'
[38]  →testa
[39] fim:
------------------------------------------------------------
[0]  r←devalfa alfa
[1]  r←((alfa⍳alfa)=⍳ρalfa)/alfa
------------------------------------------------------------
[ 0]  opesq vivo531a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;lixo2;frase;zzz
[ 1]  →(0≠□NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:
```

```
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←2 ⋄ EVENTO←'PL531   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA531←ajusta80 FOLHALA531)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[11]  xk←1 ⋄ resu←0 3⍴0
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←13 80⍴' '
[14]  f←FOLHALA531
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍕VERSAOa←3.44
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[22] inica:
[23] ⍝------------------------------
[24] volta:frase←,IJUCA[?1↑⍴IJUCA;]
[25]  frase←achapadrao frase
[26]  →(' '≠1↑frase)/blz
[27]  ⎕←'*'
[28]  →volta
[29] blz:
[30]  lixo1←PADRAO BRUTA frase
[31]  lixo2←PADRAO BM frase
[32]  →((⍴lixo1)=+/lixo1=lixo2)/okok
[33]  ⎕←'  ⎕'
[34]  →volta
[35] okok:
[36]  esse[8;]←esse[10;]←80↑'T=',frase
[37]  esse[9;]←esse[11;]←80↑'P=',PADRAO
[38]  esse[13;4+⍳⍴2 0⍕TABELA1]←2 0⍕TABELA1
[39]  esse[12;5+⍳2×⍴ALFA]←((2×⍴ALFA)⍴1 0)\ALFA
[40]  esse[13;50+⍳⍴2 0⍕TABELA2]←2 0⍕TABELA2
[41]  esse[12;51+⍳2×⍴PADRAO]←((2×⍴PADRAO)⍴1 0)\PADRAO
[42]  resp←resp,CONTBRU,CONTBM
[43]  resu←resu,[1]1 3⍴resp
[44]  acuja←(f[;2]='#')/⍳1↑⍴f
[45]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[46]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[47]  ⎕←(⍕xk←xk+1),'-'
[48]  →testa
[49] fim:upag←(1 0+⍴f)⍴' '
[50]  →(1=≡n)/elafa
[51]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[52]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[53]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0)⍕resu
[54]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[55]  →terminando
[56] elafa:aaa←(ylu,5 0⍕0 1↓resu)
[57]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[58]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[59] terminando:
[60]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\begin{verbatim}'
[61]  relat[1↑⍴relat;;]←upag
[62]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[63]  lixonol←lixonol,[1](ajusta80 INSTRUC531)
[64]  lixonol←lixonol,[1](ajusta80'¯-'edit zzz←PADRAO MOSTRA frase),[1]1 80⍴80↑'\end{verba
      tim} \end{document}'
```

```
[65]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[66]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[67]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo532

```
[0]  AVISO
[1]  'para executar esta folha, o professor precisa passar 2 algoritmos no quadro'
[2]  'eles estao na variavel INSTRUC532'
[3]  ''
[4]  'chame geraalgos e depois compile c:\apl2\algos532.tex'
-------------------------------------------------------------
[ 0]  r←k buscaabp tab;arv;qtd;onde
[ 1]  arv←criaabp tab
[ 2]  qtd←0 ⋄ onde←1
[ 3] testa:→(onde=¯1)/alala
[ 4] ⍝ onde,qtd
[ 5]  qtd←qtd+1
[ 6]  →(k>arv[onde;3])/maior
[ 7]  →(k<arv[onde;3])/menor
[ 8]  r←qtd
[ 9]  →0
[10] maior:onde←arv[onde;2]
[11]  qtd←qtd+1
[12]  →testa
[13] menor:onde←arv[onde;1]
[14]  qtd←qtd+1
[15]  →testa
[16] alala:r←qtd
-------------------------------------------------------------
[ 0]  r←k buscabin tab;i;qtd;ini;metade;fim
[ 1] ⍝ esta funcao devolve o esforco (qtd)
[ 2]  ini←1 ⋄ fim←⍴tab ⋄ qtd←1
[ 3] testa:
[ 4]  metade←⌊(ini+fim)÷2
[ 5] ⍝ ini,fim,metade,qtd
[ 6]  qtd←qtd+1
[ 7]  →(k≤tab[metade])/somafim
[ 8] somaini:ini←metade+1
[ 9]  →pula
[10] somafim:fim←metade-1
[11] pula:qtd←qtd+2
[12]  →((tab[metade]=k)∨(ini>fim))/finalmente
[13]  →testa
[14] finalmente:r←qtd
-------------------------------------------------------------
[ 0]  r←k buscabin2 tab;i;qtd;ini;metade;fim
[ 1] ⍝ esta funcao devolve o resultado da busca (0 ou indice)
[ 2]  ini←1 ⋄ fim←⍴tab
[ 3] testa:
[ 4]  metade←⌊(ini+fim)÷2
[ 5]  →(k≤tab[metade])/somafim
[ 6] somaini:ini←metade+1
[ 7]  →pula
[ 8] somafim:fim←metade-1
[ 9] pula:→((tab[metade]=k)∨(ini>fim))/finalmente
[10]  →testa
[11] finalmente:→(tab[metade]=k)/achou
[12]  r←0
[13]  →0
[14] achou:r←metade
```

```
------------------------------------------------------------
[ 0]  r←k buscahash tab;ind;tabw;qtd;tam
[ 1]  →(20>⍴tab)/v23
[ 2]  →(40>⍴tab)/v47
[ 3]  →(60>⍴tab)/v71
[ 4]  tam←(⌊0.3×⍴tab)+⍴tab
[ 5]  →cc
[ 6] v23:tam←23
[ 7]  →cc
[ 8] v47:tam←47
[ 9]  →cc
[10] v71:tam←71
[11] cc:tabw←tam criahash tab
[12]  ind←1+tam|k
[13]  qtd←1
[14] t1:→(tabw[ind]=k)/achou
[15]  →(tabw[ind]=0)/achou
[16]  qtd←qtd+2
[17]  ind←ind+1
[18]  →(ind≤⍴tabw)/t1
[19]  ind←1
[20]  →t1
[21] achou:r←qtd
------------------------------------------------------------
[0]  r←k buscalin tab;i;cnt;qtd
[1]  cnt←1 ⋄ qtd←1
[2] testa:→(cnt>⍴tab)/achou
[3]  qtd←qtd+1
[4]  →(k=tab[cnt])/achou
[5]  qtd←qtd+1
[6]  →(cnt=cnt←cnt+1)/testa
[7] achou:r←qtd
------------------------------------------------------------
[0]  r←k buscalinord tab;i;cnt;qtd
[1]  cnt←1 ⋄ qtd←1
[2] testa:→(cnt>⍴tab)/achou
[3]  →(k≤tab[cnt])/achou
[4]  qtd←qtd+2
[5]  →(cnt=cnt←cnt+1)/testa
[6] achou:r←qtd
------------------------------------------------------------
[0]  r←k buscalinsen tab;i;cnt;qtd
[1]  cnt←1 ⋄ qtd←1 ⋄ tab←tab,k
[2] testa:→(k=tab[cnt])/achou
[3]  qtd←qtd+1
[4]  →(cnt=cnt←cnt+1)/testa
[5] achou:r←qtd
------------------------------------------------------------
[ 0]  r←criaabp tab;onde;pai;i;ultimo;esqdir
[ 1]  r←((⍴tab),3)⍴¯1,¯1,tab[1],200⍴0
[ 2]  i←2 ⋄ ultimo←2
[ 3] comeca:→(i>⍴tab)/ufa
[ 4]  r[ultimo;]←¯1,¯1,tab[i]
[ 5]  onde←1
[ 6] volta:→(onde=¯1)/acab
[ 7]  pai←onde
[ 8]  →(tab[i]>r[onde;3])/maior
[ 9]  esqdir←1
[10]  onde←r[onde;1]
[11]  →pula
[12] maior:onde←r[onde;2]
[13]  esqdir←2
[14] pula:→volta
```

```
[15] acab:r[pai;esqdir]←ultimo
[16]  ultimo←ultimo+1
[17]  i←i+1
[18]  →comeca
[19] ufa:
------------------------------------------------------------
[ 0]  r←tam criahash tab;i;ind
[ 1]  r←tam⍴0 ⋄ COL←0   ⍝ contador de colisoes
[ 2]  i←1
[ 3] t1:→(i>⍴tab)/fim
[ 4]  ind←1+tam|tab[i]
[ 5] cima:→(r[ind]=0)/blz
[ 6]  COL←COL+1
[ 7]  ind←ind+1
[ 8]  →(ind≤⍴r)/cima
[ 9]  ind←1
[10]  →cima
[11] blz:r[ind]←tab[i]
[12]  →(i=i←i+1)/t1
[13] fim:
------------------------------------------------------------
[ 0]  r←formataexemplo x
[ 1]  r←18 73⍴' '
[ 2]  r[1 2 3;⍳3]←3 3⍴3 0⍕x[1 2 3;17]
[ 3]  r[1 2 3;4+⍳8]←3 8⍴'BUSCALIN'
[ 4]  r[1 2 3;17+⍳45]←3 0⍕x[1 2 3;1+⍳15]
[ 5]  r[;65]←'e'
[ 6]  r[1 2 3;68+⍳3]←3 3⍴3 0⍕x[1 2 3;18]
[ 7]  r[3+1 2 3;68+⍳3]←3 3⍴3 0⍕x[3+1 2 3;18]
[ 8]  r[3+1 2 3;⍳3]←3 3⍴3 0⍕x[3+1 2 3;17]
[ 9]  r[3+1 2 3;4+⍳11]←3 11⍴'BUSCALINORD'
[10]  r[3+1 2 3;17+⍳45]←3 0⍕x[3+1 2 3;1+⍳15]
[11]  r[3+1 2 3;68+⍳3]←3 3⍴3 0⍕x[3+1 2 3;18]
[12]  r[6+1 2 3;68+⍳3]←3 3⍴3 0⍕x[6+1 2 3;18]
[13]  r[6+1 2 3;⍳3]←3 3⍴3 0⍕x[6+1 2 3;17]
[14]  r[6+1 2 3;4+⍳11]←3 11⍴'BUSCALINSEN'
[15]  r[6+1 2 3;17+⍳45]←3 0⍕x[6+1 2 3;1+⍳15]
[16]  r[6+1 2 3;68+⍳3]←3 3⍴3 0⍕x[6+1 2 3;18]
[17]  r[9+1 2 3;68+⍳3]←3 3⍴3 0⍕x[9+1 2 3;18]
[18]  r[9+1 2 3;⍳3]←3 3⍴3 0⍕x[9+1 2 3;17]
[19]  r[9+1 2 3;4+⍳9]←3 9⍴'BUSCAHASH'
[20]  r[9+1 2 3;17+⍳45]←3 0⍕x[9+1 2 3;1+⍳15]
[21]  r[9+1 2 3;68+⍳3]←3 3⍴3 0⍕x[9+1 2 3;18]
[22]  r[12+1 2 3;68+⍳3]←3 3⍴3 0⍕x[12+1 2 3;18]
[23]  r[12+1 2 3;⍳3]←3 3⍴3 0⍕x[12+1 2 3;17]
[24]  r[12+1 2 3;4+⍳9]←3 9⍴'BUSCABIN '
[25]  r[12+1 2 3;17+⍳45]←3 0⍕x[12+1 2 3;1+⍳15]
[26]  r[12+1 2 3;68+⍳3]←3 3⍴3 0⍕x[12+1 2 3;18]
[27]  r[15+1 2 3;68+⍳3]←3 3⍴3 0⍕x[15+1 2 3;18]
[28]  r[15+1 2 3;⍳3]←3 3⍴3 0⍕x[15+1 2 3;17]
[29]  r[15+1 2 3;4+⍳9]←3 9⍴'BUSCAABP '
[30]  r[15+1 2 3;17+⍳45]←3 0⍕x[15+1 2 3;1+⍳15]
[31]  r[15+1 2 3;68+⍳3]←3 3⍴3 0⍕x[15+1 2 3;18]
------------------------------------------------------------
[ 0]  geraalgos;fol;lixo
[ 1]  INSTRUC532←ajusta80 INSTRUC532
[ 2]  fol←0 80⍴' '
[ 3]  fol←fol,[1]CABE
[ 4]  fol←fol,[1]1 80⍴80↑'\section*{Lista de algoritmos}'
[ 5]  fol←fol,[1]INSTRUC532
[ 6] fim:fol←fol,[1]1 80⍴80↑'\end{document}'
[ 7]  lixo←fol ⎕FM'c:\apl2\algos532.tex'
[ 8]  'gerada a cola para o quadro em c:\apl2\algos532.tex'
```

```
------------------------------------------------------------
[0]  r←geracaso;x;in;zz
[1]  x←formataexemplo zz←geraexemplo 15
[2]  in←0 3 6 9 12 15+(?3),(?3),(?3),(?3),(?3),?3
[3]  r←x[in;⍳66],6 5⍴'_'
[4]  RES←zz[in;18]
------------------------------------------------------------
[ 0]  r←geraexemplo n;aa;bb;lim;ult;penul
[ 1]  r←(18,(n+2))⍴0 ⋄ ult←n+2 ⋄ penul←n+1
[ 2]  →(n>80)/m1
[ 3]  lim←99
[ 4]  →m3
[ 5] m1:→(n>800)/m2
[ 6]  lim←999
[ 7]  →m3
[ 8] m2:lim←9999
[ 9] m3:
[10] ⍝ buscalin
[11]  r[1;⍳n]←aa←n?lim
[12]  r[1;penul]←aa[?n]
[13]  r[1;ult]←r[1;penul]buscalin r[1;⍳n]
[14]  r[2;⍳n]←aa←n?lim
[15]  r[2;penul]←aa[?n]
[16]  r[2;ult]←r[2;penul]buscalin r[2;⍳n]
[17]  r[3;⍳n]←1↓aa←penul?lim
[18]  r[3;penul]←aa[1]
[19]  r[3;ult]←r[3;penul]buscalin r[3;⍳n]
[20] ⍝ buscalinord
[21]  aa←n?lim
[22]  aa←aa[⍋aa]
[23]  r[4;⍳n]←aa
[24]  r[4;penul]←aa[?n]
[25]  r[4;ult]←r[4;penul]buscalinord r[4;⍳n]
[26]  aa←n?lim
[27]  aa←aa[⍋aa]
[28]  r[5;⍳n]←aa
[29]  r[5;penul]←aa[?n]
[30]  r[5;ult]←r[5;penul]buscalinord r[5;⍳n]
[31]  aa←penul?lim
[32]  bb←1↑aa
[33]  aa←1↓aa
[34]  aa←aa[⍋aa]
[35]  r[6;⍳n]←aa
[36]  r[6;penul]←bb
[37]  r[6;ult]←r[6;penul]buscalinord r[6;⍳n]
[38] ⍝ buscalinsen
[39]  r[7;⍳n]←aa←n?lim
[40]  r[7;penul]←aa[?n]
[41]  r[7;ult]←r[7;penul]buscalinsen r[7;⍳n]
[42]  r[8;⍳n]←aa←n?lim
[43]  r[8;penul]←aa[?n]
[44]  r[8;ult]←r[8;penul]buscalinsen r[8;⍳n]
[45]  r[9;⍳n]←1↓aa←penul?lim
[46]  r[9;penul]←aa[1]
[47]  r[9;ult]←r[9;penul]buscalinsen r[9;⍳n]
[48] ⍝ buscahash
[49]  r[10;⍳n]←aa←n?lim
[50]  r[10;penul]←aa[?n]
[51]  r[10;ult]←r[10;penul]buscahash r[10;⍳n]
[52]  r[11;⍳n]←aa←n?lim
[53]  r[11;penul]←aa[?n]
[54]  r[11;ult]←r[11;penul]buscahash r[11;⍳n]
[55]  r[12;⍳n]←1↓aa←penul?lim
```

```
[56]  r[12;penul]←aa[1]
[57]  r[12;ult]←r[12;penul]buscahash r[12;ın]
[58] ⍝ buscabin
[59]  aa←n?lim
[60]  aa←aa[⍋aa]
[61]  r[13;ın]←aa
[62]  r[13;penul]←aa[?n]
[63]  r[13;ult]←r[13;penul]buscabin r[13;ın]
[64]  aa←n?lim
[65]  aa←aa[⍋aa]
[66]  r[14;ın]←aa
[67]  r[14;penul]←aa[?n]
[68]  r[14;ult]←r[14;penul]buscabin r[14;ın]
[69]  aa←penul?lim
[70]  bb←1↑aa
[71]  aa←1↓aa
[72]  aa←aa[⍋aa]
[73]  r[15;ın]←aa
[74]  r[15;penul]←bb
[75]  r[15;ult]←r[15;penul]buscabin r[15;ın]
[76] ⍝ buscaabp
[77]  r[16;ın]←aa←n?lim
[78]  r[16;penul]←aa[?n]
[79]  r[16;ult]←r[16;penul]buscaabp r[16;ın]
[80]  r[17;ın]←aa←n?lim
[81]  r[17;penul]←aa[?n]
[82]  r[17;ult]←r[17;penul]buscaabp r[17;ın]
[83]  r[18;ın]←1↓aa←penul?lim
[84]  r[18;penul]←aa[1]
[85]  r[18;ult]←r[18;penul]buscaabp r[18;ın]
[86]  r←(18 1⍴1 1 1 2 2 2 3 3 3 4 4 4 5 5 5 6 6 6),r
-------------------------------------------------------------
[ 0]  r←geratabela1000;z
[ 1]  r←7 6⍴0
[ 2]  z←geraexemplo 1000
[ 3]  r[1;1]←(+/z[1 2 3;1003])÷3
[ 4]  r[1;2]←(+/z[3+1 2 3;1003])÷3
[ 5]  r[1;3]←(+/z[6+1 2 3;1003])÷3
[ 6]  r[1;4]←(+/z[9+1 2 3;1003])÷3
[ 7]  r[1;5]←(+/z[12+1 2 3;1003])÷3
[ 8]  r[1;6]←(+/z[15+1 2 3;1003])÷3
[ 9]  z←geraexemplo 1000
[10]  r[2;1]←(+/z[1 2 3;1003])÷3
[11]  r[2;2]←(+/z[3+1 2 3;1003])÷3
[12]  r[2;3]←(+/z[6+1 2 3;1003])÷3
[13]  r[2;4]←(+/z[9+1 2 3;1003])÷3
[14]  r[2;5]←(+/z[12+1 2 3;1003])÷3
[15]  r[2;6]←(+/z[15+1 2 3;1003])÷3
[16]  z←geraexemplo 1000
[17]  r[3;1]←(+/z[1 2 3;1003])÷3
[18]  r[3;2]←(+/z[3+1 2 3;1003])÷3
[19]  r[3;3]←(+/z[6+1 2 3;1003])÷3
[20]  r[3;4]←(+/z[9+1 2 3;1003])÷3
[21]  r[3;5]←(+/z[12+1 2 3;1003])÷3
[22]  r[3;6]←(+/z[15+1 2 3;1003])÷3
[23]  z←geraexemplo 1000
[24]  r[4;1]←(+/z[1 2 3;1003])÷3
[25]  r[4;2]←(+/z[3+1 2 3;1003])÷3
[26]  r[4;3]←(+/z[6+1 2 3;1003])÷3
[27]  r[4;4]←(+/z[9+1 2 3;1003])÷3
[28]  r[4;5]←(+/z[12+1 2 3;1003])÷3
[29]  r[4;6]←(+/z[15+1 2 3;1003])÷3
[30]  z←geraexemplo 1000
```

```
[31]  r[5;1]←(+/z[1 2 3;1003])÷3
[32]  r[5;2]←(+/z[3+1 2 3;1003])÷3
[33]  r[5;3]←(+/z[6+1 2 3;1003])÷3
[34]  r[5;4]←(+/z[9+1 2 3;1003])÷3
[35]  r[5;5]←(+/z[12+1 2 3;1003])÷3
[36]  r[5;6]←(+/z[15+1 2 3;1003])÷3
[37]  z←geraexemplo 1000
[38]  r[6;1]←(+/z[1 2 3;1003])÷3
[39]  r[6;2]←(+/z[3+1 2 3;1003])÷3
[40]  r[6;3]←(+/z[6+1 2 3;1003])÷3
[41]  r[6;4]←(+/z[9+1 2 3;1003])÷3
[42]  r[6;5]←(+/z[12+1 2 3;1003])÷3
[43]  r[6;6]←(+/z[15+1 2 3;1003])÷3
[44]  r[7;]←(+/[1]r[⍳6;])÷6
∇
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10]  →(0=' '∈j↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80⍴80↑j↑candi
[15]  candi←j↓candi
[16]  →((⍴candi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80⍴80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
∇
[0]  r←resume y;x
[1]  x←,18 ¯1↑y
[2]  r←0.33×+/x[1 2 3]
[3]  r←r,0.33×+/x[3+1 2 3]
[4]  r←r,0.33×+/x[6+1 2 3]
[5]  r←r,0.33×+/x[9+1 2 3]
[6]  r←r,0.33×+/x[12+1 2 3]
[7]  r←r,0.33×+/x[15+1 2 3]
∇
[ 0]  opesq vivo532a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←6 ⋄ EVENTO←'PL532   '
[ 5]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 8]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA532)⍴' '
[ 9]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLOI'
[10]  xk←1 ⋄ resu←0 7⍴0
[11] testa:→(xk>1↑⍴ylu)/fim
[12]  esse←13 80⍴' '
[13]  f←FOLHALA532
```

```
[14]  esse[1;]←80↑dhx[1;]
[15]  esse[2;]←80↑dhx[2;]
[16]  esse[3;]←80↑4 2⍕VERSAOa←3.19
[17]  esse[4;]←80↑ylu[xk;⍳6]
[18]  esse[5;]←80↑ylu[xk;6+⍳30]
[19]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[20]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[21] inica:
[22]  esse[7+⍳6;]←6 80↑geracaso
[23]  resp←resp,RES
[24]  resu←resu,[1]1 7⍴resp
[25]  acuja←(f[;2]='#')/⍳1↑⍴f
[26]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[27]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[28]  ⎕←(⍕xk←xk+1),'-'
[29]  →testa
[30] fim:upag←(1 0+⍴f)⍴' '
[31]  →(1=≡n)/elafa
[32]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[33]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[34]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 5 0 5 0 5 0 5 0)⍕resu
[35]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[36]  →terminando
[37] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),5 0⍕0 1↓resu)
[38]  aaa[1;35 36]←2 0⍕CORRECAO
[39]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[40]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[41] terminando:
[42]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[43]  relat[1↑⍴relat;;]←upag
[44]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.t
      ex'
[45]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[46]  lixonol←INSTRUC532 ⎕FM'c:\apl2\lixoalgo'
[47]  'Inclua o arquivo c:\apl2\lixoalgo apos o arquivo a imprimir e depois delete-o'
[48]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo535

```
[0]  bloco
[1]  f←(((1↑⍴relat),1↓⍴f)↑relat),[1]f
[2]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'\end{document}'
[3]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'%',resp
[4]  lixo1←f ⎕FM'c:\apl2\CA253a',('00'⍕xk-1),'.tex'
[5]  →testa
[6] fim:
-------------------------------------------------------------
[ 0]  cavaleiro535a n;acuja;esse;f;lixo1;relat;resp;x;xk;xx
[ 1]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 2]  FOLHALA535←ajusta80 FOLHALA535
[ 3]  relat←⎕FM'c:\apl2\VIVOBLOI'
[ 4]  xk←1
[ 5] testa:→(xk>n)/fim
[ 6]  esse←11 80⍴' '
[ 7]  f←FOLHALA535
[ 8]  esse[1;⍳⍴x]←x←'  --  Cavaleiros da Tavola Redonda'
[ 9]  esse[3;]←80↑4 2⍕1.03
[10]  esse[10;⍳8]←'@000000@'
[11] inica:
[12] ⍝------------------------------
[13]  xx←geracaso 13
```

```
[14]  esse[8;]←80↑xx[1;]
[15]  esse[9;]←80↑xx[2;]
[16]  resp←⍕xx[1;]distedit xx[2;]
[17]  acuja←(f[;2]='#')/⍳1↑⍴f
[18]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[19]  ⎕←(⍕xk←xk+1),'-'
[20]  f←(((1↑⍴relat),1↓⍴f)↑relat),[1]f
[21]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'\end{document}'
[22]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'%',resp
[23]  lixo1←f ⍎FM'c:\apl2\CA535a',('00'⍕xk-1),'.tex'
[24]  →testa
[25] fim:
-------------------------------------------------------------
[ 0]  r←P distedit T;tab;i;j;C1;C2;C3;xx
[ 1] ⍝ devolve a distancia de edicao entre o texto T e o padrao de busca P
[ 2] ⍝ conforme definido em SKIENA, The algorithm design manual, pag. 60 e 406
[ 3]  tab←((1+⍴P),1+⍴T)⍴0
[ 4]  tab[1;]←0,⍳⍴T
[ 5]  tab[;1]←0,⍳⍴P
[ 6]  i←2
[ 7] t1:→(i>1↑⍴tab)/fim
[ 8]  j←2
[ 9] t2:→(j>1↓⍴tab)/soma
[10]  →(P[i-1]≠T[j-1])/diferentes
[11] iguais:C1←tab[i-1;j-1]
[12]  →junta
[13] diferentes:C1←tab[i-1;j-1]+1
[14] junta:C2←tab[i-1;j]+1
[15]  C3←tab[i;j-1]+1
[16]  tab[i;j]←C1⌊C2⌊C3
[17]  j←j+1
[18]  →t2
[19] soma:i←i+1
[20]  →t1
[21] fim:⍝r←(((2+⍴P),1)⍴'  ',P),((1,xx)⍴((xx←3×1+⍴T)⍴0 0 1)\' ',T),[1]3 0⍕tab
[22]  r←tab[i-1;j-1]
[23]  TAB←tab
-------------------------------------------------------------
[0]  r←geracaso tam;ALFA;sem;qtos
[1]  r←(2,tam)⍴' '
[2]  qtos←3+?3
[3]  ALFA←'ABCDEFGHIJKLMNPQRS'
[4]  r←(2,tam)⍴ALFA[?tam⍴18]
[5]  r[2;?qtos⍴tam]←ALFA[?qtos⍴tam]
-------------------------------------------------------------
[ 0]  opesq vivo535a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;frase;lixo1;lixo2;lixonol;rela
      t;resp;resu;upag;xixo;xk;xx;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←2 ⋄ EVENTO←'PL535   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⍎FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA535←ajusta80 FOLHALA535)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑⍎FM'c:\apl2\VIVOBLOI'
[11]  xk←1 ⋄ resu←0 2⍴0
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←11 80⍴' '
[14]  f←FOLHALA535
[15]  esse[1;]←80↑dhx[1;]
```

```
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍕VERSAOa←1.03
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[22]  esse[10;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[11;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25] ⍝------------------------------
[26]  xx←geracaso 13
[27]  esse[8;]←80↑xx[1;]
[28]  esse[9;]←80↑xx[2;]
[29]  resp←resp,xx[1;]distedit xx[2;]
[30]  resu←resu,[1]1 2⍴resp
[31]  acuja←(f[;2]='#')/⍳1↑⍴f
[32]  f[acuja;⍳80]←esse[⍬,f[acuja;3 4],' ';]
[33]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[34]  ⎕←(⍕xk←xk+1),'-'
[35]  →testa
[36] fim:upag←(1 0+⍴f)⍴' '
[37]  →(1=≡n)/elafa
[38]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[39]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[40]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0)⍉resu
[41]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[42]  →terminando
[43] elafa:aaa←(ylu,5 0⍕0 1↓resu)
[44]  aaa[1;35 36]←2 0⍕CORRECAO
[45]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[46]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[47] terminando:
[48]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[49]  relat[1↑⍴relat;;]←upag
[50]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[51]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[52]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[53]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo536

```
[ 0]  AVISO
[ 1]  'MSC1 - cria a matriz para achar a Maior Sequencia Comum'
[ 2]  'MSC3 - Estuda a matriz acima e acha a MSC'
[ 3]  '       a MSC2 eh igual a MSC3 mas eh recursiva (ta no livro'
[ 4]  ''
[ 5]  'CUTXY - cria as matrizes (custo e operacoes) para transformar X em Y'
[ 6]  'CUT3 - percorre a matriz acima e acha o custo e as operacoes'
[ 7]  ''
[ 8]  'CRIAAF: cria o automato finito para achar p em t'
[ 9]  'COCA - acha as ocorrencias de p em t'
[10]  ''
------------------------------------------------------------
[ 0]  r←t COCA p;ns;quais;state;i
[ 1]  ns←t CRIAAF p
[ 2]  r←0⍴0
[ 3]  quais←((t⍳t)=⍳⍴t)/t
[ 4]  quais←quais[⎕AV⍋quais]
[ 5]  state←0
[ 6]  i←1
[ 7] t1:→(i>⍴t)/fim
```

```
[ 8]  state←ns[state+1;quaisɩt[i]]
[ 9]  →(state≠ρp)/nao
[10]  r←r,1+i-ρp
[11] nao:i←i+1
[12]  →t1
[13] fim:
-------------------------------------------------------------
[ 0]  r←texto CRIAAF padrao;quais;ns;i;j;z
[ 1]  quais←((textoɩtexto)=ɩρtexto)/texto
[ 2]  quais←quais[⍋AV⍋quais]
[ 3]  ns←((1+ρpadrao),ρquais)ρ0
[ 4]  i←0
[ 5] t1:→(i≥1↑ρns)/fim
[ 6]  j←1
[ 7] t2:→(j>1↓ρns)/soma
[ 8]  z←ρpadrao
[ 9] t3:→(z=0)/sim
[10]  →((,z↑padrao)≡,((-z)↑(i↑padrao),quais[j]))/sim
[11]  z←z-1
[12]  →t3
[13] sim:ns[i+1;j]←z
[14]  j←j+1
[15]  →t2
[16] soma:
[17]  i←i+1
[18]  →t1
[19] fim:r←ns
-------------------------------------------------------------
[ 0]  r←CUT3 mo;m;o;i;j
[ 1]  r←0 30ρ' '
[ 2]  m←⊃mo[1]
[ 3]  o←⊃mo[2]
[ 4]  i←1↑ρm
[ 5]  j←1↓ρm
[ 6] ⍝ 'chamei com i=',(⍕i),' e j=',(⍕j)
[ 7] t2:→((i=1)∧(j=1))/fim
[ 8]  →(('C'≠,o[1;i;j])∧('R'≠,o[1;i;j]))/ncr
[ 9]  →('R'≠,o[1;i;j])/ec
[10] er:r←(1 30ρ30↑,'replace ',(,o[2;i;j]),' by ',,o[3;i;j]),[1]r
[11]  →junta5
[12] ec:r←(1 30ρ30↑,'copy ',,o[2;i;j]),[1]r
[13] junta5:
[14]  i←i-1
[15]  j←j-1
[16]  →t2
[17] ncr:
[18]  →('D'≠,o[1;i;j])/einc
[19]  r←(1 30ρ30↑,'delete ',,o[2;i;j]),[1]r
[20]  i←i-1
[21]  →t2
[22] einc:
[23]  r←(1 30ρ30↑,'insert ',,o[2;i;j]),[1]r
[24]  j←j-1
[25]  →t2
[26] fim:
-------------------------------------------------------------
[ 0]  r←CUTXY xycus;cus;i;j;k;k1;k2;k3;k4;m;o;ti;tj;x;y
[ 1]  x←⊃xycus[1]
[ 2]  y←⊃xycus[2]
[ 3]  cus←⊃xycus[3]  ⍝ cc,cr,cd,ci
[ 4]  m←((ti←⍋⍒1+ρx),(tj←⍋⍒1+ρy))ρ0
[ 5]  o←(3,(ρm))ρ' '
[ 6]  m[1;]←cus[4]×0,ɩtj-1
```

```
[ 7]  o[1;1;]←'I'
[ 8]  o[2;1;]←' ',y
[ 9]  m[;1]←cus[3]×0,⍳ti-1
[10]  o[1;;1]←'D'
[11]  o[2;;1]←' ',x
[12]  o[1;1;1]←' '
[13]  i←2
[14] t1:→(i>ti)/fim
[15]  j←2
[16] t2:→(j>tj)/soma
[17]  →(x[i-1]=y[j-1])/iguais
[18] diferentes:
[19]  m[i;j]←m[i-1;j-1]+cus[2]
[20]  o[1;i;j]←'R' ⋄ o[2;i;j]←x[i-1] ⋄ o[3;i;j]←y[j-1]
[21]  →junta
[22] iguais:
[23]  m[i;j]←m[i-1;j-1]+cus[1]
[24]  o[1;i;j]←'C' ⋄ o[2;i;j]←x[i-1] ⋄ o[3;i;j]←' '
[25]  →junta
[26] junta:
[27]  →((m[i-1;j]+cus[3])≥m[i;j])/oba2
[28]  m[i;j]←m[i-1;j]+cus[3]
[29]  o[1;i;j]←'D' ⋄ o[2;i;j]←x[i-1] ⋄ o[3;i;j]←' '
[30] oba2:
[31]  →((m[i;j-1]+cus[4])≥m[i;j])/incra
[32]  m[i;j]←m[i;j-1]+cus[4]
[33]  o[1;i;j]←'I' ⋄ o[2;i;j]←y[j-1] ⋄ o[3;i;j]←' '
[34] incra:
[35]  j←j+1
[36]  →t2
[37] soma:
[38]  i←i+1
[39]  →t1
[40] fim:r←(m o)
-------------------------------------------------------------
[ 0]  r←x MSC1 y;m;i;j
[ 1]  m←((1+⍴x),1+⍴y)⍴0
[ 2]  i←2
[ 3] t1:→(i>1↑⍴m)/acabou
[ 4]  j←2
[ 5] t2:→(j>1↓⍴m)/soma
[ 6]  →(x[i-1]=y[j-1])/iguais
[ 7] diferentes:m[i;j]←m[i-1;j]⌈m[i;j-1]
[ 8]  →junta
[ 9] iguais:m[i;j]←m[i-1;j-1]+1
[10] junta:
[11]  j←j+1
[12]  →t2
[13] soma:
[14]  i←i+1
[15]  →t1
[16] acabou:r←m
-------------------------------------------------------------
[ 0]  r←MSC2 mxyij;i;j;x;y;m;alfa
[ 1]  m←⊃mxyij[1]
[ 2]  x←⊃mxyij[2]
[ 3]  y←⊃mxyij[3]
[ 4]  i←⊃mxyij[4]
[ 5]  j←⊃mxyij[5]
[ 6] ⍝ 'chamei com i=',(⍕i),' e j=',(⍕j)
[ 7] t2:→(m[i;j]=0)/fim
[ 8]  →(x[i-1]=y[j-1])/iguais
[ 9] diferentes:
```

```
[10]  →(m[i;j-1]<m[i-1;j])/menor
[11]  r←MSC2(m x y i(j-1))
[12]  →0
[13] menor:
[14]  r←MSC2(m x y(i-1)j)
[15]  →0
[16] iguais:
[17]  alfa←(MSC2(m x y(i-1)(j-1)))
[18]  r←alfa,x[i-1]
[19]  →0
[20] fim:
[21]  r←''
-------------------------------------------------------------
[ 0]  r←MSC3 mxyij;i;j;x;y;m;alfa
[ 1]  m←⊃mxyij[1]
[ 2]  x←⊃mxyij[2]
[ 3]  y←⊃mxyij[3]
[ 4]  i←⍳⍴1+⍴x
[ 5]  j←⍳⍴1+⍴y
[ 6]  r←''
[ 7] ⍝ 'chamei com i=',(⍕i),' e j=',(⍕j)
[ 8] t2:→(m[i;j]=0)/fim
[ 9]  →(x[i-1]=y[j-1])/iguais
[10] diferentes:
[11]  →(m[i;j-1]<m[i-1;j])/menor
[12]  j←j-1
[13]  →t2
[14] menor:
[15]  i←i-1
[16]  →t2
[17] iguais:
[18]  r←x[i-1],r
[19]  i←i-1
[20]  j←j-1
[21]  →t2
[22] fim:
-------------------------------------------------------------
[0]  r←q geracadeia t
[1]  r←(q↑ALFABETO)[?t⍴q]
-------------------------------------------------------------
[ 0]  r←geracaso536a;c;x;y;m;z0;z1
[ 1]  c←4+?3
[ 2]  x←c geracadeia 15
[ 3]  y←c geracadeia 30
[ 4]  m←x MSC1 y
[ 5]  z0←MSC2(m x y 16 31)
[ 6]  z1←MSC3(m x y)
[ 7]  →(~z0≡z1)/xabu
[ 8]  r←3⍴' '
[ 9]  r[1]←⊂x
[10]  r[2]←⊂y
[11]  r[3]←⊂(5 0⍕⍴z0),' ',z0
[12]  →0
[13] xabu:'deu xabu'
-------------------------------------------------------------
[ 0]  r←geracaso536b;c;x;y;custos;m;re
[ 1]  c←2+?3
[ 2]  x←c geracadeia 8
[ 3]  y←c geracadeia 12
[ 4]  custos←(3+?4),(7+?4),2⍴11+?5
[ 5]  m←CUTXY(x y custos)
[ 6]  re←CUT3 m
[ 7]  r←6⍴' '
```

```
[ 8]  r[1]←⊂x
[ 9]  r[2]←⊂y
[10]  r[3]←⊂custos
[11]  r[4]←⊂m
[12]  r[5]←⊂(¯1↑,⊃m[1])
[13]  r[6]←⊂re
[14]  →0
------------------------------------------------------------
[ 0]  r←geracaso536c;t;p;aa;xx
[ 1] novo:
[ 2]  t←(aa←3+?3)geracadeia 20+?3
[ 3]  p←aa geracadeia 1+?3
[ 4]  xx←t COCA p
[ 5]  →(0=ρxx)/novo
[ 6]  →(xx<⌊0.5×ρt)/profim
[ 7] procomeco:t[(?5)+ιρp]←p
[ 8]  →junta
[ 9] profim:
[10]  t[(11+?5)+ιρp]←p
[11] junta:
[12]  r←4ρ0
[13]  r[1]←⊂t
[14]  r[2]←⊂p
[15]  r[3]←⊂t CRIAAF p
[16]  r[4]←⊂t COCA p
------------------------------------------------------------
[ 0]  opesq vivo536b n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL536b  '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎ιn
[ 9]  ylu←n grupo ylu
[10]  FOLHALA536b←ajusta80 FOLHALA536b
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALA536b)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 80ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←13 80ρ' '
[16]  f←FOLHALA536b
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.02
[20]  esse[4;]←80↑ylu[xk;ι6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;ι4]=((1↑ρf),4)ρ'⍀#05')/ι1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+ι30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[12;ι10]←'@',esse[6;5+ι3],esse[4;1+ι5],'@'
[32]  esse[13;]←80↑esse[6;5+ι3],'-',esse[4;1+ι5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracaso536a
```

```
[35]  esse[8;]←1 80ρ80↑⊃xx[1]
[36]  esse[9;]←1 80ρ80↑⊃xx[2]
[37]  resp←(3 0⍕resp),'-',36↑,⊃xx[3]
[38]  xx←geracaso536a
[39]  esse[10;]←1 80ρ80↑⊃xx[1]
[40]  esse[11;]←1 80ρ80↑⊃xx[2]
[41]  resp←resp,'-',40↑,⊃xx[3]
[42]  resu←resu,[1]1 80ρresp
[43]  acuja←(f[;2]='#')/⍳1↑ρf
[44]  f[acuja;⍳80]←esse[⍤,f[acuja;3 4],' ';]
[45]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\clearpage'
[46]  ⍞←(⍕xk←xk+1),'-'
[47]  →testa
[48] fim:upag←(1 0+ρf)ρ' '
[49]  →(1=≡n)/elafa
[50]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[51]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[52]  upag[2+⍳1↑ρresu;]←resu
[53]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[54]  →terminando
[55] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[56] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[57] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[58]  lixonol←aaa ⎕FM('c:\apl2\',((~⊖∧\⊖EVENTO=' ')/EVENTO),'.gpa')
[59]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[60] terminando:
[61]  upag[1↑ρupag;]←(1↓ρupag)↑'\end{document}'
[62]  relat[1↑ρrelat;;]←upag
[63]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[64] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[65]  lixonol←lixonol ⎕FM'c:\apl2\',((~⊖∧\⊖EVENTO=' ')/EVENTO),'.tex'
[66]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[67]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo536c n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;m;mm;mmm;nomes;q
      l39;qlinha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL536c  '
[ 6]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA536c←ajusta80 FOLHALA536c
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALA536c)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑⎕FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 80ρ' '
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←14 80ρ' '
[16]  f←FOLHALA536c
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.03
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑ρf),4)ρ'\#05')/⍳1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
```

```
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[13;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[14;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracaso536b
[35]  esse[8;]←1 80⍴80↑⊃xx[1]
[36]  esse[9;]←1 80⍴80↑⊃xx[2]
[37]  esse[10;]←1 80⍴80↑4 0⍕⊃xx[3]
[38]  m←⊃xx[4]
[39]  mm←⊃m[1]
[40]  mmm←⊃xx[6]
[41]  resp←(3 0⍕resp),'-',(,4 0⍕mm[1↑⍴mm;1↓⍴mm]),' ',20↑,mmm[¯2+1↑⍴mmm;]
[42]  xx←geracaso536c
[43]  esse[11;]←1 80⍴80↑⊃xx[1]
[44]  esse[12;]←1 80⍴80↑⊃xx[2]
[45]  resp←resp,'-',50↑,(2 0⍕⊃xx[3]),' '
[46]  resu←resu,[1]1 80⍴resp
[47]  acuja←(f[;2]='#')/⍳1↑⍴f
[48]  f[acuja;⍳80]←esse[⌽,f[acuja;3 4],' ';]
[49]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[50]  ⎕←(⍕xk←xk+1),'-'
[51]  →testa
[52] fim:upag←(1 0+⍴f)⍴' '
[53]  →(1=≡n)/elafa
[54]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[55]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[56]  upag[2+⍳1↑⍴resu;]←resu
[57]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[58]  →terminando
[59] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[60]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[61]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[62] terminando:
[63]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[64]  relat[1↑⍴relat;;]←upag
[65]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[66] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[67]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[68]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[69]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo538

```
[0]  AVISO
[1]  'Como o APL2 nao tem um processador de regexp (e o APLX tem), fiz um ws'
[2]  'la, chamado f:\p\aplx\gvivo538.aws que gera 2000 linhas de texto+padrao+'
[3]  ' resposta e grava isso em c:\apl2\caso539.ddd'
[4]  ' dai e so ler aqui e pegar uma linha de 2000 (ou de mais...)'
[5]  ''
[6]  ' para ajudar a explicar, chame    mostracaso538    '
[7]  ''
[8]  mostracaso538
------------------------------------------------------------
[0]  r←geracaso538;i
[1]  i←?1↑⍴CASO538
[2]  r←(CASO538[i;⍳47]CASO538[i;47+⍳10]CASO538[i;57+⍳10])
------------------------------------------------------------
[ 0]  geraquestao538 n;q;caso
```

```
[ 1]  q←''''
[ 2]  caso←ΔFM'c:⍀apl2⍀caso538.eee'
[ 3]  caso←60 67⍴caso
[ 4]  'Nesta quest⍀~ao, h⍀',q,'a 3 textos independentes. Para cada um deles, '
[ 5]  'h⍀',q,'a tamb⍀',q,'em um padr⍀~ao de busca definido por uma express⍀~ao'
[ 6]  'regular. Voc⍀^e deve localizar a ocorr⍀^encia de cada padr⍀~ao dentro do'
[ 7]  'texto original e informar a posi⍀c c⍀~ao de in⍀',q,'icio de cada padr⍀~ao.'
[ 8]  '⍀begin{verbatim}'
[ 9]  '1. Texto = '
[10]  '12345678901234567890123456789012345678901234567'
[11]  caso[¯2+n×3;⍳47]
[12]  '   Padrao a buscar: ',caso[¯2+n×3;47+⍳10]
[13]  '2. Texto = '
[14]  '12345678901234567890123456789012345678901234567'
[15]  caso[¯1+n×3;⍳47]
[16]  '   Padrao a buscar: ',caso[¯1+n×3;47+⍳10]
[17]  '3. Texto = '
[18]  '12345678901234567890123456789012345678901234567'
[19]  caso[n×3;⍳47]
[20]  '   Padrao a buscar: ',caso[n×3;47+⍳10]
[21]  '⍀end{verbatim} '
[22]  caso[¯2+n×3;57+⍳10],'/ ',caso[¯1+n×3;57+⍳10],'/ ',caso[n×3;57+⍳10]
-------------------------------------------------------------
[0]  r←mostracaso538;x
[1]  x←geracaso538
[2]  r←4 79⍴' '
[3]  r[1;⍳47]←'12345678901234567890123456789012345678901234567'
[4]  r[2;⍳47]←47↑,⊃x[1]
[5]  r[4;]←79↑'padrao = ',,⊃x[2]
[6]  r[3;⍸,⊃x[3]]←'↑'
-------------------------------------------------------------
[ 0]  opesq vivo538a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;nomes;num
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;xx;ylu;zebra;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL538   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA538←ajusta80 FOLHALA538
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA538)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[12]  xk←1 ⋄ resu←0 47⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←17 80⍴' '
[15]  f←FOLHALA538
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←1.03
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  →(36=1↓⍴ylu)/zebra
[21]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[22]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[23]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[24]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[25]  →maiszebra
[26] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[27] maiszebra:
[28]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[29]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
```

```
[30]  esse[16;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[31]  esse[17;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[32] ini1:
[33]  xx←geracaso538
[34]  esse[8;]←80↑,⊃xx[1]
[35]  esse[9;]←80↑,⊃xx[2]
[36]  resp←(3 0⍕resp),' =  ',10↑,⊃xx[3]
[37]  xx←geracaso538
[38]  esse[10;]←80↑,⊃xx[1]
[39]  esse[11;]←80↑,⊃xx[2]
[40]  resp←resp,10↑,⊃xx[3]
[41]  xx←geracaso538
[42]  esse[12;]←80↑,⊃xx[1]
[43]  esse[13;]←80↑,⊃xx[2]
[44]  resp←resp,10↑,⊃xx[3]
[45]  xx←geracaso538
[46]  esse[14;]←80↑,⊃xx[1]
[47]  esse[15;]←80↑,⊃xx[2]
[48]  resp←resp,10↑,⊃xx[3]
[49]  resu←resu,[1]1 47⍴resp
[50]  acuja←(f[;2]='#')/⍳1↑⍴f
[51]  f[acuja;]←esse[⍬,f[acuja;3 4],' ';]
[52]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[53]  ⍞←(⍕xk←xk+1),'-'
[54]  →testa
[55] fim:upag←(1 0+⍴f)⍴' '
[56]  →(1=≡n)/elafa
[57]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[58]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[59]  upag[2+⍳1↑⍴resu;⍳47]←resu
[60]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[61]  →terminando
[62] elafa:aaa←(ylu,0 6↓resu)
[63]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[64]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[65] terminando:
[66]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[67]  relat[1↑⍴relat;;]←upag
[68]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[69] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[70]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[71]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo560

```
[ 0]  opesq vivo560a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo560 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PL560   '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
```

```
[14] ⍝⍝⍝
```

vivo570

```
[ 0]  r←acertapol x
[ 1]  r←'$x^{10}+'
[ 2]  →(x[2]=1)/oba1
[ 3]  r←r,(2 0⍕x[2]),'x^9+'
[ 4]  →junta1
[ 5] oba1:r←r,'x^9+'
[ 6] junta1:
[ 7]  →(x[3]=1)/oba2
[ 8]  r←r,(2 0⍕x[3]),'x^8+'
[ 9]  →junta2
[10] oba2:r←r,'x^8+'
[11] junta2:
[12]  →(x[4]=1)/oba3
[13]  r←r,(2 0⍕x[4]),'x^7+'
[14]  →junta3
[15] oba3:r←r,'x^7+'
[16] junta3:
[17]  →(x[5]=1)/oba4
[18]  r←r,(2 0⍕x[5]),'x^6+'
[19]  →junta4
[20] oba4:r←r,'x^6+'
[21] junta4:
[22]  →(x[6]=1)/oba5
[23]  r←r,(2 0⍕x[6]),'x^5+'
[24]  →junta5
[25] oba5:r←r,'x^5+'
[26] junta5:
[27]  →(x[7]=1)/oba6
[28]  r←r,(2 0⍕x[7]),'x^4+'
[29]  →junta6
[30] oba6:r←r,'x^4+'
[31] junta6:
[32]  →(x[8]=1)/oba7
[33]  r←r,(2 0⍕x[8]),'x^3+'
[34]  →junta7
[35] oba7:r←r,'x^3+'
[36] junta7:
[37]  →(x[9]=1)/oba8
[38]  r←r,(2 0⍕x[9]),'x^2+'
[39]  →junta8
[40] oba8:r←r,'x^2+'
[41] junta8:
[42]  →(x[10]=1)/oba9
[43]  r←r,(2 0⍕x[10]),'x+'
[44]  →junta9
[45] oba9:r←r,'x+'
[46] junta9:
[47]  →(x[11]=1)/oba10
[48]  r←r,(2 0⍕x[11]),'$.'
[49]  →junta10
[50] oba10:r←r,'1$.'
[51] junta10:
------------------------------------------------------------
[  0]  r←a divp b;p;rx
[  1]  p←(0,⍳15)
[  2]  rx←23 16⍴0
[  3]  rx[1;⍳15]←a
[  4]  rx[2;⍳5]←b
[  5]  rx[1;16]←rx[1;1]
[  6]  rx[3;2]←ts[p⍳rx[1;2];p⍳rx[2;2]]
[  7]  rx[3;3]←ts[p⍳rx[1;3];p⍳rx[2;3]]
```

```
[  8]  rx[3;4]←ts[pirx[1;4];pirx[2;4]]
[  9]  rx[3;5]←ts[pirx[1;5];pirx[2;5]]
[ 10]  rx[3;6]←rx[1;6]
[ 11]  rx[4;2]←rx[2;16]←rx[3;2]
[ 12]  rx[4;3]←tm[pirx[2;16];pirx[2;2]]
[ 13]  rx[4;4]←tm[pirx[2;16];pirx[2;3]]
[ 14]  rx[4;5]←tm[pirx[2;16];pirx[2;4]]
[ 15]  rx[4;6]←tm[pirx[2;16];pirx[2;5]]
[ 16]  rx[5;3]←ts[pirx[3;3];pirx[4;3]]
[ 17]  rx[5;4]←ts[pirx[3;4];pirx[4;4]]
[ 18]  rx[5;5]←ts[pirx[3;5];pirx[4;5]]
[ 19]  rx[5;6]←ts[pirx[3;6];pirx[4;6]]
[ 20]  rx[5;7]←rx[1;7]
[ 21]  rx[6;3]←rx[3;16]←rx[5;3]
[ 22]  rx[6;4]←tm[pirx[3;16];pirx[2;2]]
[ 23]  rx[6;5]←tm[pirx[3;16];pirx[2;3]]
[ 24]  rx[6;6]←tm[pirx[3;16];pirx[2;4]]
[ 25]  rx[6;7]←tm[pirx[3;16];pirx[2;5]]
[ 26]  rx[7;4]←ts[pirx[5;4];pirx[6;4]]
[ 27]  rx[7;5]←ts[pirx[5;5];pirx[6;5]]
[ 28]  rx[7;6]←ts[pirx[5;6];pirx[6;6]]
[ 29]  rx[7;7]←ts[pirx[5;7];pirx[6;7]]
[ 30]  rx[7;8]←rx[1;8]
[ 31]  rx[8;4]←rx[4;16]←rx[7;4]
[ 32]  rx[8;5]←tm[pirx[4;16];pirx[2;2]]
[ 33]  rx[8;6]←tm[pirx[4;16];pirx[2;3]]
[ 34]  rx[8;7]←tm[pirx[4;16];pirx[2;4]]
[ 35]  rx[8;8]←tm[pirx[4;16];pirx[2;5]]
[ 36]  rx[9;5]←ts[pirx[7;5];pirx[8;5]]
[ 37]  rx[9;6]←ts[pirx[7;6];pirx[8;6]]
[ 38]  rx[9;7]←ts[pirx[7;7];pirx[8;7]]
[ 39]  rx[9;8]←ts[pirx[7;8];pirx[8;8]]
[ 40]  rx[9;9]←rx[1;9]
[ 41]  rx[10;5]←rx[5;16]←rx[9;5]
[ 42]  rx[10;6]←tm[pirx[5;16];pirx[2;2]]
[ 43]  rx[10;7]←tm[pirx[5;16];pirx[2;3]]
[ 44]  rx[10;8]←tm[pirx[5;16];pirx[2;4]]
[ 45]  rx[10;9]←tm[pirx[5;16];pirx[2;5]]
[ 46]  rx[11;6]←ts[pirx[9;6];pirx[10;6]]
[ 47]  rx[11;7]←ts[pirx[9;7];pirx[10;7]]
[ 48]  rx[11;8]←ts[pirx[9;8];pirx[10;8]]
[ 49]  rx[11;9]←ts[pirx[9;9];pirx[10;9]]
[ 50]  rx[11;10]←rx[1;10]
[ 51]  rx[12;6]←rx[6;16]←rx[11;6]
[ 52]  rx[12;7]←tm[pirx[6;16];pirx[2;2]]
[ 53]  rx[12;8]←tm[pirx[6;16];pirx[2;3]]
[ 54]  rx[12;9]←tm[pirx[6;16];pirx[2;4]]
[ 55]  rx[12;10]←tm[pirx[6;16];pirx[2;5]]
[ 56]  rx[13;7]←ts[pirx[11;7];pirx[12;7]]
[ 57]  rx[13;8]←ts[pirx[11;8];pirx[12;8]]
[ 58]  rx[13;9]←ts[pirx[11;9];pirx[12;9]]
[ 59]  rx[13;10]←ts[pirx[11;10];pirx[12;10]]
[ 60]  rx[13;11]←rx[1;11]
[ 61]  rx[14;7]←rx[7;16]←rx[13;7]
[ 62]  rx[14;8]←tm[pirx[7;16];pirx[2;2]]
[ 63]  rx[14;9]←tm[pirx[7;16];pirx[2;3]]
[ 64]  rx[14;10]←tm[pirx[7;16];pirx[2;4]]
[ 65]  rx[14;11]←tm[pirx[7;16];pirx[2;5]]
[ 66]  rx[15;8]←ts[pirx[13;8];pirx[14;8]]
[ 67]  rx[15;9]←ts[pirx[13;9];pirx[14;9]]
[ 68]  rx[15;10]←ts[pirx[13;10];pirx[14;10]]
[ 69]  rx[15;11]←ts[pirx[13;11];pirx[14;11]]
[ 70]  rx[15;12]←rx[1;12]
```

```
[ 71]  rx[16;8]←rx[8;16]←rx[15;8]
[ 72]  rx[16;9]←tm[⍪rx[8;16];⍪rx[2;2]]
[ 73]  rx[16;10]←tm[⍪rx[8;16];⍪rx[2;3]]
[ 74]  rx[16;11]←tm[⍪rx[8;16];⍪rx[2;4]]
[ 75]  rx[16;12]←tm[⍪rx[8;16];⍪rx[2;5]]
[ 76]  rx[17;9]←ts[⍪rx[15;9];⍪rx[16;9]]
[ 77]  rx[17;10]←ts[⍪rx[15;10];⍪rx[16;10]]
[ 78]  rx[17;11]←ts[⍪rx[15;11];⍪rx[16;11]]
[ 79]  rx[17;12]←ts[⍪rx[15;12];⍪rx[16;12]]
[ 80]  rx[17;13]←rx[1;13]
[ 81]  rx[18;9]←rx[9;16]←rx[17;9]
[ 82]  rx[18;10]←tm[⍪rx[9;16];⍪rx[2;2]]
[ 83]  rx[18;11]←tm[⍪rx[9;16];⍪rx[2;3]]
[ 84]  rx[18;12]←tm[⍪rx[9;16];⍪rx[2;4]]
[ 85]  rx[18;13]←tm[⍪rx[9;16];⍪rx[2;5]]
[ 86]  rx[19;10]←ts[⍪rx[17;10];⍪rx[18;10]]
[ 87]  rx[19;11]←ts[⍪rx[17;11];⍪rx[18;11]]
[ 88]  rx[19;12]←ts[⍪rx[17;12];⍪rx[18;12]]
[ 89]  rx[19;13]←ts[⍪rx[17;13];⍪rx[18;13]]
[ 90]  rx[19;14]←rx[1;14]
[ 91]  rx[20;10]←rx[10;16]←rx[19;10]
[ 92]  rx[20;11]←tm[⍪rx[10;16];⍪rx[2;2]]
[ 93]  rx[20;12]←tm[⍪rx[10;16];⍪rx[2;3]]
[ 94]  rx[20;13]←tm[⍪rx[10;16];⍪rx[2;4]]
[ 95]  rx[20;14]←tm[⍪rx[10;16];⍪rx[2;5]]
[ 96]  rx[21;11]←ts[⍪rx[19;11];⍪rx[20;11]]
[ 97]  rx[21;12]←ts[⍪rx[19;12];⍪rx[20;12]]
[ 98]  rx[21;13]←ts[⍪rx[19;13];⍪rx[20;13]]
[ 99]  rx[21;14]←ts[⍪rx[19;14];⍪rx[20;14]]
[100]  rx[21;15]←rx[1;15]
[101]  rx[22;11]←rx[11;16]←rx[21;11]
[102]  rx[22;12]←tm[⍪rx[11;16];⍪rx[2;2]]
[103]  rx[22;13]←tm[⍪rx[11;16];⍪rx[2;3]]
[104]  rx[22;14]←tm[⍪rx[11;16];⍪rx[2;4]]
[105]  rx[22;15]←tm[⍪rx[11;16];⍪rx[2;5]]
[106]  rx[23;12]←ts[⍪rx[21;12];⍪rx[22;12]]
[107]  rx[23;13]←ts[⍪rx[21;13];⍪rx[22;13]]
[108]  rx[23;14]←ts[⍪rx[21;14];⍪rx[22;14]]
[109]  rx[23;15]←ts[⍪rx[21;15];⍪rx[22;15]]
[110]  r←2⍴0
[111]  r[1]←⊂rx[⍳11;16]
[112]  r[2]←⊂rx[23;11+⍳4]
-------------------------------------------------------------
[ 0]  r←a divp2 b;ta;tb;ra;rx;i;j
[ 1]  ta←a ⋄ tb←b ⋄ ra←(1+(⍴a)-⍴b)⍴0 ⋄ i←1
[ 2] t1:→((⍴ta)≤⍴tb)/oba1
[ 3]  tb←tb,0
[ 4]  →t1
[ 5] oba1:rx←ta≠tb
[ 6] ⍝ 'rx=',⍕rx
[ 7]  ra[i]←1
[ 8]  i←i+1
[ 9]  j←2
[10] t2:→(rx[j]≠0)/ok
[11]  j←j+1
[12]  i←i+1
[13]  →t2
[14] ok:
[15]  →(((¯2+i+⍴b)≥⍴a)∨(0=+/¯1↓rx))/acabou
[16]  ta←(j-1)↓rx
[17]  tb←b
[18]  →t1
[19] acabou:
```

```
[20]  r←2⍴0
[21]  r[1]←⊂ra
[22]  r[2]←⊂1↓rx
------------------------------------------------------------
[0]  r←geracaso570;x;y;z
[1]  x←1,?10⍴15
[2]  y←x,0 0 0 0
[3]  z←y divp 1 15 3 1 12
[4]  r←2⍴0
[5]  r[1]←⊂x
[6]  r[2]←z[2]
------------------------------------------------------------
[0]  r←a mais b;p
[1]  p←0,⍳15
[2]  →(ts[pıa;pıb]≠ts[pıb;pıa])/erro
[3]  r←ts[pıa;pıb]
[4]  →0
[5] erro:'deu xabu'
------------------------------------------------------------
[0]  r←a pot ind;i
[1]  r←1
[2]  i←1
[3] t1:→(i>ind)/fim
[4]  r←r vezes a
[5]  i←i+1
[6]  →t1
[7] fim:
------------------------------------------------------------
[ 0]  r←a sindr alfa
[ 1]  r←a[1]vezes alfa pot 14
[ 2]  r←r mais a[2]vezes alfa pot 13
[ 3]  r←r mais a[3]vezes alfa pot 12
[ 4]  r←r mais a[4]vezes alfa pot 11
[ 5]  r←r mais a[5]vezes alfa pot 10
[ 6]  r←r mais a[6]vezes alfa pot 9
[ 7]  r←r mais a[7]vezes alfa pot 8
[ 8]  r←r mais a[8]vezes alfa pot 7
[ 9]  r←r mais a[9]vezes alfa pot 6
[10]  r←r mais a[10]vezes alfa pot 5
[11]  r←r mais a[11]vezes alfa pot 4
[12]  r←r mais a[12]vezes alfa pot 3
[13]  r←r mais a[13]vezes alfa pot 2
[14]  r←r mais a[14]vezes alfa pot 1
[15]  r←r mais a[15]
------------------------------------------------------------
[0]  r←a vezes b;p
[1]  p←(0,⍳15)
[2]  →(tm[pıa;pıb]≠tm[pıb;pıa])/erro
[3]  r←tm[pıa;pıb]
[4]  →0
[5] erro:'ica'
------------------------------------------------------------
[ 0]  opesq vivo570a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL570   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
```

```
[ 9]  ylu←n grupo ylu
[10]  FOLHALA570←ajusta80 FOLHALA570
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA570)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO2'
[13]  xk←1 ⋄ resu←0 5⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←11 80⍴' '
[16]  f←FOLHALA570
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[10;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[11;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracaso570
[35]  esse[8;]←1 80⍴80↑3 0⍕⊃xx[1]
[36]  esse[9;]←1 80⍴80↑acertapol⊃xx[1]
[37]  resp←resp,⊃xx[2]
[38]  resu←resu,[1]1 5⍴resp
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[42]  ⎕←(⍕xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←4 0 7 0 3 0 3 0 3 0)⍕resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],7 0⍕0 1↓resu)
[52]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo571

```
[ 0]  r←convalf x;tab
[ 1]  tab←'0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ $%*+-./:'
[ 2]  →(∨/~x∈tab)/xabu
[ 3]  r←'0010' ⍝ conversao alfanumerica
[ 4]  r←r,,1 0⍕(9⍴2)⊤⍴x
[ 5] t1:→(2>⍴x)/terminando
```

```
[ 6]  r←r,,1 0⍕(11⍴2)⊤(45×¯1+tabıx[1])+¯1+tabıx[2]
[ 7]  x←2↓x
[ 8]  →t1
[ 9] terminando:
[10]  →(0=⍴x)/fim
[11]  →(1=⍴x)/eum
[12]  'deu xabu 0'
[13]  →0
[14] eum:r←r,,1 0⍕(6⍴2)⊤¯1+tabıx
[15] fim:
[16]  →0
[17] xabu:'deu xabu 3'
------------------------------------------------------------
[ 0]  r←convnum x
[ 1]  →(∨/~x∈'0123456789')/xabu
[ 2]  r←'0001'
[ 3]  r←r,,1 0⍕(10⍴2)⊤⍴x
[ 4] t1:→(3>⍴x)/acabando
[ 5]  r←r,1 0⍕(10⍴2)⊤⍎3↑x
[ 6]  x←3↓x
[ 7]  →t1
[ 8] acabando:
[ 9]  →(0=⍴x)/fim
[10]  →(1=⍴x)/eum
[11]  →(2=⍴x)/edois
[12]  'deu xabu'
[13]  →0
[14] edois:r←r,1 0⍕(7⍴2)⊤⍎x
[15]  →fim
[16] eum:r←r,1 0⍕(4⍴2)⊤⍎x
[17] fim:
[18]  →0
[19] xabu:'deu xabu2'
------------------------------------------------------------
[ 0]  r←deconvalf x;tab;m;z;d1;d2;t
[ 1]  tab←'0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ $%*+-./:'
[ 2]  m←2 2 2 2⊥⍎1 0 1 0 1 0 1⍀x[⍳4]
[ 3]  →(m≠2)/erro1
[ 4]  t←(9⍴2)⊥⍎(17⍴1 0)⍀x[4+⍳9]
[ 5]  r←''
[ 6]  x←13↓x
[ 7] t1:→(11>⍴x)/aca
[ 8]  z←(11⍴2)⊥⍎(21⍴1 0)⍀11↑x
[ 9]  d1←⌊z÷45
[10]  d2←45|z
[11]  r←r,tab[1+d1],tab[1+d2]
[12]  x←11↓x
[13]  →t1
[14] aca:→(6=⍴,x)/eum
[15]  →junta
[16]  'deu xabu8'
[17]  →0
[18] eum:
[19]  z←(6⍴2)⊥⍎(11⍴1 0)⍀,x
[20]  r←r,tab[1+z]
[21] junta:→(t≠⍴r)/erro4
[22]  →0
[23] erro4:'deu xabu9'
[24]  →0
[25] erro1:'deu xabua'
[26]  →0
------------------------------------------------------------
[ 0]  r←deconvnum x;m;t;z
```

```
[ 1]  m←2 2 2 2⊥⍣1 0 1 0 1 0 1⍉x[⍳4]
[ 2]  t←(10ρ2)⊥⍣(19ρ1 0)⍉x[4+⍳10]
[ 3]  r←''
[ 4]  x←14↓x
[ 5]  →(m≠1)/deuerro
[ 6] t1:→(10>ρx)/passou
[ 7]  z←3 0⍕(10ρ2)⊥⍣(19ρ1 0)⍉x[⍳10]
[ 8]  r←r,z
[ 9]  x←10↓x
[10]  →t1
[11] passou:→(7=ρx)/tem2
[12]  →(4=ρx)/tem1
[13]  →(0=ρx)/junta
[14]  'deu xabu5'
[15]  →0
[16] tem1:z←1 0⍕2 2 2 2⊥⍣(7ρ1 0)⍉x
[17]  r←r,z
[18]  →junta
[19] tem2:z←2 0⍕2 2 2 2 2 2 2⊥⍣(13ρ1 0)⍉x
[20]  r←r,z
[21] junta:→(t≠ρr)/deuerro2
[22]  →0
[23] deuerro:'deu xabu6'
[24]  →0
[25] deuerro2:'deu xabu7'
[26]  →0
------------------------------------------------------------
[ 0]  r←geracaso571;z;y;y1;y2;c;xx;i;k1;k2;k3;k4
[ 1]  z←1000+2?5000
[ 2]  y←PAL[2?1↑ρPAL;]
[ 3]  y1←(y[1;]≠' ')/y[1;]
[ 4]  y2←(y[2;]≠' ')/y[2;]
[ 5]  c←4 80ρ' '
[ 6]  c[1;]←80↑convnum⍕z[1]
[ 7]  c[2;]←80↑convnum⍕z[2]
[ 8]  c[3;]←80↑convalf y1
[ 9]  c[4;]←80↑convalf y2
[10]  xx←4 6ρ(6↑⍕z[1]),(6↑⍕z[2]),(6↑y1),6↑y2
[11]  i←4?4
[12]  r←2ρ0
[13]  k1←deconvnum trim c[1;]
[14]  →(z[1]≠⊥k1)/erro11
[15]  k2←deconvnum trim c[2;]
[16]  →(z[2]≠⊥k2)/erro12
[17]  k3←deconvalf trim c[3;]
[18]  →((ρk3)≠+/k3=y1)/erro13
[19]  k4←deconvalf trim c[4;]
[20]  →((ρk4)≠+/k4=y2)/erro14
[21]  r[1]←⊂c[i;]
[22]  r[2]←⊂xx[i;]
[23]  →0
[24] erro11:
[25] erro12:
[26] erro13:
[27] erro14:
[28]  'deu zica'
[29]  →0
------------------------------------------------------------
[ 0]  opesq vivo571a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
```

```
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL571   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA571←ajusta80 FOLHALA571
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA571)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO2'
[13]  xk←1 ⋄ resu←0 31⍴' '
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←13 80⍴' '
[16]  f←FOLHALA571
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.06
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[12;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[13;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracaso571
[35]  esse[7+⍳4;]←4 80↑⊃xx[1]
[36]  resp←(3 0⍎resp),':',¯1↓,(⊃xx[2]),' '
[37]  resu←resu,[1]1 31⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[41]  ⍞←(⍎xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳31]←resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[51]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo611

```
[ 0]  r←qua crianorie ord;vet;i;j;k
```

```
[ 1] ⍝ chame
[ 2] ⍝ A,B CRIAMCM2 ordem, onde
[ 3] ⍝ A = quantidade de arestas
[ 4] ⍝ B = valor maximo de cada aresta
[ 5] ⍝ ordem = ordem do grafo
[ 6] comeco:vet←(((ord×ord)-ord)÷2)⍴0
[ 7]  vet[(⍴vet)?⍴vet]←(⍴vet)↑(?qua[1]⍴qua[2]),100⍴0
[ 8]  r←(ord,ord)⍴0
[ 9]  i←j←k←1
[10] t2:→(i>ord)/fim
[11]  j←1
[12] t3:→(j>ord)/f5
[13]  →(j≤i)/soma
[14]  r[i;j]←vet[k]
[15]  k←k+1
[16] soma:→(j=j←j+1)/t3
[17] f5:→(i=i←i+1)/t2
[18] fim:i←1
[19] t6:→(i>ord)/fmesmo
[20]  r[;i]←r[i;]
[21]  →(i=i←i+1)/t6
[22] fmesmo:
[23]  →(0=+/1≥+/[1]r≠0)/blz   ⍝ todos vertices conectados ?
[24] ⍝   ⍞  ←'r'   ⍝ tentando de novo
[25]  →comeco
[26] blz:
-------------------------------------------------------------
[ 0]  r←tam geralistas gra;ord;ve;on;subin;in;kk;i
[ 1]  r←?(tam,3)⍴20 ⋄ ord←1↑⍴gra ⋄ LOG←0 30⍴' '
[ 2]  in←tam?tam ⋄ VERTICES←ord⍴0
[ 3]  i←1
[ 4] t1:→(i>ord)/f7
[ 5]  ve←(gra[i;]≠0)/gra[i;]
[ 6]  on←(gra[i;]≠0)/⍳ord
[ 7]  subin←(⍴on)↑in
[ 8]  in←(⍴on)↓in
[ 9]  →(0=⍴on)/vazblz
[10]  LOG←LOG,[1]1 30⍴30↑'ve=',⍕ve
[11]  LOG←LOG,[1]1 30⍴30↑'on=',⍕on
[12]  LOG←LOG,[1]1 30⍴30↑'subin=',⍕subin
[13]  kk←1
[14]  VERTICES[i]←subin[kk]
[15] oba:
[16]  r[subin[kk];1]←on[kk]
[17]  r[subin[kk];2]←ve[kk]
[18]  →(kk≥⍴on)/fin
[19]  r[subin[kk];3]←subin[kk+1]
[20]  →soma
[21] fin:r[subin[kk];3]←¯1
[22] vazblz:→(i=i←i+1)/t1
[23] soma:→(kk=kk←kk+1)/oba
[24] f7:
-------------------------------------------------------------
[0]  r←orig numera2 oper;aa;⎕IO
[1]  ⎕IO←orig
[2]  r←4 0⍕oper
[3]  r←(((3 0⍕(((1↑⍴oper),1)⍴⍳1↑⍴oper)),[⎕IO+1]'|'),[⎕IO+1]' '),r
[4]  r←((1,aa)⍴'     ',4 0⍕⍳1↓⍴oper),[⎕IO]((1,aa←5+4×1↓⍴oper)⍴'   +',100⍴'-'),[⎕IO]r
-------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
```

```
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10]  →(0=' 'ϵj↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80⍴80↑j↑candi
[15]  candi←j↓candi
[16]  →((⍴candi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80⍴80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
-------------------------------------------------------------
[ 0]  r←resolvecmw y;W;Q;ordem;infinito;k;i;j
[ 1] ⍝ algoritmo de warshall modificado, pag 285 de LIPS86
[ 2]  W←y
[ 3]  infinito←100000000000
[ 4]  Q←W+(infinito×W=0)
[ 5]  ordem←1↑⍴y
[ 6]  k←1
[ 7] testak:→(k>ordem)/saik
[ 8]  i←1
[ 9] testai:→(i>ordem)/saii
[10]  j←1
[11] testaj:→(j>ordem)/saij
[12]  Q[i;j]←Q[i;j]⌊Q[i;k]+Q[k;j]
[13]  →(j=j←j+1)/testaj
[14] saij:→(i=i←i+1)/testai
[15] saii:   ⍝   ⍞'QQ',(1 0   ⍕k),'  ←1E11 99 edit Q'
[16]  →(k=k←k+1)/testak
[17] saik:r←(9999×Q>1000000000)+(Q×Q<1000000000)
-------------------------------------------------------------
[ 0]  opesq vivo611a n;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixonol;xixo;aa
      a;lixo1;oba;xx;zz;lista;rr
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  EVENTO←'PL611   '
[ 5]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 8]  FOLHALA611←ajusta80 FOLHALA611
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA611)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[11]  xk←1 ⋄ resu←0 3⍴0
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←31 80⍴' '
[14]  f←FOLHALA611
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍕VERSAOa←3.14
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[22]  esse[30;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
```

```
[23]  esse[31;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25] ⍝ ----- segue o baile ----------
[26]  resp←resp,⌈/,xx←resolvecmw zz←7 20 crianorie 6
[27]  resp←resp,(+/,xx<zz)÷2
[28]  lista←20 geralistas zz
[29]  esse[8;]←80↑'  VERTICES             LISTA DE ARESTAS'
[30]  esse[9;]←80↑'VERT   PRIM'
[31]  esse[9;17+⍳⍴rr]←rr←'NUM      VERT     VALOR    PROX'
[32]  esse[9+⍳6;⍳10]←1 numera 6 0⍕6 1⍴VERTICES
[33]  esse[9+⍳20;15+⍳31]←'¯'-'edit 1 numera 9 0⍕lista
[34]  resu←resu,[1]1 3⍴resp
[35]  acuja←(f[;2]='#')/⍳1↑⍴f
[36]  f[acuja;⍳80]←esse[⌽,f[acuja;3 4],' ';]
[37]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[38]  ⍞←(⍕xk←xk+1),'-'
[39]  →testa
[40] fim:upag←(1 0+⍴f)⍴' '
[41]  →(1=≡n)/elafa
[42]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[43]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[44]  upag[2+⍳1↑⍴presu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0)⍕resu
[45]  upag[3+1↑⍴presu;]←(1↓⍴upag)↑'\end{verbatim}'
[46]  →terminando
[47] elafa:aaa←(ylu,5 0⍕0 1↓resu)
[48]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[49]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[50] terminando:
[51] ⍝upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[52]  relat[1↑⍴relat;;]←upag
[53]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[54] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[55]  lixonol←lixonol,[1]1 80⍴80↑'\begin{verbatim}'
[56]  lixonol←lixonol,[1]1 80⍴80↑'Mat de adj da ultima folha'
[57]  lixonol←lixonol,[1]((1↑⍴zz),80)↑1 numera2 zz
[58]  lixonol←lixonol,[1]1 80⍴80↑'Mat de cam min da ultima folha'
[59]  lixonol←lixonol,[1]((1↑⍴xx),80)↑1 numera2 xx
[60]  lixonol←lixonol,[1]1 80⍴80↑'\end{verbatim}  \end{document}'
[61]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[62]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[63]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo612

```
[ 0]  r←ADJ2INC A;x;i;coluna;j
[ 1] ⍝ recebe a matriz de adjacencia A e devolve a incidencia I
[ 2]  x←0.5×+/,A
[ 3]  r←((1↑⍴A),x)⍴0
[ 4]  coluna←1
[ 5]  i←1
[ 6] comi:→(i>1↑⍴A)/fim
[ 7]  j←1
[ 8] comj:→(j>1↑⍴A)/naosei
[ 9]  →(i≥j)/vai
[10]  →(A[i;j]=0)/vai
[11]  r[i;coluna]←r[j;coluna]←1
[12]  coluna←coluna+1
[13] vai:j←j+1
[14]  →comj
[15] naosei:i←i+1
[16]  →comi
```

```
[17] fim:
-------------------------------------------------------------
[ 0]  r←ini CAG adj;P1;flag;vi
[ 1] ⍝ funcao de caminhamento em grafos
[ 2] ⍝ ini[1] = nodo inicial
[ 3] ⍝ ini[2] = 1 para pesquisa em profundidade e 2 para extensao
[ 4]  P1←CRPIL ⋄ r←'' ⋄ flag←(1↑⍴adj)⍴1
[ 5]  →(ini[2]=2)/fila
[ 6]  P1←P1 EMPIL ini[1]
[ 7]  →conta1
[ 8] fila:P1←P1 ENFIL ini[1]
[ 9] conta1:flag[ini[1]]←2
[10] testa:→(0=⍴P1)/fim
[11]  P1←DESEP P1
[12]  r←r,ELEMP
[13]  flag[ELEMP]←3
[14]  vi←(,adj[ELEMP;])/⍳1↑⍴adj
[15]  vi←(flag[vi]=1)/vi
[16] ⍝ print 1 80   ⍴80  ↑'vi=',  ⍕vi
[17]  flag[vi]←2
[18]  →(ini[2]=2)/fila2
[19]  P1←P1 EMPIL vi
[20]  →testa
[21] fila2:P1←P1 ENFIL vi
[22] ⍝ print 1 80   ⍴80  ↑'P1=',  ⍕P1
[23]  →testa
[24] fim:
-------------------------------------------------------------
[0]  r←qtd CRIAGR ordem;malta;malto;x
[1] ⍝ cria uma matriz de adjacencia de ordem "ordem", contendo qtd arestas
[2]  malta←((ordem×ordem)-ordem)÷2
[3]  malto←malta⍴0
[4]  malto[qtd?malta]←1
[5]  x←(2⍴ordem)⍴(,TRA(2⍴ordem)⍴1)⌿malto
[6]  r←x+⍉x
-------------------------------------------------------------
[0]  r←CRPIL
[1]  r←''
-------------------------------------------------------------
[0]  r←DESEP p
[1]  ELEMP←1↑p
[2]  r←1↓p
-------------------------------------------------------------
[0]  r←p EMPIL x
[1]  r←(x),p
-------------------------------------------------------------
[0]  r←P1 ENFIL x
[1]  r←P1,x
-------------------------------------------------------------
[0]  r←TRA y;m1;m2
[1] ⍝ esta funcao coloca zeros na diagonal principal e abaixo dela
[2]  m1←(⍴y)⍴⍳1↑⍴y
[3]  m2←⍉m1
[4]  r←(m2<m1)×y
-------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
```

```
[ 8] te2:→(80>ρcandi)/eca
[ 9]  j←qt
[10]  →(0=' 'ϵj↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80ρ80↑j↑candi
[15]  candi←j↓candi
[16]  →((ρcandi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80ρ80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
------------------------------------------------------------
[ 0]  opesq vivo612a n;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixonol;xixo;aa
      a;lixo1;incidencia;nodoini1;nodoini2;ordem;resp1;resp2;resp3;arestas;y;x;lixo;i1;i2;i
      3
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  EVENTO←'PL612   '
[ 5]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎ιn
[ 8]  FOLHALA612←ajusta80 FOLHALA612
[ 9]  relat←((2+1↑ρylu),1 0+ρFOLHALA612)ρ' '
[10]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[11]  xk←1 ⋄ resu←0 5ρ0
[12] testa:→(xk>1↑ρylu)/fim
[13]  esse←33 80ρ' '
[14]  f←FOLHALA612
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍎VERSAOa←3.33
[18]  esse[4;]←80↑ylu[xk;ι6]
[19]  esse[5;]←80↑ylu[xk;6+ι30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[22]  esse[32;ι10]←'@',esse[6;5+ι3],esse[4;1+ι5],'@'
[23]  esse[33;]←80↑esse[6;5+ι3],'-',esse[4;1+ι5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25] voltaria:ordem←14   ⍝ 10+?6
[26]  arestas←20   ⍝17+?6
[27]  nodoini1←?ordem
[28]  nodoini2←?ordem
[29]  y←arestas CRIAGR ordem
[30] ⍝ incidencia←ADJ2INC y
[31] ⍝ resp1←+/[2]incidencia[;ι6]
[32]  resp2←(nodoini1,1)CAG y
[33]  resp3←(nodoini2,2)CAG y
[34]  →((ordem=ρresp2)∧(ordem=ρresp3))/contaa
[35] erro:'gerado nodo isolado, abandonando esta configuracao '
[36]  →voltaria
[37] contaa:
[38] ⍝ i1←(?¯1+ρresp1),ρresp1
[39]  i2←(?¯1+ρresp2),ρresp2
[40]  i3←(?¯1+ρresp3),ρresp3
[41]  esse[8;]←80↑2 0⍎nodoini1
[42]  esse[9;]←80↑2 0⍎nodoini2
[43]  esse[9+ι16;ι4+3×1↑ρy]←cabeca,[1]1 numera 3 0⍎y
[44] ⍝ esse[26;]←80↑'R1[',(2 0⍎i1[1]),']'
```

```
[45] ⍝ esse[27;]←80↑'R1[',(2 0⍕i1[2]),']'
[46]  esse[26;]←80↑'R1[',(2 0⍕i2[1]),']'
[47]  esse[27;]←80↑'R1[',(2 0⍕i2[2]),']'
[48]  esse[28;]←80↑'R2[',(2 0⍕i3[1]),']'
[49]  esse[29;]←80↑'R2[',(2 0⍕i3[2]),']'
[50] ⍝ resu←resu,[1]1 7⍴resp,resp1[i1],resp2[i2],resp3[i3]
[51]  resu←resu,[1]1 5⍴resp,resp2[i2],resp3[i3]
[52]  acuja←(f[;2]='#')/⍳1↑⍴f
[53]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[54]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[55]  ⎕←(⍕xk←xk+1),'-'
[56]  →testa
[57] fim:upag←(1 0+⍴f)⍴' '
[58]  →(1=≡n)/elafa
[59]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[60]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[61]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 5 0 5 0)⍕resu
[62]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[63]  →terminando
[64] elafa:aaa←(⍳lu,4 0⍕0 1↓resu)
[65]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[66]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[67] terminando:
[68]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[69]  relat[1↑⍴relat;;]←upag
[70]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[71] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[72]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[73]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[74]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo618

```
[0]  AVISO
[1]  'Este WS nao gera arquivo GPA'
[2]  'Para aumentar as solicitacoes de grafos, aumentar o arquivo QUESTOES'
[3]  'com ateh 8 linhas por grafo, limite de 75 caracteres e uma linha'
[4]  'contendo um unico hifen separando os problemas'
[5]  ''
[6]  'Mostre os 2 grafos que est⍝o na folha em f:\material\graphviz\grafo1.gif'
[7]  ' e  f:\material\graphviz\grafo2.gif'
------------------------------------------------------------
[0]  r←geraques;i;xx
[1]  xx←¯1+(QUESTOES[;1]='-')/⍳1↑⍴QUESTOES
[2]  i←2
[3]  r←((¯1+⍴xx),8,75)⍴' '
[4] t1:→(i>⍴xx)/fim
[5]  r[i-1;;]←8 75↑1 0↓QUESTOES[xx[i-1]+⍳xx[i]-xx[i-1];]
[6]  i←i+1
[7]  →t1
[8] fim:
------------------------------------------------------------
[0]  r←orig numera2 oper;aa;⎕IO
[1]  ⎕IO←orig
[2]  r←4 0⍕oper
[3]  r←(((3 0⍕(((1↑⍴oper),1)⍴⍳1↑⍴oper)),[⎕IO+1]'|'),[⎕IO+1]' '),r
[4]  r←((1,aa)⍴'     ',4 0⍕⍳1↓⍴oper),[⎕IO]((1,aa←5+4×1↓⍴oper)⍴'   +',100⍴'-'),[⎕IO]r
------------------------------------------------------------
[ 0]  opesq vivo618a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;caso;oba2
[ 1]  →(0≠⎕NC'opesq')/qveio
```

```
[ 2]  opesq←''
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL618   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA618←ajusta80 FOLHALA618
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA618)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 0⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←15 80⍴' '
[15]  f←FOLHALA618
[16]  zz←geraques
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  esse[5;]←80↑ylu[xk;6+⍳30]
[22]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[23]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[24] inica:
[25]  esse[7+⍳8;⍳75]←zz[1+(1↑⍴zz)|xk-1;;]
[26]  acuja←(f[;2]='#')/⍳1↑⍴f
[27]  f[acuja;⍳80]←esse[≢,f[acuja;3 4],' ';]
[28]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[29]  ⎕←(⍕xk←xk+1),'-'
[30]  →testa
[31] fim:
[32] terminando:
[33]  relat[1↑⍴relat;1↑1↓⍴relat;]←80↑'\end{document}'
[34]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[35] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[36]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[37]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[38]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo621

```
[ 0]  r←ini dij66 adj;s;dv;v;dw;xxx;i;aba;fal;bru;w
[ 1] ⍝ ini e o vertice inicial. adj e a matriz de adjacencia e o algoritmo
[ 2] ⍝ esta em Rabuske, pagina 66
[ 3]  fal←0 75⍴' '
[ 4]  r←1 2⍴ini,0
[ 5]  s←,ini
[ 6]  adj←0 99 edit adj
[ 7]  dv←adj[ini;]
[ 8]  dv[ini]←0
[ 9]  v←⍳1↑⍴adj
[10]  fal←fal,[1]1 75⍴75↑'Matriz de adjacencia original    = '
[11]  fal←fal,[1]((1↑⍴adj),75)↑4 0⍕adj
[12]  fal←fal,[1]1 75⍴75↑'Nodo inicial = ',⍕ini
[13] t0:
[14]  aba←dv
[15]  aba[s]←¯1
[16]  fal←fal,[1]1 75⍴75↑'nodos ja estudados               = ',3 0⍕s
[17]  fal←fal,[1]1 75⍴75↑'¯-'edit'custo desde a origem ate aqui    = ',3 0⍕aba
[18]  →((⍴s)≥1↑⍴adj)/fim
[19]  dw←⌊/dv[v menos s]
```

```
[20]  fal←fal,[1]1 75ρ75↑'menor custo para ir a algum lugar= ',3 0⍕dw
[21]  xxx←dv
[22]  xxx[s]←99
[23]  w←xxx⍳dw
[24]  bru←'   R[',(⍕w),'] = ',3 0⍕dw
[25]  fal←fal,[1]1 75ρ75↑'proximo nodo a estudar           = ',(3 0⍕w),bru
[26]  fal←fal,[1]1 75ρ75↑'linha de ADJ corresp a este nodo = ',3 0⍕adj[w;]
[27]  r←r,[1]1 2ρw,dw
[28]  s←s,w
[29]  i←1
[30] teste:→(i>ρdv)/fim2
[31]  →(i∈s)/soma2
[32]  dv[i]←dv[i]⌊dv[w]+adj[w;i]
[33] soma2:→(i=i←i+1)/teste
[34] fim2:→t0
[35] fim:r←r[⍋r[;1];]
[36]  fal←fal,[1]1 75ρ75↑'Resultado final                  = ',3 0⍕,r[;2]
[37]  ULTIMO←fal
-------------------------------------------------------------
[0]  r←x menos y
[1] ⍝ x e um   ⍳ de alguma coisa; y e um conjunto de indices;
[2] ⍝ a resposta sao os indices de x que nao estao em y
[3]  r←(~x∈y)/x
-------------------------------------------------------------
[0]  r←orig numera2 oper;aa;⎕IO
[1]  ⎕IO←orig
[2]  r←4 0⍕oper
[3]  r←(((3 0⍕(((1↑ρoper),1)ρ⍳1↑ρoper)),[⎕IO+1]'|'),[⎕IO+1]' '),r
[4]  r←((1,aa)ρ'     ',4 0⍕⍳1↓ρoper),[⎕IO]((1,aa←5+4×1↓ρoper)ρ'   +',100ρ'-'),[⎕IO]r
-------------------------------------------------------------
[0]  r←valida m
[1]  r←v/(1↑ρm)=+/m=0
-------------------------------------------------------------
[ 0]  opesq vivo621a n;CORRECAO;EVENTO;MAT;aa;aaa;acuja;dhx;esse;f;ini;lixo1;lixonol;ordem
      ;relat;resp;resu;rr;upag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←10 ⋄ EVENTO←'PL621   '
[ 6]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕⍳n
[ 9]  FOLHALA621←ajusta80 FOLHALA621
[10]  relat←((2+1↑ρylu),1 0+ρFOLHALA621)ρ' '
[11]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[12]  xk←1 ⋄ resu←0 11ρ0
[13] testa:→(xk>1↑ρylu)/fim
[14]  esse←30 80ρ' '
[15]  f←FOLHALA621
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.08
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23] inica:
[24] seis:ordem←10
[25] denovo:MAT←(ordem×ordem)ρ0
[26]  MAT[aa?ordem×ordem]←?(aa←⌈3.5×ordem)ρ20
[27]  MAT[(-ordem)+(ordem+1)×⍳ordem]←0
```

```
[28]  MAT←(2⍴ordem)⍴MAT
[29]  →(1=valida MAT)/denovo
[30]  esse[8;]←80↑2 0⍕ini←?ordem
[31]  esse[20+ini;]←80↑'{\huge{0}} '
[32]  rr←ini dij66 MAT
[33]  →(999999=⌈/,rr)/seis
[34] ⍝ flm[106+⍳ordem;9+⍳5×ordem]←5 0⍕MAT
[35]  esse[8+⍳12;]←12 80↑1 numera2 MAT
[36]  resu←resu,[1]1 11⍴resp,,rr[;2]
[37]  acuja←(f[;2]='#')/⍳1↑⍴f
[38]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[39]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[40]  ⍞←(⍕xk←xk+1),'-'
[41]  →testa
[42] fim:upag←(1 0+⍴f)⍴' '
[43]  →(1=≡n)/elafa
[44]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[45]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[46]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0)⍕resu
[47]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[48]  →terminando
[49] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),5 0⍕0 1↓resu)
[50]  aaa[1;35 36]←2 0⍕CORRECAO
[51]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[58]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo622

```
[ 0]  r←CRIAMCM3 ord;vet;⎕IO;k
[ 1]  ⎕IO←1
[ 2] comeco:vet←(ord×ord)⍴(⍳59)
[ 3]  vet[(⍴vet)?⍴vet]←vet
[ 4]  r←(ord,ord)⍴vet
[ 5]  →(0≠+/1≥+/[1]r≠0)/comeco
[ 6]  k←1
[ 7] vu7:→(k>ord)/0
[ 8]  r[k;k]←0
[ 9]  →(k=k←k+1)/vu7
------------------------------------------------------------
[ 0]  r←gera;ini;fim;y;resp;ord
[ 1]  ord←9
[ 2]  ini←?ord
[ 3]  fim←?ord
[ 4]  y←CRIAMCM3 ord
[ 5]  resp←y tennen ini,fim
[ 6]  r←10 70⍴' '
[ 7]  r[0;]←70↑'Inicio = ',(⍕ini),'   Fim = ',⍕fim
[ 8]  r[1+⍳ord;]←((1↑⍴y),70)↑5 0⍕y
[ 9]  r[9;]←70↑⍕resp
------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
```

```
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10]  →(0=' '∈j↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80⍴80↑j↑candi
[15]  candi←j↓candi
[16]  →((⍴candi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80⍴80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
-------------------------------------------------------------
[ 0]  r←matw tennen depara;⎕IO;N;s;t;perm;distancia;procede;corrente;smalldist;dc;i;newdis
      t;k;pd;resposta;cont
[ 1]  ⎕IO←0 ⋄ N←1↑⍴matw ⋄ perm←N⍴0 ⋄ distancia←N⍴99999 ⋄ s←depara[0] ⋄ cont←0
[ 2]  t←depara[1] ⋄ perm[s]←1 ⋄ distancia[s]←0 ⋄ procede←N⍴0 ⋄ corrente←s
[ 3] teste1:→(corrente=t)/sai1
[ 4]  smalldist←99999 ⋄ dc←distancia[corrente] ⋄ i←0
[ 5] teste2:→(i≥N)/sai2
[ 6]  →(perm[i]≠0)/sai5
[ 7]  newdist←dc+matw[corrente;i]
[ 8] sai3:→(newdist≥distancia[i])/sai4
[ 9]  distancia[i]←newdist ⋄ procede[i]←corrente
[10] sai4:→(distancia[i]≥smalldist)/sai5
[11]  smalldist←distancia[i] ⋄ k←i ⋄⍝ 'k=',  ⍕k
[12] sai5:→(i=i←i+1)/teste2
[13] sai2:corrente←k ⋄ perm[corrente]←1
[14]  →teste1
[15] sai1:pd←distancia[t]
[16] ⍝ 'procede=',⍕procede
[17] ⍝ 't=',⍕t
[18]  resposta←t,procede[t] ⋄ i←1
[19] teste3:→(procede[t]=s)/fim
[20]  t←procede[t]
[21]  resposta←resposta,procede[t]
[22]  →teste3
[23] fim:r←pd,⊖resposta+1   ⍝ era ⊖resposta (sem o +1) e dava a resposta com ⎕io←0
-------------------------------------------------------------
[ 0]  opesq vivo622a n;CORRECAO;EVENTO;aaa;acuja;carta;dhx;esse;f;final;inicio;lixo1;lixon
      ol;ordem;relat;resp;resp1;resu;upag;xixo;xk;y;ylu
[ 1]  ⎕IO←0
[ 2]  →(0≠⎕NC'opesq')/qveio
[ 3]  opesq←10⍴' '
[ 4] qveio:
[ 5]  ⎕RL←⌊(⎕TS[6]+⎕TS[5]+⎕TS[4])*2.7364736473
[ 6]  EVENTO←'PL622   '
[ 7]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[2 1 0]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      3 4],⎕TS[5]+⎕TS[6]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←⍙FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕1+⍳n
[10]  FOLHALA622←ajusta80 FOLHALA622
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA622)⍴' '
[12]  relat[0;;]←(1↓⍴relat)↑⍙FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 11⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
```

```
[15]  esse←20 80ρ' '
[16]  f←FOLHALA622
[17]  esse[0;]←80↑dhx[0;]
[18]  esse[1;]←80↑dhx[1;]
[19]  esse[2;]←80↑4 2⍕VERSAOa←3.06
[20]  esse[3;]←80↑ylu[xk-1;⍳6]
[21]  esse[4;]←80↑ylu[xk-1;6+⍳30]
[22]  →(~1=≡n)/1+⎕LC ⋄ esse[5;]←80↑EVENTO
[23]  esse[6;]←80↑(3 0⍕resp←xk),' ',opesq
[24]  esse[18;⍳10]←'@',esse[5;5+⍳3],esse[3;1+⍳5],'@'
[25]  esse[19;]←80↑esse[5;5+⍳3],'-',esse[3;1+⍳5],' - ',opesq[5 6],'/',opesq[8 9]
[26] inica:
[27] denovo:y←CRIAMCM3 ordem←9
[28]  inicio←1?ordem
[29] arruma:final←1?ordem
[30]  →(inicio=final)/arruma
[31]  →(ordem=+/y[inicio;]=0)/denovo
[32]  →(ordem=+/y[;inicio]=0)/denovo
[33]  →(ordem=+/y[final;]=0)/denovo
[34]  →(ordem=+/y[;final]=0)/denovo
[35]  y←0 99 edit y
[36]  resp1←y tennen inicio,final
[37]  →(5<ρresp1)/mesmo
[38] ⍝ ⎕←'o'
[39]  →denovo
[40] mesmo:
[41]  esse[7;]←80↑3 0⍕1+inicio
[42]  esse[8;]←80↑3 0⍕1+final
[43]  carta←'9& 55& 55& 55& 55& 55& 55& 55& 55& 55⍀⍀⍀hline'
[44]  esse[9+⍳9;]←9 80↑carta⍕(9 1ρ1+⍳9),y
[45]  resp←resp,10↑resp1
[46]  resu←resu,[0]1 11ρresp
[47]  acuja←(f[;1]='#')/⍳1↑ρf
[48]  f[acuja;⍳80]←esse[¯1+±,f[acuja;2 3],' ';]
[49]  relat[xk;;]←f,[0](1,1↓ρf)ρ200↑'⍀newpage'
[50]  ⎕←(⍕xk←xk+1),'-'
[51]  →testa
[52] fim:upag←(1 0+ρf)ρ' '
[53]  →(1=≡n)/elafa
[54]  upag[0;]←(1↓ρupag)↑'⍀begin{verbatim}'
[55]  upag[1;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[56]  upag[2+⍳1↑ρresu;⍳+/lixo1]←(lixo1←5 0 8 0,18ρ5 0)⍕resu
[57]  upag[2+1↑ρresu;]←(1↓ρupag)↑'⍀end{verbatim}'
[58]  →terminando
[59] elafa:aaa←(ylu,5 0⍕0 1↓resu)
[60]  lixonol←aaa ⍙FM('c:⍀apl2⍀',((~⍟∧⍀⍟EVENTO=' ')/EVENTO),'.gpa')
[61]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[62] terminando:
[63]  upag[¯1+1↑ρupag;]←(1↓ρupag)↑'⍀end{document}'
[64]  relat[¯1+1↑ρrelat;;]←upag
[65]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[66]  lixonol←lixonol ⍙FM'c:⍀apl2⍀',((~⍟∧⍀⍟EVENTO=' ')/EVENTO),'.tex'
[67]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[68]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo623

```
[0]  AVISO
[1]  'No f:/p/n/623/wars.mle tem o programa maple que gera o exemplo e o exercicio'
[2]  'As funcoes t1 e t2 mostram a demora (comparacao) de dijsktra e warshall'
------------------------------------------------------------
```

```
[0]  r←CRIAMCM ord;vet
[1] comeco:vet←(ord×ord)ρ0
[2]  vet[(ρvet)?ρvet]←(ρvet)↑(20ρι8),100ρ0
[3]  r←(ord,ord)ρvet
[4]  →(0≠+/1≥+/[1]r≠0)/comeco
-------------------------------------------------------------
[ 0]  r←RESOLVECM y;W;Q;ordem;infinito;k;i;j
[ 1] ⍝ algoritmo de warshall modificado, pag 285 de LIPS86
[ 2]  W←y
[ 3]  infinito←100000000000
[ 4]  Q←W+(infinito×W=0)
[ 5]  ordem←1↑ρy
[ 6]  k←1
[ 7] testak:→(k>ordem)/saik
[ 8]  i←1
[ 9] testai:→(i>ordem)/saii
[10]  j←1
[11] testaj:→(j>ordem)/saij
[12]  Q[i;j]←Q[i;j]⌊Q[i;k]+Q[k;j]
[13]  →(j=j←j+1)/testaj
[14] saij:→(i=i←i+1)/testai
[15] saii:⍞'QQ',(1 0⍕k),'←1E11 99 edit Q'
[16]  →(k=k←k+1)/testak
[17] saik:r←(9999×Q>1000000000)+(Q×Q<1000000000)
-------------------------------------------------------------
[ 0]  r←geraquesprov;bb;x;y;rs;li;co
[ 1] volta:x←CRIAMCM 4
[ 2]  y←RESOLVECM x
[ 3]  →(1<+/,bb←x≠y)/blz
[ 4]  →volta
[ 5] blz:rs←2↑(,bb)/ι16
[ 6]  co←1+4|rs-1 ⋄ li←1+⌊(rs-1)÷4
[ 7] ⍝ 'rs=',(⍕rs),'   li=',(2 0⍕li),'co=',2 0⍕co
[ 8]  r←23 80ρ' '
[ 9]  r[1;]←80↑'Suponha N=4 e a matriz K valendo'
[10]  r[2;]←80↑'\begin{verbatim}'
[11]  r[2+ι4;]←4 80↑(3 0⍕x) ⍝ ,(5 0⍕y),2 0⍕bb
[12]  r[7;]←80↑'Acompanhe o algoritmo abaixo e informe ao final as posiçÃes pedidas'
[13]  r[8;]←80↑'\begin{algorithmic}[1]'
[14]  r[9;]←80↑'\STATE Algoritmo FLOYD-WARSHALL'
[15]  r[10;]←80↑'\FOR {Q de 1 até N}            '
[16]  r[11;]←80↑'\FOR {S de 1 até N}             '
[17]  r[12;]←80↑'\FOR{T de 1 até N}               '
[18]  r[13;]←80↑'\IF {K[S,Q] + K[Q,T] $<$ K[S,T]}  '
[19]  r[14;]←80↑'\STATE  K[S,T]  $\gets$  K[S,Q] + K[Q,T]'
[20]  r[15;]←80↑'\ENDIF                    '
[21]  r[16;]←80↑'\ENDFOR                    '
[22]  r[17;]←80↑'\ENDFOR                     '
[23]  r[18;]←80↑'\ENDFOR                      '
[24]  r[19;]←80↑'\STATE fim {algoritmo}       '
[25]  r[20;]←80↑'\end{algorithmic}             '
[26]  r[21;]←80↑'Ao final, informe os valores das posiçÃes L=',(2 0⍕li[1]),' e C=',2 0⍕co[
      1]
[27]  r[22;]←80↑' e L=',(2 0⍕li[2]),' e C=',2 0⍕co[2]
[28]  r[23;]←80↑(2 0⍕y[li[1];co[1]]),' e ',2 0⍕y[li[2];co[2]]
-------------------------------------------------------------
[0]  r←orig numera2 oper;aa;⎕IO
[1]  ⎕IO←orig
[2]  r←4 0⍕oper
[3]  r←(((3 0⍕(((1↑ρoper),1)ρι1↑ρoper)),[⎕IO+1]'|'),[⎕IO+1]' '),r
[4]  r←((1,aa)ρ'     ',4 0⍕ι1↓ρoper),[⎕IO]((1,aa←5+4×1↓ρoper)ρ'   +',100ρ'-'),[⎕IO]r
-------------------------------------------------------------
[ 0]  opesq vivo623a n;EVENTO;aaa;acuja;colunas;dhx;esse;f;incidencia;linhas;lixo1;lixonol
```

```
      ;oba;ordem;relat;resp;resp1;resu;upag;x;xixo;xk;xuca;y;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL623   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA623←ajusta80 FOLHALA623
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA623)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[12]  xk←1 ⋄ resu←0 6⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←28 80⍴' '
[15]  f←FOLHALA623
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←3.35
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[23]  esse[27;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[28;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  y←CRIAMCM ordem←7
[27]  resp1←RESOLVECM y
[28]  esse[7+⍳9;]←9 80↑1 numera2 y
[29]  linhas←?5⍴7 ⋄ colunas←?5⍴7
[30]  esse[17 19 21 23 25;1]←5 1⍴1 0⍎linhas
[31]  esse[18 20 22 24 26;1]←5 1⍴1 0⍎colunas
[32]  xuca←5 11⍴',resp1[?;?]'
[33]  xuca[;8]←5 1⍴1 0⍎linhas ⋄ xuca[;10]←5 1⍴1 0⍎colunas
[34]  xuca←,xuca
[35]  xuca[1]←' '
[36]  resp←resp,⍪xuca   ⍝ antes era n[1]+x
[37] continua:
[38]  resu←resu,[1]1 6⍴resp
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;⍳80]←esse[⍪,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[42]  ⍞←(⍎xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 5 0 5 0 5 0)⍎resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu,5 0⍎0 1↓resu)
[52]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[59]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[60]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[61]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
```

```
[62]  'veja o processamento em QQ1, QQ2, ... QQ7'
-------------------------------------------------------------
```

vivo624

```
[ 0]  r←CRIAMCM2 ord;vet;⎕IO;k
[ 1]  ⎕IO←1
[ 2] comeco:vet←(ord×ord)⍴0
[ 3]  vet[(⍴vet)?⍴vet]←(⍴vet)↑(20⍴⍳8),100⍴0
[ 4]  r←(ord,ord)⍴vet
[ 5]  →(0≠+/1≥+/[1]r≠0)/comeco
[ 6]  k←1
[ 7] vu7:→(k>ord)/0
[ 8]  r[k;k]←0
[ 9]  →(k=k←k+1)/vu7
-------------------------------------------------------------
[ 0]  r←RESOLVECM2 y;W;Q;ordem;infinito;k;i;j;passos
[ 1] ⍝ este algoritmo exige a diagonal principal zerada
[ 2] ⍝ algoritmo de Floyd modificado. RABU92, pag 75, corrigido !
[ 3]  ordem←1↑⍴y
[ 4]  ANTES←DEPOIS←ROTA←(ordem,ordem,ordem)⍴0
[ 5]  →(ordem=+/0=(,y)[((⍳ordem)×ordem+1)-ordem])/ok55
[ 6]  'a matiz diagonal nao esta zerada'
[ 7]  →0
[ 8] ok55:W←y
[ 9]  infinito←100000000000
[10]  Q←W+(infinito×W=0)
[11]  k←1
[12] fff:→(k>ordem)/vai88
[13]  Q[k;k]←0
[14]  →(k=k←k+1)/fff
[15] vai88:k←1 ⋄ passos←(ordem,ordem)⍴0
[16] testak:→(k>ordem)/saik
[17]  ANTES[k;;]←Q
[18]  ROTA[k;;]←passos
[19]  i←1
[20] testai:→(i>ordem)/saii
[21]  j←1
[22] testaj:→(j>ordem)/saij
[23]  →((Q[i;k]+Q[k;j])≥Q[i;j])/somao
[24]  Q[i;j]←Q[i;k]+Q[k;j]
[25]  →(passos[i;k]=0)/eda
[26]  passos[i;j]←passos[i;k]
[27]  →somao
[28] eda:passos[i;j]←k
[29] somao:→(j=j←j+1)/testaj
[30] saij:→(i=i←i+1)/testai
[31] saii:
[32]  DEPOIS[k;;]←Q
[33]  →(k=k←k+1)/testak
[34] saik:r←(999×Q>1000000000)+(Q×Q<1000000000)
[35]  r←r,passos←passos+(passos=0)×((ordem,ordem)⍴⍳ordem)
[36]  ANTES←100000000000 999 edit ANTES
[37]  DEPOIS←100000000000 999 edit DEPOIS
-------------------------------------------------------------
[ 0]  r←achalongos x;y;z;i;j;ct;oi;ii
[ 1]  y←(1↓⍴x)÷2
[ 2]  r←(y,y)⍴0
[ 3]  z←(0,y)↓x
[ 4]  i←1
[ 5] t1:→(i>y)/fim
[ 6]  j←1
```

```
[ 7] t2:→(j>y)/fi0
[ 8]  ct←1
[ 9]  oi←z[i;j]
[10]  ii←i
[11] t3:→(oi=j)/ufa
[12]  ct←ct+1
[13]  oi←ii←z[ii;j]
[14]  →t3
[15] ufa:
[16]  r[i;j]←ct
[17]  j←j+1
[18]  →t2
[19] fi0:
[20]  i←i+1
[21]  →t1
[22] fim:
-------------------------------------------------------------
[ 0]  geraquestao624a;as;a;b;cc;lin;col;rr
[ 1]  as←''''
[ 2]  'Suponha um grafo dirigido, sem la↓c cos, que est↓',as,'a indicado pela sua'
[ 3]  'matriz de custos. Nela o valor 0 deve ser entendido como custo igual a $↓infty$'
[ 4]  'ja que inexiste a liga↓c c↓~ao. Voc↓^e deve achar o custo do menor caminho para'
[ 5]  'duas liga↓c c↓~oes, conforme se indica a seguir. Como n↓~ao h↓',as,'a acesso  a'
[ 6]  'um computador, a sugest↓~ao ↓',as,'e voc↓^e desenhar o grafo e da↓',as,'i usar '
[ 7]  'o maravilhoso computador que est↓',as,'a atr↓',as,'as do seu nariz, entre suas duas
      '
[ 8]  'orelhas...↓↓*'
[ 9]  'A matriz de custos ↓',as,'e: ↓↓*'
[10]  '↓begin{verbatim}'
[11]  1 numera2 a←CRIAMCM2 5
[12]  '↓end{verbatim}'
[13]  cc←achalongos b←RESOLVECM2 a
[14] novo:
[15]  lin←2?5
[16]  col←2?5
[17]  rr←(b[lin[1];col[1]]),b[lin[2];col[2]]
[18]  →((1∈rr)∨(2∈rr))/novo
[19]  →((lin[1]=col[1])∨(lin[2]=col[2]))/novo
[20]  'Ache o menor caminho entre o nodo ',(⍕lin[1]),' e o nodo ',(⍕col[1]),'↓↓*'
[21]  ' e tamb↓',as,'em  o menor caminho entre o nodo ',(⍕lin[2]),' e o nodo ',(⍕col[2]),'
      .'
[22]  'A resposta e: ',(⍕b[lin[1];col[1]]),' e ',⍕b[lin[2];col[2]]
-------------------------------------------------------------
[ 0]  geraquestao624b;as;a;b;cc;lin;col;rr;max;qu;q;ct;ii;oi;z
[ 1]  as←''''
[ 2]  'Voc↓^e ↓',as,'e o gerente de uma empresa de log↓',as,'istica. Seu departamento'
[ 3]  'de inform↓',as,'atica teve a gentileza de preparar a matriz de roteamento para uma'
[ 4]  'malha de 10 cidades atendidas pela sua empresa. Se voc↓^e precisa mandar um '
[ 5]  'pacote entre duas cidades como indicado a seguir, a pergunta ↓',as,'e:↓↓*'
[ 6]  'Por quantas cidades o pacote deve passar ? (Obs: a conta j↓',as,'a come↓c ca em 2:'
[ 7]  'a origem e o destino).'
[ 8] mais:
[ 9]  a←CRIAMCM2 10
[10]  b←RESOLVECM2 a
[11]  →(999∈b)/mais
[12]  cc←achalongos b
[13]  qu←((,cc)∈4 5 6 7 8 9 10 11)/⍳100
[14]  →(0=⍴qu)/mais
[15]  q←qu[?⍴qu]
[16]  lin←1+⌊(q-1)÷10
[17]  col←1+10|q-1
[18]  'A matriz de roteamento ↓',as,'e: ↓↓*'
[19]  '↓begin{verbatim}'
```

```
[20]  1 numera2 z←0 10↓b
[21]  '⍀end{verbatim}'
[22]  ct←lin
[23]  ii←lin
[24]  oi←,z[lin;col]
[25] t3:→(oi=,col)/ufa
[26]  ct←ct,,z[ii;col]
[27]  oi←ii←,z[ii;col]
[28]  →t3
[29] ufa:
[30]  'Ache o n⍀',as,'umero de cidades do menor caminho entre o nodo '
[31]  (⍕lin),' e o nodo ',(⍕col),'.'
[32]  ' A segunda pergunta ⍀',as,'e por quais cidades o pacote vai passar ?'
[33]  'A resposta e: ',(⍕,cc[(,lin);(,col)]),' e ',⍕ct
-------------------------------------------------------------
[0]  r←orig numera2 oper;aa;⎕IO
[1]  ⎕IO←orig
[2]  r←4 0⍕oper
[3]  r←(((3 0⍕(((1↑⍴oper),1)⍴⍳1↑⍴oper)),[⎕IO+1]'|'),[⎕IO+1]' '),r
[4]  r←((1,aa)⍴'     ',4 0⍕⍳1↓⍴oper),[⎕IO]((1,aa←5+4×1↓⍴oper)⍴'   +',100⍴'-'),[⎕IO]r
-------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10]  →(0=' '∈j↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80⍴80↑j↑candi
[15]  candi←j↓candi
[16]  →((⍴candi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80⍴80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
-------------------------------------------------------------
[0]  r←tratamat y;i
[1]  r←0 99 edit y
[2]  i←1
[3] t1:→(i>1↑⍴y)/fimj
[4]  r[i;i]←0
[5]  →(i=i←i+1)/t1
[6] fimj:
-------------------------------------------------------------
[ 0]  opesq vivo624a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;incidencia;ordem;resp1;resp2;resp3;y;x;xu;respx;respr;linhas;colunas
      ;quem
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←6 ⋄ EVENTO←'PL624   '
[ 5]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
```

```
[ 8]  FOLHALA624←ajusta80 FOLHALA624
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA624)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[11]  xk←1 ⋄ resu←0 7⍴0
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  f←FOLHALA624
[14]  esse←24 80⍴' '
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍕VERSAOa←3.33
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[22]  esse[23;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[24;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25]  ordem←7
[26]  y←CRIAMCM2 ordem
[27]  esse[7+⍳9;]←9 80↑1 numera2 tratamat y
[28]  resp1←RESOLVECM2 y
[29]  ULTIMO←resp1
[30]  respx←(ordem,ordem)↑resp1 ⋄ respr←(ordem,-ordem)↑resp1
[31]  linhas←?6⍴ordem
[32]  colunas←?6⍴ordem
[33]  quem←(1 1 1 2 2 2)[6?6]
[34]  esse[17;]←80↑('KR'[quem[1]]),'[',(1 0⍕linhas[1]),'][',(1 0⍕colunas[1]),']'
[35]  esse[18;]←80↑('KR'[quem[2]]),'[',(1 0⍕linhas[2]),'][',(1 0⍕colunas[2]),']'
[36]  esse[19;]←80↑('KR'[quem[3]]),'[',(1 0⍕linhas[3]),'][',(1 0⍕colunas[3]),']'
[37]  esse[20;]←80↑('KR'[quem[4]]),'[',(1 0⍕linhas[4]),'][',(1 0⍕colunas[4]),']'
[38]  esse[21;]←80↑('KR'[quem[5]]),'[',(1 0⍕linhas[5]),'][',(1 0⍕colunas[5]),']'
[39]  esse[22;]←80↑('KR'[quem[6]]),'[',(1 0⍕linhas[6]),'][',(1 0⍕colunas[6]),']'
[40]  xu←6 11⍴',resp?[?;?]'
[41]  xu[;6]←6 1⍴'xr'[quem]
[42]  xu[;8]←6 1⍴1 0⍕linhas
[43]  xu[;10]←6 1⍴1 0⍕colunas
[44]  xu←,xu
[45]  xu[1]←' '
[46]  resp←resp,⍪xu
[47]  resu←resu,[1]1 7⍴resp
[48]  acuja←(f[;2]='#')/⍳1↑⍴f
[49]  f[acuja;⍳80]←esse[⍪,f[acuja;3 4],' ';]
[50]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[51]  ⍞←(⍕xk←xk+1),'-'
[52]  →testa
[53] fim:upag←(1 0+⍴f)⍴' '
[54]  →(1=≡n)/elafa
[55]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[56]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[57]  upag[2+⍳1↑⍴presu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 5 0 5 0 5 0 5 0)⍕resu
[58]  upag[3+1↑⍴presu;]←(1↓⍴upag)↑'\end{verbatim}'
[59]  →terminando
[60] elafa:aaa←(ylu,4 0⍕0 1↓999 0 edit resu)
[61]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[62]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[63] terminando:
[64]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[65]  relat[1↑⍴relat;;]←upag
[66]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[67] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[68]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[69]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[70]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
```

```
------------------------------------------------------------
```

vivo627

```
[0]  AVISO
[1]  'veja COMOFAZER'
------------------------------------------------------------
[ 0]  r←achadiagsec aa;i;tot;j
[ 1]  i←1
[ 2]  j←1↑⍴aa
[ 3]  tot←0
[ 4] t1:→(i>1↑⍴aa)/fim
[ 5]  tot←tot+aa[i;j]
[ 6]  i←i+1
[ 7]  j←j-1
[ 8]  →t1
[ 9] fim:r←tot
------------------------------------------------------------
[ 0]  r←bb acharota tudo;xxx;zz;a;b;cam
[ 1]  cam←⊃tudo[2]
[ 2]  zz←⊃tudo[4]
[ 3]  a←bb[1]
[ 4]  b←bb[2]
[ 5]  ROTA←0 35⍴'        '
[ 6]  xxx←cam[a;b]
[ 7]  r←a
[ 8]  ROTA←ROTA,[1]zz[a;⍳35]
[ 9] vola:→(xxx=b)/fim
[10]  r←r,xxx
[11]  ROTA←ROTA,[1]zz[xxx;⍳35]
[12]  xxx←cam[xxx;b]
[13]  →vola
[14] fim:r←r,b
[15]  ROTA←ROTA,[1]zz[b;⍳35]
[16]  ROTA←((3 0⍕((⍴r),1)⍴r),[2]'-'),[2]ROTA
[17] ⍝ ROTA
------------------------------------------------------------
[ 0]  cavaleiro627a n;acuja;esse;f;iga;lixo1;relat;resp;ta;x;xk;ze;mc;mr;g1;qual;catu
[ 1]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 2]  FOLHALA627←ajusta80 FOLHALA627
[ 3]  relat←ΔFM'c:\apl2\VIVOBLOI'
[ 4]  xk←1
[ 5] testa:→(xk>n)/fim
[ 6]  esse←76 80⍴' '
[ 7]  f←FOLHALA627
[ 8]  esse[1;⍳⍴x]←x←'  --  Cavaleiros da Tavola Redonda'
[ 9]  esse[3;]←80↑4 2⍕1.01
[10]  esse[75;⍳8]←'@000000@'
[11] ini1:
[12]  ze←geracaso 0  ⍝ 0=instancia variada, 1=rede pura (sem estacoes adicionais)
[13]  esse[8;]←80↑5 0⍕ta←1↑⍴iga←⊃ze[4]
[14]  esse[8+⍳6;]←6 80↑formalis(⊃ze[3])[1;;]
[15]  esse[14+⍳6;]←6 80↑formalis(⊃ze[3])[2;;]
[16]  esse[20+⍳6;]←6 80↑formalis(⊃ze[3])[3;;]
[17]  esse[26+⍳6;]←6 80↑formalis(⊃ze[3])[4;;]
[18]  esse[32+⍳6;]←6 80↑formalis(⊃ze[3])[6;;]
[19]  esse[38+⍳6;]←6 80↑formalis(⊃ze[3])[7;;]
[20]  esse[44+⍳6;]←6 80↑formalis(⊃ze[3])[8;;]
[21]  esse[50+⍳6;]←6 80↑formalis(⊃ze[3])[9;;]
[22]  esse[56+⍳6;]←6 80↑formalis(⊃ze[3])[10;;]
[23]  esse[62+⍳6;]←6 80↑formalis(⊃ze[3])[11;;]
[24]  esse[69;]←80↑10 0⍕⊃ze[5]
```

```
[25]  mc←⊃ze[1]
[26]  mr←⊃ze[2]
[27] vortinha:g1←4?ta
[28]  →(mc[g1[3];g1[4]]>7)/blx
[29]  ⍞←'%'
[30]  →vortinha
[31] blx:qual←3+?3
[32]  esse[70;]←80↑(5 0⍕g1[1]),'-',iga[g1[1];⍳21]
[33]  esse[71;]←80↑(5 0⍕g1[2]),'-',iga[g1[2];⍳21]
[34]  resp←,mc[g1[1];g1[2]]
[35]  catu←g1[3 4]acharota ze
[36]  esse[72;]←(3 80⍴(80↑'quarta'),(80↑'quinta'),(80↑'sexta'))[qual-3;]
[37]  esse[73;]←80↑(5 0⍕g1[3]),'-',iga[g1[3];⍳21]
[38]  esse[74;]←80↑(5 0⍕g1[4]),'-',iga[g1[4];⍳21]
[39]  resp←resp,catu[qual]
[40]  resp←⍕resp,achadiagsec mc
[41]  acuja←(f[;2]='#')/⍳1↑⍴f
[42]  f[acuja;]←esse[⌸,f[acuja;3 4],' ';]
[43]  ⍞←(⍕xk←xk+1),'-'
[44]  f←(((1↑⍴relat),1↓⍴f)↑relat),[1]f
[45]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'\end{document}'
[46]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'%',resp
[47]  lixo1←f ⎕FM'c:\apl2\CA627a',('00'⍕xk-1),'.tex'
[48]  →testa
[49] fim:
------------------------------------------------------------
[ 0]  r←criaadj con;i;j;jj
[ 1]  r←(2⍴1↑⍴con)⍴0
[ 2]  i←1
[ 3] t1:→(i>1↑⍴con)/fim
[ 4]  j←35
[ 5] vorta:→(3=+/' '=jj←con[i;j+⍳3])/podesomar
[ 6]  r[i;⌸jj]←1
[ 7]  j←j+3
[ 8]  →vorta
[ 9] podesomar:i←i+1
[10]  →t1
[11] fim:
------------------------------------------------------------
[  0]  criaadjantiga
[  1]  adj←112 112⍴0
[  2]  adj[1;98 86]←1              Aabilio abreu          11
[  3]  adj[2;36]←1                 Aaeroporto              2
[  4]  adj[3;19 33]←1              Aafonso camargo        10
[  5]  adj[4;42 82]←1              Aalgacyr mader          6
[  6]  adj[5;30 73 104 95]←1       Aalto gloria            1,5
[  7]  adj[6;74 55]←1              Aamaury silverio        7
[  8]  adj[7;20 21]←1              Aanita garibaldi       10
[  9]  adj[8;91 64 37]←1           Aatuba                  9,11
[ 10]  adj[9;37 84]←1              Aavenida maringa        6,9
[ 11]  adj[10;45 99 39 102]←1      Abadep                  5,6
[ 12]  adj[11;52 84]←1             Abairro alto            6
[ 13]  adj[12;83 103]←1            Abaixada                2
[ 14]  adj[13;94 20]←1             Abar vitor              3
[ 15]  adj[14;43]←1                Abarreirinha            9
[ 16]  adj[15;28 93]←1             Aboqueirao              4
[ 17]  adj[16;61 112]←1            Abosque maack           8
[ 18]  adj[17;20 30]←1             Abosque papa            3
[ 19]  adj[18;90 58 112 44]←1      Abr116                  7,11
[ 20]  adj[19;32 3 105]←1          Abr277                  8,10
[ 21]  adj[20;13 55 17 7]←1        Abrasilino moura        3,10
[ 22]  adj[21;50 40 95 17]←1       Acabral                 1,10
[ 23]  adj[22;69 97 96 45]←1       Acampina siqueira       2,8
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[ 24]  adj[23;68 107]←1            Acampo cumprido         2
[ 25]  adj[24;60 63]←1             Acanada                 1
[ 26]  adj[25;111 76 70 31]←1      Acapao raso             1,8
[ 27]  adj[26;83 75]←1             Acapelinha              1
[ 28]  adj[27;106 81 111 82]←1     Acarlos klemtz          6,8
[ 29]  adj[28;15 61]←1             Acarmo                  4
[ 30]  adj[29;35 51 67]←1          Acascatinha             4,10
[ 31]  adj[30;17 88 73 5]←1        Acentro civico          3,5
[ 32]  adj[31;25 79]←1             Achurchill              1
[ 33]  adj[32;19]←1                Acoca cola              8
[ 34]  adj[33;52 41 85 57 3 78]←1  Acolegio militar        3,10,11
[ 35]  adj[34;83 99]←1             Acoronel dulcidio       1
[ 36]  adj[35;29 65]←1             Acruz                   4
[ 37]  adj[36;2 80]←1              Acuia grande            2
[ 38]  adj[37;8 9]←1               Adeposito copel         9
[ 39]  adj[38;103 108 100 99]←1    Aengenheiros reboucas   4,5,7
[ 40]  adj[39;73 100 10 89]←1      Aesquina marechais      1,4,6
[ 41]  adj[40;21 41]←1             Aestados unidos        10
[ 42]  adj[41;52 33 54 40]←1       Afagundes varela        6,10
[ 43]  adj[42;4]←1                 Afazendinha             6
[ 44]  adj[43;14 49]←1             Afernando noronha       9
[ 45]  adj[44;18 70]←1             Afrancisco derosso     11
[ 46]  adj[45;22 10 83 106]←1      Afrancisco rocha        2,6
[ 47]  adj[46;55 67]←1             Agardenio scorzato     10
[ 48]  adj[47;90 101]←1            Aguaira                 7
[ 49]  adj[48;72 98]←1             Ahauer                  4
[ 50]  adj[49;43 91]←1             Ahildo paz              9
[ 51]  adj[50;21 63]←1             Aholanda                1
[ 52]  adj[51;29 102]←1            Ahospital gracas        4
[ 53]  adj[52;64 11 33 41]←1       Ahospital vita          6,11
[ 54]  adj[53;66 101]←1            Ahsbc kennedy           7
[ 55]  adj[54;41 73]←1             Ahugo lange             6
[ 56]  adj[55;20 88 46 6]←1        Ahugo simas             7,10
[ 57]  adj[56;76 81]←1             Aitatiaia               1
[ 58]  adj[57;33 86]←1             Ajardim botanico       11
[ 59]  adj[58;18 98]←1             Ajoao barcelos         11
[ 60]  adj[59;69]←1                Ajoao dallami           8
[ 61]  adj[60;24 91]←1             Ajoao gulin             1
[ 62]  adj[61;72 87 28 16]←1       Ajoaquim torrea         4,8
[ 63]  adj[62;104 108]←1           Alargo lazzarotto       5
[ 64]  adj[63;24 50]←1             Aludovico geronasso     1
[ 65]  adj[64;8 52]←1              Aluiza gulin           11
[ 66]  adj[65;35 92]←1             Amadalosso              4
[ 67]  adj[66;53 103]←1            Amaternidade curitiba   7
[ 68]  adj[67;29 46]←1             Amba ferrante          10
[ 69]  adj[68;23 97]←1             Amossungue              2
[ 70]  adj[69;22 59]←1             Amuseu automovel        8
[ 71]  adj[70;25 44 112]←1         Aomar pichetti          8,11
[ 72]  adj[71;74]←1                Aparque tangua          7
[ 73]  adj[72;48 61]←1             Apassarela              4
[ 74]  adj[73;5 104 100 39 88 30]←1Apasseio publico        1,3,6,7
[ 75]  adj[74;6 71]←1              Apedreira leminski      7
[ 76]  adj[75;26 81]←1             Apedro macedo           1
[ 77]  adj[76;25 56]←1             Apedro zagonel          1
[ 78]  adj[77;78]←1                Apinhais                3
[ 79]  adj[78;33 77]←1             Apinheirao              3
[ 80]  adj[79;31]←1                Apinheirinho            1
[ 81]  adj[80;36 105]←1            Aportal saojose         2
[ 82]  adj[81;106 75 56 27]←1      Aportao                 1,6
[ 83]  adj[82;4 27]←1              Apotiguara              6
[ 84]  adj[83;34 12 26 45]←1       Apraca japao            1,2
[ 85]  adj[84;9 11]←1              Apraca liberdade        6
[ 86]  adj[85;33 104]←1            Apraca nacoes           3
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[ 87]  adj[86;57 109 1 103]←1      ⍝puc                    2,11
[ 88]  adj[87;61 105]←1            ⍝rio belem              8
[ 89]  adj[88;55 30 73 102]←1      ⍝rua teffe              5,7
[ 90]  adj[89;102 39]←1            ⍝ruinas saofrancisco    4
[ 91]  adj[90;18 47]←1             ⍝santa bernadete        7
[ 92]  adj[91;8 49 60]←1           ⍝santa candida          1,9
[ 93]  adj[92;65]←1                ⍝santa felicidade       4
[ 94]  adj[93;15]←1                ⍝sao jose               4
[ 95]  adj[94;13]←1                ⍝sao lourenco           3
[ 96]  adj[95;5 21]←1              ⍝sao lucas              1
[ 97]  adj[96;22 106]←1            ⍝seminario              8
[ 98]  adj[97;22 68]←1             ⍝shopping barigui       2
[ 99]  adj[98;1 48 58 103]←1       ⍝shopping cidade        4,11
[100]  adj[99;10 100 38 83]←1      ⍝shopping curitiba      1,5
[101]  adj[100;73 39 99 38]←1      ⍝shopping estacao       1,4,7
[102]  adj[101;47 53]←1            ⍝shopping paladium      7
[103]  adj[102;88 89 10 51]←1      ⍝telepar                4,5
[104]  adj[103;38 86 98 66 12]←1   ⍝tre                    2,4,7
[105]  adj[104;5 85 62 73]←1       ⍝ubaldino amaral        3,5
[106]  adj[105;109 19 80 87]←1     ⍝uberaba                2,8
[107]  adj[106;96 45 81 27]←1      ⍝ulisses vieira         6,8
[108]  adj[107;23]←1               ⍝universidade positivo  2
[109]  adj[108;38 62]←1            ⍝vila capanema          5
[110]  adj[109;86 105]←1           ⍝wal mart               2
[111]  adj[110;112]←1              ⍝waldemar campos        7
[112]  adj[111;25 27]←1            ⍝waldemiro pedroso      8
[113]  adj[112;18 16 110 70]←1     ⍝xaxim                  7,8
------------------------------------------------------------
[ 0]  r←floydmetro adj;i;q;s;t;j;a;cam;lim
[ 1]  lim←1↑⍴adj
[ 2]  r←(2,⍴adj)⍴0
[ 3]  a←0 99999 edit adj
[ 4]  cam←(2⍴lim)⍴0
[ 5]  i←1
[ 6] t1:→(i>lim)/conta
[ 7]  a[i;i]←0
[ 8]  i←i+1
[ 9]  →t1
[10] conta:q←1
[11] t2:→(q>lim)/ufa0
[12]  s←1
[13] t3:→(s>lim)/ufa1
[14]  t←1
[15] t4:→(t>lim)/ufa2
[16]  →((a[s;q]+a[q;t])≥a[s;t])/pula
[17]  a[s;t]←a[s;q]+a[q;t]
[18]  →(cam[s;q]≠0)/crasca
[19]  cam[s;t]←q
[20]  →junta
[21] crasca:cam[s;t]←cam[s;q]
[22] junta:
[23] pula:
[24]  t←t+1
[25]  →t4
[26] ufa2:s←s+1
[27]  →t3
[28] ufa1:q←q+1
[29]  →t2
[30] ufa0:
[31]  i←1
[32] t5:→(i>lim)/ufa
[33]  j←1
[34] t6:→(j>lim)/ufb
```

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[35]  →(cam[i;j]≠0)/soma
[36]  cam[i;j]←j
[37] soma:j←j+1
[38]  →t6
[39] ufb:i←i+1
[40]  →t5
[41] ufa:r[1;;]←a
[42]  r[2;;]←cam
-----------------------------------------------------------
[ 0]  r←formalis aa;xu;i;xaxa
[ 1]  r←6 80ρ' '
[ 2]  xaxa←0 80ρ' '
[ 3]  aa←((1↓ρaa)≠+/aa=' ')/[1]aa
[ 4]  aa←aa,';'
[ 5]  aa←aa,'∘'
[ 6]  xu←,aa
[ 7]  xu←(xu≠' ')/xu
[ 8]  xu←('∘ 'edit xu)
[ 9]  xu←(¯2↓xu),'. Total de estaçAes: ',3 0⍕1↑ρaa
[10]  xu←480↑xu
[11] ini:i←60
[12] vo:→(xu[i]=' ')/pi
[13]  i←i+1
[14]  →vo
[15] pi:xaxa←xaxa,[1]1 80ρ80↑i↑xu
[16]  xu←i↓xu
[17]  →((ρxu)=+/' '=xu)/acabou
[18]  →(0=ρxu)/acabou
[19]  →ini
[20] acabou:r←6 80↑xaxa
-----------------------------------------------------------
[ 0]  r←geracaso puro;conex;ma;aa;rr;to
[ 1]  r←6ρ' '
[ 2]  conex←CONEX
[ 3]  ma←11 23 21ρ' '
[ 4]  ma[1;;]←23 21↑L1
[ 5]  ma[2;;]←23 21↑L2
[ 6]  ma[3;;]←23 21↑L3
[ 7]  ma[4;;]←23 21↑L4
[ 8]  ma[5;;]←23 21↑L5
[ 9]  ma[6;;]←23 21↑L6
[10]  ma[7;;]←23 21↑L7
[11]  ma[8;;]←23 21↑L8
[12]  ma[9;;]←23 21↑L9
[13]  ma[10;;]←23 21↑LA
[14]  ma[11;;]←23 21↑LB
[15]  to←156
[16]  →(puro=1)/pz
[17]  →(1=?2)/p2
[18]  ma[1;23;]←21↑'XUNDA∘PINHAO'
[19]  conex←conex,[1]1 71ρ(24↑'XUNDA PINHAO'),(11↑'1'),36↑' 79'
[20]  conex[79;38+⍳3]←3 0⍕1↑ρconex
[21]  to←to+1
[22] p2:→(1=?2)/p3
[23]  ma[2;16;]←21↑'ZACARIA∘SJP'
[24]  conex←conex,[1]1 71ρ(24↑'ZACARIA SJP'),(11↑'2'),36↑'  2'
[25]  conex[2;38+⍳3]←3 0⍕1↑ρconex
[26]  to←to+1
[27] p3:→(1=?2)/p4
[28]  ma[3;12;]←21↑'ZANAORIA∘PINHAIS'
[29]  conex←conex,[1]1 71ρ(24↑'ZANAORIA PINHAIS'),(11↑'3'),36↑' 77'
[30]  conex[77;38+⍳3]←3 0⍕1↑ρconex
[31]  to←to+1
```

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[32] p4:→(1=?2)/p6
[33]  ma[4;19;]←21↑'ZEBRA'
[34]  conex←conex,[1]1 71⍴(24↑'ZEBRA'),(11↑'4'),36↑' 92'
[35]  conex[92;38+⍳3]←3 0⍕1↑⍴conex
[36]  to←to+1
[37] p6:→(1=?2)/p7
[38]  ma[6;17;]←21↑'ZIMBRO'
[39]  conex←conex,[1]1 71⍴(24↑'ZIMBRO'),(11↑'6'),36↑'  9'
[40]  conex[9;41+⍳3]←3 0⍕1↑⍴conex
[41]  to←to+1
[42] p7:→(1=?2)/p8
[43]  ma[7;18;]←21↑'ZULMIRO'
[44]  conex←conex,[1]1 71⍴(24↑'ZULMIRO'),(11↑'7'),36↑' 71'
[45]  conex[71;38+⍳3]←3 0⍕1↑⍴conex
[46]  to←to+1
[47] p8:→(1=?2)/pa
[48]  ma[8;17;]←21↑'ZULU'
[49]  conex←conex,[1]1 71⍴(24↑'ZULU'),(11↑'8'),36↑' 32'
[50]  conex[32;38+⍳3]←3 0⍕1↑⍴conex
[51]  to←to+1
[52] pa:→(1=?2)/pz
[53]  ma[10;13;]←21↑'ZUZU∘AMIGA'
[54]  conex←conex,[1]1 71⍴(24↑'ZUZU AMIGA'),(11↑'10'),36↑' 19'
[55]  conex[19;44+⍳3]←3 0⍕1↑⍴conex
[56]  to←to+1
[57] pz:aa←criaadj conex
[58]  rr←floydmetro aa
[59]  r[1]←⊂rr[1;;]
[60]  r[2]←⊂rr[2;;]
[61]  r[3]←⊂ma
[62]  r[4]←⊂conex
[63]  r[5]←⊂to
[64]  r[6]←⊂aa
------------------------------------------------------------
[0]  r←geratabestac;x;z;y
[1]  x←⎕CR'criaadj'
[2]  z←2 0↓x
[3]  y←0 29↓z
[4]  r←1 numera y
------------------------------------------------------------
[ 0]  opesq vivo627a n;CORRECAO;EVENTO;a;aaa;acuja;b;catu;dhx;esse;f;g1;iga;kk;lixo1;lixon
      ol;mc;mr;num;qual;relat;resp;resu;ta;upag;xixo;xk;ylu;ze
[ 1]  'demora...'
[ 2]  →(0≠⎕NC'opesq')/qveio
[ 3]  opesq←10⍴' '
[ 4] qveio:
[ 5]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 6]  CORRECAO←8 ⋄ EVENTO←'PL627   '
[ 7]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[10]  FOLHALA627←ajusta80 FOLHALA627
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA627)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[13]  xk←1 ⋄ resu←0 4⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←76 80⍴' '
[16]  f←FOLHALA627
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[20]  esse[4;]←80↑ylu[xk;⍳6]
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[21]  esse[5;]←80↑ylu[xk;6+⍳30]
[22]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[23]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[24]  esse[75;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[25]  esse[76;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[26] ini1:
[27]  ze←geracaso 0  ⍝ 0=instancia variada, 1=rede pura (sem estacoes adicionais)
[28]  esse[8;]←80↑5 0⍕ta←1↑⍴iga←⊃ze[4]
[29]  esse[8+⍳6;]←6 80↑formalis(⊃ze[3])[1;;]
[30]  esse[14+⍳6;]←6 80↑formalis(⊃ze[3])[2;;]
[31]  esse[20+⍳6;]←6 80↑formalis(⊃ze[3])[3;;]
[32]  esse[26+⍳6;]←6 80↑formalis(⊃ze[3])[4;;]
[33]  esse[32+⍳6;]←6 80↑formalis(⊃ze[3])[6;;]
[34]  esse[38+⍳6;]←6 80↑formalis(⊃ze[3])[7;;]
[35]  esse[44+⍳6;]←6 80↑formalis(⊃ze[3])[8;;]
[36]  esse[50+⍳6;]←6 80↑formalis(⊃ze[3])[9;;]
[37]  esse[56+⍳6;]←6 80↑formalis(⊃ze[3])[10;;]
[38]  esse[62+⍳6;]←6 80↑formalis(⊃ze[3])[11;;]
[39]  esse[69;]←80↑10 0⍕⊃ze[5]
[40]  mc←⊃ze[1]
[41]  mr←⊃ze[2]
[42] vortinha:g1←4?ta
[43]  →(mc[g1[3];g1[4]]>7)/blx
[44]  ⎕←'%'
[45]  →vortinha
[46] blx:qual←3+?3
[47]  esse[70;]←80↑(5 0⍕g1[1]),'-',iga[g1[1];⍳21]
[48]  esse[71;]←80↑(5 0⍕g1[2]),'-',iga[g1[2];⍳21]
[49]  resp←resp,mc[g1[1];g1[2]]
[50]  catu←g1[3 4]acharota ze
[51]  esse[72;]←(3 80⍴(80↑'quarta'),(80↑'quinta'),(80↑'sexta'))[qual-3;]
[52]  esse[73;]←80↑(5 0⍕g1[3]),'-',iga[g1[3];⍳21]
[53]  esse[74;]←80↑(5 0⍕g1[4]),'-',iga[g1[4];⍳21]
[54]  resp←resp,catu[qual]
[55]  resp←resp,achadiagsec mc
[56]  resu←resu,[1]1 4⍴resp
[57]  acuja←(f[;2]='#')/⍳1↑⍴f
[58]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[59]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[60]  ⎕←(⍕xk←xk+1),'-'
[61]  →testa
[62] fim:upag←(1 0+⍴f)⍴' '
[63]  →(1=≡n)/elafa
[64]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[65]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[66]  upag[2+⍳1↑⍴presu;⍳+/lixo1]←(lixo1←4 0 8 0 8 0 8 0)⍕resu
[67]  upag[3+1↑⍴presu;]←(1↓⍴upag)↑'\end{verbatim}'
[68]  →terminando
[69] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),8 0⍕0 1↓resu)
[70]  aaa[1;35 36]←2 0⍕CORRECAO
[71]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[72]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[73] terminando:
[74]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[75]  relat[1↑⍴relat;;]←upag
[76]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[77] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[78]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[79]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo628

```
[ 0]  r←j contacids lista;x;ct
[ 1]  x←j[1]
[ 2]  ct←1
[ 3] como:  ⍝ x,ct
[ 4]  →(lista[x]=j[2])/achou
[ 5]  ct←ct+1
[ 6]  x←lista[x]
[ 7]  →como
[ 8] achou:r←ct+1
------------------------------------------------------------
[ 0]  r←geracaso628;a;c10;cus;ee;i;ind;j;n2;no;peso;qtd1;qtd2;qtd3;r1;r2;rot;v2;v3;vi;vv;x
      ;z
[ 1] denovo:
[ 2]  no←cida2c
[ 3]  n2←cidades
[ 4]  vi←vizin
[ 5]  z←15 15⍴0
[ 6]  i←1
[ 7] t1:→(i>15)/f1
[ 8]  vv←vi[i;a←?4]
[ 9]  vi[i;a]←0
[10]  z[i;vv]←10+?40
[11]  i←i+1
[12]  →t1
[13] f1:
[14]  j←1
[15] t2:→(j>15)/f3
[16]  →(0≠+/z[;j])/soma
[17]  v2←(vi[j;]≠0)/vi[j;]
[18]  v3←v2[?⍴v2]
[19]  vi[j;]←vi[j;]×vi[j;]≠v3
[20]  z[v3;j]←10+?40
[21]  j←j+1
[22]  →t2
[23] soma:j←j+1
[24]  →t2
[25] f3:
[26]  j←1
[27] t4:→(j>15)/f4
[28]  →(1≠?2)/soma2
[29]  v2←(vi[j;]≠0)/vi[j;]
[30]  v3←v2[a←?⍴v2]
[31]  z[v3;j]←10+?40
[32]  j←j+1
[33]  →t4
[34] soma2:j←j+1
[35]  →t4
[36] f4:
[37]  r2←resolve628 z
[38]  →(999≠⌈/,r2[;⍳15])/blz
[39]  ⍞←'%'
[40]  →denovo
[41] blz:
[42]  r1←((19⍴' '),,' ',cida2c),[1](1 numera cidades,(3 0⍕z))
[43]  cus←r2[;⍳15]
[44]  rot←r2[;15+⍳15]
[45]  c10←10 4⍴0
[46]  i←1
[47] t5:→(i>10)/f5
[48]  c10[i;1 2]←j←2?15
[49]  c10[i;3]←cus[j[1];j[2]]
```

```
[50]  c10[i;4]←j contacids rot[;j[2]]
[51]  i←i+1
[52]  →t5
[53] f5:c10←c10[⍒c10[;3];]
[54]  ee←3 80⍴' '
[55]  ee[1;]←80↑'1&',r1[1+c10[1;1];⍳18],'&',r1[1+c10[1;2];⍳18],'&',(3 0⍕qtd1←10+?20),'⍀⍀ ⍀
      hline'
[56]  ee[2;]←80↑'2&',r1[1+c10[3;1];⍳18],'&',r1[1+c10[3;2];⍳18],'&',(3 0⍕qtd2←10+?20),'⍀⍀ ⍀
      hline'
[57]  ee[3;]←80↑'3&',r1[1+c10[8;1];⍳18],'&',r1[1+c10[8;2];⍳18],'&',(3 0⍕qtd3←10+?20),'⍀⍀ ⍀
      hline'
[58]  r←7⍴0
[59]  r[1]←⊂c10[1 3 8;]
[60]  r[2]←⊂r1
[61]  r[3]←⊂cus
[62]  r[4]←⊂rot
[63]  r[5]←⊂ee
[64]  r[6]←⊂3 0⍕peso←3+?6
[65]  qtd1←qtd1×peso ⋄ qtd2←qtd2×peso ⋄ qtd3←qtd3×peso
[66]  r[7]←⊂80↑7 0⍕,(3 2⍴(qtd1,1,qtd2,1,qtd3,1))×c10[1 3 8;3 4]
[67]  →0
[68] erro:'parametro nao pode ser maior do que 15'
-------------------------------------------------------------
[0]  r←orig numera2 oper;aa;⎕IO
[1]  ⎕IO←orig
[2]  r←4 0⍕oper
[3]  r←(((3 0⍕(((1↑⍴oper),1)⍴⍳1↑⍴oper)),[⎕IO+1]'|'),[⎕IO+1]' '),r
[4]  r←((1,aa)⍴'     ',4 0⍕⍳1↓⍴oper),[⎕IO]((1,aa←5+4×1↓⍴oper)⍴'   +',100⍴'-'),[⎕IO]r
-------------------------------------------------------------
[ 0]  r←resolve628 y;W;Q;ordem;infinito;k;i;j;passos
[ 1] ⍝ este algoritmo exige a diagonal principal zerada
[ 2] ⍝ algoritmo de Floyd modificado. RABU92, pag 75, corrigido !
[ 3]  ordem←1↑⍴y
[ 4]  →(ordem=+/0=(,y)[((⍳ordem)×ordem+1)-ordem])/ok55
[ 5]  'a matiz diagonal nao esta zerada'
[ 6]  →0
[ 7] ok55:W←y
[ 8]  infinito←100000000000
[ 9]  Q←W+(infinito×W=0)
[10]  k←1
[11] fff:→(k>ordem)/vai88
[12]  Q[k;k]←0
[13]  →(k=k←k+1)/fff
[14] vai88:k←1 ⋄ passos←(ordem,ordem)⍴0
[15] testak:→(k>ordem)/saik
[16]  i←1
[17] testai:→(i>ordem)/saii
[18]  j←1
[19] testaj:→(j>ordem)/saij
[20]  →((Q[i;k]+Q[k;j])≥Q[i;j])/somao
[21]  Q[i;j]←Q[i;k]+Q[k;j]
[22]  →(passos[i;k]=0)/eda
[23]  passos[i;j]←passos[i;k]
[24]  →somao
[25] eda:passos[i;j]←k
[26] somao:→(j=j←j+1)/testaj
[27] saij:→(i=i←i+1)/testai
[28] saii:
[29]  →(k=k←k+1)/testak
[30] saik:r←(999×Q>1000000000)+(Q×Q<1000000000)
[31]  r←r,passos←passos+(passos=0)×((ordem,ordem)⍴⍳ordem)
-------------------------------------------------------------
[ 0]  opesq vivo628a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
```

```
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo628 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PL628   '
[ 9]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[62] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[63]  lixonol←aaa ∆FM('c:\apl2\',((~⊖∧\⊖EVENTO=' ')/EVENTO),'.gpa')
[64]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[65] terminando:
[66]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[67]  relat[1↑⍴relat;;]←upag
[68]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[69] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[70]  lixonol←lixonol ∆FM'c:\apl2\',((~⊖∧\⊖EVENTO=' ')/EVENTO),'.tex'
[71]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[72]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo632

```
[0]  r←acertacam ff;i
[1]  ff←1↓ff
[2]  r←((¯1+⍴ff),2)⍴0
[3]  i←1
[4] t1:→(i>1↑⍴r)/fim
[5]  r[i;]←ff[i],ff[i+1]
[6]  →(i=i←i+1)/t1
[7] fim:
------------------------------------------------------------
[0]  r←achafi m
[1]  r←(0=+/[2]m)/⍳1↑⍴m
------------------------------------------------------------
[0]  r←achain m
[1]  r←(0=+/[1]m)/⍳1↓⍴m
------------------------------------------------------------
[ 0]  r←criaflow3;li;or;de;o1;o2;d1;d2;d3;xx;pr;prefs;outro;indp;indo;ind;o3
[ 1]  r←7 7⍴0
[ 2]  li←7?7
[ 3]  →(1=?2)/coroa
[ 4]  or←li[1] ⋄ de←li[7] ⋄ o1←li[2] ⋄ o2←li[3] ⋄ d1←li[4] ⋄ d2←li[5]
[ 5]  d3←li[6]
[ 6]  r[or;(o1,o2)]←?2⍴20
[ 7]  r[(d1,d2,d3);de]←?3⍴20
[ 8]  xx←⍉2 25⍴(25⍴o1,o2,d1,d2,d3),(5⍴o1),(5⍴o2),(5⍴d1),(5⍴d2),5⍴d3
[ 9]  xx←(,xx[;1]≠xx[;2])/[1]xx
[10]  pr←((xx[;1]=o1)∨(xx[;1]=o2))∧((xx[;2]=d1)∨(xx[;2]=d2)∨(xx[;2]=d3))
[11]  prefs←pr/[1]xx
[12]  outro←(~pr)/[1]xx
[13]  indp←4?6
[14]  indo←6+2?14
[15]  xx←prefs,[1]outro
[16]  ind←indp,indo
[17] t1:→(0=⍴ind)/fim
[18]  r[xx[ind[1];1];xx[ind[1];2]]←?10
[19]  ind←1↓ind
[20]  →t1
[21] fim:   ⍝'li=',(  ⍕li),'      2/3'
[22]  →0
[23] coroa:
[24]  or←li[1] ⋄ de←li[7] ⋄ o1←li[2] ⋄ o2←li[3] ⋄ o3←li[4] ⋄ d1←li[5]
[25]  d2←li[6]
[26]  r[or;(o1,o2,o3)]←?3⍴20
[27]  r[(d1,d2);de]←?2⍴20
[28]  xx←⍉2 25⍴(25⍴o1,o2,o3,d1,d2),(5⍴o1),(5⍴o2),(5⍴o3),(5⍴d1),5⍴d2
[29]  xx←(,xx[;1]≠xx[;2])/[1]xx
[30]  pr←((xx[;1]=o1)∨(xx[;1]=o2)∨(xx[;1]=o3))∧((xx[;2]=d1)∨(xx[;2]=d2))
[31]  prefs←pr/[1]xx
```

```
[32]  outro←(~pr)/[1]xx
[33]  indp←4?6
[34]  indo←6+2?14
[35]  xx←prefs,[1]outro
[36]  ind←indp,indo
[37] t11:→(0=⍴ind)/fim1
[38]  r[xx[ind[1];1];xx[ind[1];2]]←?10
[39]  ind←1↓ind
[40]  →t11
[41] fim1:   ⍝'li=',(  ⍕li),'           3/2'
-------------------------------------------------------------
[ 0]  r←ekarp m;in;fi;kk;zz;quem;rm;val;jj;yh
[ 1]  in←achain m ⋄ fi←achafi m ⋄ r←0 ⋄ LOG←0 40⍴'' ⋄ yh←1
[ 2] inicio:kk←transf m
[ 3]  zz←acertacam jj←kk tennen1 in,fi
[ 4]  quem←zz[;2]+(1↑⍴m)×¯1+zz[;1]
[ 5]  rm←,m
[ 6]  val←⌊/rm[quem]
[ 7]  LOG←LOG,[1]1 40⍴40↑(5 0⍕val),' = ',4 0⍕jj
[ 8]  →(val≤0)/acabu
[ 9]  r←r+val
[10]  rm[quem]←rm[quem]-val
[11]  m←(⍴m)⍴rm
[12]  →(yh>9)/inicio
[13]  ⍞'M',(1 0⍕yh),'  ←m'
[14]  yh←yh+1
[15]  →inicio
[16] acabu:
-------------------------------------------------------------
[0]  r←geraquestaoprova;dd;x
[1]  dd←criaflow3
[2]  r←0 75⍴' '
[3]  x←1 numera2 dd
[4]  r←r,[1]((1↑⍴x),75)↑x
[5]  r←r,[1]1 75⍴75↑'nodo inicial (caixa de agua): ',⍕achain dd
[6]  r←r,[1]1 75⍴75↑'nodo final (local de uso da agua): ',⍕achafi dd
[7]  r←r,[1]1 75⍴75↑'Resposta: ',⍕ekarp dd
-------------------------------------------------------------
[0]  r←orig numera2 oper;aa;⎕IO
[1]  ⎕IO←orig
[2]  r←4 0⍕oper
[3]  r←(((3 0⍕(((1↑⍴oper),1)⍴⍳1↑⍴oper)),[⎕IO+1]'|'),[⎕IO+1]' '),r
[4]  r←((1,aa)⍴'     ',4 0⍕⍳1↓⍴oper),[⎕IO]((1,aa←5+4×1↓⍴oper)⍴'   +',100⍴'-'),[⎕IO]r
-------------------------------------------------------------
[ 0]  r←matw tennen1 depara;⎕IO;N;s;t;perm;distancia;procede;corrente;smalldist;dc;i;newdi
      st;k;pd;resposta;cont
[ 1]  depara←depara-1
[ 2]  ⎕IO←0 ⋄ N←1↑⍴matw ⋄ perm←N⍴0 ⋄ distancia←N⍴99999 ⋄ s←depara[0] ⋄ cont←0
[ 3]  t←depara[1] ⋄ perm[s]←1 ⋄ distancia[s]←0 ⋄ procede←N⍴0 ⋄ corrente←s
[ 4] teste1:→(corrente=t)/sai1
[ 5]  smalldist←99999 ⋄ dc←distancia[corrente] ⋄ i←0
[ 6] teste2:→(i≥N)/sai2
[ 7]  →(perm[i]≠0)/sai5
[ 8]  newdist←dc+matw[corrente;i]
[ 9] sai3:→(newdist≥distancia[i])/sai4
[10]  distancia[i]←newdist ⋄ procede[i]←corrente
[11] sai4:→(distancia[i]≥smalldist)/sai5
[12]  smalldist←distancia[i] ⋄ k←i ⋄⍝ 'k=',  ⍕k
[13] sai5:→(i=i←i+1)/teste2
[14] sai2:corrente←k ⋄ perm[corrente]←1
[15]  →teste1
[16] sai1:pd←distancia[t]
[17] ⍝'procede=',  ⍕procede
```

```
[18] ⍝'t=',  ⍕t
[19]  resposta←t,procede[t] ⋄ i←1
[20] teste3:→(procede[t]=s)/fim
[21]  t←procede[t]
[22]  resposta←resposta,procede[t]
[23]  →teste3
[24] fim:r←pd,1+⊖resposta
-------------------------------------------------------------
[0]  r←transf m
[1]  r←9998×m=0
[2]  r←r+1
-------------------------------------------------------------
[ 0]  opesq vivo632a n;CORRECAO;EVENTO;aaa;acuja;dd;dd2;dd3;dhx;esse;f;lixo1;lixonol;nomes
      ;oba;ql39;qlinha;relat;resp;resu;upag;x;xixo;xk;ylu;zeca;zeca2;zeca3
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←1 ⋄ EVENTO←'PL632   ' ⋄ ⎕IO←1
[ 5]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 8]  ylu←n grupo ylu
[ 9]  FOLHALA632←ajusta80 FOLHALA632
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA632)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[12]  xk←1 ⋄ resu←0 4⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←42 80⍴' '
[15]  f←FOLHALA632
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.23
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  →(36=1↓⍴ylu)/zebra
[21]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[22]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[23]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[24]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[25]  →maiszebra
[26] ⍝⍝⍝
```

```
[49]  →(1≠+/0=+/[2]dd3)/teste3
[50]  esse[30;]←80↑1 0⍕achain dd3
[51]  esse[31;]←80↑1 0⍕achafi dd3
[52]  esse[31+⍳9;]←9 80↑1 numera2 dd3
[53]  resu←resu,[1]1 4⍴resp,zeca,zeca2,zeca3
[54]  acuja←(f[;2]='#')/⍳1↑⍴f
[55]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[56]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[57]  ⎕←(⍕xk←xk+1),'-'
[58]  →testa
[59] fim:upag←(1 0+⍴f)⍴' '
[60]  →(1=≡n)/elafa
[61]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[62]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[63]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 5 0)⍕resu
[64]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[65]  →terminando
[66] elafa:aaa←(ylu,5 0⍕0 1↓resu)
[67]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[68]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[69] terminando:
[70] ⍝upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[71]  relat[1↑⍴relat;;]←upag
[72]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[73] ⍝ lixonol←lixonol,[1]((1↑⍴lixonol),80)↑INSTRUC632
[74] ⍝ lixonol←lixonol,[1]((1↑⍴lixonol),80)↑LOG
[75]  lixonol←lixonol,[1]1 80⍴80↑'\end{document}'
[76] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[77]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[78]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[79]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo633

```
[0]  AVISO
[1]  'Para corrigir, construa x←14 14⍴0, colocando 1 nos prerequitos'
[2]  'Dai faca (⍳14),[0.5]+/[1]x - para ver o vetor de controle'
[3]  'Escreva numa folha de papel o vetor de controle para ir resolvendo'
[4]  'escolha o primeiro zero, (na coluna c) e dai faca: (⍳14),[0.5]x[c;]'
------------------------------------------------------------
[ 0]  r←n geragra qtos;z;qual
[ 1] devolta:r←,(n,n)⍴0
[ 2]  r[qtos?⍴r]←1
[ 3]  r←(n,n)⍴r
[ 4]  RESP←⍳0
[ 5] resolve:
[ 6]  z←+/[1]r
[ 7] loop:→(1>+/0=z)/devolta
[ 8]  qual←1↑(0=z)/⍳⍴z
[ 9]  z[qual]←999
[10]  RESP←RESP,qual
[11]  →(n=⍴RESP)/acab
[12] diminui:z←z-,r[qual;]
[13] ⍝ z
[14]  →loop
[15] acab:
[16]  →0
[17] deuerro:'deu erro, veja: ',⍕z
------------------------------------------------------------
[ 0]  r←geratex mat;i;j;obj
[ 1]  obj←MATS
```

```
[ 2]  r←0 40ρ' '
[ 3]  i←1
[ 4] up0:→(i>1↑ρmat)/fim
[ 5]  j←1
[ 6] up1:→(j>1↑ρmat)/sal
[ 7]  →(mat[i;j]=0)/pula
[ 8] ⍝ r  ←r,[1] 1 40   ρ40  ↑obj[i;  ⍳3],(,'ZI2'   ⎕FMT i),' e prerequisito de ',obj[j;
      ⍳3],,'ZI2'   ⎕FMT j
[ 9]  r←r,[1]1 40ρ40↑obj[i;⍳3],' e prerequisito de ',obj[j;⍳3]
[10] pula:→(j=j←j+1)/up1
[11] sal:→(i=i←i+1)/up0
[12] fim:
------------------------------------------------------------
[0]  r←preencha;x
[1]  r←14 14ρ0
[2] t1:'entre linha e coluna ou zero para encerrar'
[3]  x←⎕
[4]  →(x=0)/fim
[5]  r[x[1];x[2]]←1
[6]  →t1
[7] fim:
------------------------------------------------------------
[ 0]  resolparc r;qual;n;z;i
[ 1]  n←1↑ρr
[ 2]  i←1
[ 3] devolta:
[ 4]  RESP←⍳0
[ 5] resolve:
[ 6]  z←+/[1]r
[ 7] loop:→(1>+/0=z)/deuerro
[ 8]  qual←1↑(0=z)/⍳ρz
[ 9]  z[qual]←999
[10]  RESP←RESP,qual
[11]  (⍕i),'  executa ',⍕qual
[12]  i←i+1
[13]  →(n=ρRESP)/acab
[14] diminui:z←z-,r[qual;]
[15]  'novo vetor'
[16]  z
[17]  →loop
[18] acab:
[19]  →0
[20] deuerro:'deu erro, veja: ',⍕z
------------------------------------------------------------
[ 0]  opesq vivo633a n;CORRECAO;EVENTO;aaa;acuja;aiai;dhx;esse;f;inds;lixo1;lixonol;nomes;
      ql39;qlinha;relat;resp;resp1;resp2;resu;upag;x;xixo;xk;xy;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←8 ⋄ EVENTO←'PL633   '
[ 6]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA633←ajusta80 FOLHALA633
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALA633)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLOI'
[13]  xk←1 ⋄ resu←0 30ρ' '
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←37 80ρ' '
[16]  f←FOLHALA633
```

```
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←3.34
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[22]  →(36=1↓⍴ylu)/zebra
[23]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[24]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[25]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[26]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[27]  →maiszebra
[28] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
------------------------------------------------------------
```

vivo634

```
[0]  r←acertag hh
[1]  r←5 0⍕hh
[2]  r[;6 11 16 21 26 31 36 41 46]←'&'
[3]  r←r,[2]'\'
[4]  r←r,[2]'\'
------------------------------------------------------------
[ 0]  r←constrlista aa;i;j;ordem
[ 1]  r←0 3⍴0
[ 2]  i←1 ⋄ ordem←1↑⍴aa
[ 3] tt:→(i>ordem)/aca
[ 4]  j←1
[ 5] tr:→(j>ordem)/ufa
[ 6]  →(aa[i;j]=0)/zero
[ 7]  r←r,[1]1 3⍴aa[i;j],i,j
[ 8] zero:→(j=j←j+1)/tr
[ 9] ufa:→(i=i←i+1)/tt
[10] aca:r←r[⍋r[;1];]
------------------------------------------------------------
[0]  gabarito alfa
[1] ⍝ alfa deve ser a matriz da folha
[2]  bb←constrlista alfa
[3]  cc←10 resolve bb
[4]  CUS
------------------------------------------------------------
[ 0]  r←geracaso ordem;i;j
[ 1]  r←(ordem,ordem)⍴?(ordem*2)⍴99⌊ordem*2
[ 2]  i←1
[ 3] v1:→(i>ordem)/fim
[ 4]  j←1
[ 5] v2:→(j>ordem)/f0
[ 6]  →(i<j)/blz
[ 7]  r[i;j]←0
[ 8] blz:→(j=j←j+1)/v2
[ 9] f0:→(i=i←i+1)/v1
[10] fim:
------------------------------------------------------------
[ 0]  geraquestao634;as
[ 1]  as←''''
[ 2]  'Dado um grafo n\~ao dirigido, expresso por sua matriz de custos e com'
[ 3]  'grau = 6, pede-se que voc\^e calcule a \',as,'Arvore de Cobertura M\',as,'inima.'
[ 4]  'Lembrando o algoritmo originalmente definido por Otokar Boruvka:\\*'
[ 5]  'a) liste as arestas, cada uma com seu custo\\*'
[ 6]  'b) ordene a lista anterior\\*'
[ 7]  'c) crie um conjunto para cada v\',as,'ertice e crie a \',as,'arvore =\{\}\\*'
[ 8]  'd) enquanto houver mais de um conjunto, ache a menor aresta que'
[ 9]  '   unifica dois conjuntos separados\\*'
[10]  'e) quando s\',as,'o houver 1 conjunto ele \',as,'e a ACM.\\*'
[11]  'A matriz de custos:\\*'
[12]  '\begin{verbatim}'
[13]  1 numera2 a←geracaso 6
[14]  lixo←6 resolve constrlista a
[15]  '\end{verbatim}'
[16]  'A resposta e ',⍕CUS
------------------------------------------------------------
[0]  r←orig numera2 oper;aa;⎕IO
[1]  ⎕IO←orig
[2]  r←4 0⍕oper
[3]  r←(((3 0⍕(((1↑⍴oper),1)⍴⍳1↑⍴oper)),[⎕IO+1]'|'),[⎕IO+1]' '),r
```

```
[4]  r←((1,aa)ρ'     ',4 0⍕⍳1↓⍴oper),[⎕IO]((1,aa←5+4×1↓⍴oper)ρ'   +',100ρ'-'),[⎕IO]r
-------------------------------------------------------------
[0]  r←xu ondeta are;i
[1]  i←1 ⋄ r←0
[2] tt:→(i>1↑⍴xu)/term
[3]  →(are∈xu[i;])/achou
[4] naoachou:→(i=i←i+1)/tt
[5] achou:r←i
[6] term:
-------------------------------------------------------------
[ 0]  r←ordem resolve arestas;arvore;xu;alin;acol;i;cus
[ 1]  arvore←0 2ρ0 ⋄ cus←0
[ 2]  xu←(ordem,ordem)ρ0
[ 3]  xu[;1]←(ordem,1)ρ⍳ordem
[ 4]  i←1
[ 5] tr:→(i>1↑⍴arestas)/fim
[ 6]  →((alin←xu ondeta arestas[i;2])=(acol←xu ondeta arestas[i;3]))/despreze
[ 7]  xu[alin;]←(1↓⍴xu)↑((xu[alin;]≠0)/xu[alin;]),(xu[acol;]≠0)/xu[acol;]
[ 8]  xu[acol;]←0
[ 9]  arvore←arvore,[1]1 2⍴arestas[i;2],arestas[i;3]
[10]  cus←cus+arestas[i;1]
[11] ⍝xu
[12] ⍝'----'
[13] despreze:→(i=i←i+1)/tr
[14] fim:r←arvore
[15]  CUS←cus
-------------------------------------------------------------
[ 0]  opesq vivo634a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;aa;bb;cc;caca;drive
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4] ⍝ drive←trim,⎕FM 'c:\apl2\imagem.whe'
[ 5] ⍝ drive,'---'
[ 6]  EVENTO←'PL634   '
[ 7]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕⍳n
[10]  FOLHALA634←ajusta80 FOLHALA634
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA634)ρ' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 7ρ0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←30 80ρ' '
[16]  f←FOLHALA634
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←3.16
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  esse[5;]←80↑ylu[xk;6+⍳30]
[22]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[23]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[24]  esse[29;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[25]  esse[30;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[26] inica:
[27]  esse[18;]←80↑'\includegraphics [scale=0.5]{c:/apl2/alla64z.eps}'
[28]  esse[7+⍳10;]←10 80↑acertag aa←geracaso 10
[29]  bb←constrlista aa
[30]  cc←10 resolve bb
[31]  resp←resp,(,¯1 2↑cc),CUS
[32] ⍝-----------------------------------------
[33]  esse[18+⍳10;]←10 80↑acertag aa←geracaso 10
```

```
[34]  bb←constrlista aa
[35]  cc←10 resolve bb
[36]  resp←resp,(,¯1 2↑cc),CUS
[37] ⍝-----------------------------------------
[38]  resu←resu,[1]1 7⍴resp
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[42]  ⎕←(⍕xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴presu;⍳+/lixo1]←(lixo1←5 0 10 0 3 0 8 0 10 0 3 0 8 0)⍀resu
[49]  upag[3+1↑⍴presu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu,5 0 3 0 8 0 10 0 3 0 8 0⍀0 1↓resu)
[52]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54] terminando:
[55] ⍝ upag[1↑⍴upag;]←(1↓⍴upag)↑'\begin{verbatim}'
[56]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[57]  relat[1↑⍴relat;;]←upag
[58]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[59] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[60] ⍝ lixonol←lixonol,[1]((1↑⍴caca),80)↑caca←1 numera2 cc
[61] ⍝ lixonol←lixonol,[1]1 80⍴80↑'\end{verbatim} \end{document}'
[62]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[63]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[64]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo635

```
[0]  r←a espalha b
[1]  r←b?a-1
------------------------------------------------------------
[ 0]  r←ftabla1 tab;lin;col;eca;c5
[ 1] ⍝ devolve tab formatado na forma de tabela latex
[ 2]  tab←(((1↑⍴tab),1)⍴⍳1↑⍴tab),tab
[ 3]  tab←((1,1↓⍴tab)⍴0,⍳1↓⍴tab),[1]tab
[ 4]  lin←1↑⍴tab
[ 5]  col←1↓⍴tab
[ 6]  r←(0,c5←50⌈16+5×col)⍴' '
[ 7]  r←r,[1](1,c5)⍴c5↑'\begin{tabular}{ ',(((1↓⍴tab)×2)⍴'c|'),'}'
[ 8]  eca←5 0⍀tab
[ 9]  eca[;1+5×⍳col-1]←'&'
[10]  eca←eca,(lin,16)⍴'\\ \hline       '
[11]  r←r,[1]((1↑⍴eca),c5)↑eca
[12]  r←r,[1](1,c5)⍴c5↑'\end{tabular}'
[13]  r[1;17 18 19]←'c||'
[14]  r[2;(¯7+1↓⍴r)+⍳6]←'\hline'
------------------------------------------------------------
[ 0]  r←dim geracaso qt;i;onde
[ 1] ⍝ pensou-se originalmente em 12 geracaso 5
[ 2]  r←(2⍴dim)⍴0
[ 3]  onde←1+qt?dim-1
[ 4]  onde←onde[⍋onde]
[ 5]  i←1
[ 6] t1:→(i>qt)/fim
[ 7]  r[onde[i]espalha i;onde[i]]←1
```

```
[ 8]  →(i=i←i+1)/t1
[ 9] fim:i←2
[10] t2:→(i>dim)/fim2
[11]  r[i;⍳i-1]←r[⍳i-1;i]
[12]  →(i=i←i+1)/t2
[13] fim2:
------------------------------------------------------------
[ 0]  r←geraquestao635;as
[ 1]  as←''''
[ 2]  'Suponha um grafo n⍀~ao dirigido, dado por sua matriz de adjac⍀^encia.'
[ 3]  'Voc⍀^e deve colorir o grafo. Lembrando, este processo ⍀',as,'e a solu⍀c c⍀~ao'
[ 4]  'de muitos problemas, e seu algoritmo ⍀',as,'e simples:'
[ 5]  'cada v⍀',as,'ertice ganha uma cor de maneira que v⍀',as,'ertices '
[ 6]  'adjacentes n⍀~ao tenham a mesma cor. Deve-se usar o menor n⍀',as,'umero de'
[ 7]  'cores. Aqui, a estrat⍀',as,'egia gulosa, come⍀c cando com o v⍀',as,'ertice'
[ 8]  'que mais tem arestas.'
[ 9]  'A matriz de adjac⍀^encia ⍀',as,'e:'
[10]  '⍀begin{verbatim}'
[11]  1 numera2 a←(7+?2)geracaso 5
[12]  '⍀end{verbatim}'
[13]  ' A pergunta ⍀',as,'e: qual o menor n⍀',as,'umero de cores que pinta o grafo ?'
[14]  'A solucao e ',1↑1 resolve a
------------------------------------------------------------
[ 0]  r←ca maior co;oo;a1;co1;qual;i
[ 1]  oo←+/ca
[ 2]  a1←⍒oo
[ 3]  co1←co[a1]
[ 4]  qual←(⍳⍴co)[a1]
[ 5]  oo←oo[a1]
[ 6]  i←1
[ 7] acha:→(i>⍴co)/erro
[ 8]  →(co1[i]≠0)/maisum
[ 9]  r←qual[i]
[10]  →0
[11] maisum:→(i=i←i+1)/acha
[12] erro:'deu zebra'
------------------------------------------------------------
[0]  r←orig numera2 oper;aa;⎕IO
[1]  ⎕IO←orig
[2]  r←4 0⍕oper
[3]  r←(((3 0⍕(((1↑⍴oper),1)⍴⍳1↑⍴oper)),[⎕IO+1]'|'),[⎕IO+1]' '),r
[4]  r←((1,aa)⍴'     ',4 0⍕⍳1↓⍴oper),[⎕IO]((1,aa←5+4×1↓⍴oper)⍴'   +',100⍴'-'),[⎕IO]r
------------------------------------------------------------
[ 0]  r←lins resolve caso;cont;cor;m;i;j;pode
[ 1]  cont←(1↑⍴caso)⍴0 ⋄ cor←1
[ 2] testaco:→(0=+/cont=0)/acabou
[ 3]  m←caso maior cont ⋄ cont[m]←cor ⋄ i←1
[ 4] t1:→(i>1↑⍴caso)/foi
[ 5]  →(cont[i]≠0)/pula
[ 6]  →(caso[m;i]=1)/pula
[ 7]  j←1 ⋄ pode←1
[ 8] blz:→(j>1↑⍴caso)/decide
[ 9]  →((caso[i;j]≠1)∨(cont[j]≠cor))/somalia
[10]  pode←0
[11] somalia:→(j=j←j+1)/blz
[12] decide:→(pode=0)/pula
[13]  cont[i]←cor
[14] pula:→(i=i←i+1)/t1
[15] foi:cor←cor+1
[16]  →testaco
[17] acabou:COLORIDO←1 numera((1↑⍴caso),1)⍴cont
[18]  r←(cor-1),cont[lins]
------------------------------------------------------------
```

```
[ 0]  opesq vivo635a n;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixonol;xixo;aa
      a;lixo1;xyz;lina
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  EVENTO←'PL635   '
[ 5]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 8]  FOLHALA635←ajusta80 FOLHALA635
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA635)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[11]  xk←1 ⋄ resu←0 4⍴0
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←26 80⍴' '
[14]  f←FOLHALA635
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍎VERSAOa←3.15
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[22]  esse[25;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[26;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25]  xyz←12 geracaso 6
[26]  lina←2?12
[27]  lina←lina[⍋lina]
[28]  esse[7+⍳15;]←15 80↑⍉ftabla1 xyz
[29]  esse[23 24;]←2 80⍴80 0⍎lina
[30]  resp←resp,lina resolve xyz
[31]  resu←resu,[1]1 4⍴resp
[32]  acuja←(f[;2]='#')/⍳1↑⍴f
[33]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[34]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[35]  ⎕←(⍎xk←xk+1),'-'
[36]  →testa
[37] fim:upag←(1 0+⍴f)⍴' '
[38]  →(1=≡n)/elafa
[39]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[40]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[41]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 5 0)⍴resu
[42]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[43]  →terminando
[44] elafa:aaa←(ylu,5 0⍴0 1↓resu)
[45]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[46]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[47] terminando:
[48]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[49]  relat[1↑⍴relat;;]←upag
[50]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[51] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[52] ⍝ lixonol←lixonol,[1]1 80⍴80↑'A seguir o resultado da ultima folha'
[53] ⍝ lixonol←lixonol,[1]((1↑⍴lixonol),80)↑COLORIDO
[54] ⍝ lixonol←lixonol,[1]1 80⍴80↑'\end{document}'
[55]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[56]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[57]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo636

```
[ 0]  D←S DISPLAY A;⎕IO;R;C;HL;HC;HT;HB;VL;VB;V;W;N;B
[ 1] ⍝ Display a general array in pictorial form
[ 2] ⍝  Normal call is monadic.  Dyadic call used only in
[ 3] ⍝    recursion to specify display rank, shape, and depth.
[ 4]  ⎕IO←0
[ 5]  ⍎(0=⎕NC'S')/'S←⍴A'
[ 6]  R←↑⍴,S                    ⍝ Pseudo rank
[ 7]  C←'┐┌└┘'                  ⍝ UR, UL, LL, and LR corners
[ 8]  HL←'─'                    ⍝ Horizontal line
[ 9]  HC←HL,'⊖→',HL,'~+∊'       ⍝ Horizontal borders
[10]  HT←HC[(0<R)×1+0<↑¯1↑,S]
[11] ⍝W←,0≡¨↑0⍴⊂(1⌈⍴A)↑A
[12]  HB←HC[3+3⌊('2×~A≡⍠A'⎕EA'1+↑∊0×(1⌈×/⍴A)↑,A')+3×1<⍴⍴S]
[13]  VL←'│'                    ⍝ Vertical line
[14]  VB←VL,'⍬↓'                ⍝ Vertical border
[15]  V←VB[(1<R)×1+0<¯1↑¯1↓,S]
[16]  ⍎(0∊⍴A)/'A←(1⌈⍴A)⍴⊂↑A'   ⍝ Show prototype of empties
[17]  →(1<≡A)/GEN
[18]  →(2<⍴⍴A)/D3
[19]  D←⍠A                      ⍝ Simple arrays
[20]  W←1↑⍴D←(¯2↑1 1,⍴D)⍴D
[21]  N←¯1+1↓⍴D
[22]  →(0=⍴⍴A)/SS
[23]  D←(C[1],V,((W-1)⍴VL),C[2]),((HT,N⍴HL),[0]D,[0]HB,N⍴HL),C[0],(W⍴VL),C[3]
[24]  →0
[25] SS:HB←((0 ' ')=↑0⍴⊂A)/' -'
[26]  D←' ',(' ',[0]D,[0]HB,N⍴' '),' '
[27]  →0
[28] GEN:D←⍠⍎DISPLAY¨A          ⍝ Enclosed arrays
[29]  N←D⍱.≠' '
[30]  D←(N∨~1⌽N)⌿D
[31]  D←(∨⌿~'  '⍷D)/D
[32]  D←((1,⍴S)⍴S)DISPLAY D
[33]  →(2≥⍴,S)↓D3E,0
[34] D3:D←0 ¯1↓0 1↓⍠⊂A          ⍝ Multi-dimensional arrays
[35]  W←1↑⍴D
[36]  N←¯1+1↓⍴D
[37]  D←(C[1],V,((W-1)⍴VL),C[2]),((HT,N⍴HL),[0]D,[0]HB,N⍴HL),C[0],(W⍴VL),C[3]
[38] D3E:N←¯2+⍴,S
[39]  V←C[N⍴1],[0]VB[1+0<¯2↓,S],[0](((¯3+↑⍴D),N)⍴VL),[0]C[N⍴2]
[40]  D←V,D
[41] ⍝¶⍝ APL2/6000 FKEY verification tag - DO NOT REMOVE, MUST BE LAST LINE
------------------------------------------------------------
[0]  r←g15a;alfa
[1]  alfa←4 23⍴' '
[2]  alfa[1;]←'azul' 'verde' 'amarelo' 'roxo' 'rosa' 'lilas' 'vermelho' 'cinza' 'petroleo
      ' 'carmin' 'ocre' 'marrom' 'laranja' 'anil' 'purpura' 'violeta' 'branco' 'preto' 'ter
      ra' 'azulao' 'verdao' 'creme' 'ciano'
[3]  alfa[2;]←'ana' 'helena' 'tais' 'cris' 'elaine' 'jane' 'bia' 'nicole' 'sandra' 'aurea
      ' 'zelia' 'patricia' 'antonio' 'celso' 'marilia' 'carol' 'paula' 'silvia' 'carlos' 'd
      ante' 'paulo' 'eduardo' 'gerson'
[4]  alfa[3;]←'arroz' 'feijao' 'sopa' 'aspargo' 'cebola' 'laranja' 'morango' 'uva' 'cenou
      ra' 'batata' 'repolho' 'aipim' 'banana' 'abacaxi' 'farofa' 'lentilha' 'mimosa' 'palmi
      to' 'macarrao' 'carne' 'chocolate' 'manga' 'pudim'
[5]  alfa[4;]←'cachorro' 'gato' 'morcego' 'cavalo' 'girafa' 'elefante' 'tigre' 'camelo' '
      foca' 'guaxinim' 'tatu' 'gaviao' 'zebra' 'peixe' 'tartaruga' 'anu' 'lebre' 'mosca' 'p
      orco' 'vaca' 'asno' 'leao' 'urso'
[6]  r←alfa[(?4);15?23]
------------------------------------------------------------
[0]  r←geracaso;cas;resp;i1;i2
[1]  cas←¯1+(?2),?2
```

```
[2]  resp←+/cas×1 2
[3]  i1←(cas[1],0)gerainst g15a
[4]  i2←(cas[2],0)gerainst g15a
[5]  r←i1 i2 resp
-------------------------------------------------------------
[ 0]  r←cor gerainst vetor;i;j;certos;errado;z;w;xx
[ 1]  →(0≠⎕NC'cor')/veio
[ 2]  'chamar com operador esquerdo = 2 valores, x e y, onde'
[ 3]  '0 0 = gera um errado, embaralhado'
[ 4]  '0 1 = gera um errado sem embaralhar'
[ 5]  '1 0 = gera um que pode ser resolvido, embaralhado'
[ 6]  '1 1 = certo, sem embaralhar'
[ 7]  →0
[ 8] veio:
[ 9]  certos←10 3⍴6 5 9 12 14 9 3 14 2 3 1 11 12 1 15 15 7 13 6 10 13 8 10 2 4 7 8 11 5 4
[10]  errado←10 3⍴6 5 9 6 14 13 15 7 13 12 1 15 3 1 11 3 14 2 8 10 2 4 7 8 11 5 4 12 10 9
[11] ⍝ cor[1]=0 gera errado, cor[1]=1 gera certo
[12] ⍝ cor[2]=0 gera embaralhado, cor[2]=1 gera legal
[13]  z←10 3⍴' ' ⋄ w←10 8⍴' '
[14]  →(cor[1]=1)/cer
[15] err:i←1
[16] t1:→(i>10)/ac2
[17]  w[i;1]←⊂⍕i
[18]  j←1
[19] t2:→(j>3)/blz
[20]  z[i;j]←vetor[errado[i;j]]
[21]  →(j=j←j+1)/t2
[22] blz:→(i=i←i+1)/t1
[23] cer:
[24]  i←1
[25] t3:→(i>10)/ac2
[26]  w[i;1]←⊂⍕i
[27]  j←1
[28] t4:→(j>3)/bl2
[29]  z[i;j]←vetor[certos[i;j]]
[30]  →(j=j←j+1)/t4
[31] bl2:→(i=i←i+1)/t3
[32] ac2:→(cor[2]=1)/finz
[33]  i←1
[34] t5:→(i>10)/fim
[35]  z[i;]←z[i;3?3]
[36]  →(i=i←i+1)/t5
[37] fim:z←z[10?10;]
[38] finz:
[39]  w[;3 5 7]←z
[40]  w[;2 4 6]←'&'
[41]  w[;8]←10 1⍴⊂xx←'\\\cline{2-4} '
[42]  r←(10,(8×⍴xx))⍴⊃w
[43]  r←(~∧/[1]r=' ')/r
-------------------------------------------------------------
[ 0]  opesq vivo636a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;lixo1;aaa;qual
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←1 ⋄ EVENTO←'PL636   '
[ 5]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 8]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA636)⍴' '
[ 9]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLOI'
[10]  xk←1 ⋄ resu←0 2⍴0
```

```
[11] testa:→(xk>1↑ρylu)/fim
[12]  esse←27 80ρ' '
[13]  f←FOLHALA636
[14]  esse[1;]←80↑dhx[1;]
[15]  esse[2;]←80↑dhx[2;]
[16]  esse[3;]←80↑4 2⍕VERSAOa←3.02
[17]  esse[4;]←80↑ylu[xk;⍳6]
[18]  esse[5;]←80↑ylu[xk;6+⍳30]
[19]  →(~1=≡n)/1+□LC ⋄ esse[6;]←80↑EVENTO
[20]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[21] inica:
[22]  qual←geracaso
[23]  esse[7+⍳10;]←10 80↑⊃qual[1]
[24]  esse[17+⍳10;]←10 80↑⊃qual[2]
[25]  resp←resp,⊃qual[3]
[26]  resu←resu,[1](1,2)ρresp
[27]  acuja←(f[;2]='#')/⍳1↑ρf
[28]  f[acuja;⍳80]←esse[±,f[acuja;3 4],' ';]
[29]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\newpage'
[30]  □←(⍕xk←xk+1),'-'
[31]  →testa
[32] fim:upag←(1 0+ρf)ρ' '
[33]  →(1=≡n)/elafa
[34]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[35]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[36]  upag[2+⍳1↑ρresu;⍳+/lixo1]←(lixo1←5 0 10 0)⍕resu
[37]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[38]  →terminando
[39] elafa:aaa←(ylu,(((1↑ρylu),4)ρ' 0.0'),5 0⍕0 1↓resu)
[40]  aaa[1;35 36]←2 0⍕CORRECAO
[41]  lixonol←aaa ΔFM('c:\apl2\',((~⊖∧\⊖EVENTO=' ')/EVENTO),'.gpa')
[42]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[43] terminando:
[44]  upag[1↑ρupag;]←(1↓ρupag)↑'\end{document}'
[45]  relat[1↑ρrelat;;]←upag
[46]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)ΔFM'c:\apl2\',((~⊖∧\⊖EVENTO=' ')/EVENTO),'.t
      ex'
[47]  lixonol←□EX 2 10ρ'quantos   matriz    '
[48]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo639

```
[ 0]  r←EPOSSIVEL x;k;l;c;sg
[ 1]  k←x[1] ⋄ l←x[2] ⋄ c←x[3]
[ 2]  →(~k∈M[l;])/bl1
[ 3]  r←0
[ 4]  →0
[ 5] bl1:→(~k∈M[;c])/bl2
[ 6]  r←0
[ 7]  →0
[ 8] bl2:sg←SUBGRUPO l,c
[ 9]  →(~k∈(,M)[sg])/bl3
[10]  r←0
[11]  →0
[12] bl3:r←1
-------------------------------------------------------------
[ 0]  r←OPROXIMO x;l;c
[ 1]  l←x[1] ⋄ c←x[2]
[ 2]  →((l>9)∨(c>9))/lixo
[ 3]  c←c+1
[ 4] s1:→(c>9)/somal
```

```
[ 5]  →(M[l;c]≠0)/somac
[ 6]  r←l,c
[ 7]  →0
[ 8] somac:c←c+1
[ 9]  →s1
[10] somal:c←1
[11]  l←l+1
[12]  →s1
[13] lixo:'deu xabu'
------------------------------------------------------------
[ 0]  r←SUBGRUPO x;l;c
[ 1]  l←x[1] ⋄ c←x[2]
[ 2]  →(((l=1)∨(l=2)∨(l=3))∧((c=1)∨(c=2)∨(c=3)))/q1
[ 3]  →(((l=1)∨(l=2)∨(l=3))∧((c=4)∨(c=5)∨(c=6)))/q2
[ 4]  →(((l=1)∨(l=2)∨(l=3))∧((c=7)∨(c=8)∨(c=9)))/q3
[ 5]  →(((l=4)∨(l=5)∨(l=6))∧((c=1)∨(c=2)∨(c=3)))/q4
[ 6]  →(((l=4)∨(l=5)∨(l=6))∧((c=4)∨(c=5)∨(c=6)))/q5
[ 7]  →(((l=4)∨(l=5)∨(l=6))∧((c=7)∨(c=8)∨(c=9)))/q6
[ 8]  →(((l=7)∨(l=8)∨(l=9))∧((c=1)∨(c=2)∨(c=3)))/q7
[ 9]  →(((l=7)∨(l=8)∨(l=9))∧((c=4)∨(c=5)∨(c=6)))/q8
[10]  →(((l=7)∨(l=8)∨(l=9))∧((c=7)∨(c=8)∨(c=9)))/q9
[11] q1:r←1 2 3 10 11 12 19 20 21
[12]  →0
[13] q2:r←4 5 6 13 14 15 22 23 24
[14]  →0
[15] q3:r←7 8 9 16 17 18 25 26 27
[16]  →0
[17] q4:r←28 29 30 37 38 39 46 47 48
[18]  →0
[19] q5:r←31 32 33 40 41 42 49 50 51
[20]  →0
[21] q6:r←34 35 36 43 44 45 52 53 54
[22]  →0
[23] q7:r←55 56 57 64 65 66 73 74 75
[24]  →0
[25] q8:r←58 59 60 67 68 69 76 77 78
[26]  →0
[27] q9:r←61 62 63 70 71 72 79 80 81
------------------------------------------------------------
[ 0]  r←SUDOKU x;l;c;k;resp;l1;c1
[ 1]  CONTADOR←CONTADOR+1
[ 2]  resp←0
[ 3]  l←x[1] ⋄ c←x[2]
[ 4] ⍝ →(l>3)/feio
[ 5] ⍝ se a linha acima for comentada o programa vai ate o fim...
[ 6]  k←1
[ 7] volta:
[ 8]  resp←0
[ 9]  →(~EPOSSIVEL k,l,c)/somak
[10]  M[l;c]←k
[11] ⍝ →((l=9)∧(c=9))/fechou  -------------- alteracao -------------
[12]  →((l=9)∧(~0∈c↓M[l;]))/fechou
[13]  (l1 c1)←OPROXIMO l,c
[14]  resp←SUDOKU l1,c1
[15]  →(resp=999)/feio
[16]  →(resp=1)/conta
[17]  M[l1;c1]←0
[18]  →somak
[19] fechou:resp←1
[20] somak:k←k+1
[21] conta:→((k≤9)∧(resp≠1))/volta
[22] acabou:r←resp
[23]  →0
```

```
[24] feio:r←999
------------------------------------------------------------
[0]  r←e x
[1]  r←⍕x[1],' ',x[2],' ',x[3],' ',x[4],' ',x[5],' ',x[6],' ',x[7],' ',x[8],' ',x[9]
------------------------------------------------------------
[ 0]  r←su lesolucao aa;i;j;k;qual;qual2;rx;ss;tcores;qual1
[ 1]  ss←tirazeros su
[ 2]  r←(⍴ss)⍴0
[ 3]  k←⍕,(ΔFM'c:\npb\estante\gcol\',aa,'\solution.txt'),' '
[ 4]  rx←1+1↓k
[ 5]  9↑rx
[ 6]  9↓rx
[ 7]  tcores←rx[⍳9]
[ 8]  i←1
[ 9] t1:→(i>1↑⍴ss)/fi
[10]  j←1
[11] t2:→(j>1↓⍴ss)/ofa
[12]  qual←ss[i;j]
[13] ⍝ qual1←rx[qual]
[14]  qual2←tcores⍳qual
[15] ⍝qual2←rx[qual]
[16]  →(qual2>9)/zebra
[17]  r[i;j]←tcores[qual2]
[18] ⍝ r[i;]←qual2
[19]  j←j+1
[20]  →t2
[21] zebra:r[i;j]←-1
[22]  j←j+1
[23]  →t2
[24] ofa:
[25]  i←i+1
[26]  →t1
[27] fi:
------------------------------------------------------------
[ 0]  r←su lesolucao2 aa;i;j;k;qual;qual2;rx;ss;tcores;qual1
[ 1]  ss←tirazeros su
[ 2]  r←(⍴ss)⍴0
[ 3]  k←⍕,(ΔFM'c:\npb\estante\gcol\',aa,'\solution.txt'),' '
[ 4]  rx←1+1↓k
[ 5]  9↑rx
[ 6]  9↓rx
[ 7]  tcores←rx[⍳9]
[ 8]  i←1
[ 9] t1:→(i>1↑⍴ss)/fi
[10]  j←1
[11] t2:→(j>1↓⍴ss)/ofa
[12]  qual←ss[i;j]
[13]  qual1←rx[qual]
[14]  qual2←tcores⍳qual1
[15]  r[i;j]←qual2
[16]  j←j+1
[17]  →t2
[18] ofa:
[19]  i←i+1
[20]  →t1
[21] fi:
------------------------------------------------------------
[ 0]  r←marest ss;su;fi;i;j;k;m;aux;par;lc;re
[ 1]  su←tirazeros ss
[ 2]  fi←RESTO
[ 3]  i←1
[ 4] t1:→(i>1↑⍴su)/fim1
[ 5]  j←1
```

```
[ 6] t2:→(j>1↓ρsu)/fi2
[ 7]  aux←1
[ 8] t3:→((j+aux)>1↓ρsu)/acalin
[ 9]  par←su[i;j],su[i;j+aux]
[10]  →(par temduplo fi)/jatem
[11]  fi←fi,[1]1 2ρpar
[12] jatem:
[13]  aux←aux+1
[14]  →t3
[15] acalin:
[16]  aux←1
[17] t4:→((i+aux)>1↑ρsu)/acacol
[18]  par←su[i;j],su[i+aux;j]
[19]  →(par temduplo fi)/oba
[20]  fi←fi,[1]1 2ρpar
[21] oba:
[22]  aux←aux+1
[23]  →t4
[24] acacol:
[25]  j←j+1
[26]  →t2
[27] fi2:
[28]  lc←⍉2 9ρ(,⌊PLANOS[i;;]÷10),,10|PLANOS[i;;]
[29]  k←1
[30] t5:→(k>9)/t7
[31]  m←k+1
[32] t6:→(m>9)/t8
[33]  par←su[lc[k;1];lc[k;2]],su[lc[m;1];lc[m;2]]
[34]  →(par temduplo fi)/oxxa
[35]  fi←fi,[1]1 2ρpar
[36] oxxa:
[37]  m←m+1
[38]  →t6
[39] t8:k←k+1
[40]  →t5
[41] t7:i←i+1
[42]  →t1
[43] fim1:
[44]  i←1
[45] t10:→hu  ⍝ pula todo o processamento do RESTO
[46]  →(i>1↑ρRESTO)/hu
[47]  par←RESTO[i;]
[48]  →(par temduplo fi)/ojj
[49]  fi←fi,[1]1 2ρpar
[50] ojj:i←i+1
[51]  →t10
[52] hu:FI←fi
[53]  re←((1+1↑ρfi),14)ρ' '
[54]  re[1;]←'p edge ',(2 0⍕⌈/,su),' ',4 0⍕1↑ρfi
[55]  re[1+⍳1↑ρfi;1]←'e'
[56]  re[1+⍳1↑ρfi;2+⍳12]←6 0⍕fi
[57]  r←re
-------------------------------------------------------------
[ 0]  r←marestma ss;su;fi;i;j;k;m;aux;par;lc;re
[ 1]  su←tirazeros ss
[ 2]  fi←RESTO
[ 3]  r←81 81ρ0
[ 4]  i←1
[ 5] t1:→(i>1↑ρsu)/fim1
[ 6]  j←1
[ 7] t2:→(j>1↓ρsu)/fi2
[ 8]  aux←1
[ 9] t3:→((j+aux)>1↓ρsu)/acalin
```

```
[10]  par←su[i;j],su[i;j+aux]
[11]  →(par temduplo fi)/jatem
[12]  r[su[i;j];su[i;j+aux]]←r[su[i;j+aux];su[i;j]]←1
[13] jatem:
[14]  aux←aux+1
[15]  →t3
[16] acalin:
[17]  aux←1
[18] t4:→((i+aux)>1↑⍴su)/acacol
[19]  par←su[i;j],su[i+aux;j]
[20]  →(par temduplo fi)/oba
[21]  r[su[i;j];su[i+aux;j]]←r[su[i+aux;j];su[i;j]]←1
[22] oba:
[23]  aux←aux+1
[24]  →t4
[25] acacol:
[26]  j←j+1
[27]  →t2
[28] fi2:
[29]  lc←⍉2 9⍴(,⌊PLANOS[i;;]÷10),,10|PLANOS[i;;]
[30]  k←1
[31] t5:→(k>9)/t7
[32]  m←k+1
[33] t6:→(m>9)/t8
[34]  par←su[lc[k;1];lc[k;2]],su[lc[m;1];lc[m;2]]
[35]  →(par temduplo fi)/oxxa
[36]  r[su[lc[k;1];lc[k;2]];su[lc[m;1];lc[m;2]]]←r[su[lc[m;1];lc[m;2]];su[lc[k;1];lc[k;2]]
      ]←1
[37] oxxa:
[38]  m←m+1
[39]  →t6
[40] t8:k←k+1
[41]  →t5
[42] t7:i←i+1
[43]  →t1
[44] fim1:
[45]  i←1
[46] t10:
-------------------------------------------------------------
[ 0]  r←q temduplo f;i
[ 1]  i←1
[ 2] t1:→(i>1↑⍴f)/aca
[ 3]  →((q[1]≠f[i;1])∧(q[1]≠f[i;2]))/nao
[ 4]  →(((q[1]=f[i;1])∧(q[2]=f[i;2]))∨((q[1]=f[i;2])∧(q[2]=f[i;1])))/sim
[ 5] nao:i←i+1
[ 6]  →t1
[ 7] sim:
[ 8]  r←1
[ 9]  →0
[10] aca:
[11]  r←0
-------------------------------------------------------------
[ 0]  r←tirazeros x;i;j;ctd
[ 1]  ctd←10
[ 2]  r←x
[ 3]  i←1
[ 4] t1:→(i>1↑⍴x)/fim
[ 5]  j←1
[ 6] t2:→(j>1↑⍴x)/oba
[ 7]  →(x[i;j]≠0)/soma
[ 8]  r[i;j]←ctd
[ 9]  ctd←ctd+1
[10] soma:
```

```
[11]  j←j+1
[12]  →t2
[13] oba:
[14]  i←i+1
[15]  →t1
[16] fim:
------------------------------------------------------------
[ 0]  opesq vivo639a n;CORRECAO;EVENTO;aaa;acuja;bbb;dhx;esse;f;lixo1;lixonol;nomes;ql39;q
      linha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL639   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA639←ajusta80 FOLHALA639
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA639)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 6⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←19 80⍴' '
[16]  f←FOLHALA639
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[18;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[19;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←1+?10  ⍝ o SUD[1;;] fica como exemplo para a turma
[35]  aaa←1 0⍎SUD[xx;;]
[36]  bbb←'|',(9 1⍴aaa[;1]),'|',(9 1⍴aaa[;2]),'|',(9 1⍴aaa[;3]),'|',(9 1⍴aaa[;4]),'|',(9 1
      ⍴aaa[;5]),'|',(9 1⍴aaa[;6]),'|',(9 1⍴aaa[;7]),'|',(9 1⍴aaa[;8]),'|',((9 1⍴aaa[;9]),'|
      '),'.'
[37]  esse[7+⍳9;]←9 80↑bbb
[38]  resp←resp,,RSUD[xx;]
[39]  resu←resu,[1]1 6⍴resp
[40]  acuja←(f[;2]='#')/⍳1↑⍴f
[41]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[42]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[43]  ⍞←(⍎xk←xk+1),'-'
[44]  →testa
[45] fim:upag←(1 0+⍴f)⍴' '
[46]  →(1=≡n)/elafa
[47]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[48]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[49]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 2 0 2 0 2 0 2 0)⍎resu
[50]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[51]  →terminando
```

```
[52] elafa:aaa←(ylu[;⍳36],2 0⍕0 1↓resu)
[53]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[54]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[55] terminando:
[56]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[57]  relat[1↑⍴relat;;]←upag
[58]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[59]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[60]  lixonol←□EX 2 10⍴'quantos   matriz    '
[61]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo640

```
[ 0]  r←geracasocc;s;aa;bb;cc;alfa
[ 1] denovo:s←resolve montamat aa←geratar instancia 13
[ 2]  →((1↑⍴s)>2+bb←+/,s[;1]=s[;2])/blz
[ 3]  □←'*'
[ 4]  →denovo
[ 5] blz:→(23≥cc←1↑⍴aa)/blz2
[ 6]  □←'O'
[ 7]  →denovo
[ 8] blz2:
[ 9]  alfa←'ABCDEFGHIJKLMNOPQRSTUVWXYZ'
[10]  r←(((cc,1)⍴cc↑alfa),'$2'edit'!4'edit'& 55& 55& 55⍀⍀⍀cline{$-!}'⍕aa)(¯1↑,s)bb
------------------------------------------------------------
[ 0]  r←geramenor tam;s;aa;bb;cc;alfa
[ 1] denovo:s←resolve montamat aa←geratar instancia tam
[ 2]  →((1↑⍴s)>2+bb←+/,s[;1]=s[;2])/blz
[ 3]  □←'*'
[ 4]  →denovo
[ 5] blz:→(23≥cc←1↑⍴aa)/blz2
[ 6]  □←'O'
[ 7]  →denovo
[ 8] blz2:
[ 9]  alfa←'ABCDEFGHIJKLMNOPQRSTUVWXYZ'
[10]  r←(((cc,1)⍴cc↑alfa),'$2'edit'!4'edit'& 55& 55& 55⍀⍀⍀cline{$-!}'⍕aa)(¯1↑,s)bb
------------------------------------------------------------
[ 0]  geraquestao640;as;x
[ 1]  as←''''
[ 2]  x←geramenor 9
[ 3]  'Suponha um projeto a controlar usando o m⍀',as,'etodo PERT-CPM.'
[ 4]  'As atividades a desenvolver s⍀~ao as seguintes:⍀⍀*'
[ 5]  '⍀begin{tabular}{r|l|l|l|} ⍀cline{2-4}'
[ 6]  'tarefa&origem&destino&dura⍀c c⍀~ao⍀⍀ ⍀cline{2-4}'
[ 7]  ⊃x[1]
[ 8]  '⍀end{tabular}⍀⍀*'
[ 9]  'S⍀~ao duas perguntas:⍀⍀*'
[10]  '1. Qual a dura⍀c c⍀~ao do projeto em dias ?⍀⍀*'
[11]  '2. Quantas atividades est⍀~ao inclu⍀',as,'idas no Caminho Cr⍀',as,'itico?'
[12]  'Resposta: ',(⍕⊃x[2]),' e ',⍕⊃x[3]
------------------------------------------------------------
[ 0]  r←geratar inst;i;j
[ 1] ⍝fgera tarefas a partir da matriz de instancia
[ 2]  i←1 ⋄ r←0 3⍴0
[ 3] t1:→(i>1↑⍴inst)/fim
[ 4]  j←1↓⍴inst
[ 5] t2:→(j=1)/sai
[ 6]  →(inst[i;j]=0)/subtr
[ 7]  r←r,[1]inst[i;j],inst[i;1],?9
[ 8] subtr:→(j=j←j-1)/t2
[ 9] sai:→(i=i←i+1)/t1
```

```
[10] fim:
------------------------------------------------------------
[ 0]  r←instancia tam;lin;i;q;zeb;j;k;alfa;ing
[ 1]  →(9>tam)/erro
[ 2] ⍝f gera os dados para montar uma rede PERT-CPM
[ 3]  r←((lin←(tam-2)+?3),tam)⍴0
[ 4]  r[;1]←⍳lin
[ 5] ⍝ r[;2]←2+?lin⍴9
[ 6]  q←1+6?lin-2
[ 7]  q←q[⍋q]
[ 8]  q←1,q,lin
[ 9]  r[(1↓q);2]←¯1↓q
[10]  i←2
[11] t0:→(i>lin)/ufa
[12]  →(r[i;2]≠0)/soma
[13]  r[i;2]←?i-1
[14] soma:→(i=i←i+1)/t0
[15] ufa:i←2
[16] t1:→(i>lin)/fim
[17]  j←¯1+?4
[18]  k←1
[19] t2:→(k>j)/aca
[20]  zeb←?i-1
[21]  →(zeb∈r[i;ing←1+⍳tam-1])/aca
[22]  r[i;2+k]←zeb
[23] pula:→(k=k←k+1)/t2
[24] aca:→(i=i←i+1)/t1
[25] fim:
[26]  alfa←1↑(~(⍳lin-1)∈r[;ing])/⍳lin-1
[27]  →(alfa=0)/mesmo
[28]  i←1↑(r[lin;ing]=0)/ing
[29]  r[lin;i]←alfa
[30]  →fim
[31] mesmo:
[32]  →0
[33] erro:'tamanho deve ser ≥ 9'
------------------------------------------------------------
[0]  r←montamat b;ss;i
[1]  ss←⌈/b[;2]
[2]  r←(2⍴ss)⍴0
[3]  i←1
[4] t1:→(i>1↑⍴b)/fim
[5]  r[b[i;1];b[i;2]]←b[i;3]
[6]  →(i=i←i+1)/t1
[7] fim:
------------------------------------------------------------
[ 0]  r←resolve xx;lins;i;j;cedo;tarde;rest;col;lin
[ 1]  lins←1↑⍴xx
[ 2]  r←(lins,2)⍴0
[ 3]  cedo←lins⍴0 ⋄ tarde←lins⍴0
[ 4]  j←2
[ 5] t2:→(j>lins)/ufa
[ 6]  i←1 ⋄ rest←0⍴0
[ 7] t3:→(i>lins)/ufb
[ 8]  →(xx[i;j]=0)/soma
[ 9]  rest←rest,xx[i;j]+cedo[i]
[10] soma:→(i=i←i+1)/t3
[11] ufb:
[12]  cedo[j]←⌈/,rest
[13]  →(j=j←j+1)/t2
[14] ufa:r[;1]←cedo
[15]  tarde[lins]←r[lins;2]←r[lins;1]
[16]  lin←(⍋⍒lins)-1
```

```
[17] aa1:→(lin≤1)/mesmo
[18]  col←⍪⍒lins ⋄ rest←0⍴0
[19] aa2:→(col<1)/oba
[20]  →(xx[lin;col]=0)/pula
[21]  rest←rest,|xx[lin;col]-tarde[col]
[22] pula:col←col-1
[23]  →aa2
[24] oba:tarde[lin]←⌊/,rest
[25] ⍝ rest,lin
[26]  lin←lin-1
[27] ⍝ →0
[28]  →aa1
[29] mesmo:
[30]  r[⍳lins-1;2]←¯1↓tarde
[31]  CEDO←cedo
[32]  TARDE←tarde
------------------------------------------------------------
[ 0]  opesq vivo640a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;lixo1;ddc;aaa
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←2 ⋄ EVENTO←'PL640   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA640←ajusta80 FOLHALA640
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA640)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[12]  xk←1 ⋄ resu←0 5⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←55 80⍴' '
[15]  f←FOLHALA640
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[54;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[55;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  ddc←geracasocc
[27]  esse[7+⍳23;]←23 80↑⊃ddc[1]
[28]  resp←resp,⊃ddc[2]
[29]  resp←resp,⊃ddc[3]
[30]  ddc←geracasocc
[31]  esse[30+⍳23;]←23 80↑⊃ddc[1]
[32]  resp←resp,⊃ddc[2]
[33]  resp←resp,⊃ddc[3]
[34]  resu←resu,[1]1 5⍴resp
[35]  acuja←(f[;2]='#')/⍳1↑⍴f
[36]  f[acuja;]←esse[⍋,f[acuja;3 4 5],' ';]
[37]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[38]  ⍞←(⍕xk←xk+1),'-'
[39]  →testa
[40] fim:upag←(1 0+⍴f)⍴' '
[41]  →(1=≡n)/elafa
[42]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[43]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
```

```
[44]  upag[2+⍳1↑⍴resu;⍳↑/lixo1]←'¯-'edit(lixo1←4 0 8 0 4 0 6 0 4 0)⍪resu
[45]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[46]  →terminando
[47] elafa:aaa←(ylu,'¯-'edit 4 0⍪0 1↓resu)
[48]  lixonol←aaa ⎕FM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[49]  '!!!!!  Arquivo GPA com ',(⍪1↑⍴aaa),' linhas e ',(⍪1↓⍴aaa),' colunas'
[50] terminando:
[51]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[52]  relat[1↑⍴relat;;]←upag
[53]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[54] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[55]  lixonol←lixonol ⎕FM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[56]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo645

```
[ 0]  r←hms calculatudo m;h;i;ra;s;maio;j;tot;ijmaio
[ 1] ⍝ hms ┤e uma matriz 3 2 com 3 pontos (onde estao os hms)
[ 2] ⍝ para o exemplo, o hms ┤e 2 2: 3 3 8 6
[ 3]  h←((1↑⍴hms),⍴m)⍴0
[ 4]  i←1
[ 5] t1:→(i>1↑⍴hms)/fim
[ 6]  h[i;;]←hms[i;]influencia m
[ 7]  i←i+1
[ 8]  →t1
[ 9] fim:
[10]  ULTH←h
[11]  ra←m-+/[1]h
[12]  ra←ra×ra≥0
[13] ⍝onde ?
[14]  ULTRA←ra
[15]  s←(⍴m)⍴0
[16]  maio←-999999
[17]  i←1
[18] t2:→(i>1↑⍴m)/acabou
[19]  j←1
[20] t3:→(j>1↓⍴m)/eca
[21]  s[i;j]←tot←+/,(i,j)influencia ra
[22]  →(tot≤maio)/viva
[23]  maio←tot
[24]  ijmaio←i,j
[25] viva:
[26]  j←j+1
[27]  →t3
[28] eca:i←i+1
[29]  →t2
[30] acabou:
[31]  ULTS←s
[32]  r←ijmaio
-------------------------------------------------------------
[0]  r←a dist b
[1]  r←(((a[1]-a[2])*2)+((b[1]-b[2])*2))*0.5
-------------------------------------------------------------
[ 0]  r←geracaso n;il;jc;i;j;xx
[ 1] ⍝ n eh um vetor lc de linhas por colunas
[ 2]  r←n⍴40+?1000⍴59
[ 3]  RANTES←r
[ 4]  il←?1↑n
[ 5]  jc←?1↓n
[ 6] aa:i←1
[ 7] bb:→(i>1↑n)/fim
```

```
[ 8] cc:j←1
[ 9] dd:→(j>1↓n)/oba
[10]  xx←1+⌈(i,il)dist(j,jc)
[11]  r[i;j]←r[i;j]-(?xx)+(?xx)+(?xx)
[12]  j←j+1
[13]  →dd
[14] oba:i←i+1
[15]  →bb
[16] fim:⍝'o centro esta localizado em ',⍕il,jc
[17]  r←r×r>0
-------------------------------------------------------------
[ 0]  r←onde influencia m;tab;i;j;dist
[ 1] ⍝ onde e [l,c] e indica onde esta localizado o mercado
[ 2]  tab←5 3⍴0
[ 3]  tab[1;]←0 3 0.75
[ 4]  tab[2;]←3.000001 5 0.5
[ 5]  tab[3;]←5.000001 7 0.25
[ 6]  tab[4;]←7.000000999999999 10 0.1
[ 7]  tab[5;]←10.000001 9999999 0.02
[ 8]  r←(⍴m)⍴0
[ 9]  i←1
[10] t1:→(i>1↑⍴m)/fim
[11]  j←1
[12] t2:→(j>1↓⍴m)/oba
[13]  dist←(((i-onde[1])*2)+((j-onde[2])*2))*0.5
[14]  r[i;j]←⌊m[i;j]×tab[1↑((dist≥tab[;1])∧(dist≤tab[;2]))/⍳5;3]
[15]  j←j+1
[16]  →t2
[17] oba:i←i+1
[18]  →t1
[19] fim:
-------------------------------------------------------------
[ 0]  opesq vivo645a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;onde;relat;resp;
      resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ' ... demora ...'
[ 5]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 6]  CORRECAO←1 ⋄ EVENTO←'PL645   '
[ 7]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍎⍳n
[10]  FOLHALA645←ajusta80 FOLHALA645
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA645)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLOI'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←42 80⍴' '
[16]  f←FOLHALA645
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.02
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  esse[5;]←80↑ylu[xk;6+⍳30]
[22]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[23]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[24] ⍝ esse[11;]←pedemail ylu[xk;36+⍳40]
[25]  esse[41;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[26]  esse[42;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[27] inica:
[28]  xx←geracaso 30 15
```

```
[29]  onde←3 2ρ0
[30]  onde[;1]←3?1↑ρxx
[31]  onde[;2]←3?1↓ρxx
[32]  zz←onde calculatudo xx
[33]  esse[7+ι30;]←30 80↑4 0⍕xx
[34]  esse[37+ι3;]←3 80↑'55 , 55'⍕onde
[35] ⍝ esse[7+ι3;]←3 80↑acertaca xx
[36]  resp←resp,,zz
[37]  resu←resu,[1]1 3ρresp
[38]  acuja←(f[;2]='#')/ι1↑ρf
[39]  f[acuja;ι80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\clearpage'
[41]  □←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+ρf)ρ' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[47]  upag[2+ι1↑ρresu;ι+/lixo1]←(lixo1←5 0 10 0 8 0)⍕resu
[48]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu,(((1↑ρylu),4)ρ' 0.0'),9 0⍕0 1↓resu)
[51]  aaa[1;35 36]←2 0⍕CORRECAO
[52]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[54] terminando:
[55]  upag[1↑ρupag;]←(1↓ρupag)↑'\end{document}'
[56]  relat[1↑ρrelat;;]←upag
[57]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[58] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[59]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[60]  lixonol←□EX 2 10ρ'quantos   matriz    '
[61]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo646

```
[0]  AVISO
[1]  'o comando aqui e'
[2]  ' 8 0⍕exempltele custo646(exempltele geradegs criatbdist exemplcids),exemplcids'
[3]  'ou'
[4]  '     x←geratelef646'
[5]  '     y←gerainst646'
[6]  '      8 0⍕x custo646 (x geradegs criatbdist y),y'
-------------------------------------------------------------
[ 0]  r←criatbdist a;i;j
[ 1]  r←12 12ρ0
[ 2]  i←1
[ 3] t1:→(i>12)/fim
[ 4]  j←1
[ 5] t2:→(j>12)/soma
[ 6]  r[i;j]←dist646⍋a[i;27+ι4],' ',a[i;31+ι4],' ',a[j;27+ι4],' ',a[j;31+ι4]
[ 7]  j←j+1
[ 8]  →t2
[ 9] soma:i←i+1
[10]  →t1
[11] fim:
-------------------------------------------------------------
[ 0]  ra←preco custo646 tdegcids;cids;i;j;par;pp;r;rr;tdeg;in
[ 1]  tdeg←tdegcids[;ι12]
[ 2]  cids←tdegcids[;12+ι46]
[ 3]  r←2 12ρ0
```

```
[ 4]  rr←12⍴0
[ 5]  ra←2 30⍴' '
[ 6]  i←1
[ 7] t1:→(i>12)/fim
[ 8]  par←0
[ 9]  j←1
[10] t2:→(j>12)/soma
[11]  →(tdeg[i;j]='A')/ea
[12]  →(tdeg[i;j]='B')/eb
[13]  →(tdeg[i;j]='C')/ec
[14] ed:pp←preco[2]×(preco[9]÷100)×(⍤cids[j;40+⍳6],' ')-preco[1]
[15]  →(pp>0)/ok1
[16]  pp←0
[17] ok1:par←par+pp
[18]  →junta
[19] ec:pp←preco[2]×(preco[8]÷100)×(⍤cids[j;40+⍳6],' ')-preco[1]
[20]  →(pp>0)/ok2
[21]  pp←0
[22] ok2:par←par+pp
[23]  →junta
[24] eb:pp←preco[2]×(preco[7]÷100)×(⍤cids[j;40+⍳6],' ')-preco[1]
[25]  →(pp>0)/ok3
[26]  pp←0
[27] ok3:par←par+pp
[28]  →junta
[29] ea:pp←preco[2]×(preco[6]÷100)×(⍤cids[j;40+⍳6],' ')-preco[1]
[30]  →(pp>0)/ok4
[31]  pp←0
[32] ok4:par←par+pp
[33]  →junta
[34] junta:
[35]  j←j+1
[36]  →t2
[37] soma:
[38]  rr[i]←par
[39]  i←i+1
[40]  →t1
[41] fim:r[1;]←rr
[42]  r[2;]←rr×1+(10×(⍤,(12 1⍴cids[;21]),' '))÷100
[43]  R←2 12⍴⍤,12 2⍉r
[44]  in←(,r[1;])⍳⌊/r[1;]
[45]  ra[1;]←cids[in;⍳20],10 2⍉r[1;in]
[46] ⍝ in←(,r[2;])⍳⌊/r[2;]
[47]  ra[2;]←cids[in;⍳20],10 2⍉r[2;in]
-------------------------------------------------------------
[0]  r←dist646 x1y1x2y2;xy
[1]  xy←x1y1x2y2
[2]  r←(((xy[1]-xy[3])*2)+((xy[2]-xy[4])*2))*0.5
-------------------------------------------------------------
[ 0]  r←preco geradegs td;i;j
[ 1]  r←12 12⍴' '
[ 2]  i←1
[ 3] t1:→(i>12)/fim
[ 4]  j←1
[ 5] t2:→(j>12)/soma
[ 6]  →(td[i;j]<preco[3])/poea
[ 7]  →(td[i;j]<preco[4])/poeb
[ 8]  →(td[i;j]<preco[5])/poec
[ 9] poed:r[i;j]←'D'
[10]  →junta
[11] poec:r[i;j]←'C'
[12]  →junta
[13] poeb:r[i;j]←'B'
```

```
[14]  →junta
[15] poea:r[i;j]←'A'
[16]  →junta
[17] junta:j←j+1
[18]  →t2
[19] soma:i←i+1
[20]  →t1
[21] fim:
-------------------------------------------------------------
[0]  r←gerainst646;b;in;t;k
[1]  in←12?1↑⍴MATPR
[2]  b←12 5⍴' '
[3]  t←5000+?5000×k←≢,MATPR[in;⍳2],' '
[4]  t←t+k×8000
[5]  r←MATPR[in;2+⍳20],MATPR[in;⍳2],b,MATPR[in;22+⍳8],b,12 6⍴6 0⍕t
-------------------------------------------------------------
[0]  r←geratelef646
[1]  r←9⍴0
[2]  r[1]←1500+100×?9
[3]  r[2]←(5000+?10000)÷10000
[4]  r[3 4 5]←(50+10×?5),(150+10×?10),(400+10×?10)
[5]  r[6 7 8 9]←100,(150+10×?5),(250+10×?7),350+10×?8
-------------------------------------------------------------
[0]  r←preco custos
-------------------------------------------------------------
[ 0]  opesq vivo646a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;yy;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL646   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA646←ajusta80 FOLHALA646
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA646)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 34⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←31 80⍴' '
[16]  f←FOLHALA646
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←2.01
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(resp←3 0⍕xk),' ',opesq
[31]  esse[30;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[31;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geratelef646
[35]  yy←gerainst646
```

```
[36]  zz←xx custo646(xx geradegs criatbdist yy),yy
[37]  esse[7+⍳12;]←'¯-'edit 12 80↑((28⍴1),0 0,(10⍴1),0 0,8⍴1)/[2]1 numera yy
[38]  esse[20;]←80↑10 0⍕xx[1]
[39]  esse[21;]←80↑'  99.9999'⍕xx[2]
[40]  esse[22;]←80↑10 0⍕xx[3]
[41]  esse[23;]←80↑10 0⍕xx[6]
[42]  esse[24;]←80↑10 0⍕xx[4]
[43]  esse[25;]←80↑10 0⍕xx[7]
[44]  esse[26;]←80↑10 0⍕xx[5]
[45]  esse[27;]←80↑10 0⍕xx[8]
[46]  esse[28;]←80↑10 0⍕xx[9]
[47]  resp←resp,' ',zz[1;⍳20],zz[2;20+⍳10]
[48]  resu←resu,[1]1 34⍴resp
[49]  acuja←(f[;2]='#')/⍳1↑⍴f
[50]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[51]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[52]  ⍞←(⍕xk←xk+1),'-'
[53]  →testa
[54] fim:upag←(1 0+⍴f)⍴' '
[55]  →(1=≡n)/elafa
[56]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[57]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[58]  upag[2+⍳1↑⍴resu;⍳34]←resu
[59]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[60]  →terminando
[61] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[62]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[63]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[64] terminando:
[65]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[66]  relat[1↑⍴relat;;]←upag
[67]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[68]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[69]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[70]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo650

```
[0]  r←geracaso n
[1]  r←(n,n)⍴?(n*2)⍴⌈n×1.7
-------------------------------------------------------------
[0]  limpa;lixo
[1]  lixo←⎕EX 9 2⍴'X0X1X2X3X4X5X6X7X8'
[2]  lixo←⎕EX 16 3⍴'X03X04X05X06X07X08X09X10S03S04S05S06S07S08S09S10'
[3]  lixo←⎕EX 16 3⍴'X11X12X13X14X15X16X17X18S11S12S13S14S15S16S17S18'
[4]  lixo←⎕EX 16 3⍴'X19X20X21X22X23X24X25X26S19S20S21S22S23S24S25S26'
[5]  lixo←⎕EX 16 3⍴'X27X28X29X30X31X32X33X34S27S28S29S30S31S32S33S34'
[6]  lixo←⎕EX 16 3⍴'X35X36X37X38X39X40X41X42S35S36S37S38S39S40S41S42'
[7]  lixo←⎕EX'RESULT'
-------------------------------------------------------------
[0]  r←ms x
[1]  r←,(⍴x)⍴0
[2]  r[(,x=¯200)/⍳⍴,x]←1
[3]  r←(⍴x)⍴r
-------------------------------------------------------------
[ 0]  r←reshung n;i;j;di;mudou;x;quando;sombra;elems;onde;z;beleza;lixo;qqu
[ 1]  qqu←3
[ 2]  lixo←⎕EX 9 2⍴'X0X1X2X3X4X5X6X7X8'
[ 3]  lixo←⎕EX 16 3⍴'X03X04X05X06X07X08X09X10S03S04S05S06S07S08S09S10'
[ 4]  lixo←⎕EX'RESULT'
[ 5]  RESULT←0 60⍴' '
```

```
[ 6]  beleza←0
[ 7]  →(0=ρρn)/outrai
[ 8]  X0←x←n ⍝ matriz original
[ 9]  →mesmo
[10] outrai:x←X0←geracaso n
[11] mesmo:i←1 ⋄ di←1↑ρx
[12] t1:→(i>di)/col
[13]  x[i;]←x[i;]-⌊/,x[i;]
[14]  →(i=i←i+1)/t1
[15] col:i←1
[16]  X1←x ⍝ subtracao nas linhas do menor
[17] t2:→(i>di)/fia
[18]  x[;i]←x[;i]-⌊/,x[;i]
[19]  →(i=i←i+1)/t2
[20] fia:X2←x ⍝ subtracao nas colunas do menor
[21]  quando←3
[22] volta:sombra←(ρx)ρ0
[23] vovo22:
[24] ⍝ sombra e a matriz que vai fazer as marcacoes de linhas e de colunas
[25]  mudou←0
[26]  i←1
[27] t3:→(i>di)/gia
[28]  j←1
[29] t4:→(j>di)/kia
[30] ⍝⍞←'*'
[31]  →((sombra[i;j]+x[i;j])≠0)/soma ⍝ desvia se nao e zero (ou e zero riscado)
[32]  →(1=+/0=x[i;]+sombra[i;])/metecoluna ⍝ este zero e o unico na linha
[33]  →(1=+/0=x[;j]+sombra[;j])/metelinha ⍝ este zero e o unico na coluna
[34]  →soma
[35] metecoluna:sombra[;j]←¯1000
[36]  RESULT←RESULT,[1]1 60ρ60↑'metecoluna em ',⍕i,j
[37]  sombra[i;j]←¯200
[38]  mudou←1
[39]  →soma
[40] metelinha:sombra[i;]←¯1000
[41]  RESULT←RESULT,[1]1 60ρ60↑'metelinha em ',⍕i,j
[42]  sombra[i;j]←¯200
[43]  mudou←1
[44]  →soma
[45] soma:→(j=j←j+1)/t4
[46] kia:→(i=i←i+1)/t3
[47] gia:
[48]  ⍎'X',('00'⍕qqu),'←x'
[49]  ⍎'S',('00'⍕qqu),'←sombra'
[50]  →(mudou=0)/fim
[51]  qqu←qqu+1
[52]  RESULT←RESULT,[1]1 60ρ60↑'-----'
[53]  →vovo22
[54] fim:→(di=+/¯200=,sombra)/caboum
[55]  onde←(,sombra=0)/ιρ,x
[56]  elems←(,x)[onde]
[57]  →(0∈elems)/deuzebra
[58]  →conta
[59] deuzebra:⍝⍞←0
[60]  beleza←0
[61]  →(2=ρρn)/ufaaa
[62]  →outrai
[63] conta:
[64] ⍝ ⍞←'+'
[65] ⍝ zz←sombra
[66]  beleza←1
[67] ⍝ zzz←elems
[68]  elems←elems-⌊/elems
```

```
[69]  z←,x
[70]  z[onde]←elems
[71]  x←(ρx)ρz
[72]  ⍞'X',('0'⍕quando),'←x'
[73]  quando←quando+1
[74]  →volta
[75] caboum:→(beleza=1)/ufaaa
[76]  →(2=ρρn)/ufaaa
[77]  →outrai
[78] ufaaa:r←2ρ0
[79]  r[1]←⊂quando-3
[80]  r[2]←⊂ms sombra
------------------------------------------------------------
[ 0]  opesq vivo650a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;fff;lixo1;lixonol;nomes;ql39;q
      linha;relat;resp;resu;upag;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←2 ⋄ EVENTO←'PL650   '
[ 6]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA650←ajusta80 FOLHALA650
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALA650)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLOI'
[13]  xk←1 ⋄ resu←0 8ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←16 80ρ' '
[16]  f←FOLHALA650
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.03
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21] AAAAAAAAAAAAAAAAA incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[22]  →(36=1↓ρylu)/zebra
[23]  qlinha←(1=∧/[2]f[;⍳4]=((1↑ρf),4)ρ'\#05')/⍳1↑ρf
[24]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[25]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[26]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[27]  →maiszebra
[28] AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
[29] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[30] A ↓↓↓↓ e ↑↑↑↑↑ idem
[31] maiszebra:
[32]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[33]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[34]  esse[15;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[35]  esse[16;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[36] inica:
[37]  fff←reshung 7
[38]  esse[7+⍳7;]←7 80↑5 0⍕X0
[39]  resp←resp,+/[1](⊃fff[2])×7 7ρ(7ρ1),(7ρ2),(7ρ3),(7ρ4),(7ρ5),(7ρ6),7ρ7
[40]  resu←resu,[1]1 8ρresp
[41]  acuja←(f[;2]='#')/⍳1↑ρf
[42]  f[acuja;]←esse[⍞,f[acuja;3 4 5],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\newpage'
[44]  ⍞←(⍕xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+ρf)ρ' '
[47]  →(1=≡n)/elafa
```

```
[48]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[49]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[50]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯'-'edit(lixo1←4 0 8 0,12⍴4 0)⍪resu
[51]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[52]  →terminando
[53] elafa:aaa←(⍳lu,'¯'-'edit 4 0⍪0 1↓resu)
[54]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[55]  '!!!!!  Arquivo GPA com ',(⍪1↑⍴aaa),' linhas e ',(⍪1↓⍴aaa),' colunas'
[56] terminando:
[57]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[58]  relat[1↑⍴relat;;]←upag
[59]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[60] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[61]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[62]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo656

```
[0]  AVISO
[1]  'As variaveis sao: ΔI - definicao do ultimo problema gerado'
[2]  '                  ΔR - tracing da solucao deste problema'
[3]  '                  ΔA - pares da solucao deste problema'
[4]  '                  ΔB - pares, agora com letras'
[5]  ''
------------------------------------------------------------
[0]  emsaladeaula
[1]  'fazer no quadro...'
[2]  geracasoesp
[3]  lixo←galeshapley(H C LH LR SEQ)
[4]  ΔI
[5]  lixo←⍞
[6]  ΔR
------------------------------------------------------------
[ 0]  r←escolhealus caca;i;d;lr;quais;j;z
[ 1]  i←⊃caca[1]
[ 2]  d←⊃caca[2]
[ 3]  lr←⊃caca[3]
[ 4]  quais←⍳0
[ 5]  j←1
[ 6] t1:→(j>1↑⍴lr)/ac1
[ 7]  →(i∈lr[j;])/sim
[ 8] nao:j←j+1
[ 9]  →t1
[10] sim:quais←quais,j
[11]  →nao
[12] ac1:z←(d[1;]∈quais)/[2]d
[13]  r←z[1;⍋z[2;]]
------------------------------------------------------------
[ 0]  r←galeshapley xx;APLICS;aa;hj;i;ii;jj;osuj;resids;rk;seq;zz;ΔC;ΔH;ΔLH;ΔLR;ΔM
[ 1] ⍝ galeshapley xx;APLICS;aa;hj;i;ii;jj;osuj;resids;rk;seq;zz;ΔC;ΔH;ΔLH;ΔLR;ΔM
[ 2]  ΔH←⊃xx[1]
[ 3]  ΔC←⊃xx[2]
[ 4]  ΔLH←⊃xx[3]
[ 5]  ΔLR←⊃xx[4]
[ 6]  seq←⊃xx[5]
[ 7]  ΔR←0 70⍴' '
[ 8]  ΔM←0 2⍴0
[ 9]  APLICS←(⍴ΔC)⍴0
[10]  resids←(1↑⍴ΔLR)⍴0
[11]  i←1
[12]  ΔR←ΔR,[1]1 70⍴70↑' Os hospitais sao:        ',((2×⍴LET[ΔH])⍴0 1)\LET[ΔH]
```

```
[13]  ΔR←ΔR,[1]1 70ρ70↑' As capacidades deles sao: ',⍕ΔC
[14]  ΔR←ΔR,[1]1 70ρ70↑' Seq: ',⍕seq
[15]  ΔR←ΔR,[1]1 70ρ70↑' As escolhas dos hospitais:'
[16]  ΔR←ΔR,[1]((1↑ρΔLH),70)↑((((((1↑ρΔLH),1)ρLET[ΔH]),' '),'-'),' '),⍕ΔLH
[17]  ΔR←ΔR,[1]1 70ρ70↑' As escolhas dos residentes: '
[18]  ΔR←ΔR,[1]((1↑ρΔLR),70)↑1 numera((2×1↑ρΔLH)ρ0 1)⍀(' ',LET)[1+ΔLR]
[19]  ΔI←ΔR
[20]  ΔR←0 70ρ' '
[21] t1:→(((+/resids)=1↑ρΔLR)∨(i>1↑ρΔLR))/fim
[22]  ΔR←ΔR,[1]1 70ρ70↑'-- r=',⍕seq[i]
[23]  →((1↓ρΔLR)≠+/ΔLR[|seq[i];]=0)/blz33
[24]  ⍞←'*' ⍝ este cara nao tem opcoes validas
[25]  ΔR←ΔR,[1]1 70ρ70↑'   r=',(⍕seq[i]),'  nao tem opcoes validas'
[26]  →soma
[27] blz33:
[28]  hj←primeironaonulo ΔLR[seq[i];]
[29]  ΔM←ΔM,[1]1 2ρseq[i],hj
[30]  ΔR←ΔR,[1]1 70ρ70↑'  acabei de alocar o r=',(⍕seq[i]),' para h=',LET[hj]
[31]  APLICS[aa]←APLICS[aa←ΔH⍳hj]+1
[32]  →(APLICS[aa]≤ΔC[aa])/naosuper
[33] super:
[34]  rk←ΔM piorresidente(ΔLH[ΔH⍳hj;]seq[i]hj)
[35]  'ihhhh, rk=',⍕rk
[36]  →(¯1=rk)/naosuper
[37]  ΔM←(2≠+/(ΔM=((1↑ρΔM),2)ρrk,hj))/[1]ΔM
[38]  ΔR←ΔR,[1]1 70ρ70↑'+++acabei de excluir    rk=',(⍕rk),'   hj=',LET[hj]
[39] ⍝ neste ponto o residente deve voltar `a fila...
[40]  ΔLR←ΔLR,[1]ΔLR[seq⍳rk;]
[41]  resids[rk]←1
[42]  seq←seq,seq[rk]
[43]  seq[rk]←-seq[rk]
[44]  resids←resids,0
[45]  ΔR←ΔR,[1]1 70ρ70↑'   O residente ',(⍕seq[⍳rk]),'voltou a fila'
[46] naosuper:
[47]  →(APLICS[aa]<ΔC[aa])/soma
[48]  rk←ΔM piorresidente(ΔLH[ΔH⍳hj;]seq[i]hj)
[49]  →(rk=¯1)/ufa5
[50]  ΔR←ΔR,[1]1 70ρ70↑'  excluindo piores do que ',(⍕rk),' no hospital ',LET[hj]
[51]  jj←1+(,ΔLH[ΔH⍳hj;])⍳rk
[52] t3:→(jj>1↓ρΔLH)/ufa5
[53]  osuj←ΔLH[ΔH⍳hj;jj]
[54]  →(osuj=0)/so5
[55]  ΔLR[osuj;]←(ΔLR[osuj;]≠hj)×ΔLR[osuj;]
[56] so5:jj←jj+1
[57]  →t3
[58] ufa5:
[59]  →smesmo
[60] soma:resids[seq[i]]←1
[61] smesmo:i←i+1
[62]  →t1
[63] fim:ΔA←ΔM
[64]  ΔB←(((1↑ρΔA),2)ρ2 0⍕ΔA[;1]),'-',((1↑ρΔA),1)ρLET[ΔA[;2]]
[65]  zz←¯6 2↑ΔM
[66]  ii←4?6
[67]  ii←ii[⍋ii]
[68] ⍝ r←(4 2ρ2 0⍕zz[ii;1]),4 1ρLET[zz[ii;2]]
[69]  r←(4 2ρ2 0⍕zz[ii;1]),4 1ρLET[zz[ii;2]]
[70]  ΔR←ΔR,[1]1 70ρ70↑'O resultado final foi: '
[71]  zz←1↑ρΔM
[72]  ΔR←ΔR,[1]2 70ρ140↑,(((zz,2)ρ2 0⍕ΔM[;1]),'-'),((zz,1)ρLET[ΔM[;2]]),' '
-------------------------------------------------------------
[ 0]  geracasoesp
[ 1]  H←1 2 3 4 5
```

```
[ 2] ⍝ C←1 2 3 4 5
[ 3]  C←1 1 2 2 4
[ 4]  LH←5 10⍴0
[ 5]  LH[1;]←3 5 1 8 2 6 10 7 4 0
[ 6]  LH[2;]←3 5 1 8 2 6 10 9 7 4
[ 7]  LH[3;]←3 5 1 2 6 10 9 7 4 0
[ 8]  SEQ←LH[4;]←3 5 1 8 2 6 10 9 7 4
[ 9]  LH[5;]←3 5 1 8 2 10 9 7 4 0
[10]  LR←10 5⍴0
[11]  LR[;1]←10⍴1
[12]  LR[;2]←10⍴2
[13]  LR[;3]←10⍴3
[14]  LR[;4]←10⍴4
[15]  LR[;5]←10⍴5
[16]  LR[6;]←1 2 3 4 0
[17]  LR[8;]←1 2 4 5 0
[18]  LR[9;]←2 3 4 5 0
------------------------------------------------------------
[0]  r←geraexemplofolha656;h;c;s;eh;er;p
[1]  h←9 19 16 1
[2]  c←1 1 2 3
[3]  s←2 5 7 6 4 3 1
[4]  eh←4 7⍴2 5 7 6 3 1 0 2 5 7 6 4 3 1 5 7 4 3 1 0 0 2 5 7 6 4 3 1
[5]  er←⍉4 7⍴9 1 19 19 19 19 19 16 9 16 1 16 1 1 19 19 1 16 9 9 9 1 0 9 0 1 0 16
[6]  p←2 5 7 6 4 3 1
[7]  r←(h c eh er p)
------------------------------------------------------------
[ 0]  res←gerainst hr;ch;aa;i;D;h;r;H;C;LR;LH;seq;delta
[ 1]  h←hr[1]
[ 2]  r←hr[2]
[ 3] ⍝ gera uma instancia de h hospitais e r residentes
[ 4]  LET←'ABCDEFGHJKLMNPQRSTUVWXYZ'
[ 5]  →(h>⍴LET)/erro
[ 6]  H←h?⍴LET ⍝ numeros dos hospitais (referenciados a LET)
[ 7]  ch←r
[ 8]  C←(⍴H)⍴1 ⍝ capacidades de cada hospital
[ 9]  delta←¯3 ¯1 0 0 1 3 ⍝ menos vagas, igual, ou mais vagas...
[10]  delta←delta[?6]
[11] t1:→((+/C)≥ch+delta)/acab1
[12]  C[aa]←C[aa←?⍴C]+1
[13]  →t1
[14] acab1:
[15]  D←(⍳r),[0.5]r?r  ⍝ desempenho dos estudantes: l1=id; l2=ordem na nota
[16]  LR←(r,h)⍴0
[17]  i←1
[18] t2:→(i>r)/acab2
[19]  LR[i;]←h↑H[((h+1)-?1+⌊h÷3)?h]
[20]  i←i+1
[21]  →t2
[22] acab2:LH←(h,r)⍴0
[23]  i←1
[24] t3:→(i>h)/avab3
[25]  LH[i;]←r↑escolhealus(H[i]D LR)
[26]  i←i+1
[27]  →t3
[28] avab3:
[29]  seq←D[1;⍋D[2;]]
[30]  res←(H C LH LR seq)
[31]  →0
[32] erro:'erro nos parametros'
------------------------------------------------------------
[ 0]  limpavars;lixo
[ 1]  lixo←⎕EX'C'
```

```
[ 2]  lixo←⎕EX'H'
[ 3]  lixo←⎕EX'LR'
[ 4]  lixo←⎕EX'LH'
[ 5]  lixo←⎕EX'SEQ'
[ 6]  lixo←⎕EX'ΔR'
[ 7]  lixo←⎕EX'ΔI'
[ 8]  lixo←⎕EX'ΔA'
[ 9]  lixo←⎕EX'ΔB'
-------------------------------------------------------------
[0]  r←pedemail x
[1]  →(40≠+/' '=x)/aindanao
[2]  r←80↑'Por favor, informe seu e-mail: ⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_'
[3]  →junnao
[4] aindanao:r←80↑'e-mail cadastrado: ',x
[5] junnao:
-------------------------------------------------------------
[ 0]  r←m piorresidente xx;lh;i;hj;ii
[ 1]  lh←,⊃xx[1] ⋄ ii←⊃xx[2] ⋄ hj←⊃xx[3]
[ 2] ⍝ 'entrando lh=',(⍕lh),'  ii=',(⍕ii),'   hj=',(⍕hj),'  M=',⍕,m
[ 3]  m←(m[;2]=hj)/[1]m
[ 4]  i←⍴,lh
[ 5] t1:→(i<1)/fim
[ 6]  →(lh[i]∈m[;1])/eeste
[ 7] subs:i←i-1
[ 8]  →t1
[ 9] eeste:r←ii
[10]  →0
[11] fim:r←¯1
[12]  →0
-------------------------------------------------------------
[0]  r←primeironaonulo lista
[1]  lista←(lista≠0)/lista
[2]  r←1↑lista
-------------------------------------------------------------
[ 0]  stress;i;lixo
[ 1]  i←1
[ 2] t1:→(i>1000)/fim
[ 3]  (H C LH LR SEQ)←gerainst(?22),?50
[ 4]  lixo←galeshapley(H C LH LR SEQ)
[ 5]  →(0≠100|i)/soma
[ 6]  i
[ 7] soma:
[ 8]  i←i+1
[ 9]  →t1
[10] fim:
-------------------------------------------------------------
[ 0]  opesq vivo656a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;num;relat;resp;r
      esu;upag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←8 ⋄ EVENTO←'PL656   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA656←ajusta80 FOLHALA656
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA656)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[12]  xk←1 ⋄ resu←0 11⍴' '
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←40 80⍴' '
```

```
[15]  f←FOLHALA656
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23] ⍝ esse[39;]←80↑pedemail ylu[xk;36+⍳40]
[24]  esse[39;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[25]  esse[40;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[26] ini1:
[27]  aaa←galeshapley gerainst(5+?3),(10+?4)
[28]  esse[7+⍳27;]←27 80↑ΔI
[29]  esse[34+⍳4;]←4 80↑aaa[;1 2]
[30]  resu←resu,[1]1 11⍴(3 0⍕resp),'-',aaa[1;3],' ',aaa[2;3],' ',aaa[3;3],' ',aaa[4;3]
[31]  acuja←(f[;2]='#')/⍳1↑⍴f
[32]  f[acuja;]←esse[⍬,f[acuja;3 4],' ';]
[33]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[34]  ⎕←(⍕xk←xk+1),'-'
[35]  →testa
[36] fim:upag←(1 0+⍴f)⍴' '
[37]  →(1=≡n)/elafa
[38]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[39]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[40]  upag[2+⍳1↑⍴resu;⍳11]←resu
[41]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[42]  →terminando
[43] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),resu)
[44]  aaa[1;35 36]←2 0⍕CORRECAO
[45]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[46]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[47] terminando:
[48]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[49]  relat[1↑⍴relat;;]←upag
[50]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[51] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[52]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[53]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo660

```
[0]  COMOFAZER
[1]  'Para fazer a tabela de n jogadores, chame '
[2]  'chamator n'
[3]  ''
[4]  'Depois dela, a resposta estara em tabela, e a '
[5]  'sequencia de chamadas estará em SEQR'
-------------------------------------------------------------
[ 0]  r←chamator n;r1
[ 1]  SEQR←⍳0
[ 2]  →(0=2|n)/par
[ 3]  tabela←(2⍴n+1)⍴0
[ 4]  torgen n
[ 5]  r1←(2⍴n)↑tabela
[ 6]  →fim
[ 7] par:tabela←(2⍴n)⍴0
[ 8]  torgen n
[ 9]  r1←0 ¯1↓tabela
[10] fim:
[11]  r←1 numera2 r1
```

```
------------------------------------------------------------
[0]  r←orig numera2 oper;aa;⎕IO
[1]  ⎕IO←orig
[2]  r←4 0⍕oper
[3]  r←(((3 0⍕(((1↑⍴oper),1)⍴⍳1↑⍴oper)),[⎕IO+1]'|'),[⎕IO+1]' '),r
[4]  r←((1,aa)⍴'     ',4 0⍕⍳1↓⍴oper),[⎕IO]((1,aa←5+4×1↓⍴oper)⍴'   +',100⍴'-'),[⎕IO]r
------------------------------------------------------------
[0]  preencherespos;i;lixo
[1]  i←1
[2] t1:→(i>100)/fim
[3]  lixo←chamator i
[4]  exercicios[i;]←20↑SEQR
[5]  →(i=i←i+1)/t1
[6] fim:
------------------------------------------------------------
[  0]  torgen n;jog;dia;m
[  1]  SEQR←SEQR,n
[  2]  →(n≠2)/cont1
[  3]  tabela[1;1]←2
[  4]  tabela[2;1]←1
[  5]  →0
[  6] cont1:→(0=2|n)/cont2
[  7]  torgen n+1
[  8]  jog←1
[  9] t1:→(jog>n)/t10
[ 10]  dia←1
[ 11] t2:→(dia>n)/t11
[ 12]  →(tabela[jog;dia]≠n+1)/soma1
[ 13]  tabela[jog;dia]←0
[ 14] soma1:→(dia=dia←dia+1)/t2
[ 15] t11:→(jog=jog←jog+1)/t1
[ 16] t10:
[ 17]  →0
[ 18] cont2:m←⌊n÷2
[ 19]  torgen m
[ 20]  →(0≠2|m)/cont3
[ 21]  jog←m+1
[ 22] ta1:→(jog>n)/ta10
[ 23]  dia←1
[ 24] ta2:→(dia>m-1)/ta11
[ 25]  tabela[jog;dia]←tabela[jog-m;dia]+m
[ 26] somaa1:→(dia=dia←dia+1)/ta2
[ 27] ta11:→(jog=jog←jog+1)/ta1
[ 28] ta10:
[ 29]  jog←1
[ 30] tb1:→(jog>m)/tb10
[ 31]  dia←m
[ 32] tb2:→(dia>n-1)/tb11
[ 33]  →((jog+dia)≤n)/somab1
[ 34]  tabela[jog;dia]←jog+dia-m
[ 35]  →pub1
[ 36] somab1:
[ 37]  tabela[jog;dia]←jog+dia
[ 38] pub1:
[ 39]  →(dia=dia←dia+1)/tb2
[ 40] tb11:→(jog=jog←jog+1)/tb1
[ 41] tb10:
[ 42]  jog←m+1
[ 43] tc1:→(jog>n)/tc10
[ 44]  dia←m
[ 45] tc2:→(dia>n-1)/tc11
[ 46]  →(jog>dia)/somac1
[ 47]  tabela[jog;dia]←(jog+m)-dia
```

```
[ 48]  →puc1
[ 49] somac1:
[ 50]  tabela[jog;dia]←jog-dia
[ 51] puc1:
[ 52]  →(dia=dia←dia+1)/tc2
[ 53] tc11:→(jog=jog←jog+1)/tc1
[ 54] tc10:
[ 55]  →0
[ 56] cont3:
[ 57]  jog←m+1
[ 58] td1:→(jog>n)/td10
[ 59]  dia←1
[ 60] td2:→(dia>m)/td11
[ 61]  →(0=tabela[(jog-m);dia])/somad1
[ 62]  tabela[jog;dia]←tabela[jog-m;dia]+m
[ 63]  →pud1
[ 64] somad1:
[ 65]  tabela[jog;dia]←0
[ 66] pud1:
[ 67]  →(dia=dia←dia+1)/td2
[ 68] td11:→(jog=jog←jog+1)/td1
[ 69] td10:
[ 70]  jog←1
[ 71] te1:→(jog>m)/te10
[ 72]  dia←1
[ 73] te2:→(dia>m)/te11
[ 74]  →(0≠tabela[jog;dia])/somae1
[ 75]  tabela[jog;dia]←jog+m
[ 76]  tabela[jog+m;dia]←jog
[ 77] somae1:
[ 78]  →(dia=dia←dia+1)/te2
[ 79] te11:→(jog=jog←jog+1)/te1
[ 80] te10:
[ 81]  jog←1
[ 82] tf1:→(jog>m)/tf10
[ 83]  dia←m+1
[ 84] tf2:→(dia>n-1)/tf11
[ 85]  →((jog+dia)≤n)/somaf1
[ 86]  tabela[jog;dia]←jog+dia-m
[ 87]  →puf1
[ 88] somaf1:
[ 89]  tabela[jog;dia]←jog+dia
[ 90] puf1:
[ 91]  →(dia=dia←dia+1)/tf2
[ 92] tf11:→(jog=jog←jog+1)/tf1
[ 93] tf10:
[ 94]  jog←m+1
[ 95] tg1:→(jog>n)/tg10
[ 96]  dia←m+1
[ 97] tg2:→(dia>n-1)/tg11
[ 98]  →(jog>dia)/somag1
[ 99]  tabela[jog;dia]←(jog+m)-dia
[100]  →pug1
[101] somag1:
[102]  tabela[jog;dia]←jog-dia
[103] pug1:
[104]  →(dia=dia←dia+1)/tg2
[105] tg11:→(jog=jog←jog+1)/tg1
[106] tg10:
-------------------------------------------------------------
[ 0]  opesq vivo660a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;ina;lixo1;lixonol;nomes;ql39;q
      linha;relat;resp;resu;upag;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
```

```
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←2 ⋄ EVENTO←'PL660   '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA660←ajusta80 FOLHALA660
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALA660)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLOI'
[13]  xk←1 ⋄ resu←0 14ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←10 80ρ' '
[16]  f←FOLHALA660
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.02
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[22]  →(36=1↓ρylu)/zebra
[23]  qlinha←(1=∧/[2]f[;⍳4]=((1↑ρf),4)ρ'\#05')/⍳1↑ρf
[24]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[25]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[26]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[27]  →maiszebra
[28] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

vivo666

```
[ 0]  opesq vivo666b n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL666b  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA666b←ajusta80 FOLHALA666b
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA666b)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALA666b
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  resu←resu,[1]1 3⍴resp
[35]  acuja←(f[;2]='#')/⍳1↑⍴f
[36]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[37]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[38]  ⍞←(⍕xk←xk+1),'-'
[39]  →testa
[40] fim:
[41]  upag←(1 0+⍴f)⍴' '
[42] terminando:
[43]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[44]  relat[1↑⍴relat;;]←upag
[45]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[46]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[47]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[48]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'    (.tex)'
------------------------------------------------------------
[ 0]  opesq vivo666c n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL666c  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
```

```
[ 7]  →(isnum n)/1+⎕LC ◇ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ◇ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ◇ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA666c←ajusta80 FOLHALA666c
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA666c)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ◇ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALA666c
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ◇ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  resu←resu,[1]1 3⍴resp
[35]  acuja←(f[;2]='#')/⍳1↑⍴f
[36]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[37]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[38]  ⍞←(⍕xk←xk+1),'-'
[39]  →testa
[40] fim:
[41]  upag←(1 0+⍴f)⍴' '
[42] terminando:
[43]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[44]  relat[1↑⍴relat;;]←upag
[45]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[46]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[47]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[48]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'    (.tex)'
------------------------------------------------------------
[ 0]  opesq vivo666d n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL666d  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ◇ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ◇ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ◇ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA666d←ajusta80 FOLHALA666d
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA666d)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ◇ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALA666d
[17]  esse[1;]←80↑dhx[1;]
```

```
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  resu←resu,[1]1 3⍴resp
[35]  acuja←(f[;2]='#')/⍳1↑⍴f
[36]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[37]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[38]  ⍞←(⍕xk←xk+1),'-'
[39]  →testa
[40] fim:
[41]  upag←(1 0+⍴f)⍴' '
[42] terminando:
[43]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[44]  relat[1↑⍴relat;;]←upag
[45]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[46]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍬∧⍀⍬EVENTO=' ')/EVENTO),'.tex'
[47]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[48]  'Arquivo criado com o nome de c:⍀apl2⍀',EVENTO,'    (.tex)'
-------------------------------------------------------------
[ 0]  opesq vivo666e n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL666e  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA666e←ajusta80 FOLHALA666e
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA666e)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALA666e
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
```

```
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  resu←resu,[1]1 3⍴resp
[35]  acuja←(f[;2]='#')/⍳1↑⍴f
[36]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[37]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[38]  ⎕←(⍕xk←xk+1),'-'
[39]  →testa
[40] fim:
[41]  upag←(1 0+⍴f)⍴' '
[42] terminando:
[43]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[44]  relat[1↑⍴relat;;]←upag
[45]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[46]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[47]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[48]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'    (.tex)'
-------------------------------------------------------------
```

vivo668

```
[0]  AVISO
[1]  'A variavel EXEMPLO e a que esta gravada em f:\p\n\668\EXEMPLO668.myd'
[2]  'A EXEMPLO500 tem uma coluna a mais com a distancia para o filme 500'
[3]  'EXEMPLO500ORD e a anterior ordenada pela ultima coluna'
-------------------------------------------------------------
[ 0]  r←k caldist668 ace;di;i;xu
[ 1]  di←(1↑⍴ace)⍴0
[ 2]  i←1
[ 3] t1:→(i>1↑⍴ace)/fim
[ 4]  xu←(ace[i;2]-ace[k;2])*2
[ 5]  xu←xu+(ace[i;3]-ace[k;3])*2
[ 6]  xu←xu+(ace[i;4]-ace[k;4])*2
[ 7]  xu←xu+(ace[i;5]-ace[k;5])*2
[ 8]  xu←xu+(ace[i;6]-ace[k;6])*2
[ 9]  xu←xu+(ace[i;7]-ace[k;7])*2
[10]  xu←xu*0.5
[11]  di[i]←xu
[12]  i←i+1
[13]  →t1
[14] fim:r←ace,[2]((1↑⍴ace),1)⍴di
-------------------------------------------------------------
[0]  r←gera668;x;a
[1]  x←1000 7⍴0
[2]  a←1000?3000
[3]  a←a[⍋a]
[4]  x[;1]←a
[5]  x[;1+⍳6]←1000 6⍴(?6000⍴2000)÷400
[6]  r←x
-------------------------------------------------------------
[ 0]  r←grava668 arquivo;z;z1;i1;i2;i3;lixo
[ 1]  z←gera668
[ 2]  z1←3?1↑⍴z
[ 3]  i1←z1[1]caldist668 z
[ 4]  i1←i1[⍋i1[;8];]
[ 5]  r←(,z[z1;1]),,i1[2 3 4;1]
[ 6]  i2←z1[2]caldist668 z
[ 7]  i2←i2[⍋i2[;8];]
[ 8]  r←r,,i2[2 3 4;1]
```

```
[ 9]  i3←z1[3]caldist668 z
[10]  i3←i3[⍋i3[;8];]
[11]  r←r,,i3[2 3 4;1]
[12]  lixo←(⍕z)ΔFM arquivo
-------------------------------------------------------------
[ 0]  opesq vivo668a n;CORRECAO;EVENTO;QUIPN;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39
      ;qlinha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  QUIPN←'0'
[ 5]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 6]  EVENTO←'PL668   '
[ 7]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ QUIPN←n[5]
[ 9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍕n
[10]  ylu←n grupo ylu
[11]  FOLHALA668←ajusta80 FOLHALA668
[12]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA668)⍴' '
[13]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[14]  xk←1 ⋄ resu←0 10⍴0
[15] testa:→(xk>1↑⍴ylu)/fim
[16]  esse←13 80⍴' '
[17]  f←FOLHALA668
[18]  esse[1;]←80↑dhx[1;]
[19]  esse[2;]←80↑dhx[2;]
[20]  esse[3;]←80↑4 2⍎VERSAOa←1.07
[21]  esse[4;]←80↑ylu[xk;⍳6]
[22]  →(36=1↓⍴ylu)/zebra
[23]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[24]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[25]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[26]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[27]  →maiszebra
[28] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[32]  esse[12;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[13;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] inica:
[35]  esse[8;]←1 80⍴80↑'F668D',QUIPN,('00'⍎xk),'.myd'
[36]  xx←grava668'c:\apl2\F668D',QUIPN,('00'⍎xk),'.myd'
[37]  esse[9 10 11;]←3 80⍴(80↑⍎xx[1]),(80↑⍎xx[2]),80↑⍎xx[3]
[38]  resu←resu,[1]1 10⍴resp,3↓xx
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[42]  ⍞←(⍎xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 11 0 6 0 6 0 11 0 6 0 6 0 11 0 6 0 6 0)⍎resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],11 0 6 0 6 0 11 0 6 0 6 0 11 0 6 0 6 0⍎0 1↓resu)
[52]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
```

```
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍬∧⍀⍬EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo669

```
[0]  AVISO
[1]  'demora'
-------------------------------------------------------------
[ 0]  r←filtro bloom cand;i1;i2;i3;i4;i5
[ 1] ⍝ retorna o filtro devidamente atualizado pelo cand
[ 2]  i1←h1 cand
[ 3]  i2←h2 cand
[ 4]  i3←h3 cand
[ 5]  i4←h4 cand
[ 6]  i5←h5 cand
[ 7]  filtro[i1]←1
[ 8]  filtro[i2]←1
[ 9]  filtro[i3]←1
[10]  filtro[i4]←1
[11]  filtro[i5]←1
[12]  r←filtro
-------------------------------------------------------------
[ 0]  r←geracaso669;cara;i
[ 1]  r←2010 150⍴' '
[ 2]  i←1
[ 3] t1:→(i>2010)/fim
[ 4]  r[i;]←LEG[?150⍴65]
[ 5]  i←i+1
[ 6]  →t1
[ 7] fim:
[ 8]  i←2000
[ 9] t2:→(i>2010)/mesmo
[10]  cara←1=?2
[11]  →(cara=1)/soma
[12]  r[i;]←r[?1000;]
[13] soma:
[14]  i←i+1
[15]  →t2
[16] mesmo:
-------------------------------------------------------------
[ 0]  r←h1 x;s;i
[ 1]  s←0
[ 2]  i←1
[ 3] t1:→(i>150)/fim
[ 4]  s←s+(⎕AV⍳x[i])×i
[ 5]  →(s<1000000000)/ct
[ 6]  s←1000000000|s
[ 7] ct:
[ 8]  i←i+1
[ 9]  →t1
[10] fim:r←1+20000|s
-------------------------------------------------------------
[ 0]  r←h2 x;s;i
[ 1]  s←0
[ 2]  i←1
[ 3] t1:→(PRIMO[i]>150)/fim
[ 4]  s←s+(⎕AV⍳x[PRIMO[i]])×PRIMO[i]
[ 5]  →(s<1000000000)/ct
```

```
[ 6]  s←1000000000|s
[ 7] ct:
[ 8]  i←i+1
[ 9]  →t1
[10] fim:r←1+20000|s
------------------------------------------------------------
[ 0]  r←h3 x;y;max;p1;p2;i
[ 1]  y←((⌈(1↑ρ,x)÷8),8)ρ,x,7ρ⎕AV[⎕IO]
[ 2]  max←-999999
[ 3]  i←1
[ 4] t1:→(i>1↑ρy)/fim
[ 5]  p1←¯1+⎕AVιy[i;ι4]
[ 6]  p2←¯1+⎕AVιy[i;4+ι4]
[ 7]  p1←256 256 256 256⊥p1
[ 8]  p2←256 256 256 256⊥p2
[ 9]  p1←1+20000|p1
[10]  p2←1+20000|p2
[11]  max←max⌈p1⌈p2
[12]  i←i+1
[13]  →t1
[14] fim:r←max
------------------------------------------------------------
[ 0]  r←h4 x;g1;g2;i;mask;p1;um;y;z
[ 1]  mask←0 0 0 0 0 0 1 0 ⍮ 02
[ 2]  mask←mask,1 1 0 0 1 0 1 0 ⍮ CA
[ 3]  mask←mask,1 1 1 1 1 1 1 0 ⍮ FE
[ 4]  mask←mask,1 0 1 1 1 0 1 0 ⍮ BA
[ 5]  mask←mask,1 0 1 1 1 0 1 0 ⍮ BA
[ 6]  mask←mask,1 1 0 0 1 0 1 0 ⍮ CA
[ 7]  mask←mask,0 0 1 0 0 0 1 0 ⍮ 22
[ 8]  mask←mask,1 0 0 0 1 0 0 0 ⍮ 88
[ 9]  y←((⌈(1↑ρ,x)÷8),8)ρ(,x),7ρ⎕AV[256]
[10]  i←1
[11] t1:→(i>1↑ρy)/fim
[12]  p1←¯1+⎕AVιy[i;]
[13]  z←1
[14]  um←''
[15] t2:→(z>8)/ufa
[16]  um←um,(8ρ2)⊤p1[z]
[17]  z←z+1
[18]  →t2
[19] ufa:
[20]  mask←mask≠um
[21]  i←i+1
[22]  →t1
[23] fim:
[24]  g1←(32ρ2)⊥mask[ι32]
[25]  g2←(32ρ2)⊥mask[32+ι32]
[26]  r←1+20000||g1-g2
------------------------------------------------------------
[0]  r←h5 x;in;ct
[1]  in←0
[2]  ct←0
[3] t1:→((2*in)>ρ,x)/fim
[4]  ct←1000000000|ct+(2*in)×¯1+⎕AVιx[2*in]
[5]  in←in+1
[6]  →t1
[7] fim:r←1+20000|ct
------------------------------------------------------------
[ 0]  r←resolve669 x;c1;c2;c3;c4;c5;i
[ 1]  FILTRO←20000ρ0
[ 2]  i←1
[ 3] t1:→(i>2000)/fim
```

```
[ 4]  FILTRO←FILTRO bloom x[i;]
[ 5]  i←i+1
[ 6]  →t1
[ 7] fim:
[ 8]  r←0⍴0
[ 9] t2:→(i>2010)/mesmo
[10]  c1←h1 x[i;]
[11]  c2←h2 x[i;]
[12]  c3←h3 x[i;]
[13]  c4←h4 x[i;]
[14]  c5←h5 x[i;]
[15]  →((FILTRO[c1]=1)∧(FILTRO[c2]=1)∧(FILTRO[c3]=1)∧(FILTRO[c4]=1)∧(FILTRO[c5]=1))/sim
[16] nao:r←r,0
[17]  i←i+1
[18]  →t2
[19] sim:
[20]  r←r,1
[21]  i←i+1
[22]  →t2
[23] mesmo:
------------------------------------------------------------
[ 0]  opesq vivo669a n;CORRECAO;DARQ;EVENTO;QUIPN;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  QUIPN←'0'
[ 5]  DARQ←'0'
[ 6]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 7]  EVENTO←'PL669   '
[ 8]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 9]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ QUIPN←n[5]
[10]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍕n
[11]  ylu←n grupo ylu
[12]  FOLHALA669←ajusta80 FOLHALA669
[13]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA669)⍴' '
[14]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[15]  xk←1 ⋄ resu←0 11⍴0
[16] testa:→(xk>1↑⍴ylu)/fim
[17]  esse←10 80⍴' '
[18]  f←FOLHALA669
[19]  esse[1;]←80↑dhx[1;]
[20]  esse[2;]←80↑dhx[2;]
[21]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[22]  esse[4;]←80↑ylu[xk;⍳6]
[23]  →(36=1↓⍴ylu)/zebra
[24]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[25]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[26]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[27]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[28]  →maiszebra
[29] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[30] maiszebra:
[31]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[32]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[33]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[34]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[35] inica:
[36]  xx←geracaso669
[37]  lixonol←xx ΔFM'c:⍀apl2⍀F669D',QUIPN,('00'⍎xk),'.myd'
[38]  esse[8;]←1 80⍴80↑'F669D',QUIPN,('00'⍎xk),'.myd'
[39]  resp←xk,resolve669 xx
```

```
[40]  resu←resu,[1]1 11⍴resp
[41]  acuja←(f[;2]='#')/⍳1↑⍴f
[42]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[44]  ⎕←(⍕xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+⍴f)⍴' '
[47]  →(1=≡n)/elafa
[48]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[49]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[50]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 2 0 2 0 2 0 2 0 8 0 2 0 2 0 2 0 2 0)⍀resu
[51]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[52]  →terminando
[53] elafa:aaa←(ylu[;⍳36],2 0 2 0 2 0 2 0 2 0 8 0 2 0 2 0 2 0 2 0⍀0 1↓resu)
[54]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[55]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[56] terminando:
[57]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[58]  relat[1↑⍴relat;;]←upag
[59]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[60]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[61]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[62]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo671

```
[0]  AVISO
[1]  'Para gerar o gabarito, faca responde 33 44 12 15...'
-------------------------------------------------------------
[ 0]  r←alternativo p;n;s;m;l;i;j;infty;k;q
[ 1]  infty←999999999999999
[ 2]  n←(⍴p)-1
[ 3]  s←m←(2⍴n)⍴0
[ 4]  l←2
[ 5] t1:→(l>n)/fim
[ 6]  i←1
[ 7] t2:→(i>1+n-l)/f4
[ 8]  j←i+l-1
[ 9]  m[i;j]←infty
[10]  k←i
[11] t3:→(k>j-1)/f8
[12]  q←m[i;k]+m[k+1;j]+p[1+i-1]×p[1+k]×p[1+j]
[13]  →(q≥m[i;j])/pula
[14]  m[i;j]←q
[15]  s[i;j]←k
[16] pula:k←k+1
[17]  →t3
[18] f8:i←i+1
[19]  →t2
[20] f4:l←l+1
[21]  →t1
[22] fim:r←m,s
-------------------------------------------------------------
[ 0]  r←alternativomax p;n;s;m;l;i;j;infty;k;q
[ 1]  infty←-999999999999999
[ 2]  n←(⍴p)-1
[ 3]  s←m←(2⍴n)⍴0
[ 4]  l←2
[ 5] t1:→(l>n)/fim
[ 6]  i←1
[ 7] t2:→(i>1+n-l)/f4
```

```
[ 8]  j←i+l-1
[ 9]  m[i;j]←infty
[10]  k←i
[11] t3:→(k>j-1)/f8
[12]  q←m[i;k]+m[k+1;j]+p[1+i-1]×p[1+k]×p[1+j]
[13]  →(q≤m[i;j])/pula
[14]  m[i;j]←q
[15]  s[i;j]←k
[16] pula:k←k+1
[17]  →t3
[18] f8:i←i+1
[19]  →t2
[20] f4:l←l+1
[21]  →t1
[22] fim:r←m,s
-------------------------------------------------------------
[0]  amplitude x;w;z
[1] ⍝ calcula o ganho obtido em pior multiplicacao ÷ melhor multiplicacao
[2]  z←responde x
[3]  w←respondemax x
[4]  (14 0⍕(1↑⌽w[2;])÷1↑⌽z[2;]),' x mais rapido'
-------------------------------------------------------------
[ 0]  r←avaliamats x;maxn;d;m;n;h;i;j;k;temp;infty;qual
[ 1] ⍝ x eh o vetor de dimensoes das matrizes x_i-1 e x_i sao as dimensoes de M_i
[ 2]  infty←99999999999999
[ 3]  maxn←¯1+⍴x
[ 4]  d←x
[ 5]  qual←m←(maxn,maxn)⍴0
[ 6]  n←(⍴x)-1
[ 7]  h←1
[ 8] t1:→(h≥n)/fim
[ 9]  i←1
[10] t2:→(i>n-h)/fi8
[11]  j←i+h
[12]  m[i;j]←infty
[13]  k←i
[14] t3:→(k>j-1)/fi6
[15]  temp←m[i;k]+m[k+1;j]+d[1+i-1]×d[1+k]×d[1+j]
[16]  →(temp≥m[i;j])/pula
[17]  m[i;j]←temp
[18]  qual[i;j]←k
[19] pula:
[20]  k←k+1
[21]  →t3
[22] fi6:
[23]  i←i+1
[24]  →t2
[25] fi8:
[26]  h←h+1
[27]  →t1
[28] fim:r←m,qual
-------------------------------------------------------------
[ 0]  r←descreve h;i;z
[ 1]  r←2 80⍴' '
[ 2]  z←''
[ 3]  i←2
[ 4] t1:→(i>5)/fim
[ 5]  z←z,'M[',(⍕h[i-1]),'x',(⍕h[i]),'] X '
[ 6]  i←i+1
[ 7]  →t1
[ 8] fim:
[ 9]  r[1;]←80↑z
[10]  z←''
```

```
[11] t2:→(i>ρh)/fim00
[12]  z←z,'M[',(⍕h[i-1]),'x',(⍕h[i]),'] X '
[13]  i←i+1
[14]  →t2
[15] fim00:
[16]  r[2;]←80↑¯2↓z
-------------------------------------------------------------
[0]  r←geracaso671;x;z
[1]  x←9?99
[2]  z←responde x
[3]  r←3ρ' '
[4]  r[1]←⊂x
[5]  r[2]←⊂z[1;]
[6]  r[3]←⊂z[2;]
-------------------------------------------------------------
[ 0]  s printpa x;i;j
[ 1] ⍝ x[1]=i, x[2]=j
[ 2]  i←x[1] ⋄ j←x[2]
[ 3]  →(i≠j)/difs
[ 4]  R←R,'M',⍕i
[ 5]  →0
[ 6] difs:R←R,'('
[ 7]  s printpa i,s[i;j]
[ 8]  s printpa(s[i;j]+1),j
[ 9]  R←R,')'
-------------------------------------------------------------
[ 0]  r←responde z;m;q;i;v;qq;j;ind;x;k;z1;z2
[ 1] ⍝ acha a melhor sequencia para a mult. matricial
[ 2]  z2←⍳0
[ 3]  x←avaliamats z
[ 4]  m←((1↑ρx),(1↑ρx))↑x
[ 5]  q←(0,(1↑ρx))↓x
[ 6]  i←1
[ 7]  j←2
[ 8] acha:→(j>1↑ρx)/fim
[ 9]  v←⍳0
[10]  k←j
[11] ti:→(k>1↑ρx)/ufa
[12]  v←v,m[i;k]
[13]  i←i+1
[14]  k←k+1
[15]  →ti
[16] ufa:
[17]  ind←v⍳⌊/v
[18]  z2←z2,v[ind]
[19]  i←1
[20]  j←j+1
[21]  →acha
[22] fim:
[23]  R←''
[24]  q printpa 1,1↑ρx
[25]  r←2 300ρ(300↑R),300↑⍕⍉z2
-------------------------------------------------------------
[ 0]  r←respondemax z;m;q;i;v;qq;j;ind;x;k;z1;z2
[ 1] ⍝ acha a pior sequencia para a multiplicacao matricial
[ 2]  z2←⍳0
[ 3]  x←alternativomax z
[ 4]  m←((1↑ρx),(1↑ρx))↑x
[ 5]  q←(0,(1↑ρx))↓x
[ 6]  i←1
[ 7]  j←2
[ 8] acha:→(j>1↑ρx)/fim
[ 9]  v←⍳0
```

```
[10]  k←j
[11] ti:→(k>1↑⍴x)/ufa
[12]  v←v,m[i;k]
[13]  i←i+1
[14]  k←k+1
[15]  →ti
[16] ufa:
[17]  ind←v⍳⌈/v
[18]  z2←z2,v[ind]
[19]  i←1
[20]  j←j+1
[21]  →acha
[22] fim:
[23]  R←''
[24]  q printpa 1,1↑⍴x
[25]  r←2 300⍴(300↑R),300↑⍕⊖z2
------------------------------------------------------------
[ 0]  opesq vivo671a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zica;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL671   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA671←ajusta80 FOLHALA671
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA671)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 5⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←13 80⍴' '
[16]  f←FOLHALA671
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.08
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[12;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[13;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracaso671
[35]  esse[8 9;]←2 80⍴descreve⊃xx[1]
[36]  zica←⍎⊃xx[3]
[37]  resp←resp,(¯1↑zica),1↑zica
[38]  xx←geracaso671
[39]  esse[10 11;]←descreve⊃xx[1]
[40]  zica←⍎⊃xx[3]
[41]  resp←resp,(¯1↑zica),1↑zica
[42]  resu←resu,[1]1 5⍴resp
[43]  acuja←(f[;2]='#')/⍳1↑⍴f
```

```
[44]  f[acuja;⍳80]←esse[⍕,f[acuja;3 4],' ';]
[45]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[46]  ⍞←(⍕xk←xk+1),'-'
[47]  →testa
[48] fim:upag←(1 0+⍴f)⍴' '
[49]  →(1=≡n)/elafa
[50]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[51]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[52]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 14 0 10 0 12 0 10 0)⍉resu
[53]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[54]  →terminando
[55] elafa:aaa←(ylu[;⍳36],10 0⍉0 1↓resu)
[56]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[57]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[58] terminando:
[59]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[60]  relat[1↑⍴relat;;]←upag
[61]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[62]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[63]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[64]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo672

```
[ 0]  r←acertadados x;n
[ 1]  r←7 78⍴' '
[ 2]  n←x[1;1;1]
[ 3]  r[1;]←78↑'Numero de estaçAes em cada linha: ',⍕n
[ 4]  r[2;]←78↑'Tempos linha 1: ',⍕x[2;1;⍳n]
[ 5]  r[3;]←78↑'Tempos linha 2: ',⍕x[2;2;⍳n]
[ 6]  r[4;]←78↑'Swap 1 para 2: ',⍕x[3;1;⍳n-1]
[ 7]  r[5;]←78↑'Swap 2 para 1: ',⍕x[3;2;⍳n-1]
[ 8]  r[6;]←78↑'Set up: ',⍕x[4;1;⍳2]
[ 9]  r[7;]←78↑'Set down: ',⍕x[5;1;⍳2]
-------------------------------------------------------------
[ 0]  r←criafabrica;a;e;x;t;n
[ 1] A exemplo do Cormen, Algoritmos, pag 261 a 265.
[ 2]  a←2 6⍴7 9 3 4 8 4,8 5 6 4 5 7 A tempos de cada estacao (sao 6) em cada linha de mont
      agem (sao 2)
[ 3]  e←2 4 A set up inicial em cada linha de montagem (sao 2)
[ 4]  x←3 2 A set  down em cada linha de montagem (sao 2)
[ 5]  t←2 5⍴2 3 1 3 4,2 1 2 2 1 A tempos de swap nas linhas demontagem
[ 6]  n←6
[ 7]  r←5 2 12⍴0
[ 8]  r[1;1;1]←n
[ 9]  r[2;⍳2;⍳6]←a
[10]  r[3;⍳2;⍳5]←t
[11]  r[4;1;1 2]←e
[12]  r[5;1;1 2]←x
-------------------------------------------------------------
[0]  criam
[1]  mfib←1 1,998⍴-1
-------------------------------------------------------------
[ 0]  r←fastest mat;f;l;j;n;a;e;t;x;fstar;lstar;i;z
[ 1] A mat eh uma matriz de 5 x 2 x 12 com a seguintes descricao...
[ 2]  n←mat[1;1;1]
[ 3]  a←mat[2;;⍳n]
[ 4]  t←mat[3;;⍳n-1]
[ 5]  e←mat[4;1;1 2]
[ 6]  x←mat[5;1;1 2]
[ 7]  f←(2,n)⍴0
```

```
[ 8]  l←(2,n)ρ0
[ 9]  f[1;1]←e[1]+a[1;1]
[10]  f[2;1]←e[2]+a[2;1]
[11]  j←2
[12] t1:→(j>n)/fim
[13]  →((f[1;j-1]+a[1;j])>(f[2;j-1]+t[2;j-1]+a[1;j]))/pula1
[14]  f[1;j]←f[1;j-1]+a[1;j]
[15]  l[1;j]←1
[16]  →junta1
[17] pula1:f[1;j]←f[2;j-1]+t[2;j-1]+a[1;j]
[18]  l[1;j]←2
[19] junta1:
[20]  →((f[2;j-1]+a[2;j])>(f[1;j-1]+t[1;j-1]+a[2;j]))/pula2
[21]  f[2;j]←f[2;j-1]+a[2;j]
[22]  l[2;j]←2
[23]  →junta2
[24] pula2:f[2;j]←f[1;j-1]+t[1;j-1]+a[2;j]
[25]  l[2;j]←1
[26] junta2:j←j+1
[27]  →t1
[28] fim:→((f[1;n]+x[1])>(f[2;n]+x[2]))/pula3
[29]  fstar←f[1;n]+x[1]
[30]  lstar←1
[31]  →junta3
[32] pula3:fstar←f[2;n]+x[2]
[33]  lstar←2
[34] junta3:
[35]  i←lstar
[36]  j←n
[37]  z←i
[38] t4:→(j<2)/finzao
[39]  i←l[i;j]
[40]  z←z,i
[41]  j←j-1
[42]  →t4
[43] finzao:r←fstar,⊖z
------------------------------------------------------------
[0]  r←fibmemoizing n
[1]  →(mfib[n]≠-1)/achou
[2]  mfib[n]←(fibmemoizing(n-1))+fibmemoizing(n-2)
[3] achou:r←mfib[n]
------------------------------------------------------------
[0]  r←fibrecu n
[1]  →(n<3)/um
[2]  r←(fibrecu(n-1))+fibrecu(n-2)
[3]  →0
[4] um:r←1
------------------------------------------------------------
[ 0]  r←geracaso672 n;a;zz
[ 1] ⍝ r[1;1;1] ← tamanho do problema (numero de estacoes em cada linha de montagem)
[ 2] ⍝ r[2;;⍳n] ← tempos em cada estacao e em cada linha de montagem (2 x n)
[ 3] ⍝ r[3;;⍳n-1] ← tempos de swap em cada linha de montagem (1 a menos que o de cima)
[ 4] ⍝ r[4;1;⍳2] ← tempos de set up em cada linha (2 x 1)
[ 5] ⍝ r[5;1;⍳2] ← tempos de set down em cada linha (2 x 1)
[ 6] denovo:
[ 7]  a←5 2 12ρ0
[ 8]  a[1;1;1]←n
[ 9]  a[2;⍳2;⍳n]←(2,n)ρ(2×n)?99
[10]  a[3;⍳2;⍳n-1]←(2,n-1)ρ(2×¯1+n)?30
[11]  a[4;1;1 2]←2?20
[12]  a[5;1;1 2]←2?20
[13]  zz←fastest a
[14]  →(=/zz[2]=zz[1+⍳n])/denovo
```

```
[15]  r←a
-------------------------------------------------------------
[ 0]  opesq vivo672a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL672   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA672←ajusta80 FOLHALA672
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA672)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 12⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←16 80⍴' '
[16]  f←FOLHALA672
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[15;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[16;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracaso672 10
[35]  esse[7+⍳7;]←7 80↑acertadados xx
[36]  resp←resp,,fastest xx
[37]  resu←resu,[1]1 12⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⍞←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←3 0 6 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0 2 0)⍕re
      su
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[51]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
```

```
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo680

```
[0]  AVISO
[1]  'Nao tem gpa.'
[2]  ' A referencia para esta aula e PDF explicado, de Whitington, J. O Reilly - novatec'
[3]  'alem do padrao pdf_reference_1-7.pdf disponivel em '
[4]  'www.adobe.com/devnet/acrobat/pdfs/pdf_reference_1-7.pdf'
------------------------------------------------------------
[0]  x←gera680;i
[1]  i←2?1↑⍴ijuca
[2]  x←ijuca[i;]
------------------------------------------------------------
[ 0]  opesq vivo680a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL680   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA680←ajusta80 FOLHALA680
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA680)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←11 80⍴' '
[16]  f←FOLHALA680
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.06
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4])=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[10;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[11;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera680
[35]  esse[7+⍳2;]←2 80↑xx
[36]  acuja←(f[;2]='#')/⍳1↑⍴f
[37]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[39]  ⍞←(⍎xk←xk+1),'-'
[40]  →testa
[41] fim:upag←(1 0+⍴f)⍴' '
[42]  'Nao ha arquivo GPA'
[43] terminando:
```

```
[44]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[45]  relat[1↑⍴relat;;]←upag
[46]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[47]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[48]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[49]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo690

```
[0]  AVISO
[1]  'Este ws implementa o JPG'
[2]  'Para ver mais: Fundamentos da ciencia da computaᷤ~ao: Forouzan B e Mosharraf. F'
[3]  ''
[4]  ''
[5]  ''
[6]  'ATENCAO: Este WS tem a versao 690c (para C++) e 690p (para Python)'
-------------------------------------------------------------
[0]  r←c k
[1]  →(k=0)/sim
[2] nao:r←1
[3]  →0
[4] sim:r←1÷2*0.5
-------------------------------------------------------------
[ 0]  r←dct ima;i;j;s;x;y;⎕IO
[ 1]  ⎕IO←0
[ 2]  r←8 8⍴0
[ 3]  i←0
[ 4] t1:→(i>7)/fim
[ 5]  j←0
[ 6] t2:→(j>7)/soma
[ 7]  s←0
[ 8]  x←0
[ 9] t3:→(x>7)/su
[10]  y←0
[11] t4:→(y>7)/fu
[12]  s←s+ima[x;y]×(2○(○(1+2×y)×j)÷16)×(2○(○(1+2×x)×i)÷16)
[13]  y←y+1
[14]  →t4
[15] fu:x←x+1
[16]  →t3
[17] su:r[i;j]←0.25×(c i)×(c j)×s
[18]  j←j+1
[19]  →t2
[20] soma:
[21]  i←i+1
[22]  →t1
[23] fim:r←8 8⍴⍉,15 2⍕r
-------------------------------------------------------------
[0]  r←geracaso690;z
[1]  z←8 8⍴4
[2]  z←?z
[3]  r←10+z×10+?10
-------------------------------------------------------------
[ 0]  r←idct ima;x;y;s;i;j;⎕IO
[ 1]  ⎕IO←0
[ 2]  r←8 8⍴0
[ 3]  x←0
[ 4] t1:→(x>7)/fim
[ 5]  y←0
[ 6] t2:→(y>7)/soma
[ 7]  s←0
```

```
[ 8]  i←0
[ 9] t3:→(i>7)/su
[10]  j←0
[11] t4:→(j>7)/fu
[12]  s←s+(c i)×(c j)×ima[i;j]×(2oo((1+2×x)×i)÷16)×(2oo((1+2×y)×j)÷16)
[13]  j←j+1
[14]  →t4
[15] fu:i←i+1
[16]  →t3
[17] su:r[x;y]←0.25×s
[18]  y←y+1
[19]  →t2
[20] soma:x←x+1
[21]  →t1
[22] fim:
------------------------------------------------------------
[ 0]  opesq vivo690c n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;yy;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL690c  '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA690c←ajusta80 FOLHALA690c
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALA690c)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←17 80ρ' '
[16]  f←FOLHALA690c
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOc←1.07
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑ρf),4)ρ'⍀#05')/⍳1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[16;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[17;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracaso690
[35]  esse[7+⍳8;]←8 80↑5 0⍎xx
[36]  yy←dct xx
[37]  resp←resp,,yy[1;1],yy[1;3]
[38]  resu←resu,[1]1 3ρresp
[39]  acuja←(f[;2]='#')/⍳1↑ρf
[40]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'⍀clearpage'
[42]  ⍞←(⍎xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+ρf)ρ' '
```

```
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳+/25]←'¯'-'edit 5 0 12 2 8 2⍕resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],'¯'-'edit 9 0⍕0 1↓resu)
[52]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[ 0]  opesq vivo690p n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;yy;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL690p  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA690p←ajusta80 FOLHALA690p
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA690p)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←17 80⍴' '
[16]  f←FOLHALA690p
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAO⍴←1.07
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[16;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[17;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracaso690
[35]  esse[7+⍳8;]←8 80↑5 0⍕xx
[36]  yy←dct xx
[37]  resp←resp,,yy[1;1],yy[1;3]
[38]  resu←resu,[1]1 3⍴resp
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[42]  ⍞←(⍕xk←xk+1),'-'
[43]  →testa
```

```
[44] fim:upag←(1 0+ρf)ρ' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓ρupag)↑'⍀begin{verbatim}'
[47]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[48]  upag[2+⍳1↑ρresu;⍳+/25]←'¯'-'edit 5 0 12 2 8 2⍕resu
[49]  upag[3+1↑ρresu;]←(1↓ρupag)↑'⍀end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],'¯'-'edit 9 0⍕0 1↓resu)
[52]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[54] terminando:
[55]  upag[1↑ρupag;]←(1↓ρupag)↑'⍀end{document}'
[56]  relat[1↑ρrelat;;]←upag
[57]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[58]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo701

```
[ 0]  cavaleiro701a n;acuja;esse;f;relat;resp;xk;x;coifa;lixo1
[ 1]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 2]  FOLHALA701←ajusta80 FOLHALA701
[ 3]  relat←ΔFM'c:⍀apl2⍀VIVOBLOI'
[ 4]  xk←1
[ 5] testa:→(xk>n)/fim
[ 6]  esse←12 80ρ' '
[ 7]  f←FOLHALA701
[ 8]  esse[1;⍳ρx]←x←'   --- Cavaleiros da Tavola Redonda'
[ 9]  esse[3;]←80↑4 2⍕1.01
[10]  esse[11;⍳8]←'@000000@'
[11] inica:
[12]  coifa←geracaso
[13]  esse[8;]←80↑coifa[1;]
[14]  esse[9;]←80↑coifa[2;]
[15]  esse[10;]←80↑coifa[3;]
[16]  resp←CASOS-1
[17]  acuja←(f[;2]='#')/⍳1↑ρf
[18]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[19]  ⍞←(⍕xk←xk+1),'-'
[20]  f←(((1↑ρrelat),1↓ρf)↑relat),[1]f
[21]  f←f,[1](1,1↓ρf)ρ(1↓ρf)↑'⍀end{document}'
[22]  f←f,[1](1,1↓ρf)ρ(1↓ρf)↑'%',⍕resp
[23]  lixo1←f ΔFM'c:⍀apl2⍀CA701a',('00'⍕xk-1),'.tex'
[24]  →testa
[25] fim:
------------------------------------------------------------
[ 0]  r←geracaso;H4;casos;u;i;qtos;quais
[ 1]  H4←gerahadamard 4
[ 2]  casos←3?16
[ 3]  casos←casos[⍋casos]
[ 4]  ANTES←u←H4[casos;]
[ 5]  i←1
[ 6] t1:→(i>3)/fim
[ 7]  qtos←3
[ 8]  quais←qtos?16
[ 9]  u[i;quais]←¯1+?qtosρ2
[10]  →(i=i←i+1)/t1
[11] fim:CASOS←casos   ⍝ resposta que vai para o gabarito
[12]  r←⍉⍪hexad 2⊥⍉⍪DEPOIS←u
------------------------------------------------------------
```

```
[ 0]  r←gerahadamard n;h1;h2;h3;h4;h5;h6;a
[ 1]  h1←2 2⍴1 1 1 ¯1
[ 2]  a←2
[ 3]  h2←4 4⍴0
[ 4]  h2[⍳a;⍳a]←h2[a+⍳a;⍳a]←h2[⍳a;a+⍳a]←h1 ⋄ h2[a+⍳a;a+⍳a]←-h1
[ 5]  a←4
[ 6]  h3←8 8⍴0
[ 7]  h3[⍳a;⍳a]←h3[a+⍳a;⍳a]←h3[⍳a;a+⍳a]←h2 ⋄ h3[a+⍳a;a+⍳a]←-h2
[ 8]  a←8
[ 9]  h4←16 16⍴0
[10]  h4[⍳a;⍳a]←h4[a+⍳a;⍳a]←h4[⍳a;a+⍳a]←h3 ⋄ h4[a+⍳a;a+⍳a]←-h3
[11]  a←16
[12]  h5←32 32⍴0
[13]  h5[⍳a;⍳a]←h5[a+⍳a;⍳a]←h5[⍳a;a+⍳a]←h4 ⋄ h5[a+⍳a;a+⍳a]←-h4
[14]  a←32
[15]  h6←64 64⍴0
[16]  h6[⍳a;⍳a]←h6[a+⍳a;⍳a]←h6[⍳a;a+⍳a]←h5 ⋄ h6[a+⍳a;a+⍳a]←-h5
[17]  r←¯1 0 edit⍤'h',1 0⍕n
-------------------------------------------------------------
[0]  r←hexad en;rr
[1]  rr←16 16 16 16⊤en
[2]  r←'0123456789ABCDEF'[1+rr]
-------------------------------------------------------------
[ 0]  opesq vivo701a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;ip;qto;essafolha;coifa
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←3 ⋄ EVENTO←'PL701   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA701←ajusta80 FOLHALA701
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA701)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 4⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←12 80⍴' '
[15]  f←FOLHALA701
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.15
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  coifa←geracaso
[27]  esse[8;]←80↑coifa[1;]
[28]  esse[9;]←80↑coifa[2;]
[29]  esse[10;]←80↑coifa[3;]
[30]  resp←resp,CASOS-1
[31]  resu←resu,[1]1 4⍴resp
[32]  acuja←(f[;2]='#')/⍳1↑⍴f
[33]  f[acuja;⍳80]←esse[⍤,f[acuja;3 4],' ';]
[34]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[35]  ⍞←(⍕xk←xk+1),'-'
[36]  →testa
[37] fim:upag←(1 0+⍴f)⍴' '
```

```
[38]  →(1=≡n)/elafa
[39]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[40]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[41]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 5 0)⍕resu
[42]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[43]  →terminando
[44] elafa:aaa←(ylu,5 0⍕0 1↓resu)
[45]  aaa[1;35 36]←2 0⍕CORRECAO
[46]  lixonol←aaa ⍙FM('c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.gpa')
[47]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[48] terminando:
[49]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[50]  relat[1↑⍴relat;;]←upag
[51]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[52]  lixonol←lixonol,[1]ajusta80 INSTRUC701
[53]  lixonol←lixonol,[1]1 80⍴80↑'Antes do erro'
[54]  lixonol←lixonol,[1]ajusta80 3 0⍕ANTES
[55]  lixonol←lixonol,[1]1 80⍴80↑'Depois do erro'
[56]  lixonol←lixonol,[1]ajusta80 3 0⍕DEPOIS
[57]  lixonol←lixonol,[1]1 80⍴80↑'Diferencas'
[58]  lixonol←lixonol,[1](ajusta80 3 0⍕ANTES=DEPOIS),[1]1 80⍴80↑'⍀end{verbatim} ⍀end{docum
      ent}'
[59] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[60]  lixonol←lixonol ⍙FM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.tex'
[61]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[62]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo705

```
[ 0]  AVISO;asp
[ 1]  asp←''''
[ 2]  'Funcoes neste WS'
[ 3]  'indices ',asp,'ASSINAT',asp,'=>devolve 1 19 9 14 1 20'
[ 4]  'antiind 1 19 9 14 1 20 => devolve ASSINAT'
[ 5]  ' gerachave => devolve 3 numeros. A P=n1, n3 e a S=n2, n3'
[ 6]  ' chave codifica nums => devolve a msg composta por nums cofificada'
[ 7]  ' para testar :'
[ 8]  '        indices ',asp,'ASSINAT',asp
[ 9]  '1 19 19 9 14 1 20                  '
[10]  '        1435 3953 codifica 1 19 19 9 14 1 20'
[11]  '1 2971 2971 2970 2628 1 2290                  '
[12]  '       955 3953 codifica  1435 3953 codifica indices ',asp,'ASSINAT',asp
[13]  '1 19 19 9 14 1 20'
[14]  '       antiind 955 3953 codifica  1435 3953 codifica indices ',asp,'ASSINAT',asp
[15]  'ASSINAT '
------------------------------------------------------------
[0]  r←achepr a
[1]  x←⌊a÷2+?6
[2] testa:→(1=x mdc a)/fim
[3]  x←x-1
[4]  →testa
[5] fim:r←x
------------------------------------------------------------
[0]  r←c achesec f;d
[1]  d←100
[2] testa:→(1=f|c×d)/fim
[3]  →(d=d←d+1)/testa
[4] fim:r←d
------------------------------------------------------------
[0]  r←antiind x
[1]  r←'ABCDEFGHIJKLMNOPQRSTUVWXYZ/'[x]
```

```
------------------------------------------------------------
[0]  r←chave codifica numeros
[1]  r←0⍴0
[2] testa:→(0=⍴numeros)/fim
[3]  r←r,xyn(1↑numeros),chave
[4]  numeros←1↓numeros
[5]  →testa
[6] fim:
------------------------------------------------------------
[ 0]  r←gerachave;pri;p;q;f;c;d;x
[ 1]  pri←primos
[ 2] denovo:p←pri[1↑x←2?⍴pri]
[ 3]  q←pri[1↓x]
[ 4]  f←(p-1)×q-1
[ 5]  c←achepr f
[ 6]  d←c achesec f
[ 7]  →(c=d)/denovo
[ 8]  →(17=xyn(xyn 17,c,(p×q)),d,(p×q))/ok
[ 9]  'deu erro'
[10]  →denovo
[11] ok:
[12]  r←c,d,p×q
------------------------------------------------------------
[ 0]  R←gmuitaschaves x;i;aa;xx;yy
[ 1]  R←0 80⍴' '
[ 2]  i←1
[ 3] t1:→(i>x)/fim
[ 4]  aa←gerachave
[ 5]  R←R,[1]1 80⍴80↑(⍕aa[1]),'&',(⍕aa[2]),'&',(⍕aa[3]),'\\ \hline'
[ 6]  i←i+1
[ 7]  →t1
[ 8] fim:xx←ΔFM'f:\p\apl2\vivobloi'
[ 9]  yy←2 80⍴(80↑'\huge'),80↑'\begin{tabular}{|p{5cm}|p{5cm}|p{5cm}|} \hline'
[10]  xx←ajusta80 xx
[11]  R←xx,[1]yy,[1]R,[1]2 80⍴(80↑'\end{tabular}'),80↑'\end{document}'
------------------------------------------------------------
[0]  r←indices x
[1]  r←'ABCDEFGHIJKLMNOPQRSTUVWXYZ/'⍳x
------------------------------------------------------------
[0]  r←a mdc b;g
[1]  g←a
[2] testa:→(a≤0)/fim
[3]  g←a
[4]  a←a|b
[5]  b←g
[6]  →testa
[7] fim:r←g
------------------------------------------------------------
[0]  r←primos
[1] ⍝ r  ← 13 17 19 23 29 31 37 41 43 47 53 59 62 67 71 73 79 83 89 97
[2] ⍝ , 101, 103, 107, 109, 113, 127, 131, 137, 139, 149, 151, 157,
[3] ⍝ 163, 167, 173, 179, 181, 191, 193, 197, 199, 211, 223
[4]  r←47 53 59 67 71 73 79 83 89 97 101 103 107 109 113 127 131 137 139 149 151 157 163
------------------------------------------------------------
[ 0]  opesq vivo705a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;caso;oba2
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL705   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
```

```
[ 7]  →(isnum n)/1+⎕LC ◇ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ◇ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ◇ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA705←ajusta80 FOLHALA705
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA705)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ◇ resu←0 0⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←9 80⍴' '
[15]  f←FOLHALA705
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.04
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ◇ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[8;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[9;⍳17]←esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[5+⍳5]
[25] inica:
[26]  acuja←(f[;2]='#')/⍳1↑⍴f
[27]  f[acuja;⍳80]←esse[⌽,f[acuja;3 4],' ';]
[28]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[29]  ⍞←(⍕xk←xk+1),'-'
[30]  →testa
[31] fim:
[32] terminando:
[33]  relat[1↑⍴relat;1↑1↓⍴relat;]←80↑'\end{document}'
[34]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[35] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[36]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[37]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[38]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'    (.tex)'
[39]  'Nao ha arquivo GPA'
-------------------------------------------------------------
[ 0]  r←xyn oper;x;y;n;tmp
[ 1] ⍝ xyn calcula (x*y) mod n, atraves do alg. addition chaining sch96p.244
[ 2]  x←oper[1] ◇ y←oper[2] ◇ n←oper[3]
[ 3]  →(y≠1)/difa
[ 4]  r←n|x
[ 5]  →fim
[ 6] difa:→(0=2|y)/par
[ 7] impar:tmp←xyn(x,((y-1)÷2),n)
[ 8]  tmp←n|(tmp×tmp)
[ 9]  tmp←n|(tmp×x)
[10]  r←tmp
[11]  →fim
[12] par:tmp←xyn(x,(y÷2),n)
[13]  r←n|(tmp×tmp)
[14] fim:
-------------------------------------------------------------
```

vivo708

```
[0]  AVISO
[1]  'veja avisar'
[2]  ' '
[3]  'funcao gabarsen aspa CURITIBA aspa = monta a grade 5x5'
[4]  '      da senha CURITIBA'
[5]  ' '
[6]  'funcoes de geracao de questao de prova'
[7]  ' geraquestao708 seguido de geraenun708. Dai cut-paste no GIZ'
-------------------------------------------------------------
```

```
[ 0]  r←chave crplayfair msg;co;coluna1;coluna2;fora;i;li;linha1;linha2;m1;onde;rr;tc
[ 1]  fora←'W'
[ 2]  →(1=∧/msg∈ALFAB menos fora)/ok1
[ 3] erro:'Existe caracter espurio, ou deu **rda, reentre'
[ 4]  →0
[ 5] ok1:→(msg[⍴msg]=fora)/erro
[ 6]  msg←(2×⌈(⍴msg)÷2)↑msg,fora
[ 7]  m1←(((⍴msg)÷2),2)⍴msg
[ 8]  i←1
[ 9]  rr←0⍴0
[10] t1:→(i>1↑⍴m1)/ok2
[11]  →(m1[i;1]≠m1[i;2])/soma
[12]  rr←rr,1 0 1 0
[13]  →mesmo
[14] soma:rr←rr,1 1
[15] mesmo:i←i+1
[16]  →t1
[17] ok2:msg←rr⌿msg
[18]  msg[(msg=' ')/⍳⍴msg]←fora
[19]  msg←(2×⌈(⍴msg)÷2)↑msg,fora
[20]  m1←(((⍴msg)÷2),2)⍴msg
[21]  chave←((chave⍳chave)=⍳⍴chave)/chave
[22]  →(25≠⍴chave←chave,ALFAB menos chave)/erro
[23]  tc←5 5⍴chave
[24]  i←1
[25]  r←''
[26] t3:→(i>1↑⍴m1)/oba
[27]  onde←(chave⍳m1[i;1]),chave⍳m1[i;2]
[28]  linha1←1+⌊(onde[1]-1)÷5
[29]  coluna1←1+5|onde[1]-1
[30]  linha2←1+⌊(onde[2]-1)÷5
[31]  coluna2←1+5|onde[2]-1
[32]  →(linha1=linha2)/mesmalinha
[33]  →(coluna1=coluna2)/mesmacoluna
[34] retangulo:
[35]  r←r,tc[linha1;coluna2],tc[linha2;coluna1]
[36]  →ufa
[37] mesmalinha:li←tc[linha1;],tc[linha1;]
[38]  r←r,li[coluna1+1],li[coluna2+1]
[39]  →ufa
[40] mesmacoluna:co←tc[;coluna1],tc[;coluna1]
[41]  r←r,co[linha1+1],co[linha2+1]
[42] ufa:i←i+1
[43]  →t3
[44] oba:
------------------------------------------------------------
[ 0]  r←senh crplayfair4 msg;s1;s2;s3;s4;tc1;tc2;tc3;tc4;fora;m1;i;rr;onde;linha1;coluna1;
      linha2;coluna2
[ 1]  fora←'W'
[ 2]  s1←⊃senh[1] ⋄ s2←⊃senh[2] ⋄ s3←⊃senh[3] ⋄ s4←⊃senh[4]
[ 3]  →(25≠⍴s1←s1,ALFAB menos s1←((s1⍳s1)=⍳⍴s1)/s1)/erro
[ 4]  →(25≠⍴s2←s2,ALFAB menos s2←((s2⍳s2)=⍳⍴s2)/s2)/erro
[ 5]  →(25≠⍴s3←s3,ALFAB menos s3←((s3⍳s3)=⍳⍴s3)/s3)/erro
[ 6]  →(25≠⍴s4←s4,ALFAB menos s4←((s4⍳s4)=⍳⍴s4)/s4)/erro
[ 7]  tc1←5 5⍴s1
[ 8]  tc2←5 5⍴s2
[ 9]  tc3←5 5⍴s3
[10]  tc4←5 5⍴s4
[11] ⍝ (((((tc1,'|'),tc2,'|'),[1]'-'),[1](tc3,'|'),tc4,'|'))
[12] ok1:→(msg[⍴msg]=fora)/erro   ⍝ nao pode ter o FORA na ultima posicao...
[13]  msg←(2×⌈(⍴msg)÷2)↑msg,fora
[14]  m1←(((⍴msg)÷2),2)⍴msg
[15]  i←1
```

```
[16]  r←''
[17] t3:→(i>1↑⍴m1)/oba
[18]  onde←(s1⍳m1[i;1]),s4⍳m1[i;2]
[19]  linha1←1+⌊(onde[1]-1)÷5
[20]  coluna1←1+5|onde[1]-1
[21]  linha2←1+⌊(onde[2]-1)÷5
[22]  coluna2←1+5|onde[2]-1
[23] retangulo:
[24]  r←r,tc2[linha1;coluna2],tc3[linha2;coluna1]
[25]  i←i+1
[26]  →t3
[27] oba:→0
[28] erro:'deu algum problema...'
-------------------------------------------------------------
[ 0]  r←chave crplayfairoriginal msg;co;coluna1;coluna2;fora;i;li;linha1;linha2;m1;onde;rr
      ;tc
[ 1]  fora←'W'
[ 2]  →(1=∧/msg∈ALFAB menos fora)/ok1
[ 3] erro:'Existe caracter espurio, ou deu **rda, reentre'
[ 4]  →0
[ 5] ok1:→(msg[⍴msg]=fora)/erro
[ 6]  msg←(2×⌈(⍴msg)÷2)↑msg,fora
[ 7]  m1←(((⍴msg)÷2),2)⍴msg
[ 8]  i←1
[ 9]  rr←0⍴0
[10] t1:→(i>1↑⍴m1)/ok2
[11]  →(m1[i;1]≠m1[i;2])/soma
[12]  rr←rr,1 0 1
[13]  →mesmo
[14] soma:rr←rr,1 1
[15] mesmo:i←i+1
[16]  →t1
[17] ok2:msg←rr⌿msg
[18]  msg[(msg=' ')/⍳⍴msg]←fora
[19]  msg←(2×⌈(⍴msg)÷2)↑msg,fora
[20]  m1←(((⍴msg)÷2),2)⍴msg
[21]  chave←((chave⍳chave)=⍳⍴chave)/chave
[22]  →(25≠⍴chave←chave,ALFAB menos chave)/erro
[23]  tc←5 5⍴chave
[24]  i←1
[25]  r←''
[26] t3:→(i>1↑⍴m1)/oba
[27]  onde←(chave⍳m1[i;1]),chave⍳m1[i;2]
[28]  linha1←1+⌊(onde[1]-1)÷5
[29]  coluna1←1+5|onde[1]-1
[30]  linha2←1+⌊(onde[2]-1)÷5
[31]  coluna2←1+5|onde[2]-1
[32]  →(linha1=linha2)/mesmalinha
[33]  →(coluna1=coluna2)/mesmacoluna
[34] retangulo:
[35]  r←r,tc[linha1;coluna2],tc[linha2;coluna1]
[36]  →ufa
[37] mesmalinha:li←tc[linha1;],tc[linha1;]
[38]  r←r,li[coluna1+1],li[coluna2+1]
[39]  →ufa
[40] mesmacoluna:co←tc[;coluna1],tc[;coluna1]
[41]  r←r,co[linha1+1],co[linha2+1]
[42] ufa:i←i+1
[43]  →t3
[44] oba:
-------------------------------------------------------------
[ 0]  r←chave decrplayfair msg;co;coluna1;coluna2;fora;i;li;linha1;linha2;m1;onde;par;rr;t
      c
```

```
[ 1]  fora←'W'
[ 2]  →(1=∧/msg∈ALFAB)/ok1
[ 3] erro:'Existe caracter espurio, ou deu **rda, reentre'
[ 4]  →0
[ 5] ok1:→(0≠2|ρmsg)/erro
[ 6]  m1←(((ρmsg)÷2),2)ρmsg
[ 7]  i←1
[ 8] ok2:
[ 9]  chave←((chave⍳chave)=⍳ρchave)/chave
[10]  →(25≠ρchave←chave,ALFAB menos chave)/erro
[11]  tc←5 5ρchave
[12]  i←1
[13]  r←''
[14] t3:→(i>1↑ρm1)/oba
[15]  onde←(chave⍳m1[i;1]),chave⍳m1[i;2]
[16]  linha1←1+⌊(onde[1]-1)÷5
[17]  coluna1←1+5|onde[1]-1
[18]  linha2←1+⌊(onde[2]-1)÷5
[19]  coluna2←1+5|onde[2]-1
[20]  →(linha1=linha2)/mesmalinha
[21]  →(coluna1=coluna2)/mesmacoluna
[22] retangulo:
[23]  par←tc[linha1;coluna2],tc[linha2;coluna1]
[24]  →ufa
[25] mesmalinha:li←tc[linha1;],tc[linha1;]
[26]  par←li[coluna1+4],li[coluna2+4]
[27]  →ufa
[28] mesmacoluna:co←tc[;coluna1],tc[;coluna1]
[29]  par←co[linha1+4],co[linha2+4]
[30] ufa:
[31]  →(par[2]=fora)/esim
[32]  r←r,par
[33]  →sso
[34] esim:
[35]  r←r,par[1]
[36] sso:
[37]  i←i+1
[38]  →t3
[39] oba:→(r[ρr]≠fora)/fimmesmo
[40]  r←¯1↓r
[41] fimmesmo:
------------------------------------------------------------
[ 0]  r←senh decrplayfair4 msg;s1;s2;s3;s4;tc1;tc2;tc3;tc4;fora;m1;i;rr;onde;linha1;coluna
      1;linha2;coluna2
[ 1]  fora←'W'
[ 2]  s1←⊃senh[1] ⋄ s2←⊃senh[2] ⋄ s3←⊃senh[3] ⋄ s4←⊃senh[4]
[ 3]  →(25≠ρs1←s1,ALFAB menos s1←((s1⍳s1)=⍳ρs1)/s1)/erro
[ 4]  →(25≠ρs2←s2,ALFAB menos s2←((s2⍳s2)=⍳ρs2)/s2)/erro
[ 5]  →(25≠ρs3←s3,ALFAB menos s3←((s3⍳s3)=⍳ρs3)/s3)/erro
[ 6]  →(25≠ρs4←s4,ALFAB menos s4←((s4⍳s4)=⍳ρs4)/s4)/erro
[ 7]  tc1←5 5ρs1
[ 8]  tc2←5 5ρs2
[ 9]  tc3←5 5ρs3
[10]  tc4←5 5ρs4
[11] ⍎ (((((tc1,'|'),tc2,'|'),[1]'-'),[1](tc3,'|'),tc4,'|'))
[12] ok1:
[13]  msg←(2×⌈(ρmsg)÷2)↑msg,fora
[14]  m1←(((ρmsg)÷2),2)ρmsg
[15]  i←1
[16]  r←''
[17] t3:→(i>1↑ρm1)/oba
[18]  onde←(s2⍳m1[i;1]),s3⍳m1[i;2]
[19]  linha1←1+⌊(onde[1]-1)÷5
```

```
[20]  coluna1←1+5|onde[1]-1
[21]  linha2←1+⌊(onde[2]-1)÷5
[22]  coluna2←1+5|onde[2]-1
[23] retangulo:
[24]  r←r,tc1[linha1;coluna2],tc4[linha2;coluna1]
[25]  i←i+1
[26]  →t3
[27] oba:
[28]  →(r[⍴r]≠fora)/0
[29]  r←¯1↓r
[30]  →0
[31] erro:'deu algum problema...'
------------------------------------------------------------
[ 0]  r←chave decrplayfairoriginal msg;co;coluna1;coluna2;fora;i;li;linha1;linha2;m1;onde;
      rr;tc
[ 1]  fora←'W'
[ 2]  →(1=∧/msg∈ALFAB)/ok1
[ 3] erro:'Existe caracter espurio, ou deu **rda, reentre'
[ 4]  →0
[ 5] ok1:→(0≠2|⍴msg)/erro
[ 6]  m1←(((⍴msg)÷2),2)⍴msg
[ 7]  i←1
[ 8] ok2:
[ 9]  chave←((chave⍳chave)=⍳⍴chave)/chave
[10]  →(25≠⍴chave←chave,ALFAB menos chave)/erro
[11]  tc←5 5⍴chave
[12]  i←1
[13]  r←''
[14] t3:→(i>1↑⍴m1)/oba
[15]  onde←(chave⍳m1[i;1]),chave⍳m1[i;2]
[16]  linha1←1+⌊(onde[1]-1)÷5
[17]  coluna1←1+5|onde[1]-1
[18]  linha2←1+⌊(onde[2]-1)÷5
[19]  coluna2←1+5|onde[2]-1
[20]  →(linha1=linha2)/mesmalinha
[21]  →(coluna1=coluna2)/mesmacoluna
[22] retangulo:
[23]  r←r,tc[linha1;coluna2],tc[linha2;coluna1]
[24]  →ufa
[25] mesmalinha:li←tc[linha1;],tc[linha1;]
[26]  r←r,li[coluna1+4],li[coluna2+4]
[27]  →ufa
[28] mesmacoluna:co←tc[;coluna1],tc[;coluna1]
[29]  r←r,co[linha1+4],co[linha2+4]
[30] ufa:i←i+1
[31]  →t3
[32] oba:→(r[⍴r]≠fora)/uga
[33]  r←¯1↓r
[34]  i←2
[35] uga:
[36]  →(i>¯1+⍴r)/fimmesmo
[37]  →((r[i-1]=r[i+1])∧(r[i]=fora))/tira
[38] sok:i←i+1
[39]  →uga
[40] tira:r←((i-1)↑r),i↓r
[41]  →sok
[42] fimmesmo:
------------------------------------------------------------
[0]  r←gabarsen cha
[1]  cha←((cha⍳cha)=⍳⍴cha)/cha
[2]  r←5 5⍴cha,ALFAB menos cha
------------------------------------------------------------
[ 0]  r←geracaso708;a;b;c;d;e;f;z;w;fr1;fr2;fr3;p1;p2;p3;r1;r2;r3
```

```
[ 1]  z←6?1↑⍴SENHAS
[ 2]  a←trim SENHAS[z[1];]
[ 3]  b←trim SENHAS[z[2];]
[ 4]  c←trim SENHAS[z[3];]
[ 5]  d←trim SENHAS[z[4];]
[ 6]  e←trim SENHAS[z[5];]
[ 7]  f←trim SENHAS[z[6];]
[ 8]  w←3?1↑⍴PAS
[ 9]  fr1←trim(PAS[w[1];]≠' ')/PAS[w[1];]
[10]  fr2←trim(PAS[w[2];]≠' ')/PAS[w[2];]
[11]  fr3←trim(PAS[w[3];]≠' ')/PAS[w[3];]
[12]  p1←a crplayfair fr1
[13]  r1←a decrplayfair p1
[14]  →(1=∧/r1=fr1)/ok
[15]  'erro...1'
[16]  →0
[17] ok:
[18]  p2←b crplayfair fr2
[19]  r2←b decrplayfair p2
[20]  →(1=∧/r2=fr2)/ok2
[21]  'erro...2'
[22]  →0
[23] ok2:
[24]  p3←(c d e f)crplayfair4 fr3
[25]  r3←(c d e f)decrplayfair4 p3
[26]  →(1=∧/r3=fr3)/ok3
[27]  'erro...3'
[28]  →0
[29] ok3:
[30]  r←12 60⍴' '
[31]  r[1;]←60↑a
[32]  r[2;]←60↑fr1
[33]  r[3;]←60↑(a crplayfair fr1)[6 10 14],'-',a crplayfair fr1
[34]  r[4;]←60↑b
[35]  r[5;]←60↑(b crplayfair fr2)
[36]  r[6;]←60↑fr2
[37]  r[7;]←60↑c
[38]  r[8;]←60↑d
[39]  r[9;]←60↑e
[40]  r[10;]←60↑f
[41]  r[11;]←60↑(c d e f)crplayfair4 fr3
[42]  r[12;]←60↑fr3
-------------------------------------------------------------
[0]  geraenun708;a;f
[1]  a←trim,SENHAS[?1↑⍴SENHAS;]
[2]  f←trim(,PAS[b;]≠' ')/,PAS[b←?1↑⍴PAS;]
[3]  AAA←a
[4]  BBB←a crplayfair f
[5]  CCC←f
-------------------------------------------------------------
[ 0]  geraquestao708;r
[ 1]  r←37 78⍴' '
[ 2]  r[1;]←78↑'Como visto em sala de aula, a criptografia historicamente'
[ 3]  r[2;]←78↑'interessou a exércitos em guerra e a amantes, ambos devidamente'
[ 4]  r[3;]←78↑'preocupados em manter suas comunicaçAes a salvo da bisbilhotagem'
[ 5]  r[4;]←78↑'alheia. Antes do surgimento do computador, os esquemas criptográficos'
[ 6]  r[5;]←78↑'precisavam ser suficientemente simples para serem entendidos'
[ 7]  r[6;]←78↑'e operados por pessoas sem grandes qualificaçAes.'
[ 8]  r[7;]←78↑'O esquema PLAYFAIR, inventando na Inglaterra em meados do'
[ 9]  r[8;]←78↑'século XIX era simples, mas bastante engenhoso:'
[10]  r[9;]←78↑'Com uma senha alfabética comum qualquer, ambos os operadores'
[11]  r[10;]←78↑'deveriam construir uma grade 5 $\times$ 5, na qual era colocado'
[12]  r[11;]←78↑'todo o alfabeto, começando pela senha e seguindo pelas letras'
```

```
[13]  r[12;]←78↑'restantes, sem duplicar nenhuma e excluindo uma delas (no nosso'
[14]  r[13;]←78↑'caso o Y). Agindo assim, ambos teriam a mesma grade. Agora a'
[15]  r[14;]←78↑'mensagem era dividida em grupos de 2 letras, que eram vistas'
[16]  r[15;]←78↑'como indexadoras para obter a criptografias dessas 2 letras.'
[17]  r[16;]←78↑'Havia 3 possibilidades: (a) as letras estavam em linhas e colunas'
[18]  r[17;]←78↑'diferentes; (b) estavam na mesma linha; (c) estavam na mesma'
[19]  r[18;]←78↑'coluna. Havia ainda um quarto caso quando as duas letras eram'
[20]  r[19;]←78↑'iguais. Neste último caso colocava-se um coringa (o W para nós)'
[21]  r[20;]←78↑'após cada uma elas e este caso retrocedia a um dos 3 acima citados.'
[22]  r[21;]←78↑'No caso (a) cada letra era substituída pela que estivesse na mesma'
[23]  r[22;]←78↑'linha, mas na coluna da outra letra do par; No caso (b), cada'
[24]  r[23;]←78↑'era substituída pela letra da direita e no caso (c) pela letra'
[25]  r[24;]←78↑'de baixo. Note que descreveu-se a criptografia. Para obter a'
[26]  r[25;]←78↑'decriptografia, é necessário tomar o esquema simétrico: no caso '
[27]  r[26;]←78↑'(b) pega-se a letra da esquerda e no (c) pega-se a letra acima.'
[28]  r[27;]←78↑'Agora, a questão. Suponha a senha:'
[29]  r[28;]←78↑'\begin{verbatim}'
[30]  r[29;]←78↑AAA
[31]  r[30;]←78↑'\end{verbatim}'
[32]  r[31;]←78↑'Qual a decriptografia da mensagem'
[33]  r[32;]←78↑'\begin{verbatim}'
[34]  r[33;]←78↑BBB
[35]  r[34;]←78↑'\end{verbatim}'
[36]  r[35;]←78↑'?'
[37]  r[36;]←' '
[38]  r[37;]←78↑'\uline{\hspace*{6cm}}'
[39]  r
[40]  '----------------------------------'
[41]  CCC
-------------------------------------------------------------
[0]  r←a menos b;i
[1]  r←''
[2]  i←1
[3] t1:→(i>ρa)/fim
[4]  →(a[i]∈b)/jatem
[5] naotem:r←r,a[i]
[6] jatem:i←i+1
[7]  →t1
[8] fim:
-------------------------------------------------------------
[ 0]  opesq vivo708a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;nomes;num
      ;ql39;qlinha;relat;resp;resu;rr;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL708   '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA708←ajusta80 FOLHALA708
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALA708)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 70ρ' '
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←18 80ρ' '
[16]  f←FOLHALA708
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.02
[20]  esse[4;]←80↑ylu[xk;⍳6]
```

```
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'↑#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:
[28]  esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[32]  esse[17;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[18;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] ini1:
[35]  rr←geracaso708
[36]  esse[8;]←80↑rr[1;]
[37]  esse[9;]←80↑rr[2;]
[38]  esse[10;]←80↑rr[4;]
[39]  esse[11;]←80↑rr[5;]
[40]  esse[12 13 14 15;]←4 80↑rr[7 8 9 10;]
[41]  esse[16;]←80↑rr[11;]
[42]  resp←(4 0⍕resp),rr[3;1 2 3],'-',rr[6;⍳31],rr[12;⍳31]
[43]  resu←resu,[1]1 70⍴resp
[44]  acuja←(f[;2]='#')/⍳1↑⍴f
[45]  f[acuja;]←esse[⍤,f[acuja;3 4],' ';]
[46]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'↑newpage'
[47]  ⎕←(⍕xk←xk+1),'-'
[48]  →testa
[49] fim:upag←(1 0+⍴f)⍴' '
[50]  →(1=≡n)/elafa
[51]  upag[1;]←(1↓⍴upag)↑'↑begin{verbatim}'
[52]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[53]  upag[2+⍳1↑⍴resu;⍳70]←resu
[54]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'↑end{verbatim}'
[55]  →terminando
[56] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[57]  lixonol←aaa ⍙FM('c:↑apl2↑',((~⍷∧↑⍷EVENTO=' ')/EVENTO),'.gpa')
[58]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[59] terminando:
[60]  upag[1↑⍴upag;]←(1↓⍴upag)↑'↑end{document}'
[61]  relat[1↑⍴relat;;]←upag
[62]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[63] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[64]  lixonol←lixonol ⍙FM'c:↑apl2↑',((~⍷∧↑⍷EVENTO=' ')/EVENTO),'.tex'
[65]  'Arquivo(s) criado(s) com o nome de c:↑apl2↑',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo709

```
[0]  AVISO
[1]  'Tem uma funcao vaic.c em ↑p↑n↑709 que faz isto em C'
-------------------------------------------------------------
[ 0]  r←senha cripvigi msg;cont;i;rr;alfa
[ 1]  alfa←'ABCDEFGHIJKLMNOPQRSTUVWXYZ'
[ 2]  r←0⍴0
[ 3]  rr←montaviginere
[ 4]  senha←upper senha
[ 5]  cont←(⍴msg)⍴senha
[ 6]  i←1
[ 7] t1:→(i>⍴msg)/fim
[ 8]  r←r,rr[(,rr[;1])⍳cont[i];alfa⍳msg[i]]
[ 9]  i←i+1
```

```
[10]  →t1
[11] fim:
------------------------------------------------------------
[ 0]  r←senha decriptvigi msg;rr;cont;i
[ 1]  alfa←'ABCDEFGHIJKLMNOPQRSTUVWXYZ'
[ 2]  r←0⍴0
[ 3]  rr←montaviginere
[ 4]  senha←upper senha
[ 5]  cont←(⍴msg)⍴senha
[ 6]  i←1
[ 7] t1:→(i>⍴msg)/fim
[ 8]  r←r,alfa[rr[((⍳,rr[;1])⍳cont[i]));]⍳msg[i]]
[ 9]  i←i+1
[10]  →t1
[11] fim:
------------------------------------------------------------
[ 0]  r←geracaso;xx;se;fr1p;fr1c;fr2p;fr2c
[ 1]  xx←2?1↑⍴FRASES
[ 2]  se←2?1↑⍴SENHAS
[ 3]  fr1c←(trim SENHAS[se[1];])cripvigi upper trim tirab fr1p←FRASES[xx[1];]
[ 4]  fr2c←(trim SENHAS[se[2];])cripvigi upper trim tirab fr2p←FRASES[xx[2];]
[ 5]  r←6 70⍴' '
[ 6]  r[1;]←70↑SENHAS[se[1];]
[ 7]  r[2;]←70↑tirab fr1p
[ 8]  r[3;]←70↑fr1c
[ 9]  r[4;]←70↑SENHAS[se[2];]
[10]  r[5;]←70↑tirab fr2p
[11]  r[6;]←70↑fr2c
------------------------------------------------------------
[0]  r←gerach1;pasw;cas;aa
[1]  r←2 36⍴' '
[2]  pasw←SENHAS[?1↑⍴SENHAS;]
[3]  cas←'ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789'
[4]  r[1;]←cas[36?36]
[5]  r[2;]←1 36⍴36↑,pasw
[6]  ULTTAB←6 6⍴r[1;]
[7]  ULTPAS←(aa≠' ')/aa←r[2;]
------------------------------------------------------------
[0]  r←montaviginere;alfa;i
[1]  r←26 26⍴' '
[2]  i←1
[3] t1:→(i>26)/fim
[4]  r[i;]←i⊖alfa←'ABCDEFGHIJKLMNOPQRSTUVWXYZ'
[5]  i←i+1
[6]  →t1
[7] fim:
------------------------------------------------------------
[0]  r←tirab f
[1]  r←(f≠' ')/f
------------------------------------------------------------
[0]  r←tiraduplo z;i;⎕IO
[1]  i←1 ⋄ r←'' ⋄ ⎕IO←1
[2] volta:→(i>⍴z)/fim
[3]  →(z[i]∈r)/tem
[4]  r←r,z[i]
[5] tem:→(i=i←i+1)/volta
[6] fim:
------------------------------------------------------------
[0]  r←upper x;d;ii
[1]  d←⎕AV⍳x
[2]  ii←((d>97)∧(d<122))/⍳⍴x
[3]  r←x
[4]  r[ii]←⎕AV[¯32+⎕AV⍳r[ii]]
```

```
------------------------------------------------------------
[ 0]  opesq vivo709a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;fi;xxx
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL709   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA709←144 ajusta FOLHALA709
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA709)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 144⍴' '
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←13 80⍴' '
[15]  f←FOLHALA709
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←1.01
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[23]  esse[12;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[13;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  resp←(3 0⍎resp),'-'
[27]  xxx←geracaso
[28]  esse[8;]←80↑xxx[2;]
[29]  esse[9;]←80↑xxx[1;]
[30]  resp←resp,70↑xxx[3;]
[31]  esse[10;]←80↑xxx[6;]
[32]  esse[11;]←80↑xxx[4;]
[33]  resp←resp,70↑xxx[5;]
[34]  resu←resu,[1]1 144⍴resp
[35]  acuja←(f[;2]='#')/⍳1↑⍴f
[36]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[37]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[38]  ⍞←(⍎xk←xk+1),'-'
[39]  →testa
[40] fim:upag←(1 0+⍴f)⍴' '
[41]  →(1=≡n)/elafa
[42]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[43]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[44]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),144)↑resu
[45]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[46]  →terminando
[47] elafa:aaa←(ylu,0 4↓resu)
[48]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[49]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[50] terminando:
[51]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[52]  relat[1↑⍴relat;;]←upag
[53]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[54] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[55]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[56]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[57]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo710

```
[0]  r←key cripsim plain;⎕IO;y;np;yp;tp;wp;ALFA
[1]  ALFA←'/ABCDEFGHIJKLMNOPQRSTUVWXYZ' ⋄ ⎕IO←0
[2]  y←⍴,plain
[3]  plain←(8×⌈y÷8)↑plain
[4]  np←ALFA⍳plain←inverte plain
[5]  yp←(⍴plain)⍴ALFA⍳key
[6]  tp←np+yp
[7]  wp←27|tp
[8]  r←inverte ALFA[wp]
-------------------------------------------------------------
[ 0]  r←key cripsim2 plain;⎕IO;y;np;yp;tp;wp;ALFA
[ 1] ⍝ o 2 ao final singifica a soma de sucessivos   ⍳8 na codificacao
[ 2]  ALFA←'/ABCDEFGHIJKLMNOPQRSTUVWXYZ' ⋄ ⎕IO←0
[ 3]  y←⍴,plain
[ 4]  plain←(8×⌈y÷8)↑plain
[ 5]  np←ALFA⍳plain←inverte plain
[ 6]  yp←(⍴plain)⍴ALFA⍳key
[ 7]  tp←np+yp+(⍴yp)⍴⍳8
[ 8]  wp←27|tp
[ 9]  r←inverte ALFA[wp]
-------------------------------------------------------------
[0]  r←key decripsim crip;⎕IO;ALFA;np;yp;wp
[1]  ALFA←'/ABCDEFGHIJKLMNOPQRSTUVWXYZ' ⋄ ⎕IO←0
[2]  np←ALFA⍳crip←inverte crip
[3]  yp←(⍴crip)⍴ALFA⍳key
[4]  wp←27|27+np-yp
[5]  r←inverte ALFA[wp]
-------------------------------------------------------------
[0]  r←key decripsim2 crip;⎕IO;ALFA;np;yp;wp
[1]  ALFA←'/ABCDEFGHIJKLMNOPQRSTUVWXYZ' ⋄ ⎕IO←0
[2]  np←ALFA⍳crip←inverte crip
[3]  yp←(⍴crip)⍴ALFA⍳key
[4]  wp←27|27+np-yp+(⍴yp)⍴⍳8
[5]  r←inverte ALFA[wp]
-------------------------------------------------------------
[0]  r←inverte j
[1]  r←,⍉((0.5×⍴j),2)⍴j
-------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10]  →(0=' 'ϵj↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80⍴80↑j↑candi
[15]  candi←j↓candi
[16]  →((⍴candi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80⍴80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
-------------------------------------------------------------
```

```
[0]  r←tam frase
[1]  r←⍴(~⍵∧⍷⍵frase=' ')/frase
-------------------------------------------------------------
[ 0]  opesq vivo710a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;caso;msg;inds;key;indices;f1;f2
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL710   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA710←ajusta80 FOLHALA710
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA710)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:⍀apl2⍀VIVOBLOI'
[12]  xk←1 ⋄ resu←0 11⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←18 80⍴' '
[15]  f←FOLHALA710
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAO⍵←3.18
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[17;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[18;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  inds←2?1↑⍴frases
[27]  esse[8;]←80↑key←ALFA[?8⍴⍴ALFA]
[28]  f1←(8×⌈0.125×tam frases[inds[1];])↑frases[inds[1];]
[29]  f2←(8×⌈0.125×tam frases[inds[2];])↑frases[inds[2];]
[30]  indices←(3?⍴f1),3?⍴f2
[31]  indices[⍳3]←(indices[⍳3])[⍋indices[⍳3]]
[32]  indices[3+⍳3]←(indices[3+⍳3])[⍋indices[3+⍳3]]
[33]  esse[9;]←80↑(' /'edit f1),50⍴' '
[34]  resp←(3 0⍕resp),'-',(69↑key cripsim2 f1)[3↑indices]
[35]  esse[13;]←80↑key cripsim2 f2
[36]  resp←resp,' ',(69↑key decripsim2 key cripsim2 f2)[3↓indices]
[37]  resu←resu,[1]1 11⍴resp
[38]  esse[10 11 12;1 2]←2 0⍕3 1⍴3↑indices
[39]  esse[14 15 16;1 2]←2 0⍕3 1⍴3↓indices
[40]  acuja←(f[;2]='#')/⍳1↑⍴f
[41]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[42]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[43]  ⍞←(⍕xk←xk+1),'-'
[44]  →testa
[45] fim:upag←(1 0+⍴f)⍴' '
[46]  →(1=≡n)/elafa
[47]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[48]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[49]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑resu
[50]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[51]  →terminando
[52] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 3↓resu)
[53]  aaa[1;35 36]←2 0⍕CORRECAO
[54]  lixonol←aaa ⎕FM('c:⍀apl2⍀',((~⍵∧⍷⍵EVENTO=' ')/EVENTO),'.gpa')
[55]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[56] terminando:
[57]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
```

```
[58]  relat[1↑⍴relat;;]←upag
[59]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[60] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[61]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[62]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[63]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo711

```
[ 0]  AVISO;aspa
[ 1]  aspa←''''
[ 2]  'Lista das fns deste workspace'
[ 3]  'encurta a = devolve em ASCII o conteudo do string hexa a'
[ 4]  'estica a = devolve em hexad o texto ASCII a'
[ 5]  'hx a = devolve em binario o conteudo do hexad a'
[ 6]  'vx a = recebe binario  devolve hexad'
[ 7]  ' '
[ 8]  'r ← a teac msg = criptografa msg, com a chave a'
[ 9]  'r ← a tead msg = decriptografa msg, chave a'
[10]  ' r, a e msg sao strings hexadecimais (meios byte)'
[11]  ' a tem 32 meio bytes, msg tem qualquer tamanho'
[12]  '     exemplo:  a←',aspa,'000102030405060708090A0B0C0D0E0F',aspa
[13]  ' '
[14]  'comando completo:'
[15]  'encurta vx a tead vx a teac estica MSG'
[16]  'MSG e um string ASCII em maiusculo + espacos'
[17]  ''
[18]  ' se quiser dar uma embaralhada legal, troque em ambos a constante inicial...'
------------------------------------------------------------
[ 0]  ca701a n;acuja;esse;f;relat;resp;xk;x;coifa;lixo1
[ 1]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 2]  FOLHALA701←ajusta80 FOLHALA701
[ 3]  relat←ΔFM'c:\apl2\VIVOBLOI'
[ 4]  xk←1
[ 5] testa:→(xk>n)/fim
[ 6]  esse←12 80⍴' '
[ 7]  f←FOLHALA701
[ 8]  esse[1;⍳⍴x]←x←'   --- Cavaleiros da Tavola Redonda'
[ 9]  esse[3;]←80↑4 2⍕1.01
[10]  esse[11;⍳8]←'@000000@'
[11] inica:
[12]  coifa←geracaso
[13]  esse[8;]←80↑coifa[1;]
[14]  esse[9;]←80↑coifa[2;]
[15]  esse[10;]←80↑coifa[3;]
[16]  resp←CASOS-1
[17]  acuja←(f[;2]='#')/⍳1↑⍴f
[18]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[19]  ⎕←(⍕xk←xk+1),'-'
[20]  f←(((1↑⍴relat),1↓⍴f)↑relat),[1]f
[21]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'\end{document}'
[22]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'%',⍕resp
[23]  lixo1←f ΔFM'c:\apl2\CA701a',('00'⍕xk-1),'.tex'
[24]  →testa
[25] fim:
------------------------------------------------------------
[ 0]  cavaleiro711a n;acuja;esse;f;lixo1;relat;x;xk;xx;resp
[ 1]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 2]  FOLHALA711←ajusta80 FOLHALA711
[ 3]  relat←ΔFM'c:\apl2\VIVOBLOI'
[ 4]  xk←1
```

```
[ 5] testa:→(xk>n)/fim
[ 6]  esse←11 80ρ' '
[ 7]  f←FOLHALA711
[ 8]  esse[1;ιρx]←x←'------ Cavaleiros da Tavola Redonda ----'
[ 9]  esse[3;]←80↑4 2⍕1.2
[10]  esse[10;ι8]←'@OOOOOO@'
[11] inica:
[12]  xx←geracaso
[13]  esse[8;]←80↑trim xx[1;]
[14]  esse[9;]←80↑trim xx[3;]
[15]  resp←40↑trim xx[2;]
[16]  acuja←(f[;2]='#')/ι1↑ρf
[17]  f[acuja;ι80]←esse[⍋,f[acuja;3 4],' ';]
[18]  ⎕←(⍕xk←xk+1),'-'
[19]  f←(((1↑ρrelat),1↓ρf)↑relat),[1]f
[20]  f←f,[1](1,1↓ρf)ρ(1↓ρf)↑'\end{document}'
[21]  f←f,[1](1,1↓ρf)ρ(1↓ρf)↑'%',resp
[22]  lixo1←f ⎕FM'c:\apl2\CA711a',('OO'⍕xk-1),'.tex'
[23]  →testa
[24] fim:
-------------------------------------------------------------
[0]  r←criaascii
[1]  r←3 27ρ' '
[2]  r[1;]←' ABCDEFGHIJKLMNOPQRSTUVWXYZ'
[3]  r[2;]←'2444444444444444555555555555'
[4]  r[3;]←'0123456789ABCDEF0123456789A'
[5]  r←⍉r
-------------------------------------------------------------
[0]  r←desl4 x
[1]  r←(4↓x),0 0 0 0
-------------------------------------------------------------
[0]  r←desl5 x
[1]  r←0 0 0 0 0,¯5↓x
-------------------------------------------------------------
[0]  r←encurta frase;i;qu
[1]  r←''
[2]  i←0
[3] t1:→(i≥0.5×ρfrase)/fim
[4]  qu←frase[(i×2)+ι2]
[5]  r←r,TABASCII[((∧/[2]TABASCII[;2 3]=27 2ρqu)/ι27);1]
[6]  i←i+1
[7]  →t1
[8] fim:
-------------------------------------------------------------
[0]  r←estica frase
[1]  r←,TABASCII[(,TABASCII[;1])ιfrase;2 3]
-------------------------------------------------------------
[ 0]  r←geracaso;cha;fra;deu
[ 1] denovo:r←3 80ρ' '
[ 2]  r[1;]←80↑cha←estica'ABCDEFGHIJKLMNOPQRSTUVWXYZ'[?16ρ26]
[ 3]  r[2;]←80↑fra←trim,frases[?1↑ρfrases;]
[ 4]  deu←vx cha teac estica fra
[ 5]  →(80<ρdeu)/erro
[ 6]  r[3;]←80↑deu
[ 7]  →0
[ 8] erro:⎕←'*'
[ 9]  →denovo
-------------------------------------------------------------
[0]  r←hx a
[1] ⍝ recebe a hecadecimal (0..F) e devolve-o em binario
[2]  r←,⍉2 2 2 2⊤¯1+'0123456789ABCDEF'ιa
-------------------------------------------------------------
[0]  r←a somb b;t
```

```
[1]  r←(32ρ2)⊤(2⊥a)+2⊥b
-------------------------------------------------------------
[0]  r←a subb b;t
[1]  r←(32ρ2)⊤(2⊥a)-2⊥b
-------------------------------------------------------------
[ 0]  r←k teac msg;k2;tam;i;y;z;delta;sum;n;rr
[ 1]  r←''
[ 2] ⍝ k eh um string hexad de 32 meio bytes (32 caracteres 0..F)
[ 3] ⍝ msg e um string hexad de qualquer tamanho (comprimento par)
[ 4]  k2←4 32ρ(hx torneia k[⍳8]),(hx torneia k[8+⍳8]),(hx torneia k[16+⍳8]),hx torneia k[2
      4+⍳8]
[ 5]  tam←16×⌈(ρmsg)÷16
[ 6]  msg←tam↑msg,'20202020202020'
[ 7]  i←0
[ 8] t1:→(i≥tam)/acabou
[ 9]  y←hx torneia msg[i+⍳8]
[10]  z←hx torneia msg[(i+8)+⍳8]
[11]  delta←hx'9E3779B9'
[12]  sum←hx'00'
[13]  n←0
[14] t2:→(n≥32)/fim
[15]  sum←sum somb delta
[16]  y←y somb((desl4 z)somb k2[1;])xor(z somb sum)xor(desl5 z)somb k2[2;]
[17]  z←z somb((desl4 y)somb k2[3;])xor(y somb sum)xor(desl5 y)somb k2[4;]
[18]  n←n+1
[19]  →t2
[20] fim:
[21]  rr←(y[24+⍳8],y[16+⍳8],y[8+⍳8],y[⍳8]),z[24+⍳8],z[16+⍳8],z[8+⍳8],z[⍳8]
[22]  i←i+16
[23]  r←r,rr
[24]  →t1
[25] acabou:
-------------------------------------------------------------
[ 0]  r←k tead msg;k2;tam;i;y;z;delta;sum;n;rr
[ 1]  r←''
[ 2] ⍝ k eh um string hexad de 32 meio bytes (32 caracteres 0..F)
[ 3] ⍝ msg e um string hexad de qualquer tamanho (comprimento par)
[ 4]  k2←4 32ρ(hx torneia k[⍳8]),(hx torneia k[8+⍳8]),(hx torneia k[16+⍳8]),hx torneia k[2
      4+⍳8]
[ 5]  tam←16×⌈(ρmsg)÷16
[ 6]  msg←tam↑msg,'20202020202020'
[ 7]  i←0
[ 8] t1:→(i≥tam)/acabou
[ 9]  y←hx torneia msg[i+⍳8]
[10]  z←hx torneia msg[(i+8)+⍳8]
[11]  delta←hx'9E3779B9'
[12]  sum←(5↓delta),0 0 0 0 0
[13]  n←0
[14] t2:→(n≥32)/fim
[15]  z←z subb((desl4 y)somb k2[3;])xor(y somb sum)xor(desl5 y)somb k2[4;]
[16]  y←y subb((desl4 z)somb k2[1;])xor(z somb sum)xor(desl5 z)somb k2[2;]
[17]  sum←sum subb delta
[18]  n←n+1
[19]  →t2
[20] fim:rr←(y[24+⍳8],y[16+⍳8],y[8+⍳8],y[⍳8]),z[24+⍳8],z[16+⍳8],z[8+⍳8],z[⍳8]
[21]  i←i+16
[22]  r←r,rr
[23]  →t1
[24] acabou:
-------------------------------------------------------------
[0]  r←torneia x
[1]  r←x[7 8],x[5 6],x[3 4],x[1 2]
-------------------------------------------------------------
```

```
[ 0]  opesq vivo711a n;CORRECAO;EVENTO;aaa;acuja;caso;dhx;esse;f;f1;f2;indices;inds;key;li
      xo1;lixonol;msg;nomes;ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL711   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA711←ajusta80 FOLHALA711
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA711)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[13]  xk←1 ⋄ resu←0 44⍴' '
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←11 80⍴' '
[16]  f←FOLHALA711
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.2
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] ⍝⍝⍝
```

```
[61]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍬∧⍀⍬EVENTO=' ')/EVENTO),'.tex'
[62]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[0]  r←vx a
[1] ⍝ volta da funcao hx (recebe bins e devolve hexads)
[2]  r←'0123456789ABCDEF'[1+2⊥⍉((⌈(⍴a)÷4),4)⍴a]
------------------------------------------------------------
[0]  r←a xor b
[1]  r←a≠b
------------------------------------------------------------
```

vivo712

```
[0]  AVISO1
[1]  'O erro2 que esta sendo insistentemente apresentado, ocorre quando ao descriptografa
      r a msg'
[2]  'com o primeiro numero do par, acaba dando certo, o que eh obviamente um erro.'
------------------------------------------------------------
[0]  r←achepr a;x
[1]  x←⌊a÷2+?6
[2] testa:→(1=x mdc a)/fim
[3]  x←x-1
[4]  →testa
[5] fim:r←x
------------------------------------------------------------
[0]  r←c achesec f;d
[1]  d←100
[2] testa:→(1=f|c×d)/fim
[3]  →(d=d←d+1)/testa
[4] fim:r←d
------------------------------------------------------------
[0]  r←chave codifica numeros
[1]  r←0⍴0
[2] testa:→(0=⍴numeros)/fim
[3]  r←r,xyn(1↑numeros),chave
[4]  numeros←1↓numeros
[5]  →testa
[6] fim:
------------------------------------------------------------
[ 0]  r←divs x;y;z
[ 1]  y←2 ⋄ r←'' ⋄ z←⌈x*0.5
[ 2] fa:→(y>z)/fim
[ 3]  →(0≠y|x)/ne
[ 4]  r←r,y
[ 5] ne:→(y=y←y+1)/fa
[ 6] fim:→(0=2|⍴r)/par
[ 7] impar:r←r,⍬x÷r
[ 8]  →0
[ 9] par:r←r,x÷⍬¯1↓r
------------------------------------------------------------
[0]  r←eprimo n;a
[1] ⍝ baseado no Pequeno Teorema de Fermat, PPP pag. 78
[2]  a←?n
[3]  →(1=xyn a,(n-1),n)/e
[4]  r←0,a
[5]  →0
[6] e:r←1,a
------------------------------------------------------------
[ 0]  r←eprimo1 n;a
[ 1] ⍝ baseado no Pequeno Teorema de Fermat, PPP pag. 78
[ 2] volta:a←(⌊n÷2)+?⌊n÷2
[ 3]  →(1=a mdc n)/obaa
```

```
[ 4]  □←'o'
[ 5]  →volta
[ 6] obaa:
[ 7]  →(1=xyn a,(n-1),n)/e
[ 8]  r←0
[ 9] ⍝ era r←0,a
[10]  →0
[11] e:r←1
[12] ⍝era r←1,a
-------------------------------------------------------------
[ 0]  r←eprimo2 n;a;b;respo
[ 1] ⍝ baseado no Pequeno Teorema de Fermat, PPP pag. 78
[ 2]  b←1 ⋄ respo←2
[ 3] t1:→(b>100)/acabou
[ 4]  a←1+?n-2
[ 5]  →(1=xyn a,(n-1),n)/e
[ 6] ⍝ a
[ 7]  respo←1
[ 8] e:b←b+1
[ 9]  →t1
[10] acabou:r←(,(2 8⍴'nao e   pode ser')[respo;]),' primo'
-------------------------------------------------------------
[ 0]  r←gerachave;pri;p;q;f;c;d;x
[ 1]  pri←primos
[ 2] denovo:p←pri[1↑x←2?⍴pri]
[ 3]  q←pri[1↓x]
[ 4]  f←(p-1)×q-1
[ 5]  c←achepr f
[ 6]  d←c achesec f
[ 7]  →(c=d)/denovo
[ 8]  →(17=xyn(xyn 17,c,(p×q)),d,(p×q))/ok55
[ 9]  'deu erro'
[10]  →denovo ⍝ alteracao a 20/10/12, para acertar isso
[11] ⍝ os comandos abaixo sao deixados, porque era o que tinha...
[12]  →0
[13] ok55:
[14]  →(17≠xyn(xyn 17,c,(p×q)),c,(p×q))/ok
[15]  'deu erro2'
[16]  c,d,p×q
[17]  →denovo  ⍝ alteracao a 20/10/12 idem
[18] ⍝ os comandos abaixo sao deixados, porque era o que tinha...
[19]  r←c,d,p×q
[20]  →0
[21] ok:
[22]  r←c,d,p×q
-------------------------------------------------------------
[0]  r←indices x
[1]  r←1+'ABCDEFGHIJKLMNOPQRSTUVWXYZ/'⍳x
-------------------------------------------------------------
[0]  r←limita x
[1]  r←(~⍵∧≠⍵x='/')/x
-------------------------------------------------------------
[0]  r←a mdc b;g
[1]  g←a
[2] testa:→(a≤0)/fim
[3]  g←a
[4]  a←a|b
[5]  b←g
[6]  →testa
[7] fim:r←g
-------------------------------------------------------------
[0]  r←primos
[1] ⍝ r  ← 13 17 19 23 29 31 37 41 43 47 53 59 62 67 71 73 79 83 89 97
```

```
[2]  r←31 37 41 43 47 53 59 67 71 73 79 83 89 97
------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10]  →(0=' '∈j↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80⍴80↑j↑candi
[15]  candi←j↓candi
[16]  →((⍴candi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80⍴80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
------------------------------------------------------------
[0]  r←tam frase
[1]  r←⍴(~⍵∧≠⍵frase=' ')/frase
------------------------------------------------------------
[0]  tespri x
[1]  (0=(⍳x)|x)/⍳x
------------------------------------------------------------
[ 0]  testador;x;y;r1;r2;r3
[ 1] ⍝ programa para testar a condicao maluca de uma chave em
[ 2] ⍝ especial ser simetrica:
[ 3] ⍝ com a chave (c=1715,n=5293) e (d=3431, n=5293), ocorre
[ 4] ⍝ xyn 17 1715 5293 = 4359
[ 5] ⍝ xyn 4359 3431 5293 = 17 ===> ate aqui tudo otimo, MAS...
[ 6] ⍝ xyn 4359 1715 5293 = 17 ---> isto aqui nao podia acontecer.
[ 7] mais:x←gerachave
[ 8]  y←100+?1000
[ 9]  r1←xyn y,x[1],x[3]
[10]  r2←xyn r1,x[2],x[3]
[11]  →(r2≠y)/erro1
[12]  r3←xyn r1,x[1],x[3]
[13]  →(r3=y)/oops
[14]  x,y
[15]  →mais
[16] oops:'olha que coisa'
[17]  x,y,r1,r2,r3
[18]  →0
[19] erro1:'tudo errado'
[20]  x,y,r1,r2,r3
[21]  →0
------------------------------------------------------------
[ 0]  opesq vivo712a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;ALFA;x;inds;key;fr;quem;pess;fra;nomes;tua;xaxa;baba;xuxu;tmp;qual1;
      qual2;qual3;qual4;oop
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL712   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
```

```
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  fr←' /'edit frases ⋄ FOLHALA712←ajusta80 FOLHALA712
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA712)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[12]  xk←1 ⋄ resu←0 35⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←36 80⍴' '
[15]  f←FOLHALA712
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.66
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[35;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[36;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26] ⍝ -------- segue o baile --------
[27]  pess←6 3⍴gerachave,gerachave,gerachave,gerachave,gerachave,gerachave
[28]  tua←gerachave
[29] ⍝---- questoes 1 e 2
[30]  oop←'Alice=(',(4 0⍕pess[1;1]),',',(4 0⍕pess[1;3]),'), '
[31]  oop←oop,'Bento=(',(4 0⍕pess[2;1]),',',(4 0⍕pess[2;3]),')'
[32]  esse[8;]←80↑oop
[33]  oop←'Carlos=(',(4 0⍕pess[3;1]),',',(4 0⍕pess[3;3]),'), '
[34]  oop←oop,'Dante=(',(4 0⍕pess[4;1]),',',(4 0⍕pess[4;3]),')'
[35]  esse[9;]←80↑oop
[36]  oop←'Erasmo=(',(4 0⍕pess[5;1]),',',(4 0⍕pess[5;3]),'), '
[37]  oop←oop,'Frida=(',(4 0⍕pess[6;1]),',',(4 0⍕pess[6;3]),')'
[38]  esse[10;]←80↑oop
[39]  esse[11;]←80↑(4 0⍕tua[1]),',',4 0⍕tua[3]
[40]  esse[12;]←80 0⍕tua[2]
[41]  quem←2?6 ⋄ fra←4?1↑⍴fr
[42]  nomes←6 6⍴'alice bento carlosdante erasmofrida '
[43] ⍝---------- questao 3
[44]  esse[13;]←80↑nomes[quem[1];]
[45]  esse[13+⍳5;]←5 80↑5 50⍴250↑5 0⍕xuxu←pess[quem[1];2 3]codifica indices limita fr[fra[
      1];]
[46]  qual1←(1?¯1+⍴xuxu),⍴xuxu
[47]  baba←(5↑4 0⍕resp),(xaxa←60↑limita fr[fra[1];])[qual1]
[48] ⍝-------- questao 4
[49]  esse[19;]←80↑nomes[quem[2];]
[50]  esse[20;]←80↑xuxu←limita fr[fra[2];]
[51]  qual2←(1?¯1+⍴xuxu),⍴xuxu
[52]  baba←baba,6 0⍕(tmp←pess[quem[2];1 3]codifica indices limita fr[fra[2];])[qual2]
[53]  xaxa←xaxa,5 0⍕tmp
[54] ⍝---------- questao 5
[55]  esse[20+⍳5;]←5 80↑5 50⍴250↑5 0⍕xuxu←tua[1 3]codifica indices limita fr[fra[3];]
[56]  qual3←(1?¯1+⍴xuxu),⍴xuxu
[57]  baba←baba,' ',(tmp←60↑limita fr[fra[3];])[qual3]
[58]  xaxa←xaxa,,tmp
[59] ⍝--------- questao 6
[60]  esse[26;]←80↑xuxu←limita fr[fra[4];]
[61]  qual4←(1?¯1+⍴xuxu),⍴xuxu
[62]  baba←baba,6 0⍕(tmp←tua[2 3]codifica indices limita fr[fra[4];])[qual4]
[63]  xaxa←xaxa,,5 0⍕tmp
[64]  resu←resu,[1]1 35⍴baba
[65]  esse[27;]←80↑'A[',(2 0⍕qual1[1]),']'
[66]  esse[28;]←80↑'A[',(2 0⍕qual1[2]),']'
[67]  esse[29;]←80↑'B[',(2 0⍕qual2[1]),']'
```

```
[68]  esse[30;]←80↑'B[',(2 0⍕qual2[2]),']'
[69]  esse[31;]←80↑'C[',(2 0⍕qual3[1]),']'
[70]  esse[32;]←80↑'C[',(2 0⍕qual3[2]),']'
[71]  esse[33;]←80↑'D[',(2 0⍕qual4[1]),']'
[72]  esse[34;]←80↑'D[',(2 0⍕qual4[2]),']'
[73]  acuja←(f[;2]='#')/⍳1↑⍴f
[74]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[75]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[76]  ⎕←(⍕xk←xk+1),'-'
[77]  →testa
[78] fim:upag←(1 0+⍴f)⍴' '
[79]  →(1=≡n)/elafa
[80]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[81]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[82]  upag[2+⍳1↑⍴presu;]←((1↑⍴presu),80)↑presu
[83]  upag[3+1↑⍴presu;]←(1↓⍴upag)↑'\end{verbatim}'
[84]  →terminando
[85] elafa:aaa←(ylu,0 5↓resu)
[86]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[87]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[88] terminando:
[89] ⍝ upag[1↑⍴upag;]←(1↓⍴upag)↑'\begin{verbatim}'
[90]  relat[1↑⍴relat;;]←upag
[91]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[92] ⍝ lixonol←lixonol,[1](ajusta80 20 50⍴1000↑xaxa),[1]1 80⍴80↑'\end{verbatim} \end{docum
      ent}'
[93]  lixonol←lixonol,[1]1 80⍴80↑'\end{document}'
[94]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[95]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[96]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  r←xyn oper;x;y;n;tmp
[ 1] ⍝ xyn calcula (x*y) mod n, atraves do alg. addition chaining sch96p.244
[ 2]  x←oper[1] ⋄ y←oper[2] ⋄ n←oper[3]
[ 3]  →(y≠1)/difa
[ 4]  r←n|x
[ 5]  →fim
[ 6] difa:→(0=2|y)/par
[ 7] impar:tmp←xyn(x,((y-1)÷2),n)
[ 8]  tmp←n|(tmp×tmp)
[ 9]  tmp←n|(tmp×x)
[10]  r←tmp
[11]  →fim
[12] par:tmp←xyn(x,(y÷2),n)
[13]  r←n|(tmp×tmp)
[14] fim:
------------------------------------------------------------
```

vivo713

```
[ 0]  ⍙_DC←⍙_PID SVOPAIR ⍙_SV;⍙_CV
[ 1] ⍝-------------------------------------------------------------------⍝
[ 2] ⍝
[ 3] ⍝  Offer shared variables named in SV to processor number PID.
[ 4] ⍝  To be used for auxiliary processors which use a two-variable
[ 5] ⍝  interface, where the control variable begins with "C" or "CTL"
[ 6] ⍝  and the data variable begins with "D" or "DAT".  (Cxxx/Dxxx or
[ 7] ⍝  CTLxxx/DATxxx)
[ 8] ⍝
[ 9] ⍝  Returns final degree of coupling (DC) for each shared variable
[10] ⍝  Expected degree of coupling is 2 for the control variable and 1
[11] ⍝  or 2 for the data variable.
```

```
[12] ⍝
[13] ⍝  Waits up to 15 seconds for the control variable to be accepted
[14] ⍝  by the processor.  Sets standard access control to inhibit my
[15] ⍝  double references or specifications of the control variable.
[16] ⍝  Does not set access control for the data variable.
[17] ⍝
[18] ⍝  Monadic call simply returns the current degree of coupling.
[19] ⍝
[20] ⍝------------------------------------------------------------------⍝
[21] ⍝
[22] ⍝ Examples:
[23] ⍝
[24] ⍝ Offer a set of variables to the fullscreen processor
[25] ⍝       124 SVOPAIR 'CTL124' 'DAT124'
[26] ⍝ 2 1
[27] ⍝
[28] ⍝ Offer using surrogates
[29] ⍝       124 SVOPAIR 'Control C' 'Data D'
[30] ⍝ 2 1
[31] ⍝
[32] ⍝ Note: Access control set for control, not data
[33] ⍝       ⎕SVC¨ 'Control' 'Data'
[34] ⍝  1 0 1 1  0 0 0 0
[35] ⍝
[36] ⍝ Check degree of coupling
[37] ⍝       SVOPAIR 'Control' 'Data'
[38] ⍝ 2 1
[39] ⍝
[40] ⍝ Offer improper control variable
[41] ⍝       210 SVOPAIR 'A1' 'D1'
[42] ⍝ 1 1
[43] ⍝
[44] ⍝==================================================================⍝
[45] ⍝
[46]  Δ_SV←(¯2↑1 1,⍴Δ_SV)⍴Δ_SV←⊃Δ_SV      ⍝ Convert name argument to matrix
[47]  →(2=⎕NC'Δ_PID')/Δ_DYADIC           ⍝ Is it a dyadic function call?
[48]  Δ_DC←⎕SVO Δ_SV                      ⍝ Just return coupling if monadic
[49]  →0                                  ⍝ and exit
[50] Δ_DYADIC:
[51]  Δ_CV←(-+/∧⍀⍵∊⍺)⍵⍺Δ_SV=' ')⍵⍺Δ_SV          ⍝ Rotate trailing blanks and then
[52]  Δ_CV←(-+/∧⍀⍵∊⍺)⍵⍺Δ_CV≠' ')⍵⍺Δ_CV          ⍝ rotate surrogate name to front
[53]  Δ_CV←Δ_CV[;⎕IO]='C'                 ⍝ Which names are control vars?
[54]  →(1∧.≠Δ_CV/Δ_DC←Δ_PID ⎕SVO Δ_SV)/Δ_END   ⍝ Initial Offer
[55]  ⎕SVE←15                             ⍝ Wait up to 15 seconds for accepts
[56] Δ_CHECK:
[57]  →(1∧.≠Δ_CV/Δ_DC←⎕SVO Δ_SV)/Δ_END    ⍝ Check couplings
[58]  →(0≠⎕SVE)/Δ_CHECK                   ⍝ Retry if time left
[59] Δ_END:
[60]  Δ_CV←1 0 1 0 ⎕SVC Δ_CV≠Δ_SV         ⍝ Set access control on C vars only
-------------------------------------------------------------
[0]  r←p c x
[1]  r←(256*p)×¯1+⎕AV⍳x
-------------------------------------------------------------
[ 0]  r←mens criabmp ima;linhas;colunas;pontos;i;y;letra;residuo;aa;bb
[ 1] ⍝ na variavel IMAGEM esta a imagem em binario
[ 2]  IMAGEM←0 lebmp ima
[ 3]  mens←trim mens
[ 4]  linhas←(⍴mens)?L
[ 5]  colunas←(⍴mens)?C-4
[ 6]  linhas←linhas[⍋linhas]
[ 7]  colunas←colunas[⍋colunas]
[ 8]  pontos←(C×linhas-1)+colunas
[ 9]  residuo←A-C×3
```

```
[10]  i←1 ⋄ y←((⍴mens),4)⍴0
[11] testa:→(i>⍴pontos)/acabou
[12]  y[i;]←bb,(bb←54+(residuo×linhas[i]-1)+(3×pontos[i]-1))le3b IMAGEM
[13]  →(i=i←i+1)/testa
[14] acabou:letra←'ABCDEFGHIJLMNOPQRSTUVXZ0123456789 '
[15]  i←1
[16] tes2:→(i>1↑⍴y)/fim
[17]  →(0=2|y[i;2])/par
[18] impar:→(y[i;2]>127)/sub1
[19]  y[i;4]←y[i;2]+letra⍳mens[i]
[20]  →pula
[21] sub1:
[22]  y[i;4]←y[i;2]-letra⍳mens[i]
[23]  →pula
[24] par:→(y[i;2]>127)/sub2
[25]  y[i;3]←y[i;2]+letra⍳mens[i]
[26]  →pula
[27] sub2:y[i;3]←y[i;2]-letra⍳mens[i]
[28] pula:→(i=i←i+1)/tes2
[29] fim:i←1
[30] tes3:→(i>1↑⍴y)/fim3
[31]  aa←y[i;1]
[32] ⍝ IMAGEM[(aa+1),(aa+2),(aa+3)]←(1↑82 ⎕DR y[i;2]),(1↑82 ⎕DR y[i;3]),1↑82 ⎕DR y[i;4]
[33]  IMAGEM[(aa+1),(aa+2),(aa+3)]←(⎕AF y[i;2]),(⎕AF y[i;3]),⎕AF y[i;4]
[34]  →(i=i←i+1)/tes3
[35] fim3:PONTOS←pontos
-------------------------------------------------------------
[0]  r←end le3b var
[1]  r←(0 c var[end+1]),(0 c var[end+2]),0 c var[end+3]
-------------------------------------------------------------
[ 0]  r←simnao lebmp y;tam;nomuz;coma;mer
[ 1]  nomuz←'c:\apl2\imagens\im',('00'⍕y),'.bmp'
[ 2]  coma←'IR,"',nomuz,'",C'
[ 3] ⍝ ('c:\apl\imagens\im',(,'ZI2' ⎕FMT y),'.bmp')⎕NTIE ¯5
[ 4]  C210←coma
[ 5] ⍝ coma
[ 6]  mer←C210
[ 7]  C210←2,0,6
[ 8]  mer←C210
[ 9]  r←D210
[10] ⍝ tam←⎕NSIZE ¯5
[11]  T←(3 c r[6])+(2 c r[5])+(1 c r[4])+0 c r[3]
[12]  C210←2,6,T-6
[13]  mer←C210
[14]  r←r,D210
[15] ⍝ r←⎕NREAD ¯5,82,tam,0
[16]  I←(3 c r[14])+(2 c r[13])+(1 c r[12])+0 c r[11]
[17]  C←(3 c r[22])+(2 c r[21])+(1 c r[20])+0 c r[19]
[18]  A←4×⌈(C×3)÷4
[19]  L←(3 c r[26])+(2 c r[25])+(1 c r[24])+0 c r[23]
[20]  P←L×C
[21]  M←(3 c r[38])+(2 c r[37])+(1 c r[36])+0 c r[35]
[22]  C210←⍳0
[23] ⍝ ⎕NUNTIE ¯5
[24]  →(simnao=0)/0
[25]  'Tamanho da variavel criada = ',⍕⍴r
[26]  'Tamanho do arquivo       T = ',⍕T
[27]  'Inicio do bloco de dados I = ',⍕I
[28]  'Quantidade de linhas     L = ',⍕L
[29]  'Quantidade de colunas    C = ',⍕C
[30]  'Colunas   × 3                = ',⍕(C×3)
[31]  'Quantidade de bytes (aj) A = ',⍕A
[32]  'Tam da imagem justa      M = ',⍕M
```

```
[33]  'Quantidade de PIXELS     P = ',⍕P
-------------------------------------------------------------
[ 0]  limpa;k
[ 1]  k←⎕EX'A'
[ 2]  k←⎕EX'L'
[ 3]  k←⎕EX'C'
[ 4]  k←⎕EX'P'
[ 5]  k←⎕EX'M'
[ 6]  k←⎕EX'T'
[ 7]  k←⎕EX'I'
[ 8]  k←⎕EX'IMAGEM'
[ 9]  k←⎕EX'PONTOS'
-------------------------------------------------------------
[0]  r←tam frase
[1]  r←⍴(~⍵∧⍀⍵frase=' ')/frase
-------------------------------------------------------------
[ 0]  opesq vivo713a n;CORRECAO;EVENTO;aaa;aab;acuja;comaz;cuca;dhx;esse;f;indi;indm;lixo1
      ;lixonol;mer;nomuzz;relat;resp;resu;upag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  cuca←'H'
[ 5]  lixonol←210 SVOPAIR'C210' 'D210'
[ 6]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 7]  CORRECAO←0 ⋄ EVENTO←'PL713'
[ 8]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 9]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ cuca←n[5]
[10]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[11]  FOLHALA713←ajusta80 FOLHALA713
[12]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA713)⍴' '
[13]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[14]  xk←1 ⋄ resu←0 57⍴0
[15] testa:→(xk>1↑⍴ylu)/fim
[16]  esse←14 80⍴' '
[17]  f←FOLHALA713
[18]  esse[1;]←80↑dhx[1;]
[19]  esse[2;]←80↑dhx[2;]
[20]  esse[3;]←80↑4 2⍕VERSAOa←3.07
[21] ⍝ usltima alteracao=inclusao do cuca. Veja la...
[22]  esse[4;]←80↑ylu[xk;⍳6]
[23]  esse[5;]←80↑ylu[xk;6+⍳30]
[24]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[25]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[26] inica:
[27]  esse[8;]←80↑aab←'XMA',cuca,'E',('000'⍕xk),'.BMP'
[28]  esse[13;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[29]  esse[14;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[30]  indm←1?1↑⍴MENSAGENS
[31]  indi←10+?16
[32]  esse[12;⍳2]←MENSAGENS[indm;⍳2]
[33]  limpa
[34]  (,MENSAGENS[indm;])criabmp indi
[35]  nomuzz←'c:⍀apl2⍀levar⍀',aab
[36]  comaz←'IW,"',nomuzz,'",C'
[37] ⍝ ('c:⍀apl⍀imagens⍀',aab)⎕NCREATE ¯7
[38]  C210←comaz
[39]  mer←C210
[40]  D210←IMAGEM
[41]  C210←1,0,⍴,IMAGEM
[42]  mer←C210
[43]  C210←⍳0
[44]  mer←C210
```

```
[45] ⍝ IMAGEM ⎕NAPPEND ¯7
[46]  esse[9 10 11;]←3 80↑3 66⍴198↑6 0⍕PONTOS
[47] ⍝ ⎕NUNTIE ¯7
[48]  limpa
[49]  resp←(3 0⍕resp),(5 0⍕indi),'  ',47↑,MENSAGENS[indm;]
[50] continua:
[51]  resu←resu,[1]1 57⍴resp
[52]  acuja←(f[;2]='#')/⍳1↑⍴f
[53]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[54]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[55]  ⍞←(⍕xk←xk+1),'-'
[56]  →testa
[57] fim:upag←(1 0+⍴f)⍴' '
[58]  →(1=≡n)/elafa
[59]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[60]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[61]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑resu
[62]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[63]  →terminando
[64] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 3↓resu)
[65]  aaa[1;35 36]←2 0⍕CORRECAO
[66]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[67]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[68] terminando:
[69]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\begin{verbatim}'
[70]  relat[1↑⍴relat;;]←upag
[71]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[72] ⍝ lixonol←lixonol,[1](ajusta80 INSTRUC713),[1]1 80⍴80↑'\end{verbatim} \end{document}'
[73]  lixonol←lixonol,[1]1 80⍴80↑'\end{verbatim} \end{document}'
[74] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[75]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[76]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[77]  lixonol←⎕EX 2 8⍴'C210D210'
[78]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
[79]  'Este WS le imagens em f:\p\apl2\imagens\im__'
[80]  '        e gera imagens em c:\apl2\levar, com o nome de xma?e...'
[81]  '        vc precisa CRIAR este diretorio antes de comecar...'
-------------------------------------------------------------
```

vivo714

```
[0]  r←F x;⎕IO
[1]  ⎕IO←0
[2]  r←x[2]|x[0]+x[1]
-------------------------------------------------------------
[0]  r←F1 y;⎕IO
[1]  ⎕IO←0
[2]  →(y≤809999)/ok
[3] erro:'operador maior que 809999'
[4]  →0
[5] ok:r←ALFABETO[30 30 30 30⊤y]
-------------------------------------------------------------
[0]  r←F2 y;⎕IO
[1]  ⎕IO←0
[2]  r←30 30 30 30⊥ALFABETO⍳y
-------------------------------------------------------------
[0]  r←G x;⎕IO
[1]  ⎕IO←0
[2]  r←x[2]|2×|x[1]-x[0]
-------------------------------------------------------------
[ 0]  r←HASH k;A;B;C;D;T;i;j;m;n;x;temp;⎕IO
[ 1]  ⎕IO←0
```

```
[ 2]  k←' /'edit,k
[ 3]  →(∧/k∈ALFABETO)/blz
[ 4] erro:'tem caracter errado...'
[ 5]  →0
[ 6] blz:
[ 7]  m←k,11⍴'/'
[ 8]  n←((⌈(⍴k)÷12),12)⍴m
[ 9]  A←499901   ⍝ ROMK
[10]  B←377007   ⍝ M?Z!
[11]  C←757331   ⍝ ?ANK
[12]  D←111931   ⍝ DDKA
[13]  i←0
[14] ufa0:→(i≥1↑⍴n)/acabou
[15]  j←0
[16] ufa1:→(j≥3)/acaparc
[17]  x←F2 n[i;(j×4)+⍳4]
[18]  T←809999|A+(F B,C,D)+x+⍴k
[19]  temp←D,C,B,T
[20]  A←temp[0]
[21]  D←temp[1]
[22]  C←temp[2]
[23]  B←temp[3]
[24]  →(j=j←j+1)/ufa1
[25] acaparc:
[26]  j←0
[27] ufa2:→(j≥3)/acaparc2
[28]  x←F2 n[i;(j×4)+⍳4]
[29]  T←809999|A+(G B,C,D)+x+⍴k
[30]  temp←D,C,B,T
[31]  A←temp[0]
[32]  D←temp[1]
[33]  C←temp[2]
[34]  B←temp[3]
[35]  →(j=j←j+1)/ufa2
[36] acaparc2:→(i=i←i+1)/ufa0
[37] acabou:r←(F1 A),(F1 B),(F1 C),F1 D
------------------------------------------------------------
[ 0]  r←HASH255 k;A;B;C;D;T;i;j;m;n;x;temp;⎕IO
[ 1]  ⎕IO←0
[ 2]  m←k,11⍴'/'
[ 3]  n←((⌈(⍴k)÷12),12)⍴m
[ 4]  A←numh'01234567'
[ 5]  B←numh'ABCDEF01'
[ 6]  C←numh'01075533'
[ 7]  D←numh'89ABCDEF'
[ 8]  i←0
[ 9] ufa0:→(i≥1↑⍴n)/acabou
[10]  j←0
[11] ufa1:→(j≥3)/acaparc
[12]  x←numh vemasci n[i;(j×4)+⍳4]
[13]  T←4294967295|A+(F B,C,D)+x+⍴k
[14]  temp←D,C,B,T
[15]  A←temp[0]
[16]  D←temp[1]
[17]  C←temp[2]
[18]  B←temp[3]
[19]  →(j=j←j+1)/ufa1
[20] acaparc:
[21]  j←0
[22] ufa2:→(j≥3)/acaparc2
[23]  x←numh vemasci n[i;(j×4)+⍳4]
[24]  T←4294967295|A+(G B,C,D)+x+⍴k
[25]  temp←D,C,B,T
```

```
[26]  A←temp[0]
[27]  D←temp[1]
[28]  C←temp[2]
[29]  B←temp[3]
[30]  →(j=j←j+1)/ufa2
[31] acaparc2:→(i=i←i+1)/ufa0
[32] acabou:r←(hexadn A),(hexadn B),(hexadn C),hexadn D
------------------------------------------------------------
[0]  r←hexadn num;x;⎕IO
[1]  ⎕IO←0
[2]  →(num>4294967295)/erro
[3]  r←'0123456789ABCDEF'[(8⍴16)⊤num]
[4]  →0
[5] erro:'numero muito grande...'
------------------------------------------------------------
[0]  r←numh st;st1;⎕IO
[1]  ⎕IO←0
[2] ⍝ recebe st de 8 hexadecimais (4B) e devolve numero
[3]  r←+/(⍳16*⌽⍳⍴st1)×'0123456789ABCDEF'⍳st1←upper st
------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10]  →(0=' '∈j↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80⍴80↑j↑candi
[15]  candi←j↓candi
[16]  →((⍴candi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80⍴80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
------------------------------------------------------------
[0]  r←tam frase
[1]  r←⍴(~⍵∧≠⍵frase=' ')/frase
------------------------------------------------------------
[0]  r←upper x;zz
[1]  zz←(x∈'abcdefghijklmnopqrstuvwxyz')×32
[2]  r←⎕AV[(⎕AV⍳x)-zz]
------------------------------------------------------------
[0]  r←vaiasci n;⎕IO
[1] ⍝n deve ser caracter
[2]  ⎕IO←0
[3]  r←⎕AV[(4⍴256)⊤numh n]
------------------------------------------------------------
[0]  r←vemasci x;⎕IO
[1]  ⎕IO←0
[2]  r←hexadn+/(⍵256*⌽⍴x)×⎕AV⍳x
------------------------------------------------------------
[ 0]  opesq vivo714a n;CORRECAO;EVENTO;aaa;acuja;cab;dhx;esse;f;inds;lixo1;lixonol;relat;r
      esp;resu;upag;xar;xixo;xk;ylu;yta
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
```

```
[ 3] qveio:
[ 4]  frases←((1↑⍴pijuca),9)↑tijuca
[ 5]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 6]  CORRECAO←0 ⋄ EVENTO←'PL714   '
[ 7]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[10]  FOLHALA714←ajusta80 FOLHALA714
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA714)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 40⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALA714
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←3.36
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  esse[5;]←80↑ylu[xk;6+⍳30]
[22]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[23]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[24]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[25]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[26] inica:
[27]  inds←2?1↑⍴frases
[28]  esse[8;]←80↑(18⍴1 0)\' /'edit frases[inds[2];]
[29]  resp←(3 0⍎resp),'     ',(32⍴1 0)\HASH frases[inds[2];]
[30] continua:
[31]  resu←resu,[1]1 40⍴resp
[32]  acuja←(f[;2]='#')/⍳1↑⍴f
[33]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[34]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[35]  ⍞←(⍎xk←xk+1),'-'
[36]  →testa
[37] fim:upag←(1 0+⍴f)⍴' '
[38]  →(1=≡n)/elafa
[39]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[40]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[41]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑resu
[42]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[43]  →terminando
[44] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 3↓resu)
[45]  aaa[1;35 36]←2 0⍎CORRECAO
[46]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[47]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[48] terminando:
[49]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[50]  relat[1↑⍴relat;;]←upag
[51]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[52] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[53]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[54]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[55]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo715

```
[ 0]  AVISO;aspa
[ 1]  aspa←''''
[ 2]  'Para gerar um gabarito faca'
[ 3]  'gabarito',aspa,'ttttttttttttrrriiimmmm',aspa
```

```
[ 4]  'onde: ttttttttttt=as 12 letras das tomadas em ordem (minusculo)'
[ 5]  'rrr=os 3 rotores (numeros)'
[ 6]  'iii=inicializacao dos 3 rotores (minusculo)'
[ 7]  'mmmm=mensagem a cifrar (minusculo'
[ 8]  'exemplo  (aquele da folha)'
[ 9]  'gabarito',aspa,'dyzebhltsnpw351hiqzumb',aspa
[10]  gabarito'dyzebhltsnpw351hiqzumb'
[11]  'Existe a vvel AMOSTRAR que tem as palavras usadas'
[12]  'Existe a variavel lusi que tem os desafios. Mais legivel em LUSI'
[13]  ' depois de rodar o gabarito da folha, (para estabelecer as variaveis'
[14]  ' globais) pode-se rodar'
[15]  ' cifra "soodesafio..." e ele vai mostrar o desafio resolvido'
[16]  ''
[17]  ' Há duas variáveis aqui: FOLHALA715s e FOLHALA715c'
[18]  ' Dependendo do que for colocado em FOLHALA715 haverá o modelo simples'
[19]  ' (1 palavra de 4 letras) ou completo (uma frase de os Lusíadas)'
-------------------------------------------------------------
[ 0]  r←acertalusi;i;r;x;y;j
[ 1]  i←1
[ 2]  r←((1↑⍴LUSI),25)⍴' '
[ 3] t1:→(i>1↑⍴LUSI)/fim
[ 4]  x←LUSI[i;]
[ 5]  y←25↑(x≠'/')/x
[ 6]  j←1
[ 7] t2:→(j>25)/ufa
[ 8]  y[j]←⎕AV[32+⎕AV⍳y[j]]
[ 9]  j←j+1
[10]  →t2
[11] ufa:
[12]  r[i;]←y
[13]  i←i+1
[14]  →t1
[15] fim:
-------------------------------------------------------------
[0]  checa x;i
[1]  i←1
[2] t1:→(i>26)/fim
[3]  →(x[i]=i)/erro
[4]  →(i=i←i+1)/t1
[5] fim:→0
[6] erro:i
-------------------------------------------------------------
[ 0]  r←cifra msg;i;x;maq;aa;x0;x1;x2;x3;x4;x5;x6;x7;x8;ct;ct1
[ 1] ⍝   →(  ⍴,msg)  ≠+/(,msg)  ∈alfa)/erro
[ 2]  i←1 ⋄ r←'' ⋄ ct←0 ⋄ ct1←0 ⋄ RESP←(0,10)⍴''
[ 3]  x←,alfa⍳msg
[ 4]  maq←4 26⍴MAQUINA[INTERNO[2;1];],MAQUINA[INTERNO[2;2];],MAQUINA[INTERNO[2;3];],MAQUIN
      A[6;]
[ 5]  maq[1;]←26↑(INTERNO[3;1]-1)↓aa,aa←maq[1;]
[ 6]  maq[2;]←26↑(INTERNO[3;2]-1)↓aa,aa←maq[2;]
[ 7]  maq[3;]←26↑(INTERNO[3;3]-1)↓aa,aa←maq[3;]
[ 8]  MAQANTES←maq
[ 9] t1:→(i>⍴x)/fim
[10]  x0←INTERNO[1;x[i]]
[11]  x1←maq[1;x0]
[12]  x2←maq[2;x1]
[13]  x3←maq[3;x2]
[14]  x4←maq[4;x3]
[15]  x5←maq[3;]⍳x4
[16]  x6←maq[2;]⍳x5
[17]  x7←maq[1;]⍳x6
[18]  x8←INTERNO[1;]⍳x7
[19]  RESP←RESP,[1]ALFA[x[i],x0,x1,x2,x3,x4,x5,x6,x7,x8]
```

```
[20]  r←r,ALFA[x8]
[21]  ct←ct+1
[22]  maq[3;]←26↑1↓aa,aa←maq[3;]
[23]  →(0≠26|ct)/foi
[24]  ct1←ct1+1
[25]  maq[2;]←26↑1↓aa,aa←maq[2;]
[26]  →(0≠26|ct1)/foi
[27]  maq[1;]←26↑1↓aa,aa←maq[1;]
[28] foi:→(i=i←i+1)/t1
[29] fim:→0
[30] erro:'msg invalida'
[31]  (ρ,msg)
[32]  +/(,msg)∈alfa
-------------------------------------------------------------
[ 0]  r←contaletras x;z;alfa;ind;qual;i
[ 1]  z←26ρ0
[ 2]  alfa←'ABCDEFGHIJKLMNOPQRSTUVWXYZ'
[ 3]  i←1
[ 4] t1:→(i>ρx)/fim
[ 5]  qual←⎕AV⍳x[i]
[ 6]  →((66≤qual)∧(qual≤91))/blz
[ 7]  →((98≤qual)∧(qual≤123))/minu
[ 8]  →soma
[ 9] minu:x[i]←⎕AV[qual-32]
[10] blz:ind←alfa⍳x[i]
[11]  z[ind]←z[ind]+1
[12] soma:→(i=i←i+1)/t1
[13] fim:
[14]  ind←⍒z
[15]  r←(26 1ρalfa[ind]),5 1⍕100×(26 1ρz[ind])÷ρx
[16]  'Quantidade de letras estudadas = ',⍕ρx
-------------------------------------------------------------
[ 0]  r←gabarito gu;kk;rr;aux;i
[ 1] ⍝   era isto, mas depois do desafio... →(22≠ρgu)/erro
[ 2] ⍝gu[⍳12]=as 6 tomadas (minusc), gu[12+⍳3]=rotores,
[ 3] ⍝gu[15+⍳3]=letras de inicializa/~ao (minusc);
[ 4] ⍝gu[18+⍳4]=a palavra dada na folha em minusculo ou LIXO e depois 25 de desafio
[ 5]  INTERNO←3 26ρ0
[ 6]  i←ALFA⍳upper 12↑gu
[ 7]  ALFA[i[1]],'/',ALFA[i[2]],' ',ALFA[i[3]],'/',ALFA[i[4]],' ',ALFA[i[5]],'/',ALFA[i[6]
      ],' ',ALFA[i[7]],'/',ALFA[i[8]],' ',ALFA[i[9]],'/',ALFA[i[10]],' ',ALFA[i[11]],'/',AL
      FA[i[12]]
[ 8]  rr←⍳26
[ 9]  aux←rr[i[2]]
[10]  rr[i[2]]←rr[i[1]]
[11]  rr[i[1]]←aux
[12]  aux←rr[i[4]]
[13]  rr[i[4]]←rr[i[3]]
[14]  rr[i[3]]←aux
[15]  aux←rr[i[6]]
[16]  rr[i[6]]←rr[i[5]]
[17]  rr[i[5]]←aux
[18]  aux←rr[i[8]]
[19]  rr[i[8]]←rr[i[7]]
[20]  rr[i[7]]←aux
[21]  aux←rr[i[10]]
[22]  rr[i[10]]←rr[i[9]]
[23]  rr[i[9]]←aux
[24]  aux←rr[i[12]]
[25]  rr[i[12]]←rr[i[11]]
[26]  rr[i[11]]←aux
[27]  INTERNO[1;]←rr
[28]  INTERNO[2;]←26↑3↑MIST←kk←(⍕gu[13],' ',gu[14],' ',gu[15]),ALFA⍳upper gu[15+⍳3]
```

```
[29]  INTERNO[3;]←26↑3↓kk
[30]  DA←gu[18+⍳4]
[31]  cifra DA
[32]  RESP
[33]  →0
[34] erro:'a entrada deve ter 22 caracteres'
-------------------------------------------------------------
[ 0]  r←gerainstancia;kk
[ 1]  INTERNO←3 26⍴0
[ 2]  INTERNO[1;]←geratomadas
[ 3]  INTERNO[2;]←26↑3↑kk←geramisturadores
[ 4]  INTERNO[3;]←26↑3↓kk
[ 5]  EXTERNO←60⍴' '
[ 6]  EXTERNO[⍳25]←'T=',TOMA
[ 7]  EXTERNO[27+⍳11]←'Rotores=',3↑MIST
[ 8]  EXTERNO[40+⍳20]←20↑', Inicializ. c/ ',3↓MIST
-------------------------------------------------------------
[0]  r←geramisturadores;aa;bb
[1]  MIST←(1 0⍉aa←3?5),ALFA[bb←3?26]
[2]  r←aa,bb
-------------------------------------------------------------
[ 0]  r←gerarefletor;alfa;i;inds;ori;des
[ 1]  alfa←⍳26
[ 2]  i←1 ⋄ r←26⍴0
[ 3] t1:→(i>13)/fim
[ 4]  inds←2?⍴alfa
[ 5]  ori←alfa[inds[1]]
[ 6]  des←alfa[inds[2]]
[ 7]  r[ori]←des
[ 8]  r[des]←ori
[ 9]  alfa←((ori≠alfa)∧(des≠alfa))/alfa
[10]  →(i=i←i+1)/t1
[11] fim:
-------------------------------------------------------------
[ 0]  r←geratomadas;i;aux
[ 1]  i←12?26
[ 2]  r←⍳26
[ 3]  aux←r[i[2]]
[ 4]  r[i[2]]←r[i[1]]
[ 5]  r[i[1]]←aux
[ 6]  aux←r[i[4]]
[ 7]  r[i[4]]←r[i[3]]
[ 8]  r[i[3]]←aux
[ 9]  aux←r[i[6]]
[10]  r[i[6]]←r[i[5]]
[11]  r[i[5]]←aux
[12]  aux←r[i[8]]
[13]  r[i[8]]←r[i[7]]
[14]  r[i[7]]←aux
[15]  aux←r[i[10]]
[16]  r[i[10]]←r[i[9]]
[17]  r[i[9]]←aux
[18]  aux←r[i[12]]
[19]  r[i[12]]←r[i[11]]
[20]  r[i[11]]←aux
[21]  TOMA←ALFA[i[1]],'/',ALFA[i[2]],' ',ALFA[i[3]],'/',ALFA[i[4]],' ',ALFA[i[5]],'/',ALFA
      [i[6]],' ',ALFA[i[7]],'/',ALFA[i[8]],' ',ALFA[i[9]],'/',ALFA[i[10]],' ',ALFA[i[11]],'
      /',ALFA[i[12]]
-------------------------------------------------------------
[ 0]  r←instanciaexemplo;kk;i
[ 1]  INTERNO←3 26⍴0
[ 2]  INTERNO[1;]←1 8 3 25 26 6 7 2 9 10 11 20 13 19 15 23 17 18 14 12 21 22 16 24 4 5
[ 3]  INTERNO[2;]←26↑3↑MIST←kk←3 5 1 8 9 17
```

```
[ 4]  INTERNO[3;]←26↑3↓kk
[ 5]  i←4 25 26 5 2 8 12 20 19 14 16 23
[ 6]  TOMA←ALFA[i[1]],'/',ALFA[i[2]],' ',ALFA[i[3]],'/',ALFA[i[4]],' ',ALFA[i[5]],'/',ALFA
      [i[6]],' ',ALFA[i[7]],'/',ALFA[i[8]],' ',ALFA[i[9]],'/',ALFA[i[10]],' ',ALFA[i[11]],'
      /',ALFA[i[12]]
[ 7]  EXTERNO←60⍴' '
[ 8]  EXTERNO[⍳25]←'T=',TOMA
[ 9]  EXTERNO[27+⍳10]←'Mistur=',3↑MIST
[10]  EXTERNO[38+⍳22]←22↑'Inicializados com ',3↓MIST
[11]  cifra'zumbi'
[12]  RESP
-------------------------------------------------------------
[0]  r←lower x
[1]  r←alfa[ALFA⍳x]
-------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10]  →(0=' '∈j↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80⍴80↑j↑candi
[15]  candi←j↓candi
[16]  →((⍴candi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80⍴80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
-------------------------------------------------------------
[0]  r←upper x
[1]  r←ALFA[alfa⍳x]
-------------------------------------------------------------
[0]  r←ve x
[1]  r←2 78⍴' '
[2]  r[1;]←3 0⍕⍳26
[3]  r[2;]←'-'
[4]  r←r,[1]3 0⍕x
-------------------------------------------------------------
[ 0]  opesq vivo715a n;CORRECAO;EVENTO;INSTANCIA;aaa;acuja;dhx;esse;f;indidesafio;lixo1;li
      xonol;nomes;ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL715   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA715←ajusta80 FOLHALA715
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA715)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 36⍴' '
```

```
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  f←FOLHALA715
[16]  esse←13 80⍴' '
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←4.19
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[□IO+1]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[□IO]nomes,[□IO](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:
[28]  esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+□LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[32]  esse[12;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[13;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] inica:
[35]  msg←,DADOS[?1↑⍴DADOS;]
[36]  gerainstancia
[37]  esse[8;]←80↑,EXTERNO
[38]  esse[9;]←80↑cifra msg
[39]  esse[10;]←80↑cifra,'bola'
[40]  INSTANCIA←marva ⍝ pode ser lusi
[41]  indidesafio←?1↑⍴INSTANCIA
[42]  esse[11;]←80↑cifra INSTANCIA[indidesafio;]
[43]  resu←resu,[1]1 36⍴36↑(4 0⍕resp),'  ',,msg,'-',,INSTANCIA[indidesafio;]
[44]  acuja←(f[;2]='#')/⍳1↑⍴f
[45]  f[acuja;⍳80]←esse[⌽,f[acuja;3 4],' ';]
[46]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[47]  □←(⍕xk←xk+1),'-'
[48]  →testa
[49] fim:upag←(1 0+⍴f)⍴' '
[50]  →(1=≡n)/elafa
[51]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[52]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[53]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑resu
[54]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[55]  →terminando
[56] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[57]  lixonol←aaa ⍙FM('c:⍀apl2⍀',((~⍬∧⍀⍬EVENTO=' ')/EVENTO),'.gpa')
[58]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[59] terminando:
[60]  relat[1↑⍴relat;;]←upag
[61]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[62] ⍝ lixonol←lixonol,[1]INSTRUC715,[1]1 80⍴80↑'⍀end{document}'
[63]  lixonol←lixonol,[1]1 80⍴80↑'⍀end{document}'
[64]  lixonol←lixonol ⍙FM'c:⍀apl2⍀',((~⍬∧⍀⍬EVENTO=' ')/EVENTO),'.tex'
[65]  lixonol←□EX 2 10⍴'quantos   matriz    '
[66]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo716

```
[ 0]  r←achaprim lim;i
[ 1]  r←⍳0
[ 2]  i←1
[ 3] volt:→(i>lim)/fim
[ 4]  →(0=fatora i)/eprim
```

```
[ 5] soma:i←i+1
[ 6]  →volt
[ 7] eprim:r←r,i
[ 8]  i
[ 9]  →soma
[10] fim:
------------------------------------------------------------
[0]  r←achepr a;x
[1]  x←⌊a÷2+?6
[2] testa:→(1=x mdc a)/fim
[3]  x←x-1
[4]  →testa
[5] fim:r←x
------------------------------------------------------------
[0]  r←c achesec f;d
[1]  d←1
[2] testa:→(1=f|c×d)/fim
[3]  →(d=d←d+1)/testa
[4] fim:r←d
------------------------------------------------------------
[0]  r←c achesec2 f;d
[1]  d←1
[2] testa:→(1=f|c×d)/acho
[3]  →(d>f)/fim
[4]  →(d=d←d+1)/testa
[5] acho:'d=',⍕d
[6]  →(d=d←d+1)/testa
[7] fim:r←d
------------------------------------------------------------
[0]  r←chave codifica numeros
[1]  r←0⍴0
[2] testa:→(0=⍴numeros)/fim
[3]  r←r,xyn(1↑numeros),chave
[4]  numeros←1↓numeros
[5]  →testa
[6] fim:
------------------------------------------------------------
[0]  r←fatora n;i;limite
[1]  i←2
[2]  r←0
[3]  limite←⌈n*÷2
[4] vol:→(i>limite)/fim
[5]  →(0=i|n)/achou
[6]  →(i=i←i+1)/vol
[7] achou:r←i
[8] fim:
------------------------------------------------------------
[0]  r←a mdc b;g
[1]  g←a
[2] testa:→(a≤0)/fim
[3]  g←a
[4]  a←a|b
[5]  b←g
[6]  →testa
[7] fim:r←g
------------------------------------------------------------
[ 0]  r←pollard n
[ 1]  i←1
[ 2]  limite←⌈n*÷4
[ 3]  x←¯1+?n
[ 4]  y←x
[ 5]  k←2
[ 6] comeca:→(limite≤0)/fim
```

```
[ 7]  i←i+1
[ 8]  x←n|¯1+x*2
[ 9]  d←(y-x)mdc n
[10]  →((d≠1)∧(d≠n))/achou
[11]  →
-------------------------------------------------------------
[0]  r←tam frase
[1]  r←ρ(~⍵∧⍀⍵frase=' ')/frase
-------------------------------------------------------------
[ 0]  opesq vivo716a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;msg;pri;c;nn;p;q;d;fr;fr1;inds;flm;ddd;fi
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL716   '
[ 6]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕⍳n
[ 9]  FOLHALA716←ajusta80 FOLHALA716
[10]  relat←((2+1↑ρylu),1 0+ρFOLHALA716)ρ' '
[11]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[12]  xk←1 ⋄ resu←0 60ρ0
[13] testa:→(xk>1↑ρylu)/fim
[14]  esse←19 80ρ' '
[15]  f←FOLHALA716
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.2
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[18;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[19;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  msg←,FRASES[?1↑ρFRASES;]
[27]  esse[8;]←80↑5 0⍕LI
[28]  esse[9;]←80↑5 0⍕LS
[29] vorta:pri←((PRIMOS>LI)∧(PRIMOS<LS))/PRIMOS
[30]  inds←2?ρpri
[31]  p←pri[inds[1]] ⋄ q←pri[inds[2]]
[32]  nn←p×q ⋄ fi←(q-1)×(p-1)
[33]  c←achepr fi
[34]  d←c achesec fi
[35]  →(d≠c)/okl ⍝ deu chaves iguais
[36]  ⍞←'*'
[37]  →vorta
[38] okl:fr←(c,nn)codifica ALFA⍳msg
[39]  →((xyn fr[1],c,nn)≠(xyn fr[1],d,nn))/ok33  ⍝ deu chaves simetricas
[40]  ⍞←'⍟'
[41]  →vorta
[42] ok33:
[43]  esse[10;]←80↑7 0⍕c
[44]  esse[11;]←80↑7 0⍕nn
[45]  fr←((ρfr),1)ρfr
[46]  ddd←,(5 0⍕fr),','
[47]  ddd[ρddd]←' '
[48]  fr1←6 60ρ360↑ddd
[49]  esse[11+⍳6;]←6 80↑fr1
[50]  resu←resu,[1]1 60ρ(3 0⍕resp),'  ',(4 0⍕d),' ',51↑msg
[51]  acuja←(f[;2]='#')/⍳1↑ρf
```

```
[52]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[53]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[54]  ⍞←(⍕xk←xk+1),'-'
[55]  →testa
[56] fim:upag←(1 0+⍴f)⍴' '
[57]  →(1=≡n)/elafa
[58]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[59]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[60]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑resu  ⍝ estaria certo este 80↑ ????
[61]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[62]  →terminando
[63] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 3↓resu)
[64]  aaa[1;35 36]←2 0⍕CORRECAO
[65]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[66]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[67] terminando:
[68]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[69]  relat[1↑⍴relat;;]←upag
[70]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[71] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[72]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[73]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[74]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[ 0]  r←xyn oper;x;y;n;tmp
[ 1] ⍝ xyn calcula (x*y) mod n, atraves do alg. addition chaining sch96p.244
[ 2]  x←oper[1] ⋄ y←oper[2] ⋄ n←oper[3]
[ 3]  →(y≠1)/difa
[ 4]  r←n|x
[ 5]  →fim
[ 6] difa:→(0=2|y)/par
[ 7] impar:tmp←xyn(x,((y-1)÷2),n)
[ 8]  tmp←n|(tmp×tmp)
[ 9]  tmp←n|(tmp×x)
[10]  r←tmp
[11]  →fim
[12] par:tmp←xyn(x,(y÷2),n)
[13]  r←n|(tmp×tmp)
[14] fim:
-------------------------------------------------------------
```

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```
[0]  r←acertae u
[1]  u←6 6⍴u
[2]  r←6 12⍴'&'
[3]  r[;2]←u[;1]
[4]  r[;4]←u[;2]
[5]  r[;6]←u[;3]
[6]  r[;8]←u[;4]
[7]  r[;10]←u[;5]
[8]  r[;12]←u[;6]
-------------------------------------------------------------
[0]  r←t achalc f;x;y;z
[1]  x←(,t)⍳f
[2]  y←1+6|x-1
[3]  z←⌈x÷6
[4]  r←z,y
-------------------------------------------------------------
[ 0]  r←ch codif1 fra;tf;tab;pasw;i;tp;vai;ind;aa;tr;tv;NU
[ 1]  NU←'0123456789012345678901234567890123456789'
[ 2]  fra←(fra≠' ')/fra ⋄ tf←''
```

```
[ 3]  tab←6 6⍴ch[1;]
[ 4]  tp←⍪pasw←(aa≠' ')/aa←tiraduplo,ch[2;]
[ 5]  i←1 ⋄ fra←(tp×⌈((⍴fra)÷tp))↑fra,NU[(⍴NU)?⍴NU]
[ 6] t1:→(i>⍴fra)/aca
[ 7]  vai←tab achalc fra[i]
[ 8]  tf←tf,'ADFGVX'[vai[1]],'ADFGVX'[vai[2]]
[ 9]  →(i=i←i+1)/t1
[10] aca:
[11]  tv←(((⍴tf)÷tp),tp)⍴tf
[12]  ind←⍋AV⍋pasw
[13]  tr←tv[;ind]
[14]  tr←,tr
[15]  r←tr
-------------------------------------------------------------
[ 0]  r←senha cripvigi msg;cont;i;rr;alfa
[ 1]  alfa←'ABCDEFGHIJKLMNOPQRSTUVWXYZ'
[ 2]  r←0⍴0
[ 3]  rr←montaviginere
[ 4]  senha←upper senha
[ 5]  cont←(⍴msg)⍴senha
[ 6]  i←1
[ 7] t1:→(i>⍴msg)/fim
[ 8]  r←r,rr[(,rr[;1])⍳cont[i];alfa⍳msg[i]]
[ 9]  i←i+1
[10]  →t1
[11] fim:
-------------------------------------------------------------
[ 0]  r←sen decodif1 fra;tab;pasw;aa;ind;m1;m2;i
[ 1]  tab←6 6⍴sen[1;] ⋄ r←''
[ 2]  pasw←tiraduplo(aa≠' ')/aa←,sen[2;]
[ 3]  ind←⍋AV⍋pasw
[ 4]  m1←((⌈(⍴fra)÷⍴ppasw),⍴ppasw)⍴fra
[ 5]  i←1 ⋄ m2←(⍴m1)⍴' '
[ 6] v1:→(i>1↓⍴m1)/fi1
[ 7]  m2[;i]←m1[;ind⍳i]
[ 8]  →(i=i←i+1)/v1
[ 9] fi1:i←0 ⋄ fra←,m2
[10] v2:→(i≥⍴fra)/fi2
[11]  r←r,tab['ADFGVX'⍳fra[i+1];'ADFGVX'⍳fra[i+2]]
[12]  →(i=i←i+2)/v2
[13] fi2:
-------------------------------------------------------------
[ 0]  r←senha decriptvigi msg;alfa;rr;cont;i
[ 1]  alfa←'ABCDEFGHIJKLMNOPQRSTUVWXYZ'
[ 2]  r←0⍴0
[ 3]  rr←montaviginere
[ 4]  senha←upper senha
[ 5]  cont←(⍴msg)⍴senha
[ 6]  i←1
[ 7] t1:→(i>⍴msg)/fim
[ 8]  r←r,alfa[rr[((((,rr[;1])⍳cont[i]));]⍳msg[i]]
[ 9]  i←i+1
[10]  →t1
[11] fim:
-------------------------------------------------------------
[0]  r←expand21 x
[1]  r←(51⍴1 1 0)⍀[2]x
-------------------------------------------------------------
[0]  r←gerach1;pasw;cas;aa
[1]  r←2 36⍴' '
[2]  pasw←SENHAS[?1↑⍴SENHAS;]
[3]  cas←'ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789'
[4]  r[1;]←cas[36?36]
```

```
[5]  r[2;]←1 36ρ36↑,pasw
[6]  ULTTAB←6 6ρr[1;]
[7]  ULTPAS←(aa≠' ')/aa←r[2;]
------------------------------------------------------------
[0]  r←montaviginere;alfa;i
[1]  r←26 26ρ' '
[2]  i←1
[3] t1:→(i>26)/fim
[4]  r[i;]←i⊖alfa←'ABCDEFGHIJKLMNOPQRSTUVWXYZ'
[5]  i←i+1
[6]  →t1
[7] fim:
------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80ρ' '
[ 6] te:→(i≥⎕IO+1↑ρzz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>ρcandi)/eca
[ 9]  j←qt
[10]  →(0=' 'ϵj↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80ρ80↑j↑candi
[15]  candi←j↓candi
[16]  →((ρcandi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80ρ80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
------------------------------------------------------------
[0]  r←tiraduplo z;i;⎕IO
[1]  i←1 ⋄ r←'' ⋄ ⎕IO←1
[2] volta:→(i>ρz)/fim
[3]  →(z[i]ϵr)/tem
[4]  r←r,z[i]
[5] tem:→(i=i←i+1)/volta
[6] fim:
------------------------------------------------------------
[0]  r←upper x;d;ii
[1]  d←⎕AVι x
[2]  ii←((d>97)∧(d<122))/ιρx
[3]  r←x
[4]  r[ii]←⎕AV[¯32+⎕AVιr[ii]]
------------------------------------------------------------
[0]  r←vep x
[1]  r←tiraduplo x
------------------------------------------------------------
[0]  r←veu a
[1]  r←8 8ρ' '
[2]   ⋄ r[2;]←' -------' ⋄ r[;2]←' |||||||'
[3]  r[;1]←'  ADFGVX' ⋄ r[1;]←'  ADFGVX'
[4]  r[2+ι6;2+ι6]←a
------------------------------------------------------------
[ 0]  opesq vivo717a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;fi;g4;g5
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
```

```
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL717   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA717←ajusta80 FOLHALA717
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA717)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 60⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←19 80⍴' '
[15]  f←FOLHALA717
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.05
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[18;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[19;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  resp←(3 0⍕resp),57↑g5←fi decodif1 g4←(fi←gerach1)codif1,FRASES[?1↑⍴FRASES;]
[27]  →(102≥⍴g4)/okka
[28]  ⎕←'*'
[29]  →inica
[30] okka:
[31] ⍝ 't=',⍕⍴g4
[32]  esse[8 9 10;]←3 80↑3 51↑expand21 3 34⍴102↑g4
[33]  esse[11;]←80↑fi[2;]
[34]  esse[11+⍳6;]←6 80↑6 60↑acertae fi[1;]
[35]  resu←resu,[1]1 60⍴60↑resp
[36]  acuja←(f[;2]='#')/⍳1↑⍴f
[37]  f[acuja;⍳80]←esse[⍬,f[acuja;3 4],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[39]  ⎕←(⍕xk←xk+1),'-'
[40]  →testa
[41] fim:upag←(1 0+⍴f)⍴' '
[42]  →(1=≡n)/elafa
[43]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[44]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[45]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑resu
[46]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[47]  →terminando
[48] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 3↓resu)
[49]  aaa[1;35 36]←2 0⍕CORRECAO
[50]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[51]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[52] terminando:
[53]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[54]  relat[1↑⍴relat;;]←upag
[55]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[56] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[57]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo718

```
[0]  r←ygpx descripta m;i;csi
[1]  →(2≠ρρm)/erro
[2]  i←1 ⋄ r←(1↓ρm)ρ0
[3] t1:→(i>ρr)/fim
[4]  csi←xyn m[1;i],(ygpx[3]-1+ygpx[4]),ygpx[3]
[5]  r[i]←ygpx[3]|m[2;i]×csi
[6]  →(i=i←i+1)/t1
[7] fim:→0
[8] erro:'erro1'
------------------------------------------------------------
[ 0]  r←ygp encripta m;i;k
[ 1]  →(1≠ρρm)/erro
[ 2]  i←1 ⋄ r←(3,ρm)ρ0
[ 3] t1:→(i>ρm)/fim
[ 4]  k←gerak ygp[3]
[ 5]  r[1;i]←xyn ygp[2],k,ygp[3]
[ 6]  r[2;i]←ygp[3]|m[i]×xyn ygp[1],k,ygp[3]
[ 7]  r[3;i]←k
[ 8]  →(i=i←i+1)/t1
[ 9] fim:→0
[10] erro:'erro2'
------------------------------------------------------------
[0]  r←eprimo x;divs
[1]  divs←2 ⋄ r←1
[2] t1:→((x=2)∨(r=0)∨(divs>⌈x*0.5))/fim
[3]  r←0≠divs|x
[4]  divs←divs+1
[5]  →t1
[6] fim:
------------------------------------------------------------
[0]  r←geracaso lim;aa;bb
[1]  r←(3,1↓ρfrases)ρ0
[2]  r[1;⍳4]←aa←gerachave lim
[3]  r[1;5]←bb←?1↑ρfrases
[4]  r[2 3;]←¯1 0↓aa encripta,let2num frases[bb;]
------------------------------------------------------------
[0]  r←gerachave lim;p;g;x;y
[1] ini:p←(⌈0.9×lim)+?⌊0.1×lim
[2]  p←p+0=2|p
[3]  →(~eprimo p)/ini
[4]  g←(⌊0.5×lim)+?p-⌊0.5×lim
[5]  x←(⌊0.5×lim)+?p-⌊0.5×lim
[6]  y←xyn g,x,p
[7]  r←y,g,p,x
------------------------------------------------------------
[0]  r←gerak p
[1] volta:r←(⌊0.5×p)+?p-⌊0.5×p
[2]  →(1=mdc r,p-1)/fim
[3] ⍝   ⍞  ←'*'
[4]  →volta
[5] fim:
------------------------------------------------------------
[0]  r←let2num frase
[1]  r←' ABCDEFGHIJKLMNOPQRSTUVWXYZ'⍳frase
[2]  →(27<⌈/,r)/erro
[3]  →0
[4] erro:'erro'
------------------------------------------------------------
[0]  r←mdc xy
[1]  →(xy[2]=0)/zero
[2]  r←mdc xy[2],xy[2]|xy[1]
```

```
[3]  →0
[4] zero:r←xy[1]
[5] ⍝ referencia Ata99, pag 39-9.
------------------------------------------------------------
[0]  r←num2let n
[1]  r←' ABCDEFGHIJKLMNOPQRSTUVWXYZ'[n]
------------------------------------------------------------
[0]  r←poeamper xx
[1]  r←5 0⍕xx
[2]  r[1+5×⍳7]←'&'
------------------------------------------------------------
[0]  r←tam frase
[1]  r←⍴(~⍬∧⍀⍬frase=' ')/frase
------------------------------------------------------------
[0]  testa
[1]  xx←geracaso 100000
[2]  frases[xx[1;5];]
[3]  num2let xx[1;⍳4]descripta xx[2 3;]
------------------------------------------------------------
[ 0]  opesq vivo718a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL718   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA718←ajusta80 FOLHALA718
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA718)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:⍀apl2⍀VIVOBLO1'
[12]  xk←1 ⋄ resu←0 20⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←15 80⍴' '
[15]  f←FOLHALA718
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.04
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[14;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[15;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  zz←geracaso 10000
[27]  esse[8;]←80↑(6 0⍕zz[1;1]),',',(6 0⍕zz[1;2]),',',(6 0⍕zz[1;3])
[28]  esse[9;]←80↑6 0⍕zz[1;4]
[29]  esse[10;]←80↑poeamper zz[2;⍳8]
[30]  esse[11;]←80↑poeamper zz[3;⍳8]
[31]  esse[12;]←80↑poeamper zz[2;8+⍳8]
[32]  esse[13;]←80↑poeamper zz[3;8+⍳8]
[33] continua:
[34]  resu←resu,[1]1 20⍴(3 0⍕resp),'-',frases[zz[1;5];]
[35]  acuja←(f[;2]='#')/⍳1↑⍴f
[36]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[37]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[38]  ⍞←(⍕xk←xk+1),'-'
[39]  →testa
[40] fim:upag←(1 0+⍴f)⍴' '
[41]  →(1=≡n)/elafa
```

```
[42]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[43]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[44]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑resu
[45]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[46]  →terminando
[47] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 3↓resu)
[48]  aaa[1;35 36]←2 0⍕CORRECAO
[49]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[50]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[51] terminando:
[52]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[53]  relat[1↑⍴relat;;]←upag
[54]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[55] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[56]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[57]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[58]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[ 0]  r←xyn oper;x;y;n;tmp
[ 1] ⍝ xyn calcula (x*y) mod n, atraves do alg. addition chaining sch96p.244
[ 2]  x←oper[1] ⋄ y←oper[2] ⋄ n←oper[3]
[ 3]  →(y≠1)/difa
[ 4]  r←n|x
[ 5]  →fim
[ 6] difa:→(0=2|y)/par
[ 7] impar:tmp←xyn(x,((y-1)÷2),n)
[ 8]  tmp←n|(tmp×tmp)
[ 9]  tmp←n|(tmp×x)
[10]  r←tmp
[11]  →fim
[12] par:tmp←xyn(x,(y÷2),n)
[13]  r←n|(tmp×tmp)
[14] fim:
-------------------------------------------------------------
```

vivo719

```
[ 0]  AVISO
[ 1]  'Este ws le imagens BM true color (24 bits/pixel) no diretorio f:\p\apl2\imagens'
[ 2]  '  -- existem 16 imagens la, de IM11 a IM26.BMP -- e codifica uma mensagem obtida'
[ 3]  ' aleatoriamente da variavel MENSAGENS neste WS nos bits menos significativos da'
[ 4]  ' imagem. Note que os dois primeiros bytes neste arranjo codificam o tamanho da'
[ 5]  ' mensagem que vem a seguir. Depois vem a dita cuja'
[ 6]  ' As imagens esteganografadas sao gravadas com o nome de XMmm no diretorio'
[ 7]  ' c:\apl2\levar\ e NAO ha equivalencia entre o numero da imagem IM e da XM, uma'
[ 8]  ' vez que ha apenas 16 imagens originais, mas ha muitas mensagens possiveis.'
[ 9]  ' Ou seja, dois alunos podem receber a mesma imagem original, mas com duas mensagens
      '
[10]  ' diferentes codificadas'
[11]  ' Um detalhe interessante e que a decodificacao pode ser facilmente feita examinando
      '
[12]  ' a imagem com o hexedit, a partir do endereco hex(36) ou dec(54) e olhando se o'
[13]  ' byte eh PAR (=0) ou IMPAR (=1)'
[14]  ''
[15]  ' o limite de geracao de exercicios é 99'
-------------------------------------------------------------
[ 0]  Δ_DC←Δ_PID SVOPAIR Δ_SV;Δ_CV
[ 1] ⍝-----------------------------------------------------------------⍝
[ 2] ⍝
[ 3] ⍝  Offer shared variables named in SV to processor number PID.
[ 4] ⍝  To be used for auxiliary processors which use a two-variable
[ 5] ⍝  interface, where the control variable begins with "C" or "CTL"
```

```
[ 6] ⍝  and the data variable begins with "D" or "DAT".  (Cxxx/Dxxx or
[ 7] ⍝  CTLxxx/DATxxx)
[ 8] ⍝
[ 9] ⍝  Returns final degree of coupling (DC) for each shared variable
[10] ⍝  Expected degree of coupling is 2 for the control variable and 1
[11] ⍝  or 2 for the data variable.
[12] ⍝
[13] ⍝  Waits up to 15 seconds for the control variable to be accepted
[14] ⍝  by the processor.  Sets standard access control to inhibit my
[15] ⍝  double references or specifications of the control variable.
[16] ⍝  Does not set access control for the data variable.
[17] ⍝
[18] ⍝  Monadic call simply returns the current degree of coupling.
[19] ⍝
[20] ⍝⍝⍝
```

```
[ 4]  C210←coma
[ 5] ⍝ coma
[ 6]  mer←C210
[ 7]  C210←2,0,6
[ 8]  mer←C210
[ 9]  r←D210
[10] ⍝ tam←⎕NSIZE ¯5
[11]  T←(3 c r[6])+(2 c r[5])+(1 c r[4])+0 c r[3]
[12]  C210←2,6,T-6
[13]  mer←C210
[14]  r←r,D210
[15] ⍝ r←⎕NREAD ¯5,82,tam,0
[16]  I←(3 c r[14])+(2 c r[13])+(1 c r[12])+0 c r[11]
[17]  C←(3 c r[22])+(2 c r[21])+(1 c r[20])+0 c r[19]
[18]  A←4×⌈(C×3)÷4
[19]  L←(3 c r[26])+(2 c r[25])+(1 c r[24])+0 c r[23]
[20]  P←L×C
[21]  M←(3 c r[38])+(2 c r[37])+(1 c r[36])+0 c r[35]
[22]  C210←⍳0
[23] ⍝ ⎕NUNTIE ¯5
[24]  →(simnao=0)/0
[25]  'Tamanho da variavel criada = ',⍕⍴r
[26]  'Tamanho do arquivo       T = ',⍕T
[27]  'Inicio do bloco de dados I = ',⍕I
[28]  'Quantidade de linhas     L = ',⍕L
[29]  'Quantidade de colunas    C = ',⍕C
[30]  'Colunas   × 3              = ',⍕(C×3)
[31]  'Quantidade de bytes (aj) A = ',⍕A
[32]  'Tam da imagem justa      M = ',⍕M
[33]  'Quantidade de PIXELS     P = ',⍕P
------------------------------------------------------------
[ 0]  r←m leegrava n;lixo;ima;aa;msg;tripa;i;byte;nomuzz;comazz;mer
[ 1] ⍝ le a imagem IMnn em f:\p\apl2\imagens e grava XMnn no diretorio c:\apl2\levar
[ 2] ⍝  fazer fora daqui:    lixo←210 SVOPAIR 'C210' 'D210'
[ 3]  ima←0 lebmp n
[ 4]  aa←?1↑⍴MENSAGENS
[ 5]  msg←trim,MENSAGENS[aa;]
[ 6]  tripa←,(16⍴2)⊤⍴msg
[ 7]  i←1
[ 8] t1:→(i>⍴msg)/aca
[ 9]  tripa←tripa,,(8⍴2)⊤⎕AF msg[i]
[10]  i←i+1
[11]  →t1
[12] aca:i←1
[13] t2:→(i>⍴tripa)/oba
[14]  byte←(8⍴2)⊤⎕AF ima[i+54]
[15]  byte[8]←tripa[i]
[16]  ima[i+54]←⎕AF(8⍴2)⊥byte
[17]  i←i+1
[18]  →t2
[19] oba:nomuzz←'c:\apl2\levar\XM',('00'⍕m),'.BMP'
[20]  comazz←'IW,"',nomuzz,'",C'
[21]  C210←comazz
[22]  mer←C210
[23]  D210←ima
[24]  C210←1,0,⍴,ima
[25]  mer←C210
[26]  C210←⍳0
[27]  mer←C210
[28] ⍝  fazer fora daqui ⎕SVR 4 2 ⍴'C210D210'
[29]  r←msg
------------------------------------------------------------
[ 0]  r←m leegravaconst n;lixo;ima;aa;msg;tripa;i;byte;nomuzz;comazz;mer
```

```
[ 1] ⍝ le a imagem IMnn em f:\p\apl2\imagens e grava XMnn no diretorio c:\apl2\levar
[ 2] ⍝  fazer fora daqui:    lixo←210 SVOPAIR 'C210' 'D210'
[ 3]  ima←0 lebmp n
[ 4]  msg←,HINO
[ 5]  tripa←,(16⍴2)⊤⍴msg
[ 6]  i←1
[ 7] t1:→(i>⍴msg)/aca
[ 8]  tripa←tripa,,(8⍴2)⊤⎕AF msg[i]
[ 9]  i←i+1
[10]  →t1
[11] aca:i←1
[12] t2:→(i>⍴tripa)/oba
[13]  byte←(8⍴2)⊤⎕AF ima[i+54]
[14]  byte[8]←tripa[i]
[15]  ima[i+54]←⎕AF(8⍴2)⊥byte
[16]  i←i+1
[17]  →t2
[18] oba:nomuzz←'c:\apl2\levar\XM',('00'⍕m),'.BMP'
[19]  comazz←'IW,"',nomuzz,'",C'
[20]  C210←comazz
[21]  mer←C210
[22]  D210←ima
[23]  C210←1,0,⍴,ima
[24]  mer←C210
[25]  C210←⍳0
[26]  mer←C210
[27] ⍝  fazer fora daqui ⎕SVR 4 2 ⍴'C210D210'
[28]  r←msg
------------------------------------------------------------
[ 0]  limpa;k
[ 1]  k←⎕EX'A'
[ 2]  k←⎕EX'L'
[ 3]  k←⎕EX'C'
[ 4]  k←⎕EX'P'
[ 5]  k←⎕EX'M'
[ 6]  k←⎕EX'T'
[ 7]  k←⎕EX'I'
[ 8]  k←⎕EX'IMAGEM'
[ 9]  k←⎕EX'PONTOS'
------------------------------------------------------------
[ 0]  opesq vivo719a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;ii;jj;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  lixonol←210 SVOPAIR'C210' 'D210'
[ 5]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 6]  CORRECAO←0 ⋄ EVENTO←'PL719'
[ 7]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ cuca←n[5]
[ 9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[10]  ylu←n grupo ylu
[11]  FOLHALA719←ajusta80 FOLHALA719
[12]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA719)⍴' '
[13]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[14]  xk←1 ⋄ resu←0 44⍴0
[15]  ii←12
[16]  jj←1
[17] testa:→(xk>1↑⍴ylu)/fim
[18]  esse←10 80⍴' '
[19]  f←FOLHALA719
[20]  esse[1;]←80↑dhx[1;]
```

```
[21]  esse[2;]←80↑dhx[2;]
[22]  esse[3;]←80↑4 2⍕VERSAOa←3.09
[23] ⍝ usltima alteracao=inclusao do cuca. Veja la...
[24]  esse[4;]←80↑ylu[xk;⍳6]
[25]  →(36=1↓⍴ylu)/zebra
[26]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[27]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[28]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[29]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[30]  →maiszebra
[31] ⍝⍝⍝
```

```
[ 1]  'Esta funcao geraria 2 paginas por aluno. Para evitar isto,'
[ 2]  'eu tirei a explicacao da folha e deixei so o "para voce fazer"'
[ 3]  ''
[ 4]  'entao:'
[ 5]  'para emitir as folhas, fazer normalmente vivo720a qtd'
[ 6]  'e para emitir a explicacao, fazer "geratexto720" e latex texto720'
[ 7]  ''
[ 8]  'a variavel BAL contem o balanco da ultima emissao'
[ 9]  'a variavel EXEMPLO, contem o geracaso do exemplo das folhas'
[10]  ''
[11]  ' Em outras palavras: se voce fizer resolve ⊃EXEMPLO[2] ele vai (re)calcular'
[12]  ' o exemplo (que esta na folha) e apresentar os 2 valores que estao na folha'
[13]  ' e que sao 1899.72 e (879.67) =  note os () nos valores negativos'
[14]  ' esta ultima execucao vai colocar na global BAL o balancete que aparece na'
[15]  '  folha. Pode conferir...'
-------------------------------------------------------------
[ 0]  r←datasp;i
[ 1]  r←30 6⍴' '
[ 2]  i←1
[ 3] t1:→(i>30)/fim
[ 4]  r[i;1 2]←'00'⍕(8 9 10)[?3]
[ 5]  r[i;3 4]←'00'⍕(7 8 9 10 11 12)[?6]
[ 6]  r[i;5 6]←'00'⍕?28
[ 7]  i←i+1
[ 8]  →t1
[ 9] fim:
-------------------------------------------------------------
[0]  r←datasr;i
[1]  r←30 4⍴' '
[2]  i←1
[3] t1:→(i>30)/fim
[4]  r[i;1 2]←'00'⍕(8 9 10)[?3]
[5]  r[i;3 4]←'00'⍕(7 8 9 10 11 12)[?6]
[6]  i←i+1
[7]  →t1
[8] fim:
-------------------------------------------------------------
[0]  r←descricao
[1]  r←30 3↑30 1⍴'ABCDEFGHIJKLMNOPQRSTUVWXYZABCDEFGHIJKLMNOPQRSTUVWXYZ'[30?50]
-------------------------------------------------------------
[ 0]  r←geracaso;zz;yy;xx;kk;gg;lanc;ccc
[ 1]  r←3⍴0
[ 2]  zz←((~(⍳1↑⍴PLACONGER)∈(,LINSDET[;1]))/⍳1↑⍴PLACONGER),xx←(,LINSDET[;1])[kk←15?⍴,LINSD
      ET[;1]]
[ 3]  yy←zz[⍋zz]
[ 4]  r[1]←⊂PLACONGER[yy;]
[ 5]  gg←xx,xx,xx,xx,xx,xx
[ 6]  gg←gg[30?90]
[ 7]  lanc←30 29⍴' '
[ 8]  lanc[;1 2]←30 2⍴'00'⍕⍳30
[ 9]  lanc[;4 5]←30 2⍴'00'⍕gg
[10]  lanc[;7 8 9]←descricao
[11]  ccc←(0.01×100×30?100),100+(30?10000)÷100
[12]  lanc[;10+⍳7]←30 7⍴7 2⍕ccc[30?60]
[13]  lanc[;18+⍳4]←datasr
[14]  lanc[;23+⍳6]←datasp
[15]  r[2]←⊂lanc
[16]  r[3]←5000+?10000
-------------------------------------------------------------
[0]  geratexto720;zz
[1]  TEXTO720←ajusta80 TEXTO720
[2]  zz←ΔFM'c:\apl2\VIVOBLOI'
[3]  zz←ajusta80 zz
```

```
[4]  zz←zz,[1]TEXTO720
[5]  zz←zz,[1]1 80ρ80↑'\end{document}'
[6]  zz ΔFM'c:\apl2\TEXTO720'
[7]  'Arquivo criado com o nome de c:\apl2\TEXTO720'
-------------------------------------------------------------
[ 0]  r←resolve la;i;xx;num;cmi;des;val;ref;pag;j;k;bal;rr
[ 1]  xx←38 3ρ0
[ 2]  i←1
[ 3] t1:→(i>1↑ρla)/fim
[ 4]  num←⍎la[i;1 2]
[ 5]  cmi←⍎la[i;4 5]
[ 6]  des←la[i;7 8 9]
[ 7]  val←⍎la[i;10+⍳7]
[ 8]  ref←⍎la[i;18+⍳4]
[ 9]  pag←⍎la[i;23+⍳6]
[10]  j←(,LINSDET[;1])⍳cmi
[11]  k←1
[12] t2:→(LINSDET[j;k]=0)/acabou
[13]  →(LINSDET[j;k]<17)/ativo
[14] passivo:
[15]  xx[LINSDET[j;k];1]←LINSDET[j;k]
[16]  xx[LINSDET[j;k];3]←xx[LINSDET[j;k];3]+val
[17]  →junta
[18] ativo:
[19]  xx[LINSDET[j;k];1]←LINSDET[j;k]
[20]  xx[LINSDET[j;k];2]←xx[LINSDET[j;k];2]+val
[21] junta:
[22]  k←k+1
[23]  →t2
[24] acabou:i←i+1
[25]  →t1
[26] fim:xx←(0≠+/[2]xx)/[1]xx
[27]  BAL←bal←PLACONGER[xx[;1];],10 2⍕xx[;2 3]
[28]  i←1
[29]  rr←3ρ0
[30] t3:→(i>1↑ρbal)/finzao
[31]  →(1=⍎bal[i;1 2])/poe1
[32]  →(17=⍎bal[i;1 2])/poe17
[33]  →(18=⍎bal[i;1 2])/poe18
[34] soma5:→(i=i←i+1)/t3
[35] poe1:rr[1]←⍎bal[i;49+⍳10]
[36]  →soma5
[37] poe17:rr[2]←⍎bal[i;59+⍳10]
[38]  →soma5
[39] poe18:rr[3]←⍎bal[i;59+⍳10]
[40]  →soma5
[41] finzao:r←rr[3],rr[1]-rr[2]
-------------------------------------------------------------
[0]  testa
[1]  z←geracaso
[2]  ρ⊃z[2]
[3]  ρ⊃z[1]
[4]  '------'
-------------------------------------------------------------
[ 0]  opesq vivo720a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;nomes;num
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←8 ◇ EVENTO←'PL720   '
[ 6]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
```

```
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA720←ajusta80 FOLHALA720
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA720)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←67 80⍴' '
[16]  f←FOLHALA720
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[22]  →(36=1↓⍴ylu)/zebra
[23]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[24]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[25]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[26]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[27]  →maiszebra
[28] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[ 1]  'Este WS gera exercicios de folha de pagamento'
[ 2]  ' para obter um gabarito, atualize a variavel gabarito'
[ 3]  ' e depois, faca x←calcfolha gabarito'
[ 4]  ' e depois x ΔFM c:\apl2\lixogab'
[ 5]  ' e depois type lixogab > lpt1'
[ 6]  ''
[ 7]  ''
[ 8]  'O exemplo dentro da folha está desatualizado, pois as tabelas '
[ 9]  'de IR e de INSS foram atualizadas em 28/07/2016'
[10]  ' para usar este WS de novo, ARRUMAR os exemplos'
-------------------------------------------------------------
[ 0]  ca701a n;acuja;esse;f;relat;resp;xk;x;coifa;lixo1
[ 1]  □RL←⌊(□TS[7]+□TS[6]+□TS[5])*2.7364736473
[ 2]  FOLHALA701←ajusta80 FOLHALA701
[ 3]  relat←ΔFM'c:\apl2\VIVOBLOI'
[ 4]  xk←1
[ 5] testa:→(xk>n)/fim
[ 6]  esse←12 80⍴' '
[ 7]  f←FOLHALA701
[ 8]  esse[1;⍳⍴x]←x←'   --- Cavaleiros da Tavola Redonda'
[ 9]  esse[3;]←80↑4 2⍕1.01
[10]  esse[11;⍳8]←'@000000@'
[11] inica:
[12]  coifa←geracaso
[13]  esse[8;]←80↑coifa[1;]
[14]  esse[9;]←80↑coifa[2;]
[15]  esse[10;]←80↑coifa[3;]
[16]  resp←CASOS-1
[17]  acuja←(f[;2]='#')/⍳1↑⍴f
[18]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[19]  □←(⍕xk←xk+1),'-'
[20]  f←(((1↑⍴relat),1↓⍴f)↑relat),[1]f
[21]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'\end{document}'
[22]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'%',⍕resp
[23]  lixo1←f ΔFM'c:\apl2\CA701a',('00'⍕xk-1),'.tex'
[24]  →testa
[25] fim:
-------------------------------------------------------------
[ 0]  rx←calcfolha x;a1;a2;a3;a4;a5;a6;a7;a8;bl2;cab;f;g;i;ind;inse;insr;l;p;r;res;rex;sub
      ;vbf
[ 1]  cab←(10↑'NOME'),(¯9↑'BRUTO'),(¯8↑'ATRASO'),(¯9↑'DEVIDO'),(¯8↑'INSS')
[ 2]  cab←cab,(¯8↑'IR'),(¯8↑'S.FAM'),(¯9↑'LIQUIDO'),¯8↑'FGTS'
[ 3]  sub←(10↑'----'),(¯9↑'-----'),(¯8↑'------'),(¯9↑'------'),(¯8↑'----')
[ 4]  sub←sub,(¯8↑'--'),(¯8↑'-----'),(¯9↑'-------'),¯8↑'----'
[ 5]  cab←2 77⍴cab,sub
[ 6]  ind←1
[ 7]  res←((1↑⍴x),77)⍴' '
[ 8] t1:→(ind>1↑⍴x)/fim
[ 9]  res[ind;⍳10]←x[ind;⍳10]
[10]  res[ind;10+⍳9]←9 2⍕⍋x[ind;15+⍳12]
[11]  res[ind;19+⍳8]←8 2⍕⍋x[ind;27+⍳12]
[12]  res[ind;27+⍳9]←9 2⍕p←(⍋x[ind;15+⍳12])-⍋x[ind;27+⍳12]
[13]  res[ind;36+⍳8]←8 2⍕i←inss p
[14]  res[ind;44+⍳8]←8 2⍕r←ir p
[15]  res[ind;52+⍳8]←8 2⍕f←p sf⍋x[ind;39+⍳10]
[16]  res[ind;60+⍳9]←9 2⍕l←(p+f)-(i+r)
[17]  res[ind;69+⍳8]←8 2⍕g←0.08×p
[18]  ind←ind+1
[19]  →t1
[20] fim:
[21]  a1←(9 2⍕+/⍋,res[;10+⍳9],' ')
[22]  a2←(8 2⍕+/⍋,res[;19+⍳8],' ')
[23]  a3←(9 2⍕+/⍋,res[;27+⍳9],' ')
```

```
[24]  a4←(8 2⍕+/⍤,res[;36+⍳8],' ')
[25]  a5←(8 2⍕+/⍤,res[;44+⍳8],' ')
[26]  a6←(8 2⍕+/⍤,res[;52+⍳8],' ')
[27]  a7←(9 2⍕+/⍤,res[;60+⍳9],' ')
[28]  a8←(8 2⍕+/⍤,res[;69+⍳8],' ')
[29]  rex←cab,[1]res,[1](1 77⍴sub),[1]1 77⍴(10↑'TOTAL'),a1,a2,a3,a4,a5,a6,a7,a8
[30]  bl2←9 77⍴' '
[31]  bl2[1;]←77↑'INSS empregados:       ',10 2⍕⍤,a4
[32]  bl2[2;]←77↑'FGTS a recolher:       ',10 2⍕⍤,a8
[33]  bl2[3;]←77↑'IR a recolher:         ',10 2⍕IRR←⍤,a5
[34]  bl2[4;]←77↑'SF a pagar:            ',10 2⍕SFP←⍤,a6
[35]  bl2[5;]←77↑'Liquido a creditar:    ',10 2⍕⍤,a7
[36]  bl2[6;]←77↑'Valor bruto da folha:  ',10 2⍕vbf←(⍤,a3)+⍤,a8
[37]  bl2[7;]←77↑'INSS da empresa:       ',10 2⍕inse←0.268×vbf
[38]  bl2[8;]←77↑'INSS a recolher:       ',10 2⍕insr←inse-⍤,a6
[39]  bl2[9;]←77↑'Despesa Total empresa: ',10 2⍕DTE←vbf+insr
[40]  rx←rex,[1]bl2
-------------------------------------------------------------
[ 0]  cavaleiro721a n;a;aaa;acuja;b;esse;f;kk;lixo1;relat;resp;xk;ylu;zzz;x
[ 1]  □RL←⌊(□TS[7]+□TS[6]+□TS[5])*2.7364736473
[ 2]  FOLHALA721←ajusta80 FOLHALA721
[ 3]  relat←ΔFM'c:⍀apl2⍀VIVOBLOI'
[ 4]  xk←1
[ 5] testa:→(xk>n)/fim
[ 6]  esse←19 80⍴' '
[ 7]  f←FOLHALA721
[ 8]  esse[1;⍳⍴x]←x←'  ------ Cavaleiros da Tavola Redonda '
[ 9]  esse[3;]←80↑4 2⍕1.03
[10]  esse[18;⍳8]←'@000000@'
[11] ini1:
[12]  aaa←geracaso 10
[13]  esse[7+⍳10;]←10 80↑aaa
[14]  kk←calcfolha aaa
[15]  resp←10 2⍕IRR,SFP,DTE
[16]  acuja←(f[;2]='#')/⍳1↑⍴f
[17]  f[acuja;]←esse[⍤,f[acuja;3 4],' ';]
[18]  ⍞←(⍕xk←xk+1),'-'
[19]  f←(((1↑⍴relat),1↓⍴f)↑relat),[1]f
[20]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'⍀end{document}'
[21]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'%',resp
[22]  lixo1←f ΔFM'c:⍀apl2⍀CA721a',('00'⍕xk-1),'.tex'
[23]  →testa
[24] fim:
-------------------------------------------------------------
[ 0]  r←geracaso n;nomes;i;vals;atrasos;filhos
[ 1]  r←(n,49)⍴' '
[ 2]  nomes←'pedro' 'paulo' 'maria' 'jose' 'joao' 'andre' 'quiteria'
[ 3]  nomes←nomes,'paula' 'zelia' 'ana' 'joaquim' 'manuel' 'luiz'
[ 4]  nomes←nomes,'bianca' 'jane' 'sueli' 'alfredo' 'cris'
[ 5]  i←1
[ 6] t1:→(i>n)/fim
[ 7]  r[i;⍳10]←10↑,⊃nomes[?⍴nomes]
[ 8]  vals←0.01×(80000+10000×10?10),100000+10?1000000
[ 9]  r[i;15+⍳12]←12 2⍕vals[?⍴vals]
[10]  atrasos←(8⍴0),0.001×(80000+100×3?10),1000+3?10000
[11]  r[i;27+⍳12]←12 2⍕atrasos[?⍴atrasos]
[12]  filhos←(8⍴0),1,1,1,1,1,2,2,2,3,3,4
[13]  r[i;39+⍳10]←10 0⍕filhos[?⍴filhos]
[14]  i←i+1
[15]  →t1
[16] fim:
-------------------------------------------------------------
[ 0]  r←inss x
```

```
[ 1]  →(x>1556.94)/p1
[ 2]  r←0.08×x
[ 3]  →fim
[ 4] p1:→(x>2594.92)/p2
[ 5]  r←0.09×x
[ 6]  →fim
[ 7] p2:
[ 8] p3:→(x>5189.82)/p4
[ 9]  r←0.11×x
[10]  →fim
[11] p4:r←570.88
[12] fim:
-------------------------------------------------------------
[ 0]  r←ir x
[ 1]  →(x>1903.98)/p1
[ 2]  r←0
[ 3]  →fim
[ 4] p1:→(x>2826.65)/p2
[ 5]  r←(0.075×x)-142.8
[ 6]  →fim
[ 7] p2:→(x>3751.01)/p3
[ 8]  r←(0.15×x)-354.8
[ 9]  →fim
[10] p3:→(x>4664.68)/p4
[11]  r←(0.225×x)-636.13
[12]  →fim
[13] p4:r←(0.275×x)-869.36
[14] fim:
-------------------------------------------------------------
[0]  r←pedemail x
[1]  →(40≠+/' '=x)/aindanao
[2]  r←80↑'Por favor, informe seu e-mail: ⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_'
[3]  →junnao
[4] aindanao:r←80↑'e-mail cadastrado: ',x
[5] junnao:
-------------------------------------------------------------
[0]  r←p sf nf
[1]  →(p>806.8)/gra
[2]  r←41.37×nf
[3]  →0
[4] gra:r←29.16×nf
-------------------------------------------------------------
[ 0]  opesq vivo721a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;nomes;num
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL721   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA721←ajusta80 FOLHALA721
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA721)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[13]  xk←1 ⋄ resu←0 4⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←19 80⍴' '
[16]  f←FOLHALA721
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
```

```
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.03
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:
[28]  esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[32] ⍝ esse[18;]←80↑pedemail ylu[xk;36+⍳40]
[33]  esse[18;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[34]  esse[19;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[35] ini1:
[36]  aaa←geracaso 10
[37]  esse[7+⍳10;]←10 80↑aaa
[38]  kk←calcfolha aaa
[39]  resp←resp,IRR,SFP,DTE
[40]  resu←resu,[1]1 4⍴resp
[41]  acuja←(f[;2]='#')/⍳1↑⍴f
[42]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[44]  ⎕←(⍕xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+⍴f)⍴' '
[47]  →(1=≡n)/elafa
[48]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[49]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[50]  upag[2+⍳1↑⍴resu;⍳40]←'¯-'edit 4 0 12 2 12 2 12 2⍕resu
[51]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[52]  →terminando
[53] elafa:aaa←(ylu[;⍳36],'¯-'edit 12 2 12 2 12 2⍕0 1↓resu)
[54]  lixonol←aaa ⎕FM('c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.gpa')
[55]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[56] terminando:
[57]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[58]  relat[1↑⍴relat;;]←upag
[59]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[60] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[61]  lixonol←lixonol ⎕FM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.tex'
[62]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo723

```
[0]  AVISO
[1]  'Para mostrar um estoque faca cabe x←geraprods'
[2]  'Para mostrar um ABC faca cabeab z←0.6 0.9 geraabc x'
[3]  'Para mostrar tabela compras, faca gt62 qtdano, cusunit, txanualarmaz, custoaq'
[4]  '                          por exemplo: gt62 100 5 0.3 50'
[5]  ' '
[6]  'Se quiser mostrar uma instancia completa da folha, faca geracaso'
------------------------------------------------------------
[0]  r←cabe es;x;y
[1]  x←63⍴(15↑'produto'),(7↑'unid'),(¯9↑'preco'),(¯24↑'    ultimos 3 consumos'),¯8↑'estoq
      ue'
[2]  y←' -'[1+x≠' ']
[3]  r←(2 63⍴x,y),[1]es
------------------------------------------------------------
```

```
[0]  r←cabeab es;x;y
[1]  x←64⍴'   ',(15↑'produto'),(7↑'unid'),(¯9↑'preco'),(¯15↑'med consumo'),¯15↑'custo'
[2]  y←' -'[1+x≠' ']
[3]  r←(2 64⍴x,y),[1]⊃es[2]
-------------------------------------------------------------
[ 0]  re←abc geraabc estoque;x;y;t;z;w;r;ww;f;h
[ 1]  r←2⍴0
[ 2]  h←1↑⍴estoque
[ 3]  x←(h,3)⍴⍬,estoque[;31+⍳24],' '
[ 4]  y←(⍬,estoque[;22+⍳9],' ')×f←(+/[2]x)÷3
[ 5]  t←+/y
[ 6]  z←y[ww←⍒y]
[ 7]  estoque←(2 0⍕(h,1)⍴⍳h),'-',estoque[;⍳31],(15 2⍕(h,1)⍴f),(15 2⍕(h,1)⍴y)
[ 8] ⍝ estoque←estoque[ww;]
[ 9]  w←+⍀z÷t
[10]  r[1]←1↑(w>abc[1])/⍳1↑⍴estoque
[11]  r[2]←1↑(w>abc[2])/⍳1↑⍴estoque
[12]  re←(r estoque[ww;])
-------------------------------------------------------------
[ 0]  r←geracaso;yy;zz;j;p;umdois;tx1;caq;cons;cusu;nome;gtcaso;xx;caca
[ 1]  r←44 70⍴' '
[ 2] vorta:xx←geraprods
[ 3]  yy←(0.5+0.01×?20),0.7+0.01×?20
[ 4]  zz←yy geraabc xx
[ 5]  j←⊃zz[1]
[ 6]  →(j[1]≠j[2])/blz
[ 7]  ⍞←'∘'
[ 8]  →vorta
[ 9] blz:p←⊃zz[2]
[10]  umdois←?2
[11]  tx1←0.2+0.01×?20
[12]  caq←40+?30
[13]  cons←⌈12×⍬⍴p[umdois;34+⍳15]
[14]  cusu←⍬⍴p[umdois;25+⍳9]
[15]  nome←p[umdois;3+⍳14]
[16]  gtcaso←gt62 caca←cons,cusu,tx1,caq
[17]  r[⍳22;]←22 70↑cabe xx
[18]  r[23;]←70↑(40↑'Pontos A e B de corte.....'),15 2⍕yy
[19]  r[24;]←70↑(40↑'Respostas em itens A e B.....'),2 0⍕j
[20]  r[25;]←70↑(30↑'cab de gt62.....'),10 2⍕caca
[21]  r[26;]←70↑(30↑'Nome produto pedido.....'),nome
[22]  r[26+⍳18;]←18 70↑gtcaso
-------------------------------------------------------------
[ 0]  r←geraprods;x;ind;i1;i2
[ 1]  x←32 63⍴' '
[ 2] ⍝ 15:descricao, 7unid, 9-2:preco, 3×8-0:tres consumos; 8-0:estoque
[ 3]  x[1;]←(15↑'aco 8mm'),(7↑'m2'),(9 2⍕120+?1000),(8 0⍕100+4?500)
[ 4]  x[2;]←(15↑'aco 12mm'),(7↑'m2'),(9 2⍕220+?1000),(8 0⍕100+4?500)
[ 5]  x[3;]←(15↑'aco 20mm'),(7↑'m2'),(9 2⍕300+?1000),(8 0⍕100+4?500)
[ 6]  x[4;]←(15↑'prego 10mm'),(7↑'milhar'),(9 2⍕0.01×1000+?1000),(8 0⍕10+4?50)
[ 7]  x[5;]←(15↑'prego 20mm'),(7↑'milhar'),(9 2⍕0.01×2000+?1000),(8 0⍕10+4?50)
[ 8]  x[6;]←(15↑'prego 50mm'),(7↑'milhar'),(9 2⍕0.01×3000+?1000),(8 0⍕10 10 10 100+4?50)
[ 9]  x[7;]←(15↑'oleo diesel'),(7↑'litro'),(9 2⍕0.01×100+?100),(8 0⍕1000+4?5000)
[10]  x[8;]←(15↑'querosene'),(7↑'litro'),(9 2⍕0.01×100+?100),(8 0⍕100 100 100 1000+4?8000)
[11]  x[9;]←(15↑'parafina'),(7↑'kg'),(9 2⍕0.01×800+?100),(8 0⍕100 100 100 1000+4?800)
[12]  x[10;]←(15↑'arame 1mm'),(7↑'metro'),(9 2⍕0.01×10+?100),(8 0⍕4?200)
[13]  x[11;]←(15↑'arame 2mm'),(7↑'metro'),(9 2⍕0.01×20+?100),(8 0⍕1+4?200)
[14]  x[12;]←(15↑'arame 5mm'),(7↑'metro'),(9 2⍕0.01×30+?100),(8 0⍕1 1 1 10+4?200)
[15]  x[13;]←(15↑'cano cobre 1p'),(7↑'metro'),(9 2⍕0.01×1000+?1000),(8 0⍕100 100 100 1000+
      4?900)
[16]  x[14;]←(15↑'cano cobre 2p'),(7↑'metro'),(9 2⍕0.01×1400+?1000),(8 0⍕4?900)
[17]  x[15;]←(15↑'cano cobre 4p'),(7↑'metro'),(9 2⍕0.01×2000+?1000),(8 0⍕100+4?900)
[18]  x[16;]←(15↑'cano cobre 10p'),(7↑'metro'),(9 2⍕0.01×7000+?1000),(8 0⍕100+4?900)
```

```
[19]  x[17;]←(15↑'tinta branca'),(7↑'galao'),(9 2⍕20+?20),(8 0⍕5 5 5 10+4?30)
[20]  x[18;]←(15↑'tinta preta'),(7↑'galao'),(9 2⍕20+?20),(8 0⍕0 0 0 5+4?20)
[21]  x[19;]←(15↑'rebite 1mm'),(7↑'um'),(9 2⍕0.01×10+?100),(8 0⍕1000+4?50000)
[22]  x[20;]←(15↑'rebite 2mm'),(7↑'um'),(9 2⍕0.01×20+?100),(8 0⍕1000+4?50000)
[23]  x[21;]←(15↑'rebite 5mm'),(7↑'um'),(9 2⍕0.01×30+?100),(8 0⍕1000 1000 1000 4000+4?5000
      0)
[24]  x[22;]←(15↑'cal'),(7↑'ton'),(9 2⍕40+?100),(8 0⍕100+4?50)
[25]  x[23;]←(15↑'gesso'),(7↑'ton'),(9 2⍕40+?100),(8 0⍕100+4?50)
[26]  x[24;]←(15↑'areia fina'),(7↑'ton'),(9 2⍕40+?20),(8 0⍕10 10 10 40+4?10)
[27]  x[25;]←(15↑'ripa fina'),(7↑'m'),(9 2⍕200+?100),(8 0⍕20 20 20 30+4?20)
[28]  x[26;]←(15↑'ripa media'),(7↑'m'),(9 2⍕400+?100),(8 0⍕20 20 20 30+4?20)
[29]  x[27;]←(15↑'ripa grossa'),(7↑'m'),(9 2⍕600+?100),(8 0⍕20 20 20 30+4?20)
[30]  x[28;]←(15↑'papel A4-75mg'),(7↑'resma'),(9 2⍕1200+?400),(8 0⍕4?10)
[31]  x[29;]←(15↑'papel A4-90mg'),(7↑'resma'),(9 2⍕2200+?400),(8 0⍕2+4?10)
[32]  x[30;]←(15↑'grampos ind'),(7↑'milhar'),(9 2⍕200+?100),(8 0⍕200 200 200 300+4?1000)
[33]  x[31;]←(15↑'condensador'),(7↑'um'),(9 2⍕10000+?10000),(8 0⍕0 0 0 4+4?10)
[34]  x[32;]←(15↑'misturador'),(7↑'um'),(9 2⍕10000+?10000),(8 0⍕0 0 0 4+4?10)
[35]  r←x[20?32;]
[36]  ind←6?20
[37]  i1←3↑ind
[38]  i2←3↓ind
[39]  r[i1;22+⍳9]←3 9⍴9 2⍕2×⍨,r[i1;22+⍳9],' '
[40]  r[i1;31+⍳32]←3 32⍴8 0⍕2×⍨,(r[i1;31+⍳8],' '),(r[i1;39+⍳8],' '),(r[i1;47+⍳8],' '),r[i1
      ;55+⍳8],' '
[41]  r[i2;22+⍳9]←3 9⍴9 2⍕0.5×⍨,r[i2;22+⍳9],' '
[42]  r[i2;31+⍳32]←3 32⍴8 0⍕0.5×⍨,(r[i2;31+⍳8],' '),(r[i2;39+⍳8],' '),(r[i2;47+⍳8],' '),r[
      i2;55+⍳8],' '
------------------------------------------------------------
[ 0]  r←gt62 x;z;c;f;y;m;p
[ 1] ⍝ este algoritmo gera a tabela da pagina 62 do livro stocks
[ 2] ⍝ x[1]=lote anual (8400); x[2]=preco unitario (3); x[3]=tx anual (0.3); x[4]=custo aq
      (50)
[ 3]  y←12 5⍴0
[ 4]  y[;1]←1 2 3 4 6 8 12 24 52 121 182 365
[ 5]  y[;2]←x[1]÷y[;1]
[ 6]  y[;3]←0.5×y[;2]×x[2]×x[3]
[ 7]  y[;4]←x[4]×y[;1]
[ 8]  y[;5]←+/[2]y[;3 4]
[ 9]  m←18 61⍴' '
[10]  m[3;⍳13]←13↑'anual' ⋄ m[4;⍳13]←13↑'semestral' ⋄ m[5;⍳13]←13↑'quadrimestral'
[11]  m[6;⍳13]←13↑'trimestral' ⋄ m[7;⍳13]←13↑'bimestral' ⋄ m[8;⍳13]←13↑'p. 45 d.'
[12]  m[9;⍳13]←13↑'mensal' ⋄ m[10;⍳13]←13↑'quinzenal' ⋄ m[11;⍳13]←13↑'semanal'
[13]  m[12;⍳13]←13↑'a cada 3d' ⋄ m[13;⍳13]←13↑'a cada 2d' ⋄ m[14;⍳13]←13↑'diario'
[14]  m[2+⍳12;14+⍳3]←3 0⍕12 1⍴y[;1]
[15]  m[2+⍳12;17+⍳11]←11 2⍕12 1⍴y[;2]
[16]  m[2+⍳12;28+⍳11]←11 2⍕12 1⍴y[;3]
[17]  m[2+⍳12;39+⍳11]←11 2⍕12 1⍴y[;4]
[18]  m[2+⍳12;50+⍳11]←11 2⍕12 1⍴y[;5]
[19]  m[1;]←(14↑'ciclo'),'qtd',(¯11↑'unids'),(¯11↑'Carmaz'),(¯11↑'Caq'),¯11↑'Ctot'
[20]  m[2;]←'- '[1+m[1;]=' ']
[21]  z←((2×x[4]×x[1])÷(x[2]×x[3]))*0.5 ⍝ z e o lote minimo em unidades
[22]  c←x[1]÷z ⍝ c e a quantidade de aquisicoes no ano
[23]  f←365÷c ⍝ f e o periodo em dias entre uma e outra aquisicao
[24]  m[16;]←61↑(40↑'Lote minimo em unidades.....'),8 1⍕z
[25]  m[17;]←61↑(40↑'Quantidade de aquisicoes no ano.....'),8 1⍕c
[26]  m[18;]←61↑(40↑'Periodo em dias entre 2 aquisicoes.....'),8 1⍕f
[27]  r←m
------------------------------------------------------------
[ 0]  opesq vivo723a n;CORRECAO;EVENTO;a;aaa;bbb;acuja;b;dhx;esse;f;kk;lixo1;lixonol;num;r
      elat;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
```

```
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←8 ⋄ EVENTO←'PL723   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA723←ajusta80 FOLHALA723
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA723)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 5⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←34 80⍴' '
[15]  f←FOLHALA723
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[33;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[34;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] ini1:
[26]  aaa←geracaso
[27]  esse[7+⍳22;]←22 80↑aaa[⍳22;⍳70]
[28]  esse[30;]←80↑aaa[23;40+⍳30]
[29]  esse[31;]←80↑aaa[26;30+⍳20]
[30]  esse[32;]←80↑aaa[28+bbb←?12;⍳13]
[31]  resu←resu,[1]1 5⍴resp,(⍪aaa[24;40+⍳2],' ',aaa[24;42+⍳2]),(⍪aaa[28+bbb;50+⍳11]),⍪aaa[
      43;40+⍳30]
[32]  acuja←(f[;2]='#')/⍳1↑⍴f
[33]  f[acuja;]←esse[⍪,f[acuja;3 4],' ';]
[34]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[35]  ⍞←(⍕xk←xk+1),'-'
[36]  →testa
[37] fim:upag←(1 0+⍴f)⍴' '
[38]  →(1=≡n)/elafa
[39]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[40]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[41]  upag[2+⍳1↑⍴resu;⍳37]←'¯'-'edit 4 0 6 0 4 0 15 2 8 1⍕resu
[42]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[43]  →terminando
[44] elafa:aaa←(ylu,'¯'-'edit 4 0 4 0 15 2 8 1⍕0 1↓resu)
[45]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[46]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[47] terminando:
[48]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[49]  relat[1↑⍴relat;;]←upag
[50]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[51] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[52]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[53]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo731

```
[0]  r←dic achou obj;xalfa
[1]  obj←,obj
[2]  xalfa←((1↑⍴dic),⍴obj)↑dic
[3]  r←1↑(((⍴obj)=+/((((1↑⍴dic),⍴obj)⍴obj)=xalfa))/⍳1↑⍴dic),0
-------------------------------------------------------------
[0]  r←a arrumeia x
```

```
[1]  a←a,'['
[2]  r←(a,2 0⍕x[1]),']&',(a,2 0⍕x[2]),']&',(a,2 0⍕x[3])
[3]  r←r,']&',(a,2 0⍕x[4]),']&',(a,2 0⍕x[5]),']⍀⍀'
-------------------------------------------------------------
[ 0]  r←comprime original;dic;idic;st;ca;x;i
[ 1]  dic←40 10⍴' '
[ 2]  dic[⍳10;1]←'ABCDEFGHIJ' ⋄ idic←10 ⋄ r←0⍴0
[ 3]  st←original[1]
[ 4]  i←2
[ 5] testa:→(i>⍴original)/acabou
[ 6]  ca←original[i]
[ 7]  →(0=dic achou st,ca)/naoachou
[ 8]  st←st,ca
[ 9]  →soma
[10] naoachou:x←dic achou st
[11]  r←r,x
[12]  →(idic≥1↑⍴dic)/lotou
[13]  idic←idic+1
[14]  dic[idic;⍳⍴st,ca]←st,ca
[15]  st←ca
[16] soma:→(i=i←i+1)/testa
[17] acabou:r←r,dic achou st
[18]  DIC←dic
[19]  →0
[20] lotou:'deu zebra'
-------------------------------------------------------------
[0]  r←geratxt tam;alfa
[1]  alfa←'ABCDEFGHIJ'
[2]  r←alfa[?tam⍴⍴alfa]
[3]  r[(?⌊tam÷2)+⍳2+?3]←r[?tam]
[4]  r[(?⌊tam÷2)+⍳2+?3]←r[?tam]
[5]  r[(?⌊tam÷2)+⍳2+?3]←r[?tam]
[6]  r[(?⌊tam÷2)+⍳2+?3]←r[?tam]
[7]  r[(?⌊tam÷2)+⍳2+?3]←r[?tam]
-------------------------------------------------------------
[ 0]  opesq vivo731a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;ex1;ex2;f;in1;in2;lixonol;nomes;
      ql39;qlinha;re1;re2;relat;resp;resu;upag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←0 ⋄ EVENTO←'PL731   '
[ 5]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 8]  ylu←n grupo ylu
[ 9]  FOLHALA731←ajusta80 FOLHALA731
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA731)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:⍀apl2⍀VIVOBLOI'
[12]  xk←1 ⋄ resu←0 35⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←15 80⍴' '
[15]  f←FOLHALA731
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.14
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  →(36=1↓⍴ylu)/zebra
[21]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[22]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[23]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[24]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[25]  →maiszebra
```

```
[26] zebra:
[27]  esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[14;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[15;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  ex1←geratxt 30
[35]  ex2←geratxt 30
[36]  re1←comprime ex1
[37]  re2←comprime ex2
[38]  in1←(4?¯1+⍴re1),⍴re1
[39]  in1←in1[⍋in1]
[40]  in2←(4?¯1+⍴ex2),⍴ex2
[41]  in2←in2[⍋in2]
[42]  esse[8;]←80↑30↑(60⍴1 0)⍀ex1
[43]  esse[9;]←80↑30↓(60⍴1 0)⍀ex1
[44]  esse[11;]←80↑3 0⍕(⌈(⍴re2)÷2)↑re2
[45]  esse[12;]←80↑3 0⍕(⌈(⍴re2)÷2)↓re2
[46]  esse[10;]←80↑'C'arrumeia in1
[47]  esse[13;]←80↑'D'arrumeia in2
[48]  resu←resu,[1]1 35⍴(4 0⍕resp),' | ',(3 0⍕re1[in1]),' | ',(10⍴1 0)⍀ex2[in2]
[49]  acuja←(f[;2]='#')/⍳1↑⍴f
[50]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[51]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[52]  ⍞←(⍕xk←xk+1),'-'
[53]  →testa
[54] fim:upag←(1 0+⍴f)⍴' '
[55]  →(1=≡n)/elafa
[56]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[57]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[58]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑0 4↓resu
[59]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[60]  →terminando
[61] elafa:aaa←(ylu,0 5↓resu)
[62]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[63]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[64] terminando:
[65]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[66]  relat[1↑⍴relat;;]←upag
[67]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.t
      ex'
[68]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[69]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo732

```
[0]  r←acertaz x
[1]  r←3 80↑8 4⍕x
[2]  r[;1+16×⍳3]←'&'
[3]  r[;70+⍳10]←3 10⍴10↑'⍀⍀ ⍀hline'
-------------------------------------------------------------
[0]  r←acha x;h;t
[1]  r←3 51⍴' ' ⋄ h←8+⍳12 ⋄ t←tabcores
[2]  r[1;]←t[x[1];h],' ',t[x[2];h],' ',t[x[3];h],' ',t[x[4];h]
[3]  r[2;]←t[x[5];h],' ',t[x[6];h],' ',t[x[7];h],' ',t[x[8];h]
[4]  r[3;]←t[x[9];h],' ',t[x[10];h],' ',t[x[11];h],' ',t[x[12];h]
-------------------------------------------------------------
[ 0]  r←man p;i;x;a
[ 1]  i←1
```

```
[ 2]  x←2 3⍴0
[ 3]  x[1;]←0 0 0
[ 4]  x[1;1 2]←p
[ 5]  x[1;3]←((x[1;1]*2)+(x[1;2]*2))*0.5
[ 6] testa:→((i>100)∨(x[1;3]>2))/fim
[ 7]  x[2;1 2]←p+qi x[1;1 2]
[ 8]  x[2;3]←((x[2;1]*2)+(x[2;2]*2))*0.5
[ 9] ⍝ 'iteracao i=',(3 0  ⍕i),'   ', 9 6  ⍕x[2;]
[10]  a←x[1;]
[11]  x[1;]←x[2;]
[12]  x[2;]←a
[13]  →(i=i←i+1)/testa
[14] fim:r←i-1
-------------------------------------------------------------
[0]  r←a ondetem b;⎕IO
[1] ⍝ devolve a posicao em a do caracter b
[2]  ⎕IO←0
[3]  b←1↑,b
[4]  r←⍳1+(⍴a)⌊(b=,a)/⍳⍴,a
-------------------------------------------------------------
[0]  r←qi x
[1]  r←((x[1]*2)-(x[2]*2)),2×x[1]×x[2]
-------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10]  →(0=' '∈j↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80⍴80↑j↑candi
[15]  candi←j↓candi
[16]  →((⍴candi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80⍴80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
-------------------------------------------------------------
[0]  r←tabeleia x
[1]  i←1 ⋄ r←(⍴x)⍴0
[2] tes:→(i>⍴x)/fim
[3]  r[i]←((x[i]≥⍤1,tabcores[;⍳4],' ')∧(x[i]<⍤1,tabcores[;4+⍳4],' '))/⍳14
[4]  →(i=i←i+1)/tes
[5] fim:
-------------------------------------------------------------
[0]  r←tiradups z
[1]  →((+/z=1↑z)=⍴z)/tudoigual
[2]  z←z[⍋z]
[3]  r←(z≠1⌽z)/z
[4]  →0
[5] tudoigual:r←1↑z
-------------------------------------------------------------
[ 0]  opesq vivo732a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;xini;yini;deltax;deltay;matxy;nums;cores;i;vx;cortab
[ 1]  →(0≠⎕NC'opesq')/qveio
```

```
[ 2]  opesq←10ρ' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←0 ⋄ EVENTO←'PL732   '
[ 5]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕⍳n
[ 8]  FOLHALA732←ajusta80 FOLHALA732
[ 9]  relat←((2+1↑ρylu),1 0+ρFOLHALA732)ρ' '
[10]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLOI'
[11]  xk←1 ⋄ resu←0 51ρ' '
[12] testa:→(xk>1↑ρylu)/fim
[13]  esse←12 80ρ' '
[14]  f←FOLHALA732
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍕VERSAOa←3.03
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[22]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] tenta:xini←(?999)÷2000 ⋄ yini←(?999)÷2000
[25]  deltax←(?999)÷100000 ⋄ deltay←(?999)÷100000
[26]  matxy←3 4 2ρ0
[27]  matxy[;;1]←xini
[28]  matxy[;;2]←yini
[29]  matxy[2;;2]←matxy[2;;2]+deltax
[30]  matxy[1;;2]←matxy[1;;2]+2×deltax
[31]  matxy[;2;1]←matxy[;2;1]+deltay
[32]  matxy[;3;1]←matxy[;3;1]+2×deltay
[33]  matxy[;4;1]←matxy[;4;1]+3×deltay
[34]  nums←,matxy
[35]  cores←12ρ0
[36]  i←1
[37] tes:→(i>12)/acabou
[38]  cores[i]←1↑man nums[¯2+(2×i)+⍳2]
[39]  →(i=i←i+1)/tes
[40] acabou:
[41]  →((ρ,tiradups cortab←tabeleia cores)>2)/ok4
[42]  ⎕←'*'
[43]  →tenta
[44] ok4:vx←(1+⍳6),(8+⍳6),(18+⍳6),(25+⍳6),(35+⍳6),(42+⍳6),(52+⍳6),59+⍳6
[45]  esse[7+⍳3;]←3 80↑acertaz 3 8ρmatxy
[46] continua:
[47]  resp←(1 51ρ51↑4 0⍕resp),[1]acha cortab
[48]  resu←resu,[1]resp
[49]  acuja←(f[;2]='#')/⍳1↑ρf
[50]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[51]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\newpage'
[52]  ⎕←(⍕xk←xk+1),'-'
[53]  →testa
[54] fim:upag←(1 0+ρf)ρ' '
[55]  →(1=≡n)/elafa
[56]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[57]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[58]  upag[2+⍳1↑ρresu;]←((1↑ρresu),80)↑resu
[59]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[60]  →terminando
[61] elafa:aaa←ylu,(((1↑ρylu),4)ρ' 0.0'),0 51↓(((1↑ρresu)÷4),204)ρresu
[62]  aaa[1;35 36]←2 0⍕CORRECAO
[63]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
```

```
[64]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[65] terminando:
[66]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[67]  relat[1↑⍴relat;;]←upag
[68]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)⍙FM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.t
      ex'
[69]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[70]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo735

```
[ 0]  r←acer735xy a;i;j;zz
[ 1]  r←((¯1+1↑⍴a),80)⍴' '
[ 2]  i←1
[ 3] t1:→(i>1↑⍴r)/fim
[ 4]  j←1
[ 5]  zz←''
[ 6] t2:→(j>1+1↑⍴r)/oba
[ 7]  zz←zz,(⍕a[i;j]),'&'
[ 8]  j←j+1
[ 9]  →t2
[10] oba:
[11]  r[i;]←80↑(¯1↓zz),'⍀⍀'
[12]  i←i+1
[13]  →t1
[14] fim:
-------------------------------------------------------------
[ 0]  r←gerac735a;x;y;z;a;b;c
[ 1]  r←3⍴0
[ 2] mais:a←5+?22
[ 3]  b←5000+?4999
[ 4]  c←b*÷a
[ 5]  x←'$x=⍀sqrt[',(⍕a),']{',(⍕b),'}$'
[ 6]  z←b*÷a
[ 7]  →((⌈z)=⌊z)/mais
[ 8]  y←(⍕⌊z),' e ',⍕⌈z
[ 9]  r[1]←⊂x
[10]  r[2]←⊂y
[11]  r[3]←⊂z
-------------------------------------------------------------
[ 0]  r←geramatrizprova1;col;ff;l;lin;u;x;xalfa
[ 1]  x←3 3⍴9?20
[ 2]  lin←?3
[ 3]  col←?3
[ 4]  ff←⍋x
[ 5]  l←⊃ff[1]
[ 6]  u←⊃ff[2]
[ 7]  r←4⍴0
[ 8]  xalfa←' -0551.500 '⍕x
[ 9]  xalfa[lin;(11×col-1)+⍳11]←'      x    '
[10]  r[1]←⊂xalfa
[11]  r[2]←⊂' -0551.500 '⍕l
[12]  r[3]←⊂' -0551.500 '⍕u
[13]  r[4]←⊂x[lin;col]
-------------------------------------------------------------
[ 0]  r←geraquestaoprova1;zz;u;i;kk;xx;aa
[ 1]  zz←0 78⍴' '
[ 2]  u←3230
[ 3]  i←1
[ 4] t1:→(i>50)/fim
[ 5]  zz←zz,[1]1 78⍴78↑'$QE',(5 0⍕u),'565      1Achar valor dentro de L e U'
```

```
[ 6]  zz←zz,[1]1 78⍴78↑'A seguir, a matriz $A$ e a suas derivadas $L$ e $U$, '
[ 7]  zz←zz,[1]1 78⍴78↑'corretamente calculadas:'
[ 8]  zz←zz,[1]1 78⍴78↑'\begin{verbatim}'
[ 9]  zz←zz,[1]1 78⍴78↑'    ---------------- A --------------- '
[10]  xx←geramatrizprova1
[11]  zz←zz,[1]3 78↑⊃xx[1]
[12]  zz←zz,[1]1 78⍴78↑'    ---------------- L --------------- '
[13]  zz←zz,[1]3 78↑⊃xx[2]
[14]  zz←zz,[1]1 78⍴78↑'    ---------------- U --------------- '
[15]  zz←zz,[1]3 78↑⊃xx[3]
[16]  zz←zz,[1]1 78⍴78↑'\end{verbatim}'
[17]  zz←zz,[1]1 78⍴78↑'Descubra o valor de $x$. (que por sinal é inteiro)'
[18]  zz←zz,[1]1 78⍴78↑'$QR',(5 0⍕u)
[19]  zz←zz,[1]1 78⍴78↑⍕⊃xx[4]
[20]  u←u+1
[21]  i←i+1
[22]  →t1
[23] fim:r←zz
-------------------------------------------------------------
[ 0]  r←gerasist n;x;i
[ 1]  x←(-⌊n÷2)+n?n+3
[ 2]  x[(x=0)/⍳⍴x]←n+4
[ 3]  r←((n+1),n+1)⍴0
[ 4]  i←1
[ 5] t1:→(i>n)/fim
[ 6]  r[i;⍳n]←?n⍴n+2
[ 7]  r[i;n+1]←+/r[i;⍳n]×x
[ 8]  i←i+1
[ 9]  →t1
[10] fim:r[i;⍳n]←x
-------------------------------------------------------------
[ 0]  r←lu a;l;i;j;k;s;u
[ 1]  r←2⍴0
[ 2]  l←u←(2⍴1↑⍴a)⍴0
[ 3]  i←1
[ 4] t1:→(i>1↑⍴a)/zuca
[ 5]  l[i;i]←1
[ 6]  i←i+1
[ 7]  →t1
[ 8] zuca:
[ 9]  i←1
[10] t2:→(i>1↑⍴a)/fi
[11]  j←1
[12] t3:→(j>1↑⍴a)/oj
[13]  →(i>j)/xu
[14]  s←0
[15]  k←1
[16] t4:→(k>i)/zi
[17]  s←s+l[i;k]×u[k;j]
[18]  k←k+1
[19]  →t4
[20] zi:u[i;j]←a[i;j]-s
[21] xu:→(i≤j)/soma
[22]  s←0
[23]  k←1
[24] t5:→(k>j)/gi
[25]  s←s+l[i;k]×u[k;j]
[26]  k←k+1
[27]  →t5
[28] gi:
[29]  l[i;j]←(a[i;j]-s)÷u[j;j]
[30] soma:
[31]  j←j+1
```

```
[32]  →t3
[33] oj:
[34]  i←i+1
[35]  →t2
[36] fi:
[37]  r[1]←⊂l
[38]  r[2]←⊂u
------------------------------------------------------------
[ 0]  opesq vivo735f n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL735f  '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA735f←ajusta80 FOLHALA735f
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALA735f)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 6ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←14 80ρ' '
[16]  f←FOLHALA735f
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOf←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑ρf),4)ρ'\#05')/⍳1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[13;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[14;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerasist 5
[35]  esse[7+⍳5;]←acer735xy xx
[36]  resu←resu,[1]1 6ρresp,,xx[6;⍳5]
[37]  acuja←(f[;2]='#')/⍳1↑ρf
[38]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[39]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\clearpage'
[40]  ⍞←(⍎xk←xk+1),'-'
[41]  →testa
[42] fim:upag←(1 0+ρf)ρ' '
[43]  →(1=≡n)/elafa
[44]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[45]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[46]  upag[2+⍳1↑ρresu;⍳+/lixo1]←'¯-'edit(lixo1←5 0 12 0 4 0 4 0 4 0 4 0)⍎resu
[47]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[48]  →terminando
[49] elafa:aaa←(ylu[;⍳36],'¯-'edit 4 0⍎0 1↓resu)
[50]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[51]  '!!!!!  Arquivo GPA com ',(⍎1↑ρaaa),' linhas e ',(⍎1↓ρaaa),' colunas'
[52] terminando:
```

```
[53]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[54]  relat[1↑⍴relat;;]←upag
[55]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[56]  lixonol←lixonol ∆FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[57]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[58]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[ 0]  opesq vivo735p n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL735p  '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←∆FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA735p←ajusta80 FOLHALA735p
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA735p)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑∆FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 6⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←14 80⍴' '
[16]  f←FOLHALA735p
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAO⍴←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[13;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[14;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerasist 5
[35]  esse[7+⍳5;]←acer735xy xx
[36]  resu←resu,[1]1 6⍴resp,,xx[6;⍳5]
[37]  acuja←(f[;2]='#')/⍳1↑⍴f
[38]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[39]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[40]  ⍞←(⍎xk←xk+1),'-'
[41]  →testa
[42] fim:upag←(1 0+⍴f)⍴' '
[43]  →(1=≡n)/elafa
[44]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[45]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[46]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←5 0 12 0 4 0 4 0 4 0 4 0)⍎resu
[47]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[48]  →terminando
[49] elafa:aaa←(ylu[;⍳36],'¯-'edit 4 0⍎0 1↓resu)
[50]  lixonol←aaa ∆FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[51]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[52] terminando:
[53]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
```

```
[54]  relat[1↑⍴relat;;]←upag
[55]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[56]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[57]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[58]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo750

```
[ 0]  r←ajusta136 x;y
[ 1]  →(2≠⍴⍴x)/erro1
[ 2]  →((1↓⍴x)=136)/igual
[ 3]  →((1↓⍴x)<136)/menor
[ 4]  →((1↓⍴x)>136)/maior
[ 5] igual:r←x
[ 6]  →fim
[ 7] menor:r←((1↑⍴x),136)↑x
[ 8]  →fim
[ 9] maior:y←,0 136↓x
[10]  →((⍴y)=+/y=' ')/menor
[11]  'erro: tem conteudo depois da posicao 136, reveja '
[12]  →fim
[13] erro1:'erro: o operando nao e uma matriz'
[14]  →fim
[15] fim:
-------------------------------------------------------------
[0]  r←p cara x
[1] ⍝f funcao auxiliar da leitura e gravacao de arquivos BMP - P.kantek - 04/2002
[2]  r←(256*p)×¯1+⎕AV⍳x
-------------------------------------------------------------
[ 0]  ciclo;lin;col;i1;z1;y1;alfa;zebra;bons;lixo
[ 1]  zebra←0
[ 2] denovo:
[ 3]  lin←1+3?9
[ 4]  col←1+3?9
[ 5]  i1←(lin,col)geracaso 3
[ 6]  y1←6 tomografia i1
[ 7]  z1←reconstitui y1
[ 8]  alfa←ma4 z1
[ 9]  →(0.02>|alfa[3]-alfa[4])/furo
[10]  bons←z1[lin[1];col[1]],z1[lin[2];col[2]],z1[lin[3];col[3]]
[11]  →((alfa[1]∈bons)∧(alfa[2]∈bons)∧(alfa[3]∈bons))/ok
[12] ⍝ 'alfa=', 7 2   ⍕alfa
[13] ⍝ 7 2   ⍕i1
[14] ⍝ '---'
[15] ⍝ 7 2   ⍕z1
[16]  ⎕←'  ⎕'
[17]  zebra←1
[18]  →denovo
[19] ok:LIN←lin ⋄ COL←col ⋄ TOMOG←y1 ⋄ RECON←z1 ⋄ ORIG←i1
[20]  →fim
[21] furo:
[22] ⍝'alfa=',  ⍕alfa
[23]  ⎕←'  o'
[24]  zebra←1
[25]  →denovo
[26] fim:→(zebra=0)/0
[27]  ' '
-------------------------------------------------------------
[0]  r←aa geracaso n;lin;col;i
[1]  r←11 11⍴0
[2]  lin←aa[1 2 3]
```

```
[3]  col←aa[4 5 6]
[4]  i←1
[5] t1:→(i>n)/fim
[6]  r[lin[i];col[i]]←10
[7]  →(i=i←i+1)/t1
[8] fim:
-------------------------------------------------------------
[ 0]  r←geraimag ima;i;j
[ 1] ⍝fgera uma matriz 440 x 440 (pronta para gravar) a partir da imagem 11x11
[ 2]  r←440 440⍴0
[ 3]  i←1
[ 4] t1:→(i>11)/fim
[ 5]  j←1
[ 6] t2:→(j>11)/soma
[ 7]  r[((40×i-1)+⍳40);((40×j-1)+⍳40)]←⌊3.8×ima[i;j]
[ 8]  →(j=j←j+1)/t2
[ 9] soma:→(i=i←i+1)/t1
[10] fim:
-------------------------------------------------------------
[0]  r←ma4 x;y
[1]  y←,x
[2]  y←y[⍒y]
[3]  r←4↑y
-------------------------------------------------------------
[ 0]  mostre x;lixo;y;QC;QL;C;RC;V
[ 1] ⍝fmostra um arquivo BMP
[ 2] ⍝ro nome completo de um arquivo incluso BMP
[ 3] ⍝dabre uma janela mostrando o arquivo
[ 4] ⍝emostre 'c:\apl\imagens\im11.bmp'
[ 5]  lixo←3 11 ⎕NA'FILE'
[ 6]  y←FILE x
[ 7]  QC←(3 cara y[22])+(2 cara y[21])+(1 cara y[20])+0 cara y[19]
[ 8]  QL←(3 cara y[26])+(2 cara y[25])+(1 cara y[24])+0 cara y[23]
[ 9]  lixo←207 SVOFFER'C'
[10]  C←'OPEN'(0 ''QC QL 200 200)
[11]  (RC V)←C
[12]  C←'GRDATA'('bitmap' 0 0 QC QL y)
[13]  (RC V)←C
[14]  C←'VIEW'('ON')
[15]  (RC V)←C
[16]  C←'WAIT'('')
[17]  (RC V)←C
-------------------------------------------------------------
[ 0]  r←teta olha t;TRIGER;i;j;xx
[ 1]  TRIGER←0.5   ⍝ 1.1 deixa 3 linhas; 0.25 deixa 1 ou menos
[ 2]  t←t-6
[ 3]  r←11 11⍴0
[ 4]  teta←(○teta)÷180
[ 5]  i←1
[ 6] t1:→(i>11)/f1
[ 7]  j←1
[ 8] t2:→(j>11)/f2
[ 9]  xx←(((j-6)×1○teta)-((i-6)×2○teta))-t
[10]  →(TRIGER>|xx)/pula
[11]  r[i;j]←1
[12] pula:
[13]  →(j=j←j+1)/t2
[14] f2:→(i=i←i+1)/t1
[15] f1:r←~r
-------------------------------------------------------------
[0]  r←ang raiox obj;i;onde;quantos;tudo
[1]  r←11⍴0
[2]  i←1
```

```
[3] volta:→(i>11)/fim
[4]  onde←ang olha i
[5]  quantos←ρtudo←(,onde)/(,obj)
[6]  r[i]←((+/tudo)×quantos)÷11
[7]  →(i=i←i+1)/volta
[8] fim:
------------------------------------------------------------
[ 0]  R←readbm file;r;TF;ID;QL;QC;QA;TM;QP;BP;NP;i;j;lixo;x;yy;xxx;k;ant;tudo;h;CA;SA;m;mr
      ;mb;mg;tc;⎕IO
[ 1] ⍝f le um arquivo BMP - P.kantek - 07/2001
[ 2] ⍝r o nome completo do arquivo com a terminacao BMP
[ 3] ⍝d R e um vetor de 6 itens.
[ 4] ⍝d R[1] e um escalar e indica 8 (mapeado) ou 24 (true-color)
[ 5] ⍝d R[2] e a variavel CA (54 bytes)
[ 6] ⍝d R[3] e a variavel SA (1 numero entre 0 e 3)
[ 7] ⍝o se R[1] = 8, R[4] e a tabela de cores devidamente empacotada
[ 8] ⍝o se R[1] = 8, R[5] e a matriz m de valores entre 0..255
[ 9] ⍝o se R[1] = 24, R[4 5 6] contem as 3 matrizes R,G,B da imagem
[10]  R←6ρ' ' ⋄ ⎕IO←1
[11]  ant←⎕TS
[12]  tudo←r←FILE file
[13]  CA←54↑tudo
[14]  TF←(3 cara r[6])+(2 cara r[5])+(1 cara r[4])+0 cara r[3]
[15]  ID←(3 cara r[14])+(2 cara r[13])+(1 cara r[12])+0 cara r[11]
[16]  QC←(3 cara r[22])+(2 cara r[21])+(1 cara r[20])+0 cara r[19]
[17] ⍝   QA←4×⌈(QC)÷4
[18]  QL←(3 cara r[26])+(2 cara r[25])+(1 cara r[24])+0 cara r[23]
[19]  QP←QL×QC
[20]  TM←(3 cara r[38])+(2 cara r[37])+(1 cara r[36])+0 cara r[35]
[21]  BP←(1 cara r[30])+0 cara r[29]
[22]  R[1]←BP ⋄ R[2]←⊂CA
[23] ⍝ SA←QA-QC
[24]  →(BP≠24)/outra
[25]  QA←4×⌈(QC×3)÷4
[26]  SA←QA-QC×3
[27]  R[3]←SA
[28]  x←tudo
[29]  k←55
[30] TRUECOLOR:i←1
[31]  mb←mg←mr←(QL,QC)ρ0
[32] t1:→(i>QL)/fim1
[33]  j←1
[34] t2:→(j>QC)/salta
[35]  mb[i;j]←0 cara x[k]
[36]  mg[i;j]←0 cara x[k+1]
[37]  mr[i;j]←0 cara x[k+2]
[38]  k←k+3
[39]  →(j=j←j+1)/t2
[40] salta:k←k+SA
[41]  h←(0=10|i)/'*'
[42]  →(i=i←i+1)/t1
[43] fim1:R[4]←⊂mr ⋄ R[5]←⊂mg ⋄ R[6]←⊂mb
[44]  →finz
[45] outra:→(BP≠8)/naomesmo
[46]  QA←4×⌈QC÷4
[47]  SA←QA-QC
[48]  R[3]←SA
[49]  i←1
[50]  tc←256 3ρ0
[51]  x←FILE file
[52]  xxx←x[54+⍳1024]
[53] obag:→(i>256)/fica
[54]  yy←xxx[(4×i-1)+⍳3]
```

```
[55]  tc[i;]←(0 cara yy[1]),(0 cara yy[2]),0 cara yy[3]
[56]  →(i=i←i+1)/obag
[57] fica:
[58]  m←(QL,QC)⍴0
[59]  i←1
[60] t3:→(i>1↑⍴m)/fim2
[61]  xxx←x[54+1024+((QC+SA)×i-1)+⍳QC+SA]
[62]  j←1
[63] t4:→(j>QC)/sal
[64]  m[i;j]←0 cara xxx[j]
[65]  →(j=j←j+1)/t4
[66] sal:
[67]  h←(0=10|i)/'*'
[68]  →(i=i←i+1)/t3
[69] fim2:R[4]←⊂tc ⋄ R[5]←⊂m
[70] naomesmo:
[71] finz:' '
[72]  'Tamanho do arquivo       TF = ',⍕TF
[73] ⍝ 'Inicio do bloco de dados ID = ',  ⍕ID
[74]  'Quantidade de linhas     QL = ',⍕QL
[75]  'Quantidade de colunas    QC = ',⍕QC
[76] ⍝ 'Colunas   × 3                = ',  ⍕(QC  ×3)
[77] ⍝ 'Quantidade de bytes (aj) QA = ',  ⍕QA
[78] ⍝ 'Tam da imagem justa      TM = ',  ⍕TM
[79]  'Quantidade de PIXELS     QP = ',⍕QP
[80]  'BITS / pixel             BP = ',⍕BP
[81]  'Tempo gasto em segundos     = ',7 1⍕(24 60 60 1000⊥¯4↑⎕TS-ant)÷1000
[82] naomesmo:
-------------------------------------------------------------
[ 0]  r←reconstitui tab;i;j;onde
[ 1]  r←121⍴0
[ 2]  i←1
[ 3] t1:→(i>1↑⍴tab)/fim
[ 4] ⍝   ⎕  ←  ⍕i
[ 5]  j←1
[ 6] t2:→(j>11)/f0
[ 7]  onde←tab[i;1]olha j
[ 8]  r[(,onde)/⍳121]←r[(,onde)/⍳121]+(tab[i;1+j]×+/,onde)÷11
[ 9]  →(j=j←j+1)/t2
[10] f0:⍞←'i',(1 0⍕i),'←11 11⍴r'
[11] ⍝ '----------------------'
[12]  →(i=i←i+1)/t1
[13] fim:r←11 11⍴r÷1↑⍴tab
[14] ⍝ ' '
[15] ⍝ 7 2   ⍕r
-------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10]  →(0=' 'ϵj↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80⍴80↑j↑candi
[15]  candi←j↓candi
[16]  →((⍴candi)=+/candi=' ')/som
```

```
[17]  →te2
[18] eca:r←r,[⎕IO]1 80⍴80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
-------------------------------------------------------------
[ 0]  r←qtdang tomografia objeto;i;step
[ 1]  r←(qtdang,12)⍴0
[ 2]  step←180÷qtdang
[ 3]  i←1
[ 4] oia:→(i>qtdang)/fim
[ 5]  r[i;1]←(i-1)×step
[ 6]  r[i;1+⍳11]←r[i;1]raiox objeto
[ 7] ⍝   ⍞  ←  ⍕i
[ 8]  →(i=i←i+1)/oia
[ 9] fim:
-------------------------------------------------------------
[0]  r←vecome x
[1]  r←(4 0,22⍴6 0)⍎x
[2]  r[;5 11 17 23 29 35 41 47 53 59 65]←'&'
[3]  r←r,'↓'
[4]  r←r,'↓'
-------------------------------------------------------------
[ 0]  opesq vivo750a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;relat;resp;resu;
      upag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←0 ⋄ EVENTO←'PL750   '
[ 5]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:↓apl2↓',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 8]  FOLHALA750←ajusta136 FOLHALA750
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA750)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:↓apl2↓VIVOBLO1'
[11]  xk←1 ⋄ resu←0 7⍴0
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←15 136⍴' '
[14]  f←FOLHALA750
[15]  esse[1;]←136↑dhx[1;]
[16]  esse[2;]←136↑dhx[2;]
[17]  esse[3;]←136↑4 2⍎VERSAOa←3.58
[18]  esse[4;]←136↑ylu[xk;⍳6]
[19]  esse[5;]←136↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←136↑EVENTO
[21]  esse[7;]←136↑(3 0⍎resp←xk),' ',opesq
[22]  esse[14;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[15;]←136↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25]  ciclo
[26]  esse[7+⍳6;]←6 136↑vecome TOMOG
[27]  resp←resp,LIN[1],COL[1],LIN[2],COL[2],LIN[3],COL[3]
[28]  resu←resu,[1]1 7⍴resp
[29]  acuja←(f[;2]='#')/⍳1↑⍴f
[30]  f[acuja;⍳136]←esse[⍋,f[acuja;3 4],' ';]
[31]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'↓newpage'
[32]  ⍞←(⍕xk←xk+1),'-'
[33]  →testa
[34] fim:upag←(1 0+⍴f)⍴' '
[35]  →(1=≡n)/elafa
[36]  upag[1;]←(1↓⍴upag)↑'↓begin{verbatim}'
[37]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
```

```
[38]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 10 0 5 0 10 0 5 0)⍪resu
[39]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[40]  →terminando
[41] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴'    '),5 0 3 0 5 0 3 0 5 0 3 0⍪0 1↓resu)
[42]  aaa[1;35 36]←2 0⍪CORRECAO
[43]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[44]  '!!!!!  Arquivo GPA com ',(⍪1↑⍴aaa),' linhas e ',(⍪1↓⍴aaa),' colunas'
[45] terminando:
[46]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[47]  relat[1↑⍴relat;;]←upag
[48]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.t
      ex'
[49]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[50]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  quem writebm nome;lixo;i;j;REG;NP;xxx;mantem;ant;saida;inutil;CA;m1;m2;m3;mr;mg;mb;m
      ;tc;SA;quica;h
[ 1] ⍝f grava um arquivo BMP - P.kantek - 03/2001
[ 2] ⍝re=vetor de 6 elementos (igual ao gerado pelo readbm) d=nome completo
[ 3] ⍝rdo arquivo, com a terminacao BMP
[ 4] ⍝dfeedback
[ 5]  (inutil CA SA m1 m2 m3)←quem
[ 6]  ant←⎕TS
[ 7]  lixo←⎕AV[1]
[ 8]  lixo←lixo,lixo,lixo
[ 9]  saida←CA
[10]  →(24≠(0 cara CA[29])+1 cara CA[30])/eoito
[11]  i←1 ⋄ mr←m1 ⋄ mg←m2 ⋄ mb←m3
[12] t1:→(i>1↑⍴mb)/f1
[13]  j←1 ⋄ REG←(3×1↓⍴mb)⍴' ' ⋄ NP←0
[14] t2:→(j>1↓⍴mb)/f2
[15]  REG[NP+⍳3]←((⎕AV[1+mb[i;j]]),(⎕AV[1+mg[i;j]]),(⎕AV[1+mr[i;j]]))
[16]  NP←NP+3
[17]  →(j=j←j+1)/t2
[18] f2:
[19]  →(SA=0)/saltinho
[20]  REG←((3×1↓⍴mb)+SA)↑REG,lixo
[21] saltinho:saida←saida,REG
[22]  h←(0=10|i)/'*'
[23]  →(i=i←i+1)/t1
[24] f1:
[25]  →fimmesmo
[26] eoito:tc←m1 ⋄ m←m2
[27]  xxx←1024⍴' '
[28]  i←1
[29] g1:→(i>256)/g3
[30]  xxx[(4×i-1)+⍳4]←(⎕AV[1+tc[i;1]]),(⎕AV[1+tc[i;2]]),(⎕AV[1+tc[i;3]]),⎕AV[1]
[31]  →(i=i←i+1)/g1
[32] g3:saida←saida,xxx
[33]  i←1
[34] g4:→(i>1↑⍴m)/uja
[35]  xxx←(1↓⍴m)⍴' '
[36]  j←1
[37] g5:→(j>1↓⍴m)/yqa
[38]  xxx[j]←⎕AV[1+m[i;j]]
[39]  →(j=j←j+1)/g5
[40] yqa:
[41]  →(SA=0)/pulinho
[42]  xxx←((⍴xxx)+SA)↑xxx,lixo
[43] pulinho:saida←saida,xxx
[44]  h←(0=10|i)/'*'
[45]  →(i=i←i+1)/g4
[46] uja:
```

```
[47] fimmesmo:' '
[48]  quica←saida FILE nome
[49]  'feito... Tempo gasto = ',7 1⍕(24 60 60 1000⊥¯4↑⎕TS-ant)÷1000
-------------------------------------------------------------
```

vivo752

```
[ 0]  Δ_DC←Δ_PID SVOPAIR Δ_SV;Δ_CV
[ 1] ⍝-----------------------------------------------------------------⍝
[ 2] ⍝
[ 3] ⍝  Offer shared variables named in SV to processor number PID.
[ 4] ⍝  To be used for auxiliary processors which use a two-variable
[ 5] ⍝  interface, where the control variable begins with "C" or "CTL"
[ 6] ⍝  and the data variable begins with "D" or "DAT".  (Cxxx/Dxxx or
[ 7] ⍝  CTLxxx/DATxxx)
[ 8] ⍝
[ 9] ⍝  Returns final degree of coupling (DC) for each shared variable
[10] ⍝  Expected degree of coupling is 2 for the control variable and 1
[11] ⍝  or 2 for the data variable.
[12] ⍝
[13] ⍝  Waits up to 15 seconds for the control variable to be accepted
[14] ⍝  by the processor.  Sets standard access control to inhibit my
[15] ⍝  double references or specifications of the control variable.
[16] ⍝  Does not set access control for the data variable.
[17] ⍝
[18] ⍝  Monadic call simply returns the current degree of coupling.
[19] ⍝
[20] ⍝-----------------------------------------------------------------⍝
[21] ⍝
[22] ⍝ Examples:
[23] ⍝
[24] ⍝ Offer a set of variables to the fullscreen processor
[25] ⍝       124 SVOPAIR 'CTL124' 'DAT124'
[26] ⍝ 2 1
[27] ⍝
[28] ⍝ Offer using surrogates
[29] ⍝       124 SVOPAIR 'Control C' 'Data D'
[30] ⍝ 2 1
[31] ⍝
[32] ⍝ Note: Access control set for control, not data
[33] ⍝       ⎕SVC¨ 'Control' 'Data'
[34] ⍝  1 0 1 1  0 0 0 0
[35] ⍝
[36] ⍝ Check degree of coupling
[37] ⍝       SVOPAIR 'Control' 'Data'
[38] ⍝ 2 1
[39] ⍝
[40] ⍝ Offer improper control variable
[41] ⍝       210 SVOPAIR 'A1' 'D1'
[42] ⍝ 1 1
[43] ⍝
[44] ⍝=================================================================⍝
[45] ⍝
[46]  Δ_SV←(¯2↑1 1,⍴Δ_SV)⍴Δ_SV←⊃Δ_SV      ⍝ Convert name argument to matrix
[47]  →(2=⎕NC'Δ_PID')/Δ_DYADIC           ⍝ Is it a dyadic function call?
[48]  Δ_DC←⎕SVO Δ_SV                      ⍝ Just return coupling if monadic
[49]  →0                                  ⍝ and exit
[50] Δ_DYADIC:
[51]  Δ_CV←(-+/∧⍀⍵=' ')⌽Δ_SV              ⍝ Rotate trailing blanks and then
[52]  Δ_CV←(-+/∧⍀⍵≠' ')⌽Δ_CV              ⍝ rotate surrogate name to front
[53]  Δ_CV←Δ_CV[;⎕IO]='C'                 ⍝ Which names are control vars?
[54]  →(1∧.≠Δ_CV/Δ_DC←Δ_PID ⎕SVO Δ_SV)/Δ_END   ⍝ Initial Offer
```

```
[55]  ⎕SVE←15                              ⍝ Wait up to 15 seconds for accepts
[56] Δ_CHECK:
[57]  →(1∧.≠Δ_CV/Δ_DC←⎕SVO Δ_SV)/Δ_END    ⍝ Check couplings
[58]  →(0≠⎕SVE)/Δ_CHECK                    ⍝ Retry if time left
[59] Δ_END:
[60]  Δ_CV←1 0 1 0 ⎕SVC Δ_CV≠Δ_SV         ⍝ Set access control on C vars only
-------------------------------------------------------------
[0]  r←codifica valor;v1;v2
[1]  v1←256|valor
[2]  valor←valor-v1
[3]  v2←valor÷256
[4] ⍝ r←(1↑82 ⎕DR v1),(1↑82 ⎕DR v2),82 ⎕DR 0
[5]  r←(⎕AF v1),(⎕AF v2),⎕AF 0 0
-------------------------------------------------------------
[ 0]  r←letra geragrava n;linhas;colunas;ondeli;ondeco;colu2;tamaf;tamai;x;y;nomuz;coma
[ 1] ⍝ gera o arquivo em r e grava-o com o nome de image(n).bmp
[ 2]  linhas←14+?4
[ 3]  colunas←15+?4
[ 4]  ondeli←1+4?linhas-2
[ 5]  ondeli←ondeli[⍋ondeli]
[ 6]  ondeco←1+4?colunas-2
[ 7]  ondeco←ondeco[⍋ondeco]
[ 8]  colu2←4×⌈colunas÷4
[ 9]  x←BMP
[10]  tamaf←1078+linhas×colu2
[11]  tamai←linhas×colu2
[12]  x[3 4 5 6]←codifica tamaf
[13]  x[19 20 21 22]←codifica colunas
[14]  x[23 24 25 26]←codifica linhas
[15]  y←(linhas,colunas)montabloco ondeli,ondeco
[16] ⍝ ('image',(,'ZI3' ⎕FMT n),'.BMP')grava x,y
[17]  nomuz←'c:\apl2\i',letra,'age',('000'↑⍕n),'.BMP'
[18]  'gravando o arquivo ',nomuz
[19]  coma←'IW,"',nomuz,'",C'
[20]  C210←coma
[21]  '1-',⍕C210
[22]  D210←x,y
[23] ⍝ '2-',⍕C210
[24]  C210←1,0,⍴x,y
[25]  '3-',⍕C210
[26]  C210←⍳0
[27]  '4-',⍕C210
[28]  BLOCO←x,y
[29]  r←linhas,colunas,ondeli,ondeco
-------------------------------------------------------------
[ 0]  r←geragravaexemplo;linhas;colunas;ondeli;ondeco;colu2;tamaf;tamai;x;y;nomuz;coma
[ 1] ⍝ gera o arquivo em r e grava-o com o nome de image(n).bmp
[ 2]  linhas←15
[ 3]  colunas←19
[ 4]  ondeli←7 9 12 14
[ 5]  ondeco←7 10 17 18
[ 6]  colu2←4×⌈colunas÷4
[ 7]  x←BMP
[ 8]  tamaf←1078+linhas×colu2
[ 9]  tamai←linhas×colu2
[10]  x[3 4 5 6]←codifica tamaf
[11]  x[19 20 21 22]←codifica colunas
[12]  x[23 24 25 26]←codifica linhas
[13]  y←(linhas,colunas)montabloco ondeli,ondeco
[14]  nomuz←'c:\apl2\exemplo.bmp'
[15]  coma←'IW,"',nomuz,'",C'
[16]  C210←coma
[17]  D210←x,y
```

```
[18]  C210←1,0,ρx,y
[19]  C210←ι0
[20] ⍝ ('exemplo.BMP')grava x,y
[21]  BLOCO←x,y
[22]  r←linhas,colunas,ondeli,ondeco
------------------------------------------------------------
[0]  r←hexab bi
[1]  r←hexan(⎕AVιbi)-1
------------------------------------------------------------
[0]  r←hexan num
[1]  →(num>255)/0
[2]  r←'0123456789ABCDEF'[1+16 16⊤num]
------------------------------------------------------------
[ 0]  r←tam montabloco lico;x;li;co;z;y;co2;i
[ 1] ⍝ tamanho e um vetor de linhas x colunas
[ 2] ⍝ lico tem 4 valores de linha e 4 de coluna
[ 3] ⍝ devolve o bloco alinhado e montado
[ 4]  x←tamρ255
[ 5]  x[lico[ι4];]←127
[ 6]  x[;lico[4+ι4]]←127
[ 7]  li←1↑tam
[ 8]  co←1↓tam
[ 9]  co2←4×⌈co÷4
[10]  z←,(li,co2)↑x
[11]  y←,(li,co2)ρ' '
[12]  i←1
[13] testa:→(i>ρy)/fim
[14] ⍝ y[i]←1↑82 ⎕DR z[i]
[15]  y[i]←⎕AF z[i]
[16]  →(i=i←i+1)/testa
[17] fim:r←y
------------------------------------------------------------
[0]  r←visivel bi
[1]  →(biϵ'0123456789ABCDEFGHIJKLMNOPQRTSUVXYZ.,><⌿⍀!#$%  ^&*()-_=+[]{}|;:')/ok
[2]  r←'.'
[3]  →0
[4] ok:r←bi
------------------------------------------------------------
[ 0]  opesq vivo752a n;CORRECAO;EVENTO;aaa;acuja;con;dhx;esse;f;ib;ic;il;letra;lixo1;lixon
      ol;relat;reso;resp;resu;upag;xixo;xk;ylu
[ 1]  letra←'X'
[ 2]  →(0≠⎕NC'opesq')/qveio
[ 3]  opesq←10ρ' '
[ 4] qveio:
[ 5]  lixonol←210 SVOPAIR'C210' 'D210'
[ 6]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 7]  CORRECAO←10 ⋄ EVENTO←'PL752   '
[ 8]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 9]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ letra←n[5]
[10]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎ιn
[11]  FOLHALA752←ajusta80 FOLHALA752
[12]  relat←((2+1↑ρylu),1 0+ρFOLHALA752)ρ' '
[13]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[14]  xk←1 ⋄ resu←0 11ρ0
[15] testa:→(xk>1↑ρylu)/fim
[16]  esse←44 80ρ' '
[17]  f←FOLHALA752
[18]  esse[1;]←80↑dhx[1;]
[19]  esse[2;]←80↑dhx[2;]
[20]  esse[3;]←80↑4 2⍎VERSAOa←3.37
[21]  esse[4;]←80↑ylu[xk;ι6]
[22]  esse[5;]←80↑ylu[xk;6+ι30]
```

```
[23]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[24]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[25]  esse[43;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[26]  esse[44;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[27] inica:
[28]  reso←letra geragrava resp
[29]  'grava os arquivo em c:\apl2\...'
[30]  il←10 ⋄ ic←7 ⋄ ib←1 ⋄ con←0
[31] volta:→(il>17)/fora
[32]  esse[il;⍳4]←NUMLINHAS[il-9;]
[33]  esse[il;ic+0 1]←hexab BLOCO[ib]
[34]  esse[il;55+con]←visivel BLOCO[ib]
[35] pula:ib←ib+1 ⋄ ic←ic+3 ⋄ con←con+1
[36]  →(con<16)/volta
[37]  ic←7 ⋄ il←il+1 ⋄ con←0
[38]  →volta
[39] fora:
[40]  ic←7 ⋄ ib←1041 ⋄ con←0
[41] volta2:→(ib>⍴BLOCO)/fora2
[42]  esse[il;⍳4]←NUMLINHAS[il-8;]
[43]  esse[il;ic+0 1]←hexab BLOCO[ib]
[44]  esse[il;55+con]←visivel BLOCO[ib]
[45] pula2:ib←ib+1 ⋄ ic←ic+3 ⋄ con←con+1
[46]  →(con<16)/volta2
[47]  ic←7 ⋄ il←il+1 ⋄ con←0
[48]  →volta2
[49] fora2:
[50]  esse[8;⍳12]←'I',letra,'AGE',(,'000'⍕resp),'.BMP'
[51] respa:
[52]  resp←resp,reso
[53] continua:
[54]  resu←resu,[1](1,11)⍴resp
[55]  acuja←(f[;2]='#')/⍳1↑⍴f
[56]  f[acuja;⍳80]←esse[⍬,f[acuja;3 4],' ';]
[57]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[58]  ⍞←(⍕xk←xk+1),'-'
[59]  →testa
[60] fim:upag←(1 0+⍴f)⍴' '
[61]  →(1=≡n)/elafa
[62]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[63]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[64]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←4 0 8 0 3 0 8 0 3 0 3 0 3 0 8 0 3 0 3 0 3 0)⍕resu
[65]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[66]  →terminando
[67] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),3 0 3 0 8 0 3 0 3 0 3 0 8 0 3 0 3 0 3 0⍕0 1↓resu
      )
[68]  aaa[1;35 36]←2 0⍕CORRECAO
[69]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∘⍳⍷EVENTO=' ')/EVENTO),'.gpa')
[70]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[71] terminando:
[72]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[73]  relat[1↑⍴relat;;]←upag
[74]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[75] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[76]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∘⍳⍷EVENTO=' ')/EVENTO),'.tex'
[77]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[78]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
[79]  'imagens guardadas em c:\apl2\...'
[80]  lixonol←⎕SVR 2 4⍴'C210D210'
[81]  lixonol←⎕EX 2 4⍴'C210D210'
------------------------------------------------------------
```

vivo753

```
[0]  AVISO
[1]  'localize o arquivo exemp753.bmp. Ele eh o exemplo da folha'
[2]  ' Ha um limite de 80 exercicios'
-------------------------------------------------------------
[ 0]  Δ_DC←Δ_PID SVOPAIR Δ_SV;Δ_CV
[ 1] ⍝-----------------------------------------------------------------⍝
[ 2] ⍝
[ 3] ⍝  Offer shared variables named in SV to processor number PID.
[ 4] ⍝  To be used for auxiliary processors which use a two-variable
[ 5] ⍝  interface, where the control variable begins with "C" or "CTL"
[ 6] ⍝  and the data variable begins with "D" or "DAT".  (Cxxx/Dxxx or
[ 7] ⍝  CTLxxx/DATxxx)
[ 8] ⍝
[ 9] ⍝  Returns final degree of coupling (DC) for each shared variable
[10] ⍝  Expected degree of coupling is 2 for the control variable and 1
[11] ⍝  or 2 for the data variable.
[12] ⍝
[13] ⍝  Waits up to 15 seconds for the control variable to be accepted
[14] ⍝  by the processor.  Sets standard access control to inhibit my
[15] ⍝  double references or specifications of the control variable.
[16] ⍝  Does not set access control for the data variable.
[17] ⍝
[18] ⍝  Monadic call simply returns the current degree of coupling.
[19] ⍝
[20] ⍝-----------------------------------------------------------------⍝
[21] ⍝
[22] ⍝ Examples:
[23] ⍝
[24] ⍝ Offer a set of variables to the fullscreen processor
[25] ⍝       124 SVOPAIR 'CTL124' 'DAT124'
[26] ⍝ 2 1
[27] ⍝
[28] ⍝ Offer using surrogates
[29] ⍝       124 SVOPAIR 'Control C' 'Data D'
[30] ⍝ 2 1
[31] ⍝
[32] ⍝ Note: Access control set for control, not data
[33] ⍝       ⎕SVC¨ 'Control' 'Data'
[34] ⍝  1 0 1 1  0 0 0 0
[35] ⍝
[36] ⍝ Check degree of coupling
[37] ⍝       SVOPAIR 'Control' 'Data'
[38] ⍝ 2 1
[39] ⍝
[40] ⍝ Offer improper control variable
[41] ⍝       210 SVOPAIR 'A1' 'D1'
[42] ⍝ 1 1
[43] ⍝
[44] ⍝=================================================================⍝
[45] ⍝
[46]  Δ_SV←(¯2↑1 1,⍴Δ_SV)⍴Δ_SV←⊃Δ_SV      ⍝ Convert name argument to matrix
[47]  →(2=⎕NC'Δ_PID')/Δ_DYADIC           ⍝ Is it a dyadic function call?
[48]  Δ_DC←⎕SVO Δ_SV                     ⍝ Just return coupling if monadic
[49]  →0                                 ⍝ and exit
[50] Δ_DYADIC:
[51]  Δ_CV←(-+/∧⍀⌽Δ_SV=' ')⌽Δ_SV          ⍝ Rotate trailing blanks and then
[52]  Δ_CV←(-+/∧⍀⌽Δ_CV≠' ')⌽Δ_CV          ⍝ rotate surrogate name to front
[53]  Δ_CV←Δ_CV[;⎕IO]='C'                ⍝ Which names are control vars?
[54]  →(1∧.≠Δ_CV/Δ_DC←Δ_PID ⎕SVO Δ_SV)/Δ_END   ⍝ Initial Offer
[55]  ⎕SVE←15                            ⍝ Wait up to 15 seconds for accepts
[56] Δ_CHECK:
```

```
[57]  →(1∧.≠Δ_CV/Δ_DC←⎕SVO Δ_SV)/Δ_END    ⍝ Check couplings
[58]  →(0≠⎕SVE)/Δ_CHECK                    ⍝ Retry if time left
[59] Δ_END:
[60]  Δ_CV←1 0 1 0 ⎕SVC Δ_CV≠Δ_SV         ⍝ Set access control on C vars only
------------------------------------------------------------
[0]  r←arrumayyy y
[1]  r←((3+1↑⍴y),4+2×1↓⍴y)⍴' '
[2]  r[3+⍳1↑⍴y;4+2×⍳1↓⍴y]←1 0⍉y
[3]  r[2;4+⍳2×1↓⍴y]←2 0⍉⍳1↓⍴y
[4]  r[3+⍳1↑⍴y;1 2]←2 0⍉((1↑⍴y),1)⍴1+(1↑⍴y)-⍳1↑⍴y
------------------------------------------------------------
[0]  r←codifica valor;v1;v2
[1]  v1←256|valor
[2]  valor←valor-v1
[3]  v2←valor÷256
[4] ⍝ r←(1↑82 ⎕DR v1),(1↑82 ⎕DR v2),82 ⎕DR 0
[5]  r←(⎕AF v1),(⎕AF v2),⎕AF 0 0
------------------------------------------------------------
[0]  r←cor ur;v1;v2;v3
[1] ⍝ ur[1]=azul/ur[2]=verde/ur[3]=vermelho - numeros de 0 a 255
[2]  v1←256|ur[1]
[3]  v2←256|ur[2]
[4]  v3←256|ur[3]
[5] ⍝ r←(1↑82 ⎕DR v1),(1↑82 ⎕DR v2),(1↑82 ⎕DR v3),1↑82 ⎕DR 0
[6]  r←(⎕AF v1),(⎕AF v2),(⎕AF v3),⎕AF 0
------------------------------------------------------------
[ 0]  r←letra geragrava n;linhas;colunas;ondeli;ondeco;colu2;tamaf;tamai;x;y;sequencia;bmp
      1;h1;h2;nomuz;coma
[ 1] ⍝ 'letra=',letra
[ 2] ⍝ gera o arquivo em r e grava-o com o nome de image(n).bmp
[ 3]  linhas←14+?4
[ 4]  colunas←15+?4
[ 5]  sequencia←¯1+9?9
[ 6]  ondeli←1+4?linhas-2
[ 7]  ondeli←ondeli[h1←⍋ondeli]
[ 8]  ondeli←ondeli,(sequencia[⍳4])[h1]
[ 9]  ondeco←1+4?colunas-2
[10]  ondeco←ondeco[h2←⍋ondeco]
[11]  ondeco←ondeco,(sequencia[4+⍳4])[h2]
[12]  colu2←4×⌈colunas÷4
[13]  bmp1←BMP
[14]  x←bmp1 sincor((sequencia[⍳4])[h1]),((sequencia[4+⍳4])[h2]),sequencia[9]
[15]  tamaf←1078+linhas×colu2
[16]  tamai←linhas×colu2
[17]  x[3 4 5 6]←codifica tamaf
[18]  x[19 20 21 22]←codifica colunas
[19]  x[23 24 25 26]←codifica linhas
[20]  YYY←⍎[1](linhas,colu2)⍴¯1+⎕AV⍳y←(linhas,colunas)montabloco ondeli,ondeco,sequencia[9
      ]
[21]  →(letra[2]='n')/pulanao
[22]  nomuz←'c:\apl2\y',letra[1],'age',('000'⍕n),'.BMP'
[23]  coma←'IW,"',nomuz,'",C'
[24]  'gravando ',nomuz
[25]  C210←coma
[26]  '1=',C210
[27]  D210←x,y
[28]  C210←1,0,⍴x,y
[29]  '2=',C210
[30]  C210←⍳0
[31]  '3=',C210
[32] ⍝ ('ymage',(,'ZI3' ⎕FMT n),'.BMP')grava x,y
[33] pulanao:
[34]  BLOCO←x,y
```

```
[35]  r←linhas,colunas,ondeli,ondeco,sequencia[9]
-------------------------------------------------------------
[ 0]  geraquestao302;xx;inds;yy;as
[ 1]  as←''''
[ 2]  'Imagine uma poss⍀',as,'ivel tabela de cores, na qual cada cor aparece'
[ 3]  'nos seus componentes B,G,R em hexadecimal, onde 00=nada e FF=tudo'
[ 4]  '(note a invers⍀~ao BGR ao inv⍀',as,'es de RGB como o esquema ⍀',as,'e'
[ 5]  'conhecido). Lembre tamb⍀',as,'em que cada cor usa apenas 3 bytes '
[ 6]  'mas como s⍀~ao alinhadas em m⍀',as,'ultiplos de 4, ap⍀',as,'os cada'
[ 7]  'cor h⍀',as,'a um 00 sobrando.'
[ 8]  'A tabela de cores ⍀',as,'e:⍀⍀*'
[ 9]  '⍀begin{verbatim}'
[10]  xx←geratabela302
[11]  xx
[12]  '⍀end{verbatim}'
[13]  inds←¯1+2?9
[14]  inds←inds[⍋inds]
[15]  'a) a cor n⍀',as,'umero ',(⍕inds[1]),':⍀uline{⍀hspace*{2cm}}⍀⍀*'
[16]  'b) a cor n⍀',as,'umero ',(⍕inds[2]),':⍀uline{⍀hspace*{2cm}}⍀⍀*'
[17]  'c) a cor n⍀',as,'umero 9 tem um forte componente de⍀uline{⍀hspace*{2cm}}⍀⍀*'
[18]  Z[(1+inds),10;]
-------------------------------------------------------------
[ 0]  r←geratabela302;z;y;i
[ 1]  z←TBAC
[ 2]  z←z[9?9;]
[ 3]  y←(hexan⍤z[1;4 5 6]),(hexan⍤z[1;7 8 9]),(hexan⍤z[1;10 11 12]),'00'
[ 4]  y←y,(hexan⍤z[2;4 5 6]),(hexan⍤z[2;7 8 9]),(hexan⍤z[2;10 11 12]),'00'
[ 5]  y←y,(hexan⍤z[3;4 5 6]),(hexan⍤z[3;7 8 9]),(hexan⍤z[3;10 11 12]),'00'
[ 6]  y←y,(hexan⍤z[4;4 5 6]),(hexan⍤z[4;7 8 9]),(hexan⍤z[4;10 11 12]),'00'
[ 7]  y←y,(hexan⍤z[5;4 5 6]),(hexan⍤z[5;7 8 9]),(hexan⍤z[5;10 11 12]),'00'
[ 8]  y
[ 9]  y←(hexan⍤z[6;4 5 6]),(hexan⍤z[6;7 8 9]),(hexan⍤z[6;10 11 12]),'00'
[10]  y←y,(hexan⍤z[7;4 5 6]),(hexan⍤z[7;7 8 9]),(hexan⍤z[7;10 11 12]),'00'
[11]  y←y,(hexan⍤z[8;4 5 6]),(hexan⍤z[8;7 8 9]),(hexan⍤z[8;10 11 12]),'00'
[12]  y←y,(hexan⍤z[9;4 5 6]),(hexan⍤z[9;7 8 9]),(hexan⍤z[9;10 11 12]),'00'
[13]  i←?3
[14]  →(i=1)/azul
[15]  →(i=2)/verde
[16] vermelho:
[17]  y←y,(hexan?20),(hexan?20),(hexan 230+?20),'00⍀⍀*'
[18]  Z←z,[1]1 12⍴12↑'vermelhao'
[19]  →junta
[20] verde:
[21]  y←y,(hexan?20),(hexan 230+?20),(hexan?20),'00⍀⍀*'
[22]  Z←z,[1]1 12⍴12↑'verdao'
[23]  →junta
[24] azul:
[25]  y←y,(hexan 230+?20),(hexan?20),(hexan?20),'00⍀⍀*'
[26]  Z←z,[1]1 12⍴12↑'azulao'
[27] junta:
[28]  r←y
-------------------------------------------------------------
[0]  r←hexab bi
[1]  r←hexan(⎕AV⍳bi)-1
-------------------------------------------------------------
[0]  r←hexan num
[1]  →(num>255)/0
[2]  r←'0123456789ABCDEF'[1+16 16⊤num]
-------------------------------------------------------------
[ 0]  r←tam montabloco lico;x;li;co;z;y;co2;i;oba;bolavez
[ 1] ⍝ tamanho e um vetor de linhas x colunas
[ 2] ⍝ lico tem 8 valores de linha e 8 de coluna + cor do fundo
[ 3] ⍝ lico[  ⍳4] contem as 4 linhas e lico[4+  ⍳4] as cores das linhas
```

```
[ 4] ⍝ linhas tem 4 valores de linha e mais 4 de cores. Idem coluna
[ 5] ⍝ devolve o bloco alinhado e montado
[ 6]  x←tamplico[17]
[ 7]  i←1 ⋄ bolavez←4?4
[ 8] t1:→(i>4)/fz
[ 9]  oba←bolavez[i]
[10]  x[lico[oba];]←lico[oba+4]
[11]  x[;lico[oba+8]]←lico[oba+12]
[12]  →(i=i←i+1)/t1
[13] fz:
[14]  oba←bolavez[1]
[15]  PRIMEIRO←'LINHA=',2 0⍕lico[oba]
[16]  oba←bolavez[4]
[17]  ULTIMO←'COLUN=',2 0⍕lico[oba+8]
[18]  li←1↑tam
[19]  co←1↓tam
[20]  co2←4×⌈co÷4
[21]  z←,(li,co2)↑x
[22]  y←,(li,co2)⍴' '
[23]  i←1
[24] testa:→(i>⍴y)/fim
[25] ⍝ y[i]←1↑82 ⎕DR z[i]
[26]  y[i]←⎕AF z[i]
[27]  →(i=i←i+1)/testa
[28] fim:r←y
------------------------------------------------------------
[ 0]  r←b sincor sc;in;i;k
[ 1]  in←54
[ 2]  i←1 ⋄ TBAC←9 12⍴' '
[ 3] t1:→(i>9)/fz
[ 4]  k←1+sc[i]
[ 5]  b[in+⍳4]←cor⍪CORES[k;3+⍳3],' ',CORES[k;6+⍳3],' ',CORES[k;9+⍳3]
[ 6]  TBAC[i;]←CORES[k;]
[ 7]  i←i+1
[ 8]  in←in+4
[ 9]  →t1
[10] fz:r←b
------------------------------------------------------------
[0]  r←visivel bi
[1]  →(bi∈'0123456789ABCDEFGHIJKLMNOPQRTSUVXYZ.,></↖!#$%  ^&*()-_=+[]{}|;:')/ok
[2]  r←'.'
[3]  →0
[4] ok:r←bi
------------------------------------------------------------
[  0]  opesq vivo753a n;CORRECAO;EVENTO;aaa;acuja;con;dhx;esse;f;ib;ic;il;letra;li;lixo1;li
       xonol;nomes;ql39;qlinha;quais;relat;reso;resp;resu;upag;xixo;xk;xx;ylu
[  1]  letra←'X'
[  2]  →(0≠⎕NC'opesq')/qveio
[  3]  opesq←10⍴' '
[  4] qveio:
[  5]  lixonol←210 SVOPAIR'C210' 'D210'
[  6]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[  7]  CORRECAO←0 ⋄ EVENTO←'PL753   '
[  8]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
       4 5],⎕TS[6]+⎕TS[7]÷1000
[  9]  →(isnum n)/1+⎕LC ⋄ ylu←⍙FM'c:↖apl2↖',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ letra←n[5]
[ 10]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 11]  ylu←n grupo ylu
[ 12]  FOLHALA753←ajusta80 FOLHALA753
[ 13]  relat←((2+1↑⍴ylu),1 20+⍴FOLHALA753)⍴' '
[ 14]  relat[1;;]←(1↓⍴relat)↑⍙FM'c:↖apl2↖VIVOBLOI'
[ 15]  xk←1 ⋄ resu←0 62⍴0
[ 16] testa:→(xk>1↑⍴ylu)/fim
```

```
[ 17]  esse←46 80⍴' '
[ 18]  f←((1↑⍴FOLHALA753),100)↑FOLHALA753
[ 19]  esse[1;]←80↑dhx[1;]
[ 20]  esse[2;]←80↑dhx[2;]
[ 21]  esse[3;]←80↑4 2⍕VERSAOa←4.27
[ 22]  esse[4;]←80↑ylu[xk;⍳6]
[ 23]  →(36=1↓⍴ylu)/zebra
[ 24]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[ 25]  nomes←(ql39,100)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[ 26]  f←(((qlinha-1),100)↑f),[1]nomes,[1](qlinha,0)↓f
[ 27]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[ 28]  →maiszebra
[ 29] ∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆∆
[ 30] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[ 31] ⍝ ↓↓↓↓ e ↑↑↑↑↑ idem
[ 32] maiszebra:
[ 33]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[ 34]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[ 35]  esse[45;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[ 36]  esse[46;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[ 37] inica:
[ 38]  reso←(letra,'n')geragrava resp
[ 39]  il←9 ⋄ ic←7 ⋄ ib←1 ⋄ con←0
[ 40] volta:→(il>16)/fora
[ 41]  esse[il;⍳4]←NUMLINHAS[il-8;]
[ 42]  esse[il;ic+0 1]←hexab BLOCO[ib]
[ 43]  esse[il;55+con]←visivel BLOCO[ib]
[ 44] pula:ib←ib+1 ⋄ ic←ic+3 ⋄ con←con+1
[ 45]  →(con<16)/volta
[ 46]  ic←7 ⋄ il←il+1 ⋄ con←0
[ 47]  →volta
[ 48] fora:
[ 49]  il←il+1 ⋄ ic←7 ⋄ ib←1041 ⋄ con←0
[ 50] volta2:→(ib>⍴BLOCO)/fora2
[ 51]  esse[il;⍳4]←NUMLINHAS[il-8;]
[ 52]  esse[il;ic+0 1]←hexab BLOCO[ib]
[ 53]  esse[il;55+con]←visivel BLOCO[ib]
[ 54] pula2:ib←ib+1 ⋄ ic←ic+3 ⋄ con←con+1
[ 55]  →(con<16)/volta2
[ 56]  ic←7 ⋄ il←il+1 ⋄ con←0
[ 57]  →volta2
[ 58] fora2:
[ 59]  xx←resp,reso
[ 60]  li←3 0 4 0 3 0⍕xx[1 3 2]
[ 61]  li←li,' F='
[ 62]  li←li,TBAC[1+xx[20];⍳3],' '
[ 63]  li←li,PRIMEIRO,' ',ULTIMO  ⍝ ate aqui ⍴li=30
[ 64] inica6:
[ 65]  reso←(letra,'s')geragrava resp
[ 66]  il←9 ⋄ ic←7 ⋄ ib←1 ⋄ con←0
[ 67] volta6:→(il>16)/fora6
[ 68] pula6:ib←ib+1 ⋄ ic←ic+3 ⋄ con←con+1
[ 69]  →(con<16)/volta6
[ 70]  ic←7 ⋄ il←il+1 ⋄ con←0
[ 71]  →volta6
[ 72] fora6:
[ 73]  il←il+1 ⋄ ic←7 ⋄ ib←1041 ⋄ con←0
[ 74] volta26:→(ib>⍴BLOCO)/fora26
[ 75] pula26:ib←ib+1 ⋄ ic←ic+3 ⋄ con←con+1
[ 76]  →(con<16)/volta26
[ 77]  ic←7 ⋄ il←il+1 ⋄ con←0
[ 78]  →volta26
[ 79] fora26:
```

```
[ 80]  esse[8;]←80↑'⍀verb+Y',letra,'AGE',(,'000'⍕resp),'.BMP+.'
[ 81]  xx←resp,reso
[ 82]  quais←5+2?4
[ 83]  quais←quais[⍋quais]
[ 84]  esse[43;]←80↑1 0⍕quais[1]
[ 85]  li←li,' 2.',TBAC[quais[1];⍳3]
[ 86]  esse[44;]←80↑1 0⍕quais[2]
[ 87]  li←li,' ',TBAC[quais[2];⍳3]
[ 88]  li←li,' ',PRIMEIRO,' ',ULTIMO
[ 89]  resu←resu,[1]1 62⍴li
[ 90]  acuja←(f[;2]='#')/⍳1↑⍴f
[ 91]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[ 92]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[ 93]  ⍞←(⍕xk←xk+1),'-'
[ 94]  →testa
[ 95] fim:upag←(1 0+⍴f)⍴' '
[ 96]  →(1=≡n)/elafa
[ 97]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[ 98]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[ 99]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),100)↑resu
[100]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[101]  →terminando
[102] elafa:aaa←ylu[;⍳36],0 3↓resu
[103]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.gpa')
[104]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[105] terminando:
[106]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[107]  relat[1↑⍴relat;;]←upag
[108]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[109] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[110]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.tex'
[111]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[112]  lixonol←⎕SVR 2 4⍴'C210D210'
[113]  lixonol←⎕EX 2 4⍴'C210D210'
[114]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
[115]  'imagens criadas em c:⍀apl2⍀...'
-------------------------------------------------------------
```

vivo754

```
[ 0]  r←mask convolui m;m1;m2;m3;m4;m5;m6;i;j;ma
[ 1]  m1←3 3⍴¯1 ¯1 ¯1 ¯1 8 ¯1 ¯1 ¯1 ¯1
[ 2]  m2←3 3⍴¯1 ¯1 ¯1 2 2 2 ¯1 ¯1 ¯1
[ 3]  m3←3 3⍴¯1 2 ¯1 ¯1 2 ¯1 ¯1 2 ¯1
[ 4]  m4←3 3⍴1 0 ¯1 2 0 ¯2 1 0 ¯1
[ 5]  m5←3 3⍴¯1 ¯2 ¯1 0 0 0 1 2 1
[ 6]  m6←3 3⍴0 ¯1 0 ¯1 4 ¯1 0 ¯1 0
[ 7]  m←7,[1](7,m,7),[1]7
[ 8]  ma←⍋'m',1 0⍕mask
[ 9]  r←(⍴m)⍴0
[10]  i←2
[11] t1:→(i>¯1+1↑⍴m)/ca
[12]  j←2
[13] t2:→(j>¯1+1↓⍴m)/ca2
[14]  r[i;j]←(m[i-1;j-1]×ma[1;1])+(m[i-1;j]×ma[1;2])+m[i-1;j+1]×ma[1;3]
[15]  r[i;j]←r[i;j]+(m[i;j-1]×ma[2;1])+(m[i;j]×ma[2;2])+m[i;j+1]×ma[2;3]
[16]  r[i;j]←r[i;j]+(m[i+1;j-1]×ma[3;1])+(m[i+1;j]×ma[3;2])+m[i+1;j+1]×ma[3;3]
[17] ⍝   →((mask<4)  ∨(mask>5))/vorteia // este comando foi comentado em
[18] ⍝ 09/01/02, pois nao tem sentido dividir por 4. Caso se descbra
[19] ⍝ que sim, tem sentido, e' so' tirar o comentario
[20] ⍝
[21] ⍝ r[i;j]  ←  ⌊r[i;j]  ÷4
```

```
[22] vorteia:→(j=j←j+1)/t2
[23] ca2:→(i=i←i+1)/t1
[24] ca:r←r[1+⍳¯2+1↑⍴m;1+⍳¯2+1↓⍴m]
[25]  r←⌊r
[26]  r←(r≥0)×r
[27]  r←((r>15)×15)+(r≤15)×r
------------------------------------------------------------
[0]  r←deixablz mat
[1]  r←4 0⍕mat
[2]  r←(4 4⍴4 0⍕⍳4),r
[3]  r[;5 9 13 17 21 25]←'&'
[4]  r←r,'⍀'
[5]  r←r,'⍀'
------------------------------------------------------------
[ 0]  r←geracaso llcc;tam
[ 1]  r←(tam←×/llcc)⍴7
[ 2]  r[?6⍴tam]←4 5 6 8 9 10
[ 3]  r[?6⍴tam]←¯1+?6⍴16
[ 4]  r←llcc⍴r
[ 5]  r[?1↑llcc;]←6
[ 6]  r[;?1↓llcc]←8
[ 7]  r[?1↑llcc;]←5
[ 8]  r[;?1↓llcc]←9
------------------------------------------------------------
[ 0]  w←geragrad dez;i;x;r
[ 1] ⍝ dez e um vetor de 6 numeros distintos entre 1 e 72
[ 2]  dez←dez,1 1 1 1
[ 3]  dez←dez-1
[ 4] voltinha:i←1 ⋄ r←10 8⍴' '
[ 5] teste:→(i>10)/finzao
[ 6]  x←1+3 4 6⊤dez[i]
[ 7]  r[i;1]←'ABC'[x[1]]
[ 8]  r[i;2 5 8]←'[;]'
[ 9]  r[i;3 4]←2 0⍕x[2]
[10]  r[i;6 7]←2 0⍕x[3]
[11]  →(i=i←i+1)/teste
[12] finzao:r←48↑,r
[13]  →('A'∈r)/tema
[14]  →deucaca
[15] tema:→('B'∈r)/temb
[16]  →deucaca
[17] temb:→('C'∈r)/blza
[18]  →deucaca
[19] blza:w←(8↑r),'&',(8↑8↓r),'&',(8↑16↓r),'&',(8↑24↓r),'&',(8↑32↓r)
[20]  w←w,'&',(40↓r),'⍀⍀'
[21]  →0
[22] deucaca:w←'***'
------------------------------------------------------------
[ 0]  opesq vivo432a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;caso;lixo1;aaa
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←6 ⋄ EVENTO←'PL432   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⍙FM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA432)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑⍙FM'c:⍀apl2⍀VIVOBLO1'
[11]  xk←1 ⋄ resu←0 7⍴0
[12] testa:→(xk>1↑⍴ylu)/fim
```

```
[13]  esse←19 80ρ' '
[14]  f←FOLHALA432
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍕VERSAOa←4.15
[18]  esse[4;]←80↑ylu[xk;ι6]
[19]  esse[5;]←80↑ylu[xk;6+ι30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍕resp←xk),'-',opesq
[22]  esse[18;ι10]←'@',esse[6;5+ι3],esse[4;1+ι5],'@'
[23]  esse[19;]←80↑esse[6;5+ι3],'-',esse[4;1+ι5],' - ',opesq[6 7],'/',opesq[9 10]
[24] obahh:
[25]  caso←geraexe2
[26]  esse[14 15;]←2 80↑3 0⍕caso[1 2;1+ι15]
[27]  resp←resp,,caso[1 2;1]
[28]  caso←geraexe3
[29]  esse[16;]←80↑3 0⍕caso[1;1+ι15]
[30]  resp←resp,caso[1;1]
[31]  caso←geraexe4
[32]  esse[17;]←80↑3 0⍕caso[2;]
[33]  resp←resp,,caso[1;1 3]
[34]  caso←geraexe1
[35]  esse[8;]←80↑4 0⍕caso[1;1]
[36]  esse[8+ι5;]←5 80↑4 0⍕caso[;1+ι10]
[37]  resp←resp,caso[2;1]
[38]  resu←resu,[1]1 7ρresp
[39]  acuja←(f[;2]='#')/ι1↑ρf
[40]  f[acuja;ι80]←esse[⍬,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\newpage'
[42]  ⍞←(⍕xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+ρf)ρ' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[48]  upag[2+ι1↑ρresu;ι+/lixo1]←(lixo1←5 0 10 0 5 0 5 0 5 0 5 0 5 0)⍕resu
[49]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu,(((1↑ρylu),4)ρ' 0.0'),5 0⍕0 1↓resu)
[52]  aaa[1;35 36]←2 0⍕CORRECAO
[53]  lixonol←aaa ⍙FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[54]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[55] terminando:
[56]  upag[1↑ρupag;]←(1↓ρupag)↑'\end{document}'
[57]  relat[1↑ρrelat;;]←upag
[58]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)⍙FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.t
      ex'
[59]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[ 0]  opesq vivo433a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;agora;inds;k1;k2;w1;lixo1;aaa
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←10 ⋄ EVENTO←'PL433   '
[ 5]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←⍙FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕ιn
[ 8]  relat←((2+1↑ρylu),1 0+ρFOLHALA433)ρ' '
[ 9]  relat[1;;]←(1↓ρrelat)↑⍙FM'c:\apl2\VIVOBLOI'
[10]  xk←1 ⋄ resu←0 11ρ0
```

```
[11] testa:→(xk>1↑⍴ylu)/fim
[12]  esse←40 80⍴' '
[13]  f←FOLHALA433
[14]  esse[1;]←80↑dhx[1;]
[15]  esse[2;]←80↑dhx[2;]
[16]  esse[3;]←80↑4 2⍕VERSAOa←3.54
[17]  esse[4;]←80↑ylu[xk;⍳6]
[18]  esse[5;]←80↑ylu[xk;6+⍳30]
[19]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[20]  esse[7;]←80↑(3 0⍕resp←xk),'-',opesq
[21]  esse[39;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[22]  esse[40;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[23] inica:
[24]  geracaso
[25]  esse[7+⍳15;]←acerta66 RINIC[;⍳3]
[26]  esse[22+⍳14;]←14 80↑ajeita25
[27]  agora←ARV1,ARV2,ARV3
[28]  agora←((((⍴agora),1)⍴ARV1,ARV2,ARV3),0),0
[29]  agora[⍳⍴ARV1;2]←1
[30]  agora[⍳⍴ARV1;3]←⍳⍴ARV1
[31]  agora[(⍴ARV1)+⍳⍴ARV2;2]←2
[32]  agora[(⍴ARV1)+⍳⍴ARV2;3]←⍳⍴ARV2
[33]  agora[((⍴ARV1)+⍴ARV2)+⍳⍴ARV3;2]←3
[34]  agora[((⍴ARV1)+⍴ARV2)+⍳⍴ARV3;3]←⍳⍴ARV3
[35]  inds←10?1↑⍴agora
[36]  resp←resp,,agora[inds;1]
[37]  k1←agora[inds[⍳5];2] ⋄ k2←agora[inds[⍳5];3]
[38]  w1←'C',(1 0⍕k1[1]),'[',(2 0⍕k2[1]),']&'
[39]  w1←w1,'C',(1 0⍕k1[2]),'[',(2 0⍕k2[2]),']&'
[40]  w1←w1,'C',(1 0⍕k1[3]),'[',(2 0⍕k2[3]),']&'
[41]  w1←w1,'C',(1 0⍕k1[4]),'[',(2 0⍕k2[4]),']&'
[42]  w1←w1,'C',(1 0⍕k1[5]),'[',(2 0⍕k2[5]),']\\'
[43]  esse[37;]←80↑w1
[44]  k1←agora[inds[5+⍳5];2] ⋄ k2←agora[inds[5+⍳5];3]
[45]  w1←'C',(1 0⍕k1[1]),'[',(2 0⍕k2[1]),']&'
[46]  w1←w1,'C',(1 0⍕k1[2]),'[',(2 0⍕k2[2]),']&'
[47]  w1←w1,'C',(1 0⍕k1[3]),'[',(2 0⍕k2[3]),']&'
[48]  w1←w1,'C',(1 0⍕k1[4]),'[',(2 0⍕k2[4]),']&'
[49]  w1←w1,'C',(1 0⍕k1[5]),'[',(2 0⍕k2[5]),']\\'
[50]  esse[38;]←80↑w1
[51]  resu←resu,[1]1 11⍴resp
[52]  acuja←(f[;2]='#')/⍳1↑⍴f
[53]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[54]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[55]  ⍞←(⍕xk←xk+1),'-'
[56]  →testa
[57] fim:upag←(1 0+⍴f)⍴' '
[58]  →(1=≡n)/elafa
[59]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[60]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[61]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0,18⍴5 0)⍕resu
[62]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[63]  →terminando
[64] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),4 0⍕0 1↓resu)
[65]  aaa[1;35 36]←2 0⍕CORRECAO
[66]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[67]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[68] terminando:
[69]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[70]  relat[1↑⍴relat;;]←upag
[71]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.t
      ex'
[72]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
```

```
[73]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo754a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;mat;casos;a;b;c;abc;quais;zebra
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←6 ⋄ EVENTO←'PL754   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA754←ajusta80 FOLHALA754
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA754)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 7⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←17 80⍴' '
[15]  f←FOLHALA754
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.35
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[16;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[17;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26] inicia2:mat←geracaso 4 6
[27]  esse[10+⍳4;]←4 80↑deixablz mat
[28]  casos←3?6
[29]  casos←casos[⍋casos]
[30]  esse[7+⍳3;⍳5]←3 5⍴'$M_x$'
[31]  esse[7+⍳3;4]←3 1⍴1 0⍕casos
[32]  a←casos[1]convolui mat
[33]  b←casos[2]convolui mat
[34]  c←casos[3]convolui mat
[35]  abc←(,a),(,b),,c
[36]  quais←6?72
[37]  quais←quais[⍋quais]
[38]  →(3>+/0=abc[quais])/conta7
[39]  ⎕←'*'
[40]  →inicia2
[41] conta7:
[42]  zebra←geragrad quais
[43]  →('*'=1↑zebra)/inicia2
[44]  esse[15;]←80↑zebra
[45]  resp←resp,6↑abc[quais]
[46]  resu←resu,[1](1,7)⍴resp
[47]  acuja←(f[;2]='#')/⍳1↑⍴f
[48]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[49]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[50]  ⎕←(⍕xk←xk+1),'-'
[51]  →testa
[52] fim:upag←(1 0+⍴f)⍴' '
[53]  →(1=≡n)/elafa
[54]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[55]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[56]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 5 0 5 0 5 0 5 0)⍕resu
[57]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[58]  →terminando
```

```
[59] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),5 0⍕0 1↓resu)
[60]  aaa[1;35 36]←2 0⍕CORRECAO
[61]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[62]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[63] terminando:
[64]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[65]  relat[1↑⍴relat;;]←upag
[66]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[67] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[68]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[69]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[70]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo755

```
[0]  r←acertab xj;aa;bb
[1]  r←6 0⍕xj
[2]  aa←1↑⍴xj ⋄ bb←1↓⍴xj
[3]  r[;⍳2]←(aa,2)⍴2 0⍕⍳aa
[4]  r[;3,1+6×⍳¯1+bb]←'&'
[5]  r←r,'⍀'
[6]  r←r,'⍀'
------------------------------------------------------------
[ 0]  r←a acertac b
[ 1]  r←6 10⍴' '
[ 2]  r[;1 2 3]←6 3⍴'IB['
[ 3]  r[;4 5]←2 0⍕6 1⍴a
[ 4]  r[;6]←';'
[ 5]  r[;7 8]←2 0⍕6 1⍴b
[ 6]  r[;9]←']'
[ 7]  r[;10]←'&'
[ 8]  r←,r
[ 9]  r←(¯1↓r),'⍀⍀'
------------------------------------------------------------
[ 0]  r←equaliza i;j
[ 1]  m←10 5⍴0
[ 2]  m[;1]←10 1⍴gerahis i
[ 3]  m[;2]←(¯1+⍳10)÷9
[ 4]  m[;3]←m[;1]÷×/⍴i
[ 5]  m[;4]←+⍀m[;3]
[ 6]  j←1
[ 7] testa:→(j>10)/fim
[ 8]  m[j;5]←¯1+(|m[j;4]-m[;2])⍳⌊/|m[j;4]-m[;2]
[ 9]  →(j=j←j+1)/testa
[10] fim:r←m
------------------------------------------------------------
[0]  r←gerahis x
[1]  r←(+/,0=x),(+/,1=x),(+/,2=x),(+/,3=x),(+/,4=x),(+/,5=x),(+/,6=x),+/,7=x
[2]  r←r,(+/,8=x),+/,9=x
------------------------------------------------------------
[ 0]  r←sem geraima x;alfa
[ 1] ⍝ x[1] numero de linhas, x[2] numero de colunas
[ 2]  →(sem≠1)/dois
[ 3]  alfa←(30⍴0),(30⍴1),(30⍴2),(200⍴3)
[ 4]  alfa←alfa[(⍴alfa)?⍴alfa]
[ 5]  →fim
[ 6] dois:→(sem≠2)/tres
[ 7]  alfa←(300⍴0),(300⍴1),(300⍴2),(500⍴3),(1000⍴4),(500⍴5)
[ 8]  alfa←alfa[(⍴alfa)?⍴alfa]
[ 9]  →fim
[10] tres:→(sem≠3)/quatro
```

```
[11]  alfa←(100ρ6),(50ρ7)
[12]  alfa←alfa,(40ρ8),10ρ9
[13]  alfa←alfa[(ρalfa)?ρalfa]
[14]  →fim
[15] quatro:
[16]  alfa←(500ρ3),(1000ρ4),(500ρ5),(100ρ6)
[17]  alfa←alfa[(ρalfa)?ρalfa]
[18] fim:
[19]  r←(×/x)ρalfa
[20]  r[10?ρr]←0 1 2 3 4 5 6 7 8 9
[21]  r←xρr
-------------------------------------------------------------
[ 0]  ref;i;j;k;candi;qt;zz;r
[ 1] ⍝ zz←ΔFM 'f:/infoland/lixo1234'
[ 2]  zz←ΔFM'c:/apl2/tt755'
[ 3]  qt←78
[ 4] luga:
[ 5]  i←1
[ 6]  r←0 80ρ' '
[ 7] te:→(i≥⎕IO+1↑ρzz)/fim
[ 8]  candi←,zz[i;]
[ 9] te2:→(80>ρcandi)/eca
[10]  j←qt
[11]  →(0=' 'ϵj↑candi)/ufa
[12] te3:→(candi[j]=' ')/ufa
[13]  j←j-1
[14]  →te3
[15] ufa:r←r,[⎕IO]1 80ρ80↑j↑candi
[16]  candi←j↓candi
[17]  →((ρcandi)=+/candi=' ')/som
[18]  →te2
[19] eca:r←r,[⎕IO]1 80ρ80↑candi
[20] som:i←i+1
[21]  →te
[22] fim:'acabou'
[23]  y←r
-------------------------------------------------------------
[0]  r←troca i;m;ij;j
[1]  m←equaliza i
[2]  ij←i+100
[3]  j←1
[4] volta:→(j>10)/fim
[5]  ij←((99+j),m[j;5])edit ij
[6]  →(j=j←j+1)/volta
[7] fim:MATRIZ←m
[8]  r←ij
-------------------------------------------------------------
[ 0]  opesq vivo755a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;ia;ib;lle;cce;eca;ii;aah;oca
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←4 ⋄ EVENTO←'PL755   '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[ 9]  FOLHALA755←ajusta80 FOLHALA755
[10]  relat←((2+1↑ρylu),1 0+ρFOLHALA755)ρ' '
[11]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 5ρ0
[13] testa:→(xk>1↑ρylu)/fim
```

```
[14]  esse←25 80ρ' '
[15]  f←FOLHALA755
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.24
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[24;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[25;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  IA←ia←(?4)geraima(7+?3),8+?4
[27]  esse[8;]←80↑(2 0⍕1↑ρia),' por ',2 0⍕oca←1↓ρia
[28]  esse[9;]←80↑3 0⍕(1↑ρia)×oca
[29]  esse[10;]←80↑'\begin{tabular}{|r|',(ocaρ'c'),'|}'
[30]  esse[11;]←80↑(,'&',(oca,2)ρ2 0⍕⍳oca),'\\'
[31]  esse[11+⍳10;]←10 80↑acertab ia
[32]  IB←ib←troca ia
[33]  lle←?6ρ1↑ρia
[34]  cce←?6ρ1↓ρia
[35]  ii←3
[36] tt:→(ii>6)/crica
[37]  resp←resp,(,ib)[((1↓ρia)×¯1+lle[ii])+cce[ii]]
[38]  →(ii=ii←ii+1)/tt
[39] crica:
[40]  esse[22;]←80↑lle acertac cce
[41]  esse[23;]←80↑(1 0⍕ib[lle[1];cce[1]]),'&',1 0⍕ib[lle[2];cce[2]]
[42]  resu←resu,[1](1,5)ρresp
[43]  acuja←(f[;2]='#')/⍳1↑ρf
[44]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[45]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\newpage'
[46]  ⍞←(⍕xk←xk+1),'-'
[47]  →testa
[48] fim:upag←(1 0+ρf)ρ' '
[49]  →(1=≡n)/elafa
[50]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[51]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[52]  upag[2+⍳1↑ρresu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 5 0 5 0)⍕resu
[53]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[54]  →terminando
[55] elafa:aaa←(ylu,(((1↑ρylu),4)ρ' 0.0'),5 0⍕0 1↓resu)
[56]  aaa[1;35 36]←2 0⍕CORRECAO
[57]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[58]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[59] terminando:
[60]  upag[1↑ρupag;]←(1↓ρupag)↑'\end{document}'
[61]  relat[1↑ρrelat;;]←upag
[62]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[63] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[64]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[65]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[66]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo756

```
[ 0]  Δ_DC←Δ_PID SVOPAIR Δ_SV;Δ_CV
[ 1] ⍝-------------------------------------------------------------------⍝
[ 2] ⍝
[ 3] ⍝  Offer shared variables named in SV to processor number PID.
[ 4] ⍝  To be used for auxiliary processors which use a two-variable
```

```
[ 5] ⍝  interface, where the control variable begins with "C" or "CTL"
[ 6] ⍝  and the data variable begins with "D" or "DAT".  (Cxxx/Dxxx or
[ 7] ⍝  CTLxxx/DATxxx)
[ 8] ⍝
[ 9] ⍝  Returns final degree of coupling (DC) for each shared variable
[10] ⍝  Expected degree of coupling is 2 for the control variable and 1
[11] ⍝  or 2 for the data variable.
[12] ⍝
[13] ⍝  Waits up to 15 seconds for the control variable to be accepted
[14] ⍝  by the processor.  Sets standard access control to inhibit my
[15] ⍝  double references or specifications of the control variable.
[16] ⍝  Does not set access control for the data variable.
[17] ⍝
[18] ⍝  Monadic call simply returns the current degree of coupling.
[19] ⍝
[20] ⍝------------------------------------------------------------------⍝
[21] ⍝
[22] ⍝ Examples:
[23] ⍝
[24] ⍝ Offer a set of variables to the fullscreen processor
[25] ⍝       124 SVOPAIR 'CTL124' 'DAT124'
[26] ⍝ 2 1
[27] ⍝
[28] ⍝ Offer using surrogates
[29] ⍝       124 SVOPAIR 'Control C' 'Data D'
[30] ⍝ 2 1
[31] ⍝
[32] ⍝ Note: Access control set for control, not data
[33] ⍝       ⎕SVC¨ 'Control' 'Data'
[34] ⍝  1 0 1 1  0 0 0 0
[35] ⍝
[36] ⍝ Check degree of coupling
[37] ⍝       SVOPAIR 'Control' 'Data'
[38] ⍝ 2 1
[39] ⍝
[40] ⍝ Offer improper control variable
[41] ⍝       210 SVOPAIR 'A1' 'D1'
[42] ⍝ 1 1
[43] ⍝
[44] ⍝==================================================================⍝
[45] ⍝
[46]  Δ_SV←(¯2↑1 1,⍴Δ_SV)⍴Δ_SV←⊃Δ_SV      ⍝ Convert name argument to matrix
[47]  →(2=⎕NC'Δ_PID')/Δ_DYADIC           ⍝ Is it a dyadic function call?
[48]  Δ_DC←⎕SVO Δ_SV                      ⍝ Just return coupling if monadic
[49]  →0                                  ⍝ and exit
[50] Δ_DYADIC:
[51]  Δ_CV←(-+/∧⍀⌽Δ_SV=' ')⌽Δ_SV          ⍝ Rotate trailing blanks and then
[52]  Δ_CV←(-+/∧⍀⌽Δ_CV≠' ')⌽Δ_CV          ⍝ rotate surrogate name to front
[53]  Δ_CV←Δ_CV[;⎕IO]='C'                 ⍝ Which names are control vars?
[54]  →(1∧.≠Δ_CV/Δ_DC←Δ_PID ⎕SVO Δ_SV)/Δ_END   ⍝ Initial Offer
[55]  ⎕SVE←15                             ⍝ Wait up to 15 seconds for accepts
[56] Δ_CHECK:
[57]  →(1∧.≠Δ_CV/Δ_DC←⎕SVO Δ_SV)/Δ_END    ⍝ Check couplings
[58]  →(0≠⎕SVE)/Δ_CHECK                   ⍝ Retry if time left
[59] Δ_END:
[60]  Δ_CV←1 0 1 0 ⎕SVC Δ_CV≠Δ_SV         ⍝ Set access control on C vars only
-------------------------------------------------------------
[ 0]  alfa alvi756a n;resultado;resp;folha;indm;indi;xk;dhx;aaa;lixo;lixod;ti;ii
[ 1]  rand ⋄ EVENTO←8⍴' ' ⋄ 'letra pequena e so aceita numeros'
[ 2]  'serao emitidas provas a partir de ',⍕n[3]
[ 3]  xk←1 ⋄ resultado←0 9⍴0
[ 4] testa:→(xk>alfa)/fim
[ 5]  resp←¯1+xk+n[3]
```

```
[ 6]  folha←30 80↑FOLHA756
[ 7]  dhx←folha[1 2 3;58+⍳16]←'817a'dh 2
[ 8]  folha[5;64+⍳3]←3 0⍕¯1+xk+n[3]
[ 9] outrai:indm←xk   ⍝9+?35   ⍝ 35 imagens no diretorio apl\gif
[10] ⍝      ---------
[11]  aaa←folha[14;58+⍳8]←'gimage',,'ZI2'⎕FMT indm
[12]  lixo←legif'c:\apl\gif\',aaa,'.GIF'
[13]  →(4≤⍴RETARDO)/obaoba
[14]  'erro na ',⍕indm
[15]  xk←xk+1
[16]  →outrai
[17] obaoba:
[18]  lixod←dump2 R
[19]  ti←⍴LIMAGEM
[20]  ii←2?ti⌊9
[21]  ii←ii[⍋ii]
[22]  folha[17;32]←1 0⍕ii[1]
[23]  folha[18;32]←1 0⍕ii[2]
[24]  resp←resp,(4↑RETARDO),LIMAGEM[ii[1]],AIMAGEM[ii[1]],LIMAGEM[ii[2]],AIMAGEM[ii[2]]
[25]  n[1 2]PRINTF folha
[26]  n[1 2]PRINTF lixod
[27]  n[1 2]PRINTF mosv2 lixo
[28]  n[1 2]PRINTF 1 1⍴⎕TCFF
[29]  resultado←resultado,[1]1 9⍴resp
[30]  ⍞←(⍕¯1+xk←xk+1),'-'
[31]  →testa
[32] fim:
[33]  n[1 2]PRINTF 1 75⍴75↑(10⍴'='),(,,dhx,' '),(10⍴'=')
[34]  n[1 2]PRINTF⍕resultado
[35]  n[1 2]PRINTF INSTRUCOES
[36]  n[1 2]PRINTF 1 1⍴⎕TCFF
[37]  ⎕EX'ARQUIVO'
[38]  FECHAF
[39]  'acabou'
-------------------------------------------------------------
[0]  r←p c x
[1]  r←(256*p)×¯1+⎕AV⍳x
-------------------------------------------------------------
[0]  r←quem campo i;rr;ex
[1]  rr←16 16⍴¯1+⎕AV⍳quem[i]
[2]  ex←'0123456789ABCDEF'
[3]  r←ex[1+rr]
-------------------------------------------------------------
[0]  r←deixah x
[1]  r←16 16 16 16⍴x
-------------------------------------------------------------
[ 0]  r←dump2 var;tam;var;i;j;ends;inc;bbb
[ 1]  tam←⌈(⍴var)÷32
[ 2]  var←(tam×32)↑var
[ 3]  r←((2+tam),160)⍴' '
[ 4]  r[1;⍳50]←'(&hex-&deci)  0  1  2  3  4  5  6  7   8  9  A  B '
[ 5]  r[1;50+⍳38]←' C  D  E  F  10 11 12 13 14 15 16 17  '
[ 6]  r[1;88+⍳72]←72↑'18 19 1A 1B 1C 1D 1E 1F    Representacao em ASCII'
[ 7]  r[2;]←' -'[1+r[1;]≠' ']
[ 8]  ends←0
[ 9]  i←1
[10] testa:→(i>tam)/acabou
[11]  bbb←visivel linha←var[((i-1)×32)+⍳32]
[12]  r[i+2;115+⍳36]←bbb[⍳8],' ',bbb[8+⍳8],'  ',bbb[16+⍳8],' ',bbb[24+⍳8]
[13]  j←1
[14]  r[i+2;⍳12]←'(',(hexad ends),'-',(,'ZI5'⎕FMT ends),')'
[15]  inc←13
[16] viva:→(j>32)/opa
```

```
[17]  r[i+2;inc+⍳2]←linha campo j
[18]  inc←inc+3
[19]  →(j≠16)/oba
[20]  inc←inc+1
[21] ⍝ r[i+2;62+  ⍳12]  ←'(',(hexad ends+16),'-',(,'ZI5'   ⎕FMT ends+16),')'
[22] oba:→((j≠8)∧(j≠24))/oka2
[23]  →(j≠16)/umso
[24]  inc←inc+1
[25] umso:inc←inc+1
[26] oka2:→(j=j←j+1)/viva
[27] opa:ends←ends+32
[28]  →(i=i←i+1)/testa
[29] acabou:
------------------------------------------------------------
[0]  r←hexad en
[1]  rr←16 16 16 16⊤en
[2]  r←'0123456789ABCDEF'[1+rr]
[3]  →(4≠+/r='0')/blz
[4]  r←4⍴' '
[5] blz:
------------------------------------------------------------
[ 0]  re←legif nome;coma;mer;r;T;K;I;ind;next;TA;CE;RE;CT;ZE;TAM;L;C;X;Y;T1;tm;T2
[ 1]  tm←2020 1868 4614 2847 2147 2885 1868 2950 1359
[ 2]  RETARDO←0⍴0
[ 3]  LIMAGEM←0⍴0
[ 4]  AIMAGEM←0⍴0
[ 5]  coma←'IR,"c:\APL2\GIF\gimage',('00'↑⍕nome),'.GIF",C'
[ 6]  C210←coma
[ 7]  mer←C210
[ 8]  C210←2,0,tm[nome]
[ 9]  mer←C210
[10]  R←r←D210
[11]  re←2 13⍴0
[12]  T←(0 c r[7])+1 c r[8]
[13]  K←(0 c r[9])+1 c r[10]
[14]  I←3×2*1+2 2 2⍳¯3↑(8⍴2)⊤¯1+⎕AV⍳r[11]
[15]  re[1;⍳11]←(deixah 6),6 7 1 0,T,K,0 c r[11]
[16]  re[2;⍳7]←(deixah 13),13,I,2
[17]  ind←I+14
[18] lalau:
[19]  re←re,[1]1 13⍴0
[20]  next←0 c r[ind]
[21]  →(33=next)/e21
[22]  →(44=next)/e2c
[23]  →(59=next)/acabou
[24]  'erro 1: next=',(⍕next),'  ind=',⍕ind
[25]  →0
[26] e21:
[27]  ind←ind+1
[28]  next←0 c r[ind]
[29]  →(next=254)/coment
[30]  →(next=255)/aplic
[31]  →(next=1)/pleno
[32]  →(next=249)/contr
[33]  'erro: nao sei 2'
[34]  →0
[35] contr:
[36]  TA←0 c r[ind+1]
[37]  CE←0 c r[ind+2]
[38]  RE←(0 c r[ind+3])+1 c r[ind+4]
[39]  CT←0 c r[ind+5]
[40]  ZE←0 c r[ind+6]
[41]  re[(1↑⍴re);⍳11]←(deixah ind-2),(ind-2),8,33,249,4,RE,CE
```

```
[42]  RETARDO←RETARDO,RE
[43]  ind←ind+7
[44]  →lalau
[45] coment:
[46]  re[(1↑⍴re);⎕IO+8]←(deixah ind-2),(ind-2),2,33,254
[47]  →continua
[48] aplic:
[49]  re[(1↑⍴re);⎕IO+8]←(deixah ind-2),(ind-2),2,33,255
[50]  →continua
[51] pleno:
[52]  re[(1↑⍴re);⎕IO+8]←(deixah ind-2),(ind-2),2,33,1
[53]  →continua
[54] continua:
[55]  ind←ind+1
[56]  TAM←0 c r[ind]
[57]  →(TAM≠0)/viva
[58]  ind←ind+1
[59]  →lalau
[60] viva:re←re,[1]1 13⍴0
[61]  re[(1↑⍴re);⎕IO+7]←(deixah ind-1),(ind-1),(TAM+1),4
[62]  ind←ind+TAM
[63]  →continua
[64] e2c:
[65]  L←(0 c r[ind+1])+1 c r[ind+2]
[66]  C←(0 c r[ind+3])+1 c r[ind+4]
[67]  X←(0 c r[ind+5])+1 c r[ind+6]
[68]  Y←(0 c r[ind+7])+1 c r[ind+8]
[69]  T1←0 c r[ind+9]
[70]  re[(1↑⍴re);]←(deixah ind-1),(ind-1),10,44,0,L,C,X,Y,T1
[71]  LIMAGEM←LIMAGEM,X
[72]  AIMAGEM←AIMAGEM,Y
[73]  →(T1>127)/pulao
[74]  T2←0 c r[ind+10]
[75]  ind←ind+10
[76]  →continua
[77] pulao:
[78]  ind←ind+I←3×2*1+2 2 2⊥¯3↑(8⍴2)⊤¯1+⎕AV⎕IO r[ind+9]
[79]  ind←ind+10
[80]  →continua
[81] acabou:
[82]  re←¯1 0↓re
[83]  C210←⎕IO 0
-------------------------------------------------------------
[ 0]  r←mos oi;aa;xoi;bb;i;j
[ 1]  r←((7+1↑⍴oi),60)⍴' '
[ 2]  r[1;]←60↑'0x21 F9 = extensao de controle (tempo)'
[ 3]  r[2;]←60↑'0x21 FE = comentario '
[ 4]  r[3;]←60↑'0x21 01 = texto pleno '
[ 5]  r[4;]←60↑'0x21 FF = extensao de aplicacao'
[ 6]  r[6;⎕IO+⍴aa]←aa←'&hex  &dec TAM tip       subt '
[ 7]  i←7 ⋄ j←1
[ 8] te:→(j>1↑⍴oi)/fim
[ 9]  r[i;1]←'0123456789ABCDEF'[1+oi[j;1]]
[10]  r[i;2]←'0123456789ABCDEF'[1+oi[j;2]]
[11]  r[i;3]←'0123456789ABCDEF'[1+oi[j;3]]
[12]  r[i;4]←'0123456789ABCDEF'[1+oi[j;4]]
[13]  r[i;5+⎕IO+5]←5 0⍕oi[j;5]
[14]  r[i;11+⎕IO+3]←'BI3'⎕FMT oi[j;6]
[15]  bb←7 10⍴(10↑'desc tela'),(10↑'tabcor gl'),(10↑'tabcor lo'),(10↑'dados'),(10↑'0x21=co
      nt'),(10↑'0x2c subim'),(10↑'0x3b FIM')
[16]  xoi←oi[j;7]
[17]  →(xoi<5)/pulao
[18]  xoi←+/(xoi=33,44,59)×5 6 7
```

```
[19] pulao:
[20]  r[i;15+⍳10]←bb[xoi;]
[21]  r[i;26+⍳2]←2↓hexad oi[j;8]
[22]  r[i;30+⍳30]←,6 0⍕oi[j;9 10 11 12 13]
[23]  j←j+1
[24]  →(i=i←i+1)/te
[25] fim:
------------------------------------------------------------
[ 0]  r←mosv2 oi;aa;xoi;bb;i;j
[ 1]  r←((7+1↑⍴oi),60)⍴' '
[ 2]  r[1;]←60↑'0x21 F9 = extensao de controle (tempo)'
[ 3]  r[2;]←60↑'0x21 FE = comentario '
[ 4]  r[3;]←60↑'0x21 01 = texto pleno '
[ 5]  r[4;]←60↑'0x21 FF = extensao de aplicacao'
[ 6]  r[6;⍳⍴aa]←aa←'&hex  &dec TAM '
[ 7]  i←7 ⋄ j←1
[ 8] te:→(j>1↑⍴oi)/fim
[ 9]  r[i;1]←'0123456789ABCDEF'[1+oi[j;1]]
[10]  r[i;2]←'0123456789ABCDEF'[1+oi[j;2]]
[11]  r[i;3]←'0123456789ABCDEF'[1+oi[j;3]]
[12]  r[i;4]←'0123456789ABCDEF'[1+oi[j;4]]
[13]  r[i;5+⍳5]←5 0⍕oi[j;5]
[14]  r[i;11+⍳3]←'BI3'⎕FMT oi[j;6]
[15]  j←j+1
[16]  →(i=i←i+1)/te
[17] fim:
------------------------------------------------------------
[0]  oferece210
[1]  210 SVOPAIR'C210' 'D210'
------------------------------------------------------------
[0]  r←visivel k;in;y
[1]  y←⎕AV⍳k
[2]  in←((y>33)∧(y<127))/⍳⍴k
[3]  r←(⍴k)⍴'.'
[4]  r[in]←k[in]
------------------------------------------------------------
[ 0]  opesq vivo756a n;CORRECAO;EVENTO;aaa;acuja;cuca;dhx;esse;f;ii;lixo;lixonol;nomes;ql3
      9;qlinha;relat;resp;resu;ti;upag;xk;ylu;zeca;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  lixonol←210 SVOPAIR'C210' 'D210'
[ 5]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 6]  CORRECAO←0 ⋄ EVENTO←'PL756   '
[ 7]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ cuca←n[5]
[ 9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[10]  ylu←n grupo ylu
[11]  FOLHALA756←ajusta80 FOLHALA756
[12]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA756)⍴' '
[13]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[14]  xk←1 ⋄ resu←0 9⍴0
[15] testa:→(xk>1↑⍴ylu)/fim
[16]  esse←12 80⍴' '
[17]  f←FOLHALA756
[18]  esse[1;]←80↑dhx[1;]
[19]  esse[2;]←80↑dhx[2;]
[20]  esse[3;]←80↑4 2⍕VERSAOa←3.04
[21]  esse[4;]←80↑ylu[xk;⍳6]
[22]  esse[5;]←80↑ylu[xk;6+⍳30]
[23]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[24]  →(36=1↓⍴ylu)/zebra
```

```
[25]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[26]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[27]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[28]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[29]  →maiszebra
[30] ⍝⍝⍝
```

```
[ 3]  →(2880<ρ,i)/erro2
[ 4]  →(~isnum i)/erro3
[ 5]  →(255<⌈/,i)/erro4
[ 6]  a←80↑'SIMPLE  = T / arquivo conforme com o padrao FITS'
[ 7]  a←a,80↑'BITPIX  = 8 / numero de bits por pixel'
[ 8]  a←a,80↑'NAXIS   = 2 / numero de eixos nos dados'
[ 9]  a←a,80↑'NAXIS1  = ',(⍕1↓ρi),' / tamanho do eixo 1'
[10]  a←a,80↑'NAXIS2  = ',(⍕1↑ρi),' / tamanho do eixo 2'
[11]  a←a,80↑'OBJECT  = "Gerado pelo programa VIVO760 - v1.3 - Pkantek - mar/17"'
[12]  a←a,80↑'DATE    = "',(4 0⍕⎕TS[⎕IO]),'-',('00'⍕⎕TS[1+⎕IO]),'-',('00'⍕⎕TS[2+⎕IO]),'"'
[13]  a←a,80↑'END'
[14]  x←2880↑,a
[15]  y←2880ρ⎕AV[1]
[16]  z←i
[17]  y[ιρ,z]←⎕AV[,z]
[18]  r←(x,y)⎕FV m
[19]  →0
[20] erro1:'imagem nao tem o rank=2'
[21]  →0
[22] erro2:'imagem com mais do que 2880 bytes'
[23]  →0
[24] erro3:'imagem precisa ser numerica'
[25]  →0
[26] erro4:'imagem tem um pixel > 255'
[27]  →0
-------------------------------------------------------------
[ 0]  r←geraarq x;c;ima;lixo;nome;t;z
[ 1]  t←(10+?26),50+?25
[ 2]  c←10×tρ?10ρ25
[ 3]  nome←'f:\p\n\760\im760-',('00'⍕x),'.fits'
[ 4]  ima←tρc
[ 5]  lixo←ima criaarq nome
[ 6]  r←2ρ0
[ 7]  r[1]←⊂t,2,(⌈/,c),⌊/,c
[ 8]  r[2]←⊂nome
[ 9]  c
-------------------------------------------------------------
[ 0]  opesq vivo760a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL760   '
[ 6]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕ιn
[ 9]  ylu←n grupo ylu
[10]  FOLHALA760←ajusta80 FOLHALA760
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALA760)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑⎕FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 6ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←10 80ρ' '
[16]  f←FOLHALA760
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;ι6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;ι4]=((1↑ρf),4)ρ'\#05')/ι1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
```

```
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geraarq xk
[35]  esse[8;⍳13]←,¯13↑⊃xx[2]
[36]  resp←resp,,⊃xx[1]
[37]  resu←resu,[1]1 6⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⍞←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 5 0 5 0 5 0)⍕resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] AAAAAAAAAAA↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[51] elafa:aaa←(ylu[;⍳36],5 0⍕0 1↓resu)
[52] AAAAAAAAAAA↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[53]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[54]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[55] terminando:
[56]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[57]  relat[1↑⍴relat;;]←upag
[58]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[59] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[60]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[61]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[62]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo763

```
[0]  r←arrumals x
[1]  r←'$L_5$=',(1 0⍕x[1]),', $L_4$=',(1 0⍕x[2])
[2]  r←r,', $L_3$=',(1 0⍕x[3]),', $L_2$=',(1 0⍕x[4])
[3]  r←r,', $L_1$=',(1 0⍕x[5]),', $L_0$=',(1 0⍕x[6])
-------------------------------------------------------------
[ 0]  r←dim criap lc;pre;pos;x;inds;y
[ 1]  →((2×dim)≥×/lc)/erro
[ 2]  pre←pos←,lc⍴0
[ 3]  pre[inds←dim?x←⍴pre]←1
[ 4]  y←(~(⍳x)∈inds)/⍳x
[ 5]  pos[y[dim?⍴y]]←1
[ 6]  r←(3,lc)⍴pre,pos,pos-pre
[ 7]  →0
[ 8] erro:'impossivel'
-------------------------------------------------------------
[0]  r←divisao mm;i
[1]  i←1 ⋄ r←0⍴0
[2] tes:→(i>(⍴mm)[3])/acabou
[3]  →((2>+/,mm[2;;i])∨(0=+/,mm[2;;i]))/naoe
```

```
[4]  r←r,i
[5] naoe:→(i=i←i+1)/tes
[6] acabou:
-------------------------------------------------------------
[0]  r←fica mm;i
[1]  i←1 ⋄ r←0⍴0
[2] tes:→(i>(⍴mm)[2])/acabou
[3]  →((2>+/,mm[2;i;])∨(0=+/,mm[2;i;]))/naoe
[4]  r←r,i
[5] naoe:→(i=i←i+1)/tes
[6] acabou:
-------------------------------------------------------------
[0]  r←gerasomador umzero
[1] ⍝ esta funcao devolve uma configuracao valida para o somador
[2]  r←1,(0,1)[?6⍴2]
[3]  r[7]←umzero
-------------------------------------------------------------
[ 0]  r←mm habs marcas;i;j;esim
[ 1]  i←1 ⋄ r←0⍴0
[ 2] testa:→(i>¯1↑⍴mm)/fim
[ 3]  j←1
[ 4]  esim←1
[ 5] te2:→(j>⍴marcas)/volta
[ 6]  →(marcas[j]<mm[1;j;i])/erro
[ 7]  →(mm[2;j;i]=0)/ok
[ 8]  →(marcas[j]≠0)/erro
[ 9] ok:→(j=j←j+1)/te2
[10] erro:esim←0
[11]  j←9999
[12]  →te2
[13] volta:→(esim≠1)/pula
[14]  r←r,i
[15] pula:→(i=i←i+1)/testa
[16] fim:
-------------------------------------------------------------
[0]  r←inca mm;i
[1]  i←1 ⋄ r←0⍴0
[2] tes:→(i>(⍴mm)[2])/acabou
[3]  →((2>+/,mm[1;i;])∨(0=+/,mm[1;i;]))/naoe
[4]  r←r,i
[5] naoe:→(i=i←i+1)/tes
[6] acabou:
-------------------------------------------------------------
[0]  r←juncao mm;i
[1]  i←1 ⋄ r←0⍴0
[2] tes:→(i>(⍴mm)[3])/acabou
[3]  →((2>+/,mm[1;;i])∨(0=+/,mm[1;;i]))/naoe
[4]  r←r,i
[5] naoe:→(i=i←i+1)/tes
[6] acabou:
-------------------------------------------------------------
[ 0]  ref;i;j;k;candi;qt;zz;r
[ 1]  zz←ΔFM'f:/infoland/lixo1234'
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10]  →(0=' '∈j↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
```

```
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80⍴80↑j↑candi
[15]  candi←j↓candi
[16]  →((⍴candi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80⍴80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
[22]  y←r
------------------------------------------------------------
[ 0]  r←revesgueia xa
[ 1]  r←9 5⍴' '
[ 2]  r[;1]←'('
[ 3]  r[;2 3]←2 0⍕9 1⍴⍳9
[ 4]  r[;4]←')'
[ 5]  r[;5]←'&'
[ 6]  r←r,5 0⍕xa
[ 7]  r[;11 16 21 26 31 36 41 46 51 56]←'&'
[ 8]  r←r,'⍀'
[ 9]  r←r,'⍀'
------------------------------------------------------------
[ 0]  opesq vivo763b n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;pp;ma;r1;r2;r3;r4;xx;r5;oi;aaa;lixo1
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL763b  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA763b←ajusta80 FOLHALA763b
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA763b)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[12]  xk←1 ⋄ resu←0 26⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←28 80⍴' '
[15]  f←FOLHALA763b
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOb←3.28
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑3 0⍕resp←xk
[23]  esse[27;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[28;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26] v1:pp←12 criap 9 11
[27]  ma←¯1+?9⍴2
[28]  esse[7+⍳9;]←9 80↑revesgueia pp[1;;]
[29]  esse[16+⍳9;]←9 80↑revesgueia pp[2;;]
[30]  esse[26;]←80↑2 0⍕ma
[31]  r1←pp habs ma
[32]  →(5<⍴r1)/erro
[33]  r2←divisao pp
[34]  →(5<⍴r2)/erro
[35]  r3←juncao pp
[36]  →(5<⍴r3)/erro
[37]  r4←inca pp
```

```
[38]  →(5<ρr4)/erro
[39]  r5←fica pp
[40]  →(5<ρr5)/erro
[41]  →fim2
[42] erro:⍞←'*'
[43]  →v1
[44] continua:
[45] fim2:
[46]  resu←resu,[1]1 26ρresp,(5↑r2),(5↑r3),(5↑r4),(5↑r5),5↑r1
[47]  acuja←(f[;2]='#')/⍳1↑ρf
[48]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[49]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\newpage'
[50]  ⍞←(⍕xk←xk+1),'-'
[51]  →testa
[52] fim:upag←(1 0+ρf)ρ' ' ⋄ oi←4 0 2 0 2 0 2 0 2 0
[53]  →(1=≡n)/elafa
[54]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[55]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[56]  upag[2+⍳1↑ρresu;⍳+/lixo1]←(lixo1←3 0,50ρoi)⍕resu
[57]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[58]  →terminando
[59] elafa:aaa←(ylu,(50ρoi)⍕0 1↓resu)
[60]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[61]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[62] terminando:
[63]  upag[1↑ρupag;]←(1↓ρupag)↑'\end{document}'
[64]  relat[1↑ρrelat;;]←upag
[65]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.t
      ex'
[66]  lixonol←⍞EX 2 10ρ'quantos   matriz    '
[67]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo763c n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;p1;p2;p3;p4;r1;r2;r3;r4;nn1;nn2;dois;xx
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL763c  '
[ 6]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  FOLHALA763c←ajusta80 FOLHALA763c
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕⍳n
[10]  relat←((2+1↑ρylu),1 0+ρFOLHALA763c)ρ' '
[11]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLO1'
[12]  xk←1 ⋄ resu←0 17ρ0
[13] testa:→(xk>1↑ρylu)/fim
[14]  esse←15 80ρ' '
[15]  f←FOLHALA763c
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.24
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑3 0⍕resp←xk
[23]  esse[14;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[15;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  esse[8;]←80↑arrumals p1←gerasomador 1
[27]  esse[9;]←80↑arrumals p2←gerasomador 0
[28]  esse[11;]←80↑arrumals p3←gerasomador 0
```

```
[29]  esse[13;]←80↑arrumals p4←gerasomador 0
[30]  nn1←5+?5
[31] vou:nn2←5+?5
[32]  →(nn1=nn2)/vou
[33]  esse[10;]←80↑2 0⍕nn1
[34]  esse[12;]←80↑2 0⍕nn2
[35]  dois←6⍴2
[36]  r1←PROXEV[1+dois⍳¯1↓p1]
[37]  r2←dois⊤64|nn1+(dois⍳¯1↓p2)
[38]  r3←dois⊤64|nn2+(dois⍳¯1↓p3)
[39]  r4←1+63-(dois⍳¯1↓p4)
[40]  resu←resu,[1]1 17⍴resp,r1,r2,0,r3,0,r4
[41]  acuja←(f[;2]='#')/⍳1↑⍴f
[42]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[44]  ⎕←(⍕xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+⍴f)⍴' '
[47]  →(1=≡n)/elafa
[48]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[49]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[50]  upag[2+⍳1↑⍴presu;⍳+/lixo1]←(lixo1←3 0 5 0 5 0,(12⍴2 0),5 0,(12⍴2 0),5 0)⍕resu
[51]  upag[3+1↑⍴presu;]←(1↓⍴upag)↑'\end{verbatim}'
[52]  →terminando
[53] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),3 0⍕0 1↓resu)
[54]  lixonol←aaa ⍙FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[55]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[56] terminando:
[57]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[58]  relat[1↑⍴relat;;]←upag
[59]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)⍙FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.t
      ex'
[60]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[61]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo763d n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;lixo1;aaa;in
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  EVENTO←'PL763d  '
[ 5]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  FOLHALA763d←ajusta80 FOLHALA763d
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⍙FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA763d)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑⍙FM'c:\apl2\VIVOBLOI'
[11]  xk←1 ⋄ resu←0 4⍴0
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←10 80⍴' '
[14]  f←FOLHALA763d
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍕VERSAOd←3.24
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[22]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25]  esse[8;]←80↑1↓2 0⍕MATC[(in←?12);]
```

```
[26]  resu←resu,[1]1 4⍴resp,RESC[in;]
[27]  acuja←(f[;2]='#')/⍳1↑⍴f
[28]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[29]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[30]  ⍞←(⍕xk←xk+1),'-'
[31]  →testa
[32] fim:upag←(1 0+⍴f)⍴' '
[33]  →(1=≡n)/elafa
[34]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[35]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[36]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 5 0)⍕resu
[37]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[38]  →terminando
[39] elafa:aaa←(ylu,5 0⍕0 1↓resu)
[40]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[41]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[42] terminando:
[43]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[44]  relat[1↑⍴relat;;]←upag
[45]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.t
      ex'
[46]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[47]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo766

```
[ 0]  r←compfil x;i;a1;a2;a3;a4;y;ct
[ 1]  r←'' ⋄ x←,x ⋄ y←x,'&%$#@*'
[ 2]  i←1
[ 3] t1:→(i>⍴x)/fim
[ 4]  a1←y[i]
[ 5]  a2←y[i+1]
[ 6]  a3←y[i+2]
[ 7]  a4←y[i+3]
[ 8]  →((a1=a2)∧(a2=a3)∧(a3=a4))/foi
[ 9]  r←r,y[i]
[10]  →(i=i←i+1)/t1
[11] foi:ct←0
[12] t2:→(a1≠y[i])/aca
[13]  ct←ct+1
[14]  i←i+1
[15]  →(i>⍴x)/aca
[16]  →t2
[17] aca:r←r,'\',a1,1 0⍕ct
[18]  →t1
[19] fim:
------------------------------------------------------------
[ 0]  r←comphuf ffa;i;m1;tt;r1;bs
[ 1]  ffa←' .'edit ffa
[ 2]  →(∧/ffa∈,dichuf[;1])/blz
[ 3]  'existe letra que nao esta dicionarizada... Use ',,dichuf[;1]
[ 4]  →0
[ 5] blz:
[ 6]  i←1 ⋄ m1←''
[ 7] t1:→(i>⍴ffa)/fi1
[ 8]  m1←m1,dichuf[(,dichuf[;1])⍳ffa[i];1+⍳7]
[ 9]  →(i=i←i+1)/t1
[10] fi1:tt←8×⌈0.125×bs←⍴m1←(m1≠' ')/m1
[11]  m1←tt↑m1,'000000000'
[12]  m1←((tt÷8),8)⍴m1
[13]  i←1 ⋄ r1←''
```

```
[14] t2:→(i>1↑⍴m1)/fi3
[15]  r1←r1,'0123456789ABCDEF'[1+2 2 2 2⊥⍣(8⍴1 0)⍉m1[i;⍳4]]
[16]  r1←r1,'0123456789ABCDEF'[1+2 2 2 2⊥⍣(8⍴1 0)⍉m1[i;4+⍳4]],' '
[17]  →(i=i←i+1)/t2
[18] fi3:r←r1,'/// ',(⍕bs),' b.s.'
------------------------------------------------------------
[ 0]  r←compmor ffa;rai1;rai2;inds;j;i;pal
[ 1]  i←1 ⋄ pal←''
[ 2] t2:→(i>⍴ffa)/fi1
[ 3]  →(ffa[i]=' ')/espaco
[ 4]  pal←pal,dicmorse[(,dicmorse[;1])⍳ffa[i];1+⍳4],'1'
[ 5]  →(i=i←i+1)/t2
[ 6] espaco:pal←pal,'2'
[ 7]  →(i=i←i+1)/t2
[ 8] fi1:pal←pal,'2'
[ 9]  pal←(pal≠' ')/pal
[10]  r←pal
------------------------------------------------------------
[ 0]  r←descompfil x;i
[ 1]  x←,x
[ 2]  r←''
[ 3]  i←1
[ 4] t1:→(i>⍴x)/fim
[ 5]  →(x[i]='⍀')/bar
[ 6]  r←r,x[i]
[ 7]  →(i=i←i+1)/t1
[ 8] bar:r←r,(⊂x[i+2])⍴x[i+1]
[ 9]  →(i=i←i+3)/t1
[10] fim:
------------------------------------------------------------
[ 0]  r←gerafil;perg;resp;inds
[ 1]  r←2⍴' '
[ 2]  resp←4 40⍴' '
[ 3]  perg←4 40⍴' '
[ 4]  inds←4?1↑⍴frasesfil
[ 5]  resp[1;]←40↑compfil frasesfil[inds[1];]
[ 6]  resp[2;]←40↑compfil frasesfil[inds[2];]
[ 7]  resp[3;]←40↑frasesfil[inds[3];]
[ 8]  resp[4;]←40↑frasesfil[inds[4];]
[ 9]  perg[1;]←40↑frasesfil[inds[1];]
[10]  perg[2;]←40↑frasesfil[inds[2];]
[11]  perg[3;]←40↑compfil frasesfil[inds[3];]
[12]  perg[4;]←40↑compfil frasesfil[inds[4];]
[13]  r[1]←⊂resp
[14]  r[2]←⊂perg
------------------------------------------------------------
[ 0]  r←gerahuf;inds;j;i;m1;tt;r1;bs;rai1;rai2
[ 1]  r←2⍴' '
[ 2]  rai2←3 80⍴' ' ⋄ rai1←3 10⍴' '
[ 3]  inds←3?1↑⍴fraseshu
[ 4]  j←1
[ 5] t0:→(j>3)/acabou
[ 6]  i←1 ⋄ m1←''
[ 7] t1:→(i>10)/fi1
[ 8]  m1←m1,dichuf[(,dichuf[;1])⍳fraseshu[inds[j];i];1+⍳7]
[ 9]  →(i=i←i+1)/t1
[10] fi1:tt←8×⌈0.125×bs←⍴m1←(m1≠' ')/m1
[11]  m1←tt↑m1,'000000000'
[12]  m1←((tt÷8),8)⍴m1
[13]  i←1 ⋄ r1←''
[14] t2:→(i>1↑⍴m1)/fi3
[15]  r1←r1,'0123456789ABCDEF'[1+2 2 2 2⊥⍣(8⍴1 0)⍉m1[i;⍳4]]
[16]  r1←r1,'0123456789ABCDEF'[1+2 2 2 2⊥⍣(8⍴1 0)⍉m1[i;4+⍳4]],' '
```

```
[17]  →(i=i←i+1)/t2
[18] fi3:rai2[j;⍳30]←30↑r1
[19]  rai2[j;40+⍳30]←30↑(4 0⍕bs),' bits significativos'
[20]  rai1[j;]←fraseshu[inds[j];]
[21]  →(j=j←j+1)/t0
[22] acabou:r[1]←⊂rai1
[23]  r[2]←⊂rai2
------------------------------------------------------------
[ 0]  r←geramor;rai1;rai2;inds;j;i;pal
[ 1]  r←2⍴' ' ⋄ rai2←3 40⍴' '
[ 2]  inds←3?1↑⍴frasesmor
[ 3]  rai1←frasesmor[inds;]
[ 4]  j←1
[ 5] t1:→(j>3)/acabou
[ 6]  i←1 ⋄ pal←''
[ 7] t2:→(i>6)/fi1
[ 8]  pal←pal,dicmorse[(,dicmorse[;1])⍳rai1[j;i];1+⍳4],'1'
[ 9]  →(i=i←i+1)/t2
[10] fi1:pal←pal,'2'
[11]  pal←(pal≠' ')/pal
[12]  rai2[j;]←40↑pal
[13]  →(j=j←j+1)/t1
[14] acabou:r[1]←⊂rai1
[15]  r[2]←⊂rai2
------------------------------------------------------------
[0]  r←remdupl x
[1]  r←((x⍳x)=⍳⍴x)/x
------------------------------------------------------------
[ 0]  opesq vivo766a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;lixo1;xx;aaa
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL766   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA766←ajusta80 FOLHALA766
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA766)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[12]  xk←1 ⋄ resu←0 220⍴' '
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←17 80⍴' '
[15]  f←FOLHALA766
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←1.04
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23] inica:
[24]  xx←geramor
[25]  esse[8 9 10;]←3 80↑⊃xx[2]
[26]  resp←(3 0⍕resp),,(⊃xx[1]),' '
[27]  xx←gerafil
[28]  esse[11 12 13 14;]←4 80↑⊃xx[2]
[29]  resp←resp,,(⊃xx[1]),' '
[30]  xx←gerahuf
[31]  esse[15 16 17;]←3 80↑⊃xx[2]
[32]  resp←resp,¯1↓,(⊃xx[1]),' '
```

```
[33]  resu←resu,[1]1 220⍴resp
[34]  acuja←(f[;2]='#')/⍳1↑⍴f
[35]  f[acuja;]←esse[⍋,f[acuja;3 4 5],' ';]
[36]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[37]  ⎕←(⍕xk←xk+1),'-'
[38]  →testa
[39] fim:upag←(1 0+⍴f)⍴' '
[40]  →(1=≡n)/elafa
[41] ⍝ upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[42] ⍝ upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[43] ⍝ upag[2+⍳1↑⍴resu;⍳+/lixo1]⍝← (lixo1←4 0 10 0 4 0)⍕resu
[44] ⍝ upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[45]  →terminando
[46] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 3↓resu)
[47]  aaa[1;35 36]←2 0⍕CORRECAO
[48]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[49]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[50] terminando:
[51]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[52]  relat[1↑⍴relat;;]←upag
[53]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[54] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[55]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[56]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo767

```
[ 0]  COMOARRUMARASIMAGENS
[ 1]  'Carregue o ws que exige imagens'
[ 2]  'Aumente o numero de linhas de esse (1 linha por imagem)'
[ 3]  'Altere FOLHALAxxx, comentando a linha \includegra... e abrindo um'
[ 4]  '    \#yy, onde yy e a nova linha inserida em esse'
[ 5]  'Crie na funcao vivoxxxa,:'
[ 6]  '    No cabecalho, inclua "drive"'
[ 7]  '    Depois da inicializacao, faca drive←trim ⎕FM "c:\apl2\imagem.whe"'
[ 8]  '    esse[ultimo]←... conteudo comentado'
[ 9]  '         dentro de FOLHALAxxx, que vem a ser:'
[10]  '    ←\includegraphics[scale=1],",drive,"/infoland/ima/kkkkk.eps '
-------------------------------------------------------------
[0]  COMOGERARPDFPARCIAL
[1]  'Chame o giz e na f.65 gere o pacote parcial (por exemplo: AL)'
[2]  'Carregue o ws vivodire e faca fazcadmat2 fazcadmat Pxx (no exemplo PAL)'
[3]  'depois numa janela DOS carregue o \apl2\TERA.BAT e faca as alteracoes'
[4]  'cabidas (principalmente no nome do arquivo destino final)'
-------------------------------------------------------------
[ 0]  COMOGERARPDFZAO
[ 1]  'Antes, chame )load ... vivo070 e rode vivotod'
[ 2]  ' depois,...'
[ 3]  'Faca x←geralistaunificada'
[ 4]  'Faca fazpdftodo x'
[ 5]  'Importante: no dos, no diretorio c:\apl2, rode tera70'
[ 6]  '    depois, rode tera'
[ 7]  '    depois rode o geradire'
[ 8]  '    e ainda rode o lates e depois o dvipdfm de paper_expl_vivo'
[ 9]  '    que esta e, f:\p\infoland, e depois do pdf gerado deve ser'
[10]  '    copiado para c:\apl2'
-------------------------------------------------------------
[ 0]  COMOGERARX3CASADO
[ 1]  'Este procedimento visa casar as aulas registradas no GIZ (opcao                '
[ 2]  'aulas) com os exercicios descritos em IKVI. O objetivo e redistribuir         '
[ 3]  'exercicios por disciplinas e eventualmente sugerir novas disciplinas...      '
```

```
[ 4]  '                                                                    '
[ 5]  '1. Para comecar, entre no diretorio do giz, chame o DBASE e execute        '
[ 6]  'o comando                                                                  '
[ 7]  '                  use GIZAUL3                                               '
[ 8]  '                  copy to lixoau sdf                                       '
[ 9]  'Este procedimento criara o arquivo LIXOAU.TXT                             '
[10]  '                                                                         '
[11]  '2. No APL2, chame VIVODIRE e execute gerax3casado que lera o              '
[12]  'arquivo acima em c:\giz\lixoau.txt e o comparara com x3, gerando um '
[13]  'novo x3 denominado X3CASADO que descrevera como os exercicios sao  '
[14]  'usados                                                                    '
[15]  ' '
[16]  ' chamando gerax3casado2, funciona tudo igual, mas ele imprime tambem'
[17]  ' a chamada ao segundo exercicio de cada aula'
-------------------------------------------------------------
[0]  COMOINCLUIRPEDEMAIL
[1]  '1. faca ylu←(n,76)...'
[2]  '2. crie uma linha a mais em esse'
[3]  '3. esse[ul]←80↑pedemail ylu[xk;36+⍳40]'
[4]  '4. carregue pedemail (pode ser de vivo012)'
[5]  '5. em FOLHALAxx, apos a ultima linha'
[6]  '   \\[0.5cm]'
[7]  '   \#ul'
-------------------------------------------------------------
[ 0]  COMOPORCODIGOBARRA
[ 1]  '1. Aumentar esse em 2 linhas ou usar a ultima linha+1 se ja existir esta'
[ 2]  '2. em vivoxxxa, escrever'
[ 3]  '   esse[ult;⍳10]←"@",esse[6;5+⍳3],esse[4;1+⍳5],"@"'
[ 4]  '   esse[ult+1;]←80↑esse[6;5+⍳3],"-",esse[4;1+⍳5]," - ",opesq[6 7],"/",opesq[9 10]'
[ 5]  ''
[ 6]  '3. no final de FOLHALAxxx'
[ 7]  '   \fbox { \font \bcfont=wlc39 scaled 1000 {\bcfont'
[ 8]  '   \#ult'
[ 9]  '   }}'
[10]  '   \#ult+1'
-------------------------------------------------------------
[0]  CORES2009
[1]  'verde = ALA'
[2]  'amarelo = ALB'
[3]  'rosa = EDN'
[4]  'azul = TPM e TPN'
[5]  'salmao = EDM'
[6]  'ciza/reciclado = ALM'
[7]  '90gr branco = controle meu'
-------------------------------------------------------------
[ 0]  ROTINASABADOS;r
[ 1]  r←0 70⍴' '
[ 2]  r←r,[1]70↑'Confirmar as mudancas de alunos'
[ 3]  r←r,[1]70↑'   a. Crie os arquivos no micro internet. Nome AA* (AA=ano)'
[ 4]  r←r,[1]70↑'   e grave-os em \giz'
[ 5]  r←r,[1]70↑'   b. Rode giz e na opcao aluno, F3, geracao de arquivos mediante ANO'
[ 6]  r←r,[1]70↑'   c. Carregue ws=entrasai e execute x <- montamats turs'
[ 7]  r←r,[1]70↑'   d. examine x'
[ 8]  r←r,[1]70↑'recrie os arquivos ALU (giz : turmas : F6)'
[ 9]  r←r,[1]70↑'Preencher GIZ-PROGS com o planejamento da semana'
[10]  r←r,[1]70↑'Gerar GIZ-PROGS-PROGLA, imprimir e conferir'
[11]  r←r,[1]70↑'Confirmar se os WSs APL2 estao OK (sem erro e codigo barras OK...)'
[12]  r←r,[1]70↑'Gerar os exercicios AAxxxyyy no APL2'
[13]  r←r,[1]70↑'Compilar os exercicios gerados no LATEX'
[14]  r←r,[1]70↑'Imprimir os exercicios'
[15]  r←r,[1]70↑'Carregar no portal os exercicios complementares'
[16]  r←r,[1]70↑'Imprimir em folha salmão 1 exercicio complementar'
[17]  r←r,[1]70↑'Publicar as aulas da semana (ou só confirmar)'
```

```
[18]  r←r,[1]70↑'Carregar os eventos em GIZ-EVEN'
[19]  r←r,[1]70↑'Mover os arquivos *.GPA de ⍀apl2 para ⍀giz '
[20]  r←r,[1]70↑'Carregar GIZ-AVAL-captura ALLA'
[21]  r←r,[1]70↑'Mover arquivos *.GPA de ⍀giz para ⍀giz⍀gpa'
[22]  r←r,[1]70↑'Criar arquivos PDF da semana a partir dos DVI (dvipdfm)'
[23]  r←r,[1]70↑'Publicar os 09xxxyyy.PDF nas aulas correspondentes do portal'
[24]  r←r,[1]70↑'Apagar ⍀dbfs.zip e ⍀prgs⍀zip'
[25]  r←r,[1]70↑'Recuperar folhas feitas, descobrir data de corte e carimbar atrasados'
[26]  r←r,[1]70↑'corrigir folhas pendentes'
[27]  r←r,[1]70↑'Fazer em ⍀giz: VAIDISK'
[28]  r←r,[1]70↑'Backup de ⍀p⍀ no disco USB'
[29]  r←r,[1]70↑'Rodar um CHKDSK /F sobre o pendrive'
[30]  r←((1↑⍴r),80)↑1 numera r
[31]  CABE←ajusta80 CABE
[32]  CABE←CABE,[1]1 80⍴80↑'⍀large'
[33]  CABE←CABE,[1]1 80⍴80↑'⍀begin{verbatim}'
[34]  r←CABE,[1]r,[1]2 80⍴(80↑'⍀end{verbatim}'),80↑'⍀end{document}'
[35]  r ⎕FM'c:⍀apl2⍀listasab.tex'
[36]  'criado arquivo c:⍀apl2⍀listasab.tex'
-------------------------------------------------------------
[ 0]  r←acertaca x;i
[ 1]  r←3 78⍴' '
[ 2]  i←1
[ 3] t1:→(i>3)/fim
[ 4]  →(i≠1)/pulla
[ 5]  r[i;]←78↑(⍕x[i;1]),'&-',(⍕x[i;2]),'&-',(⍕x[i;3]),'&-',(⍕x[i;4]),'&...&',(⍕x[i;5]),'⍀
      ⍀ ⍀hline'
[ 6]  →vaii
[ 7] pulla:
[ 8]  r[i;]←78↑(⍕x[i;1]),'&-',(⍕x[i;2]),'&-',(⍕x[i;3]),'&-',(⍕x[i;4]),'&...&⍀⍀ ⍀hline'
[ 9] vaii:
[10]  i←i+1
[11]  →t1
[12] fim:
-------------------------------------------------------------
[ 0]  r←acertauni fr;fr1;i;ct
[ 1]  fr1←remdupl fr
[ 2]  i←1 ⋄ ct←(⍴fr1)⍴0
[ 3] t1:→(i>⍴fr1)/fi
[ 4]  ct[i]←+/fr=fr1[i]
[ 5]  →(i=i←i+1)/t1
[ 6] fi:fr1←fr1[⍒ct]
[ 7]  ct←ct[⍒ct]
[ 8]  r←''
[ 9]  i←1
[10] t2:→(i>⍴fr1)/fi0
[11]  r←r,(⍕⍳⍴ct)[i]⍴fr1[i]
[12]  →(i=i←i+1)/t2
[13] fi0:
-------------------------------------------------------------
[0]  r←achagrand x
[1]  r←(1=,GRANDEGRUPO[;1]=x)/⍳1↑⍴GRANDEGRUPO
-------------------------------------------------------------
[0]  r←v3 achaliq t3;i
[1]  i←1
[2] t1:→(i>1↑⍴v3)/fim
[3]  →(3=+/t3=v3[i;⍳3])/achou
[4]  i←i+1
[5]  →t1
[6] achou:r←i
[7]  →0
[8] fim:'deu erro'
-------------------------------------------------------------
```

```
[0]  r←achanovo x;ii
[1]  r←'   '
[2]  ii←(3=+/[2]NOVOVELHO[;1 2 3]=((1↑⍴NOVOVELHO),3)⍴x)/⍳1↑⍴NOVOVELHO
[3]  →(0=⍴ii)/0
[4]  r←NOVOVELHO[ii;4 5 6]
-------------------------------------------------------------
[0]  r←analisalatex x
[1]  x←4 0↓x
[2]  r←'latex ',3 0⍕+/x[;5]='L'
[3]  r←r,'        '
[4]  r←r,'outros ',3 0⍕+/x[;5]≠'L'
-------------------------------------------------------------
[0]  r←a ate b
[1]  r←(a-1)+⍳(b-a)+1
-------------------------------------------------------------
[0]  aviso
[1]  'Exercicios comecados com L sao os ja convertidos a latex'
[2]  'Os comecados com P sao aqueles que so tem PAPEL sem WS apl'
[3]  'Os comecados com I sao os VIVO e ja estao na base APL2'
-------------------------------------------------------------
[0]  r←qt bina m;alfa;vet;i
[1]  alfa←'0123456789ABCDEF' ⋄ r←''
[2]  vet←16 5⍴'0000010001200103001140100501016011070111810009100 1A1010B1011C1100D1101E111
      0F1111'
[3]  i←1
[4] t1:→(i>⍴m)/aca
[5]  r←r,vet[alfa⍳m[i];1+⍳4]
[6]  →(i=i←i+1)/t1
[7] aca:r←qt↑r
-------------------------------------------------------------
[ 0]  r←d comprimesh f;li;i;qtd;alfa
[ 1]  li←'' ⋄ alfa←'01234567890ABCDEF' ⋄ r←''
[ 2]  i←1
[ 3] t1:→(i>⍴f)/fim
[ 4]  li←li,d[(,d[;1])⍳f[i];2+⍳8]
[ 5]  →(i=i←i+1)/t1
[ 6] fim:
[ 7]  li←(li≠' ')/li
[ 8]  qtd←⍴li
[ 9]  li←(8×⌈0.125×⍴li)↑li,'00000000'
[10]  i←1
[11] t2:→(i>⍴li)/finz
[12]  r←r,alfa[1+2 2 2 2⊥⍸li[i],' ',li[i+1],',',li[i+2],' ',li[i+3]]
[13]  r←r,(alfa[1+2 2 2 2⊥⍸li[i+4],' ',li[i+5],',',li[i+6],' ',li[i+7]]),' '
[14]  i←i+8
[15]  →t2
[16] finz:r←(40↑r),'bits signf=',3 0⍕qtd
-------------------------------------------------------------
[ 0]  col cortashan if;soma;ind;so12;i;f
[ 1]  i←if[1] ⋄ f←if[2]
[ 2] ⍝ EXPSH←EXPSH,[1]1 50⍴50↑'na col=',(2 0⍕col),' corta i=',(2 0⍕i),' f=',2 0⍕f
[ 3]  soma←0
[ 4]  ind←i
[ 5] t1:→(ind>f)/acabou
[ 6]  soma←soma+ctd[ind]
[ 7]  ind←ind+1
[ 8]  →t1
[ 9] acabou:ind←i ⋄ so12←0
[10] t2:→(so12>0.5×soma)/metade
[11]  so12←so12+ctd[ind]
[12]  ind←ind+1
[13]  →t2
[14] metade:ind←ind-1
```

```
[15]  EXPSH←EXPSH,[1]1 50ρ50↑'corte apos ',2 0⍕ind
[16]  DIC[(i ate ind);col]←'0'
[17]  DIC[((ind+1)ate f);col]←'1'
[18]  →(2>(ind-i))/qf
[19]  (col+1)cortashan i,ind
[20] qf:→(2>f-ind+1)/finzao
[21]  (col+1)cortashan(ind+1),f
[22] finzao:
------------------------------------------------------------
[ 0]  r←urca doctralatex quem;li;co;i;j;k;ind;xva;mat;dx
[ 1] ⍝fgera as macros latex para documentar em apl a texto (funcao?) apl
[ 2] ⍝roperando esquerda=titulo da sessao; direita:o texto apl a converter
[ 3] ⍝ exemplo: 'exemplo de convrsao' doctralatex ⎕cr 'edit'
[ 4]  mat←5 50ρ' '
[ 5]  mat[1;]←'≥α⌽⍉⍟⍥○⍝⊂⊥⊤∇≠÷◇→↓Δ⊃∧≤≠±⍒⍋⍒⍳⍝⌈¯⌊∣⍫⍰⍩ω∨∈⍗⍞←ρ↑~≡¨∪×'
[ 6]  mat[3;]←'GARTCLLSCRDEDN%DGDLL&LCXFGGQI"CNFAPNNOOEDB_RUNDDU#'
[ 7]  mat[4;]←'EMVRRGOOBUENLE MOADU ESQMDUQO EGLBDNRMRPQX OATQDU '
[ 8]  mat[2;]←'@' ◇ mat[5;]←'~'
[ 9]  mat[1+⍳3;30]←'"  '
[10]  →(2≠ρρquem)/erro
[11] ⍝  →(urca  ∈quem)/erro
[12]  xva←(1↑ρquem)ρ0
[13]  i←1
[14] t0:→(i>ρxva)/f88
[15]  xva[i]←+/quem[i;]∈mat[1;]
[16]  →(i=i←i+1)/t0
[17] f88:li←1↑ρquem
[18]  co←1↓ρquem
[19]  r←(li,co+4×⌈/xva)ρ' '
[20]  i←1
[21] t1:→(i>li)/fim1
[22]  j←1 ◇ k←1
[23] t2:→(j>co)/fim0
[24]  →(quem[i;j]∈mat[1;])/tem
[25]  r[i;k]←quem[i;j]
[26]  j←j+1
[27]  k←k+1
[28]  →t2
[29] tem:ind←(quem[i;j]=mat[1;])/⍳1↓ρmat
[30]  r[i;k+¯1+⍳4]←mat[2;ind],mat[3;ind],mat[4;ind],mat[5;ind]
[31]  j←j+1
[32]  k←k+4
[33]  →t2
[34] fim0:→(i=i←i+1)/t1
[35] erro:'deu xabu, troque a opcao '
[36] fim1:dx←1↓ρr
[37]  →(0=ρurca)/naotemurca
[38]  r←((2,dx)ρ(dx↑'\section{',urca,'}'),dx↑'\begintt'),[1]r
[39]  →conta69
[40] naotemurca:r←((1,dx)ρdx↑'\begintt'),[1]r
[41] conta69:r←r,[1]((1,dx)ρdx↑'\endtt')
------------------------------------------------------------
[ 0]  r←fazcadmat qual;x;y;li;as;i;r;letra;ll
[ 1]  'Entre no GIZ e chame a funcao AULA'
[ 2]  'Dai gere a listagem 65'
[ 3]  'E informe a esta funcao APL o nome P+o que vc falou la no GIZ'
[ 4]  x←ΔFM'c:\giz\',qual
[ 5]  y←x[2+⍳¯2+1↑ρx;44+⍳4]
[ 6]  y
[ 7]  as←''''
[ 8]  r←0 100ρ' '
[ 9]  i←1
[10] t1:→(i>1↑ρy)/fim
```

```
[11]  letra←y[i;4]
[12]  →(letra='a')/ea
[13] naoe:
[14]  ll←letra
[15]  →junta
[16] ea:ll←' '
[17] junta:
[18]  li←100⍴' '
[19]  li[⍳29]←')copy ',as,'f:\p\apl2\vivo',y[i;1 2 3],'.apl',as
[20]  li[30+⍳12]←12↑'vivo',y[i;1 2 3 4],' 1'
[21]  li[42+⍳20]←20↑'latex pl',y[i;1 2 3],ll,' -quiet'
[22]  li[62+⍳20]←20↑'dvipdfm -s 1 pl',y[i;1 2 3],ll
[23]  →(ll≠' ')/uga
[24]  li[82+⍳18]←18↑'pl',y[i;1 2 3],'.pdf'
[25]  →juga
[26] uga:
[27]  li[82+⍳18]←18↑'pl',y[i;1 2 3],ll,'.pdf'
[28] juga:
[29]  r←r,[1]1 100⍴li
[30]  i←i+1
[31]  →t1
[32] fim:LI←r
[33]  'SAIDA guardada com o nome de LI (global)'
-------------------------------------------------------------
[ 0]  r←fazcadmat2 lixotudo;lixo;i;tera;SHR101;coma;sinal;xxx
[ 1]  'tamanho do operador x',⍕⍴lixotudo
[ 2]  lixo←101 SVOFFER'SHR101'
[ 3]  sinal←1
[ 4]  tera←0 110⍴' '
[ 5]  coma←'pdftk '
[ 6]  i←1
[ 7] t1:
[ 8]  →(i>1↑⍴lixotudo)/fi8
[ 9]  SHR101←lixotudo[i;⍳30],⎕TC[2],lixotudo[i;30+⍳12],⎕TC[2],')clear'
[10] pula:
[11]  tera←tera,[1]1 110⍴110↑lixotudo[i;42+⍳20]
[12]  tera←tera,[1]1 110⍴110↑lixotudo[i;62+⍳20]
[13]  coma←coma,(trim lixotudo[i;82+⍳18]),' '
[14]  i←i+1
[15]  →(0≠7|i)/t1
[16] fi8:
[17]  coma←coma,' output a',('00'⍕sinal),' dont_ask'
[18]  sinal←sinal+1
[19]  tera←tera,[1]1 110⍴110↑coma
[20]  coma←'pdftk '
[21]  →(i>1↑⍴lixotudo)/gui
[22]  →t1
[23] gui:
[24]  tera←tera,[1]1 110⍴110↑'pdftk a01 a02 a03 a04 a05 a06 a07 a08 a09 a10 output b1 dont
      _ask'
[25]  tera←tera,[1]1 110⍴110↑'pdftk a11 a12 a13 a14 a15 a16 a17 a18 a19 a20 output b2 dont
      _ask'
[26]  tera←tera,[1]1 110⍴110↑'pdftk a21 a22 a23 a24 a25 a26 a27 a28 a29 a30 output b3 dont
      _ask'
[27]  tera←tera,[1]1 110⍴110↑'pdftk a31 a32 a33 a34 a35 a36 a37 a38 a39 a40 output b4 dont
      _ask'
[28]  tera←tera,[1]1 110⍴110↑'pdftk a41 a42 a43 a44 a45 a46 a47 a48 a49 a50 output b5 dont
      _ask'
[29]  tera←tera,[1]1 110⍴110↑'pdftk a51 a52 a53 a54 a55 output b6 dont_ask'
[30]  tera←tera,[1]1 110⍴110↑'pdftk b1 b2 b3 b4 b5 b6 output VIVOAULA.PDF '
[31]  tera ⍎FM'c:\apl2\tera.bat'
[32]  'arrume o tera gerado'
-------------------------------------------------------------
```

```
[ 0]  r←fazdiatodo1 lixotudo;lixo;i;tera;SHR101;coma;sinal;xxx
[ 1]  lixo←101 SVOFFER'SHR101'
[ 2]  i←1
[ 3] t1:
[ 4]  →(i>330)/fi8
[ 5]  SHR101←lixotudo[i;⍳30],⎕TC[2],lixotudo[i;30+⍳40],⎕TC[2],')clear'
[ 6]  i←i+1
[ 7]  →(0≠7|i)/t1
[ 8] fi8:
[ 9]  →(i>330)/gui
[10]  →t1
[11] gui:
------------------------------------------------------------
[ 0]  r←fazdiatodo2 lixotudo;SHR101;coma;i;lixo;sinal;tera1;tera2;xxx
[ 1]  lixo←101 SVOFFER'SHR101'
[ 2]  i←1
[ 3] t1:
[ 4]  →(i>1↑⍴lixotudo)/fi8
[ 5]  →(i<331)/pula
[ 6]  SHR101←lixotudo[i;⍳30],⎕TC[2],lixotudo[i;30+⍳40],⎕TC[2],')clear'
[ 7] pula:
[ 8] ⍝ xxx←⍞
[ 9]  i←i+1
[10]  →(0≠7|i)/t1
[11] fi8:
[12]  →(i>1↑⍴lixotudo)/gui
[13]  →t1
[14] gui:
------------------------------------------------------------
[ 0]  r←fazfuntodo1 lixotudo;lixo;i;tera;SHR101;coma;sinal;xxx;asp
[ 1]  lixo←101 SVOFFER'SHR101' ⋄ asp←''''
[ 2]  i←1
[ 3] t1:
[ 4]  →(i>330)/fi8
[ 5]  SHR101←lixotudo[i;⍳30],⎕TC[2],')copy ',asp,'c:\apl2\vivofunc.apl',asp,⎕TC[2],asp,lix
      otudo[i;15+⍳7],asp,' docfuncoes stopwords',⎕TC[2],')clear'
[ 6]  i←i+1
[ 7]  →(0≠7|i)/t1
[ 8] fi8:
[ 9]  →(i>330)/gui
[10]  →t1
[11] gui:
------------------------------------------------------------
[ 0]  r←fazpdftodo1 lixotudo;lixo;i;tera;SHR101;coma;sinal;xxx
[ 1] ⍝ 'tamanho do operador x',⍕⍴lixotudo
[ 2] ⍝ geradire
[ 3] ⍝ geracartela
[ 4]  lixo←101 SVOFFER'SHR101'
[ 5]  i←1
[ 6] t1:
[ 7]  →(i>330)/fi8
[ 8]  SHR101←lixotudo[i;⍳30],⎕TC[2],lixotudo[i;30+⍳12],⎕TC[2],')clear'
[ 9]  i←i+1
[10]  →(0≠7|i)/t1
[11] fi8:
[12]  →(i>330)/gui
[13]  →t1
[14] gui:
[15] ⍝ SHR101←0
------------------------------------------------------------
[ 0]  r←fazpdftodo2 lixotudo;SHR101;coma;i;lixo;sinal;tera1;tera2;xx;xxx
[ 1]  lixo←101 SVOFFER'SHR101'
[ 2]  i←331
```

```
[ 3] t1:
[ 4]  →(i>661)/gui
[ 5]  SHR101←lixotudo[i;⍳30],⎕TC[2],lixotudo[i;30+⍳12],⎕TC[2],')clear'
[ 6] pula:
[ 7]  i←i+1
[ 8]  →t1
[ 9] gui:
------------------------------------------------------------
[ 0]  r←fazpdftodo3 lixotudo;SHR101;coma;i;lixo;sinal;tera1;tera2;xx;xxx
[ 1]  lixo←101 SVOFFER'SHR101'
[ 2]  i←661
[ 3] t1:
[ 4]  →(i>1↑⍴lixotudo)/gui
[ 5]  SHR101←lixotudo[i;⍳30],⎕TC[2],lixotudo[i;30+⍳12],⎕TC[2],')clear'
[ 6] pula:
[ 7]  i←i+1
[ 8]  →t1
[ 9] gui:
------------------------------------------------------------
[ 0]  r←fazpdftodo4 lixotudo;SHR101;coma;i;lixo;sinal;tera1;tera2;xx;xxx
[ 1] ⍝ 'tamanho do operador x',⍕⍴lixotudo
[ 2]  geradire
[ 3]  geracartela
[ 4]  sinal←1
[ 5]  tera1←tera2←0 110⍴' '
[ 6]  coma←'pdftk '
[ 7]  i←1
[ 8] t1:
[ 9]  →(i>1↑⍴lixotudo)/fi8
[10] pula:
[11]  →(lixotudo[i;56]='a')/branco
[12]  coma←coma,11↑(trim lixotudo[i;50+⍳6]),'.pdf'
[13]  tera1←tera1,[1]1 110⍴110↑(trim lixotudo[i;42+⍳14])
[14]  →puula
[15] branco:
[16]  tera1←tera1,[1]1 110⍴110↑lixotudo[i;42+⍳13]
[17]  coma←coma,10↑(trim lixotudo[i;50+⍳5]),'.pdf '
[18] puula:
[19]  i←i+1
[20]  →(0≠7|i)/t1
[21] fi8:
[22]  coma←coma,' output a',('00'⍕sinal),' dont_ask'
[23]  sinal←sinal+1
[24]  tera2←tera2,[1]1 110⍴110↑coma
[25]  coma←'pdftk '
[26]  →(i>1↑⍴lixotudo)/gui
[27]  →t1
[28] gui:
[29]  tera1 ⎕FM'c:\apl2\tera1.bat'
[30]  tera2←tera2,[1]1 110⍴110↑'latex diredire    '
[31]  tera2←tera2,[1]1 110⍴110↑'dvipdfm diredire  -q  '
[32]  tera2←tera2,[1]1 110⍴110↑'latex cartvivo    '
[33]  tera2←tera2,[1]1 110⍴110↑'dvipdfm cartvivo  -q  '
[34]  tera2←tera2,[1]1 110⍴110↑'pdftk a01 a02 a03 a04 a05 a06 a07 a08 a09 a10 output b1 '
[35]  tera2←tera2,[1]1 110⍴110↑'pdftk a11 a12 a13 a14 a15 a16 a17 a18 a19 a20 output b2 '
[36]  tera2←tera2,[1]1 110⍴110↑'pdftk a21 a22 a23 a24 a25 a26 a27 a28 a29 a30 output b3 '
[37]  tera2←tera2,[1]1 110⍴110↑'pdftk a31 a32 a33 a34 a35 a36 a37 a38 a39 a40 output b4 '
[38]  tera2←tera2,[1]1 110⍴110↑'pdftk a41 a42 a43 a44 a45 a46 a47 a48 a49 a50 output b5 '
[39]  tera2←tera2,[1]1 110⍴110↑'pdftk a51 a52 a53 a54 a55 a56 a57 a58 a59 a60 output b6 '
[40]  tera2←tera2,[1]1 110⍴110↑'pdftk a61 a62 a63 a64 a65 a66 a67 a68 a69 a70 output b7 '
[41]  tera2←tera2,[1]1 110⍴110↑'pdftk a71 a72 a73 a74 a75 a76 a77 a78 a79 a80 output b8 '
[42]  tera2←tera2,[1]1 110⍴110↑'pdftk a81 a82 a83 a84 a85 a86 a87 a88 a89 a90 output b9 '
[43]  tera2←tera2,[1]1 110⍴110↑'pdftk a91 a92 a93 a94 a95 a96 output ba dont_ask'
```

```
[44] ⍝ nao esquecer de incluir os arquivos faltantes a35, a36, ...
[45]  tera2←tera2,[1]1 110⍴110↑'copy c:\apl2\paper_expl_vivos.tex .'
[46]  tera2←tera2,[1]1 110⍴110↑'latex paper_expl_vivos'
[47]  tera2←tera2,[1]1 110⍴110↑'dvipdfm -o pap.pdf paper_expl_vivos -q '
[48]  tera2←tera2,[1]1 110⍴110↑'latex diredire'
[49]  tera2←tera2,[1]1 110⍴110↑'dvipdfm diredire -q '
[50]  tera2←tera2,[1]1 110⍴110↑'pdftk c:\apl2\capa.pdf pap.pdf c:\apl2\eista03.pdf diredir
      e.pdf cartvivo.pdf output b0 '
[51]  tera2←tera2,[1]1 110⍴110↑'pdftk b0 c:\apl2\exer_alg.pdf capa2.pdf b1 b2 b3 b4 b5 out
      put VIVOFLS1.PDF '
[52]  tera2←tera2,[1]1 110⍴110↑'pdftk b6 b7 b8 b9 ba output VIVOFLS2.PDF '
[53]  tera2←tera2,[1]1 110⍴110↑'pdftk VIVOFLS1.PDF VIVOFLS2.PDF output VIVOFLS.PDF '
[54]  tera2 ⎕FM'c:\apl2\tera5.bat'
[55]  'Gerado o arquivo c:\apl2\TERA.BAT, que devera ser executado...'
[56]  ' Rode antes STANDALONE o tera70'
-------------------------------------------------------------
[0]  g
[1]  IKVI←ajusta80 IKVI
[2]  x1←geralista1
[3]  x2←geralista2
[4]  x3←geralista3
[5]  x4←geralista4
-------------------------------------------------------------
[ 0]  geracartela;ik;i;ANT;li;tam;r
[ 1]  tam←78
[ 2]  IKVI←ajusta80 IKVI
[ 3]  r←(0,tam)⍴' '
[ 4]  ik←(80≠+/(IKVI=' '))/[1]IKVI
[ 5]  ik←ik[⍋AV⍋ik[;1+⍳7];]
[ 6]  i←1
[ 7]  ANT←'⊗'
[ 8] t1:→(i>1↑⍴ik)/fim
[ 9]  →(ik[i;2]=ANT)/segue
[10]  →(ANT='⊗')/oba
[11] ⍝ r←r,[1](1,tam)⍴tam↑'\end{longtable}'
[12]  r←r,[1](1,tam)⍴tam↑'\end{verbatim}'
[13] oba:
[14]  r←r,[1](1,tam)⍴tam↑'\subsubsection*{',,GRANDEGRUPO[achagrand ik[i;2];1+⍳29],'}'
[15] ⍝ r←r,[1](1,tam)⍴tam↑'\begin{longtable}{|p{0.7cm}|p{5.5cm}|p{0.3cm}|p{0.3cm}|} \hline
      '
[16]  r←r,[1](1,tam)⍴tam↑'\begin{verbatim}'
[17] ⍝segue:li←ik[i;1+⍳7],'&',trim ik[i;11+⍳39],'&',ik[i;58 59],'&',(,achanovo ik[i;1+⍳3])
      ,'\\ \hline'
[18] segue:li←ik[i;1+⍳7],' ',ik[i;11+⍳39],' ',ik[i;58 59],' ',(,achanovo ik[i;1+⍳3])
[19]  ANT←ik[i;2]
[20]  r←r,[1](1,tam)⍴tam↑li
[21]  i←i+1
[22]  →t1
[23] fim:
[24] ⍝ r←r,[1](1,tam)⍴tam↑'\end{longtable}'
[25]  r←r,[1](1,tam)⍴tam↑'\end{verbatim}'
[26]  r←(((1↑⍴CABECAR),tam)↑CABECAR),[1]r
[27]  r←r,[1](1,tam)⍴tam↑'Número de folhas: ',(⍕1↑⍴ik),'\\*'
[28]  r←r,[1](1,tam)⍴tam↑'Versto de ',('00/'⍕⎕TS[3]),('00/'⍕⎕TS[2]),('00'⍕⎕TS[1]-2000),' à
      s ',('00:'⍕⎕TS[4]),('00'⍕⎕TS[5])
[29]  r←r,[1](1,tam)⍴tam↑'\end{multicols*}'
[30]  r←r,[1](1,tam)⍴tam↑'\end{document}'
[31]  r ⎕FM'c:\apl2\cartvivo.tex'
[32]  'Arquivo criado com o nome de cartvivo.tex'
-------------------------------------------------------------
[ 0]  r←geracaso;z;x
[ 1]  r←0 5⍴0
[ 2] denovo:x←10000+?50000
```

```
[ 3]  z←raizq x
[ 4]  →(5>ρFRASE)/denovo
[ 5]  →(0=FRASE[5])/denovo
[ 6]  r←1 5ρx,FRASE[1 2 3 5]
[ 7] denovo2:x←40000+?10000
[ 8]  z←raizq x
[ 9]  →(5>ρFRASE)/denovo2
[10]  →(0=FRASE[5])/denovo2
[11]  r←r,[1]1 5ρx,FRASE[1 2 3 5]
[12] denovo4:x←10000+?20000
[13]  z←raizq x
[14]  →(5>ρFRASE)/denovo4
[15]  →(0=FRASE[5])/denovo4
[16]  r←r,[1]1 5ρx,FRASE[1 2 3 5]
------------------------------------------------------------
[ 0]  r←geradialunificada;xx;i;a;b;li;aux;as
[ 1]  as←''''
[ 2]  xx←IKVI
[ 3]  xx←xx[⍋AV⍋xx[;2 3 4 5];]
[ 4]  r←0 70ρ' '
[ 5]  i←1
[ 6] t1:→(i>1↑ρxx)/fim
[ 7]  li←70ρ' '
[ 8]  li[⍳29]←29↑')copy ',as,'c:\apl2\vivo',xx[i;2 3 4],'.apl',as
[ 9]  li[30+⍳40]←40↑')out ',as,'c:\vaiapl2\vivo',xx[i;2 3 4],'.atf',as
[10]  r←r,[1]1 70ρli
[11] soma:i←i+1
[12]  →t1
[13] fim:LI←li
[14]  'Tamanho da lista gerada: ',⍕1↑ρr
------------------------------------------------------------
[ 0]  r←geradir3 x;lin;i;tam
[ 1]  r←(((+/(,x[;1])='%')÷2),15)ρ' '
[ 2]  tam←0
[ 3]  lin←1
[ 4]  i←1
[ 5] t1:→(i>1↑ρx)/fim
[ 6]  →((x[i;1]='%')∧(x[i;2]='i'))/comeca
[ 7]  →((x[i;1]='%')∧(x[i;2]='f'))/termina
[ 8]  tam←tam+1
[ 9]  i←i+1
[10]  →t1
[11] comeca:r[lin;⍳3]←x[i;3 4 5]
[12]  r[lin;5+⍳5]←5 0⍕i
[13]  tam←0
[14]  i←i+1
[15]  →t1
[16] termina:r[lin;10+⍳5]←5 0⍕tam
[17]  lin←lin+1
[18]  i←i+1
[19]  →t1
[20] fim:
------------------------------------------------------------
[ 0]  geradire;dhx;cabe;zz;fol;xk;bloco;iikbd;lixo
[ 1]  METOD←ajusta80 METOD
[ 2]  CABE←ajusta80 CABE
[ 3]  DESCR←ajusta80 DESCR
[ 4]  fol←0 80ρ' '
[ 5]  fol←fol,[1]CABE
[ 6]  fol←fol,[1]METOD
[ 7]  fol←fol,[1]1 80ρ80↑'\counterwithout{subsection}{section}'
[ 8]  fol←fol,[1]1 80ρ80↑'\tableofcontents'
[ 9]  fol←fol,[1]1 80ρ80↑'\chapter{Lista de exercícios}'
```

```
[10]  xk←1 ⋄ zz←geradir3 DESCR
[11]  zz←zz[⍋⎕AV⍋zz[;⍳3];]
[12] testa:→(xk>1↑⍴zz)/fim
[13]  iikbd←IKVI[;1+⍳3]achaliq zz[xk;⍳3]
[14]  bloco←50 80⍴' '
[15]  bloco[1;]←DESCR[(⍷zz[xk;5+⍳5])+1;]
[16]  bloco[2;]←80↑'código: ',(zz[xk;⍳3]),'⍀⍀'
[17]  →(8=+/IKVI[iikbd;51+⍳8]=' ')/pula
[18]  bloco[3;]←80↑'finalizado em ',IKVI[iikbd;51+⍳8],'⍀⍀'
[19] pula:bloco[3+⍳47;]←47 80↑DESCR[1+(⍷zz[xk;5+⍳5])+⍳⍷zz[xk;10+⍳5];]
[20]  fol←fol,[1]trim2 bloco
[21]  xk←xk+1
[22]  →testa
[23] fim:fol←fol,[1]1 80⍴80↑'⍀end{document}'
[24]  lixo←fol ⍙FM'c:⍀apl2⍀diredire.tex'
[25]  'gerada a cartela em c:⍀apl2⍀diredire.tex'
[26]  ZZ←zz
------------------------------------------------------------
[ 0]  geradireparc quais;dhx;cabe;zz;fol;xk;bloco;iikbd
[ 1]  METOD←ajusta80 METOD
[ 2]  CABE←ajusta80 CABE
[ 3]  DESCR←ajusta80 DESCR
[ 4]  fol←0 80⍴' '
[ 5]  fol←fol,[1]CABE
[ 6]  fol←fol,[1]METOD
[ 7]  fol←fol,[1]1 80⍴80↑'⍀section*{Lista de exercícios}'
[ 8]  xk←1 ⋄ zz←geradir3 DESCR
[ 9] ⍝ zz←zz[⍋zz[;1];]
[10]  zz←zz[zz[;1]⍳quais;]
[11] testa:→(xk>1↑⍴zz)/fim
[12]  iikbd←(⍷,IKVI[;1+⍳3],' ')⍳zz[xk;1]
[13]  bloco←50 80⍴' '
[14]  bloco[1;]←DESCR[zz[xk;2]+1;]
[15]  bloco[2;]←80↑'código: ',(⍕zz[xk;1]),'⍀⍀'
[16]  →(8=+/IKVI[iikbd;51+⍳8]=' ')/pula
[17]  bloco[3;]←80↑'finalizado em ',IKVI[iikbd;51+⍳8],'⍀⍀'
[18] pula:bloco[3+⍳47;]←47 80↑DESCR[1+zz[xk;2]+⍳zz[xk;3];]
[19]  fol←fol,[1]trim2 bloco
[20]  xk←xk+1
[21]  →testa
[22] fim:fol←fol,[1]1 80⍴80↑'⍀end{document}'
[23]  fol ⍙FM'c:⍀apl2⍀diredire.tex'
------------------------------------------------------------
[0]  geragiz;x;y
[1]  x←(80≠+/[2]IKVI=' ')/[1]IKVI
[2]  y←x[;2 3 4 5,(11+⍳39),(51+⍳8)]
[3]  y ⍙FM'c:⍀giz⍀GVT'
[4]  'feito'
------------------------------------------------------------
[0]  r←geralista1;y;j;x
[1]  'ordena pelas 8 primeiras posicoes'
[2]  r←IKVI[⍋⎕AV⍋IKVI[;1+⍳7];]
------------------------------------------------------------
[ 0]  r←geralista2;y;j;x
[ 1]  'ordena pela antiguidade'
[ 2]  x←720 59↑IKVI
[ 3]  x←x[⍋⎕AV⍋x[;8+⍳3];]
[ 4]  ⍴x
[ 5]  x←(1 0 1 1 1 1 1 1 1 0 1 1 1 0,(39⍴1),0 1 0,8⍴1)⌿[2]x
[ 6]  j←12 66 64⍴' '
[ 7]  j[;1;]←12 64⍴64↑'T NUM     SEQ Descricao                                N Data'
[ 8]  j[;2;]←12 64⍴64↑'= ======= === ========================================= = =========='
[ 9]  j[1;2+⍳60;]←x[⍳60;]
```

```
[10]  j[2;2+⍳60;]←x[60+⍳60;]
[11]  j[3;2+⍳60;]←x[120+⍳60;]
[12]  j[4;2+⍳60;]←x[180+⍳60;]
[13]  j[5;2+⍳60;]←x[240+⍳60;]
[14]  j[6;2+⍳60;]←x[300+⍳60;]
[15]  j[7;2+⍳60;]←x[360+⍳60;]
[16]  j[8;2+⍳60;]←x[420+⍳60;]
[17]  j[9;2+⍳60;]←x[480+⍳60;]
[18]  j[10;2+⍳60;]←x[540+⍳60;]
[19]  j[11;2+⍳60;]←x[600+⍳60;]
[20]  j[12;2+⍳60;]←x[660+⍳60;]
[21]  r←j[1;;],[1]j[2;;],[1]j[3;;],[1]j[4;;],[1]j[5;;],[1]j[6;;],[1]j[7;;],[1]j[8;;],[1]j[
      9;;],[1]j[10;;],[1]j[11;;],[1]j[12;;]
[22]  r←(~⍱∧⍲⍱64=+/r=' ')/[1]r
-------------------------------------------------------------
[ 0]  r←geralista3;y;j;x
[ 1]  'ordena so pelo numero'
[ 2]  x←780 59↑IKVI
[ 3]  x←(59≠+/x=' ')/[1]x
[ 4]  x←x[⍋⎕AV⍋x[;1+⍳4];]
[ 5]  x←(660,59)↑x
[ 6]  x←(1 0 1 1 1 1 1 1 1 0 1 1 1 0,(39⍴1),0 1 0,8⍴1)⌿[2]x
[ 7]  j←13 66 64⍴' '
[ 8]  j[;1;]←13 64⍴64↑'T NUM     SEQ Descricao                                    N Data'
[ 9]  j[;2;]←13 64⍴64↑'= ======= === ======================================== = ========'
[10]  j[1;2+⍳60;]←x[⍳60;]
[11]  j[2;2+⍳60;]←x[60+⍳60;]
[12]  j[3;2+⍳60;]←x[120+⍳60;]
[13]  j[4;2+⍳60;]←x[180+⍳60;]
[14]  j[5;2+⍳60;]←x[240+⍳60;]
[15]  j[6;2+⍳60;]←x[300+⍳60;]
[16]  j[7;2+⍳60;]←x[360+⍳60;]
[17]  j[8;2+⍳60;]←x[420+⍳60;]
[18]  j[9;2+⍳60;]←x[480+⍳60;]
[19]  j[10;2+⍳60;]←x[540+⍳60;]
[20]  j[11;2+⍳60;]←x[600+⍳60;]
[21]  r←j[1;;],[1]j[2;;],[1]j[3;;],[1]j[4;;],[1]j[5;;],[1]j[6;;],[1]j[7;;],[1]j[8;;],[1]j[
      9;;],[1]j[10;;],[1]j[11;;] ⍝,[1]j[12;;],[1]j[13;;]
[22] ⍝ para acertar em 3 folhas de 66 linhas, tire o proximo comando
[23] ⍝ r←(~⍱∧⍲⍱64=+/r=' ')/[1]r
-------------------------------------------------------------
[ 0]  x←geralista4;kk;zz;gg;kika;azi;i;r;a;b
[ 1]  'ordena pela usabilidade + posicoes numericas do codigo'
[ 2]  x←700 70↑IKVI
[ 3]  x←(70≠+/x=' ')/[1]x
[ 4]  →oba
[ 5]  x←x[⍋⎕AV⍋(x[;51],[2]x[;1+⍳4]);]
[ 6]  'Listagem de exercicios'
[ 7]  kk←x[;51 2],' '
[ 8]  kk←⍪,kk
[ 9]  zz←(+/kk<17),(+/(kk>20)∧(kk<27)),(+/(kk>30)∧(kk<37)),+/(kk>40)∧kk<47
[10]  zz←zz,(+/kk=17),(+/kk=27),(+/kk=37),+/kk=47
[11]  zz←zz,(+/(kk>17)∧(kk<20)),(+/(kk>27)∧(kk<30)),(+/(kk>37)∧(kk<40)),+/(kk>47)∧kk<50
[12]  zz←3 4⍴zz
[13]  zz←zz,[1]+/[1]zz
[14]  zz←zz,[2]+/[2]zz
[15]  gg←5 6⍴0 ⋄ gg[1;]←' ',(⊂'C1'),(⊂'C2'),(⊂'C3'),(⊂'C4'),⊂'TOT'
[16]  gg[;1]←' ',(⊂'ED'),(⊂'TO'),(⊂'IA'),⊂'TOT'
[17]  gg[1+⍳4;1+⍳5]←zz
[18]  gg
[19] oba:
[20]  'Qtd I=',(⍕+/IKVI[;1]='I'),'  Qtd L=',(+/IKVI[;1]='L'),'   Qtd V=',(⍕+/IKVI[;1]='V')
      ,'  Qtd P=',(⍕+/IKVI[;1]='P')
```

```
[21]  '------------------------------'
[22]  'Listagem por anos'
[23]  kika←x[;57+⍳2]
[24]  kika←' 7'edit kika
[25]  kika←⍪,kika,' '
[26]  azi←tiraduplo kika
[27]  i←1 ⋄ r←((⍴azi),2)⍴0
[28]  r[;1]←azi
[29] ⍝ r[;1]←77 0 edit r[;1]
[30] t1:→(i>⍴azi)/fim
[31]  r[i;2]←+/kika=azi[i]
[32]  →(r[i;1]<70)/menos
[33]  r[i;1]←r[i;1]+1900
[34]  →junta
[35] menos:r[i;1]←r[i;1]+2000
[36] junta:
[37]  →(i=i←i+1)/t1
[38] fim:
[39]  a←r[⍋r[;1];]
[40]  b←r[⍒r[;2];]
[41]  b
[42]  a,' ',' ','|',' ',' ',1 numera b
-------------------------------------------------------------
[ 0]  r←geralistaunificad2;xx;i;a;b;li;aux;as
[ 1]  as←''''
[ 2]  xx←IKVI
[ 3]  xx←xx[⍋⎕AV⍋xx[;2 3 4 5];]
[ 4]  r←0 100⍴' '
[ 5]  i←1
[ 6]  a←'a'
[ 7]  b←'b'
[ 8] t1:→(i>1↑⍴xx)/fim
[ 9]  →(xx[i;1]='P')/soma
[10]  →(xx[i;1]='V')/soma
[11]  li←100⍴' '
[12]  li[⍳29]←29↑')copy ',as,'c:\apl2\vivo',xx[i;2 3 4],'.apl',as
[13]  li[30+⍳12]←12↑'vivo',xx[i;2 3 4 5],' 1'  ⍝ era 2 para vivos/carimbo
[14]  →(li[38]≠'a')/efogo
[15]  →(3=+/'070'=xx[i;2 3 4])/ikaa
[16]  li[42+⍳20]←20↑'call mpdf pl',xx[i;2 3 4]
[17] ⍝ li[42+⍳20]←20↑'car pl',xx[i;2 3 4],'        '⍝ para vivo/carimbo
[18]  →(3=+/xx[i;2 3 4]='947')/mandaver
[19]  →(3=+/xx[i;2 3 4]='138')/mandaver
[20]  →(3=+/xx[i;2 3 4]='026')/mandaver
[21]  →(3=+/xx[i;2 3 4]='028')/mandaver
[22]  →(3=+/xx[i;2 3 4]='032')/mandaver
[23]  li[62+⍳20]←20↑'call pega1 pl',xx[i;2 3 4] ⍝,'.pdf'
[24]  →junta2
[25] mandaver:
[26]  li[62+⍳20]←20↑'call pega1 pl',xx[i;2 3 4] ⍝ ,'.pdf'
[27] junta2:
[28] ik:li[82+⍳18]←18↑'pl',xx[i;2 3 4],'.pdf'
[29]  →(4=+/'    '=xx[i;2 3 4 5])/soma
[30]  r←r,[1]1 100⍴li
[31]  →soma
[32] ikaa:
[33]  li[30+⍳11]←'vivotod    '
[34]  li[42+⍳20]←20↑'echo rode tera70 '
[35]  li[62+⍳20]←20↑' '
[36]  li[82+⍳18]←18↑'pl070.pdf'
[37]  r←r,[1]1 100⍴li
[38]  →soma
[39] efogo:
```

```
[40]  li[42+⍳20]←20↑'call mpdf pl',xx[i;2 3 4 5]
[41]  li[62+⍳20]←20↑'call pega1 pl',xx[i;2 3 4 5] ⍵,'.pdf'
[42]  li[82+⍳18]←18↑'pl',xx[i;2 3 4 5],'.pdf'
[43]  →(4=+/'    '=xx[i;2 3 4 5])/soma
[44]  r←r,[1]1 100⍴li
[45] soma:i←i+1
[46]  →t1
[47] fim:LI←li
[48]  'Tamanho da lista gerada: ',⍕1↑⍴r
-------------------------------------------------------------
[ 0]  r←geralistaunificada;xx;i;a;b;li;aux;as
[ 1]  as←''''
[ 2]  xx←IKVI
[ 3]  xx←xx[⍋⎕AV⍳xx[;2 3 4 5];]
[ 4]  r←0 100⍴' '
[ 5]  i←1
[ 6]  a←'a'
[ 7]  b←'b'
[ 8] t1:→(i>1↑⍴xx)/fim
[ 9]  →(xx[i;1]='P')/soma
[10]  →(xx[i;1]='V')/soma
[11]  li←100⍴' '
[12]  li[⍳29]←29↑')copy ',as,'c:\apl2\vivo',xx[i;2 3 4],'.apl',as
[13]  li[30+⍳12]←12↑'vivo',xx[i;2 3 4 5],' 1'  ⍝ era 2 para vivos/carimbo
[14]  →(li[38]≠'a')/efogo
[15]  →(3=+/'070'=xx[i;2 3 4])/ikaa
[16]  li[42+⍳20]←20↑'latex pl',xx[i;2 3 4],' -quiet'
[17] ⍝ li[42+⍳20]←20↑'car pl',xx[i;2 3 4],'        '⍝ para vivo/carimbo
[18]  →(3=+/xx[i;2 3 4]='947')/mandaver
[19]  →(3=+/xx[i;2 3 4]='138')/mandaver
[20]  →(3=+/xx[i;2 3 4]='026')/mandaver
[21]  →(3=+/xx[i;2 3 4]='028')/mandaver
[22]  →(3=+/xx[i;2 3 4]='032')/mandaver
[23]  li[62+⍳25]←25↑'dvipdfm -s 1 pl',xx[i;2 3 4],' -q'
[24]  →junta2
[25] mandaver:
[26]  li[62+⍳25]←25↑'dvipdfm pl',xx[i;2 3 4],' -q'
[27] junta2:
[28] ik:li[87+⍳13]←13↑'pl',xx[i;2 3 4],'.pdf'
[29]  →(4=+/'    '=xx[i;2 3 4 5])/soma
[30]  r←r,[1]1 100⍴li
[31]  →soma
[32] ikaa:
[33]  li[30+⍳11]←'vivotod    '
[34]  li[42+⍳20]←20↑'echo rode tera70 '
[35]  li[62+⍳25]←25↑' '
[36]  li[87+⍳13]←13↑'pl070.pdf'
[37]  r←r,[1]1 100⍴li
[38]  →soma
[39] efogo:
[40]  li[42+⍳20]←20↑'latex pl',xx[i;2 3 4 5],' -quiet'
[41]  li[62+⍳25]←25↑'dvipdfm -s 1 pl',xx[i;2 3 4 5],' -q'
[42]  li[87+⍳13]←13↑'pl',xx[i;2 3 4 5],'.pdf'
[43]  →(4=+/'    '=xx[i;2 3 4 5])/soma
[44]  r←r,[1]1 100⍴li
[45] soma:i←i+1
[46]  →t1
[47] fim:LI←li
[48]  'Tamanho da lista gerada: ',⍕1↑⍴r
-------------------------------------------------------------
[ 0]  r←geralistaunificada3;xx;i;a;b;li;aux;as
[ 1]  as←''''
[ 2]  xx←IKVI
```

```
[ 3]  xx←xx[⍋AV⍋xx[;2 3 4 5];]
[ 4]  r←0 57⍴' '
[ 5]  i←1
[ 6] t1:→(i>1↑⍴xx)/fim
[ 7]  →(xx[i;1]='P')/soma
[ 8]  →(xx[i;1]='V')/soma
[ 9]  li←57⍴' '
[10]  li[⍳29]←29↑')copy ',as,'c:\apl2\vivo',xx[i;2 3 4],'.apl',as
[11]  li[30+⍳12]←12↑'vivo',xx[i;2 3 4 5],' 1'  ⍝ era 2 para vivos/carimbo
[12] ⍝ →(li[38]≠'a')/efogo
[13]  →(3=+/'070'=xx[i;2 3 4])/ikaa
[14]  →(3=+/xx[i;2 3 4]='947')/mandaver
[15]  →(3=+/xx[i;2 3 4]='138')/mandaver
[16]  →(3=+/xx[i;2 3 4]='026')/mandaver
[17] ⍝ →(3=+/xx[i;2 3 4]='028')/mandaver   porque o 028 era assim ?
[18]  →(3=+/xx[i;2 3 4]='032')/mandaver
[19]  li[42+⍳15]←15↑'call p1 pl',xx[i;2 3 4 5]
[20]  →junta2
[21] mandaver:
[22]  li[42+⍳15]←15↑'call p0 pl',xx[i;2 3 4 5]
[23] junta2:
[24]  →(4=+/'    '=xx[i;2 3 4 5])/soma
[25]  r←r,[1]1 57⍴li
[26]  →soma
[27] ikaa:
[28]  li[30+⍳11]←'vivotod    '
[29]  li[42+⍳15]←15↑'echo rode tera70 '
[30] ⍝li[62+⍳25]←25↑' '
[31] ⍝ li[87+⍳13]←13↑'pl070.pdf'
[32]  r←r,[1]1 57⍴li
[33]  →soma
[34] ⍝efogo:
[35] ⍝ li[42+⍳20]←20↑'latex pl',xx[i;2 3 4 5],' -quiet'
[36] ⍝ li[62+⍳25]←25↑'dvipdfm -s 1 pl',xx[i;2 3 4 5],' -q'
[37] ⍝ li[87+⍳13]←13↑'pl',xx[i;2 3 4 5],'.pdf'
[38] ⍝ →(4=+/'    '=xx[i;2 3 4 5])/soma
[39] ⍝ r←r,[1]1 100⍴li
[40] soma:i←i+1
[41]  →t1
[42] fim:LI←li
[43]  'Tamanho da lista gerada: ',⍕1↑⍴r
------------------------------------------------------------
[ 0]  r←gerashan universo;letrs;ctd;i;in;fi;DIC
[ 1]  EXPSH←0 50⍴''
[ 2]  letrs←remdupl universo
[ 3]  ctd←(⍴letrs)⍴0
[ 4]  i←1
[ 5] t1:→(i>⍴letrs)/fim
[ 6]  ctd[i]←+/universo=letrs[i]
[ 7]  →(i=i←i+1)/t1
[ 8] fim:letrs←letrs[⍒ctd]
[ 9]  EXPSH←EXPSH,[1]1 50⍴50↑'letras = ',letrs
[10]  ctd←ctd[⍒ctd]
[11]  EXPSH←EXPSH,[1]1 50⍴50↑'qtds = ',3 0⍕ctd
[12]  DIC←((⍴ctd),8)⍴' '
[13]  in←1
[14]  fi←⍴ctd
[15]  1 cortashan in,fi
[16]  i←1
[17] t3:→(i>¯1+1↑⍴DIC)/aca
[18]  →(8=+/DIC[i;]=DIC[i+1;])/poe
[19]  i←i+1
[20]  →t3
```

```
[21] poe:
[22]  DIC[i;]←8↑(trim DIC[i;]),'0'
[23]  DIC[i+1;]←8↑(trim DIC[i+1;]),'1'
[24]  i←i+2
[25]  →t3
[26] aca:EXPSH←EXPSH,[1]1 50⍴50↑'o dicionario final, ficou:'
[27]  EXPSH←EXPSH,[1]((1↑⍴DIC),50)↑(((1↑⍴DIC),1)⍴letrs),'=',DIC
[28]  r←((1↑⍴DIC),50)↑(((1↑⍴DIC),1)⍴letrs),'=',DIC
-------------------------------------------------------------
[ 0]  gerax3casado;au;cols;ex;i;ids;j;v1;x
[ 1]  'pressupoe x3 atualizado e arquivo LIXOAU.TXT gerado em c:\giz'
[ 2]  ' para tanto: dbase, use gizaul3, copy to lixoau sdf'
[ 3]  au←⎕FM'c:\giz\lixoau.txt'
[ 4]  'au='
[ 5] ⍝au
[ 6]  'veja x3casado neste ws'
[ 7]  x3casado←x3[;⍳54]
[ 8]  x3casado←((1↑⍴x3casado),90)↑x3casado
[ 9]  i←1
[10] t1:→(i>1↑⍴au)/fim
[11]  ex←au[i;37+⍳4]   ⍝ era 37, depois 29
[12] ⍝ 'ex=',ex
[13]  →(4=+/' '=ex)/ufa
[14]  v1←x3casado[;2+⍳4]
[15]  ids←(4=+/[2]v1=(⍴v1)⍴ex)/⍳1↑⍴x3casado
[16]  j←1
[17] t2:→(j>⍴ids)/ufa
[18]  cols←55
[19] oba:→(cols=90)/soma66
[20]  →((5=+/x3casado[ids[j];cols+⍳5]=' ')∧(au[i;1]≠'H'))/podepor
[21]  cols←cols+5
[22]  →oba
[23] podepor:x3casado[ids[j];cols+⍳5]←au[i;⍳5]
[24] soma66:
[25]  j←j+1
[26]  →t2
[27] ufa:i←i+1
[28]  →t1
[29] fim:   ⍝ calculo das linhas de x3casado que nao sao usados em nenhuma aula
[30]  i←1
[31] t99:→(i>1↑⍴x3casado)/finzao
[32]  →((x3casado[i;1]=' ')∨(x3casado[i;1]='T')∨(x3casado[i;1]='=')∨(x3casado[i;56]≠' '))/
      enao
[33]  x3casado[i;⍳50]
[34] enao:i←i+1
[35]  →t99
[36] finzao:
[37]  x3casado←((1,1↓⍴x3casado)⍴' '),[1]x3casado
[38]  x3casado[1;⍳⍴x]←x←(20⍴' '),'gerado em ','00 00 00'⍕⎕TS[3 2 1]-0 0 2000
-------------------------------------------------------------
[ 0]  gerax3casado2;au;i;ex;v1;ids;j;cols
[ 1]  'pressupoe x3 atualizado e arquivo LIXOAU.TXT gerado em c:\giz'
[ 2]  ' para tanto faca: dbase <enter> use gizaul3 <enter> copy to lixoau sdf'
[ 3]  au←⎕FM'c:\giz\lixoau.txt'
[ 4]  'veja x3casado neste ws'
[ 5]  x3casado←x3[;⍳54]
[ 6]  x3casado←((1↑⍴x3casado),70)↑x3casado
[ 7]  i←1
[ 8] t1:→(i>1↑⍴au)/fim
[ 9]  ex←au[i;29+⍳4]    ⍝ era 37
[10]  →(4=+/' '=ex)/ufa
[11]  v1←x3casado[;2+⍳4]
[12]  ids←(4=+/[2]v1=(⍴v1)⍴ex)/⍳1↑⍴x3casado
```

```
[13]  j←1
[14] t2:→(j>⍴ids)/ufa
[15]  cols←55
[16] oba:→(5=+/x3casado[ids[j];cols+⍳5]=' ')/podepor
[17]  cols←cols+5
[18]  →oba
[19] podepor:x3casado[ids[j];cols+⍳5]←au[i;⍳5]
[20]  j←j+1
[21]  →t2
[22] ufa:
[23]  ex←au[i;34+⍳4]   ⍝ era 42
[24]  →(4=+/' '=ex)/ufa2
[25]  v1←x3casado[;2+⍳4]
[26]  ids←(4=+/[2]v1=(⍴v1)⍴ex)/⍳1↑⍴x3casado
[27]  j←1
[28] t2x:→(j>⍴ids)/ufa2
[29]  cols←55
[30] obax:→(5=+/x3casado[ids[j];cols+⍳5]=' ')/podeporx
[31]  cols←cols+5
[32]  →obax
[33] podeporx:x3casado[ids[j];cols+⍳5]←au[i;⍳4],'s'
[34]  j←j+1
[35]  →t2x
[36] ufa2:
[37]  i←i+1
[38]  →t1
[39] fim:
------------------------------------------------------------
[ 0]  r←instaaa xx;ms;fr;dici;i;alfa;vv;yy;qt7;rai2;ia;env
[ 1]  EXPAA←0 50⍴' '
[ 2]  ms←'' ⋄ r←2⍴' '
[ 3]  →(0≠⍴xx)/puok
[ 4] ok:fr←((¯1+?4)⍴'A'),((¯1+?4)⍴'B'),((¯1+?4)⍴'C'),(¯1+?4)⍴'D'
[ 5]  →(7≥⍴fr)/ok
[ 6]  fr←fr[(⍴fr)?⍴fr]
[ 7]  →junta
[ 8] puok:fr←xx
[ 9]  EXPAA←EXPAA,[1]1 50⍴50↑'frase=',fr
[10] junta:
[11]  dici←4 8⍴'A1   000','B01  000','C001 000','D0001000'
[12]  i←1 ⋄ alfa←'0123456789ABCDEF'
[13] t1:→(i>⍴fr)/aca
[14]  ms←ms,env←dici[ia←(,dici[;1])⍳fr[i];1+⍳4]
[15]  EXPAA←EXPAA,[1]1 50⍴50↑'dicionario ='
[16]  EXPAA←EXPAA,[1]4 50↑dici
[17]  dici[ia;5+⍳3]←'000'⍕1+⍎dici[ia;5+⍳3]
[18]  EXPAA←EXPAA,[1]1 50⍴50↑'letra=',dici[ia;1]
[19]  vv←⍎,dici[;5+⍳3],' '
[20]  yy←⍒vv
[21]  dici[;1]←dici[yy;1]
[22]  dici[;5+⍳3]←4 3⍴'000'⍕vv[yy]
[23]  EXPAA←EXPAA,[1]1 50⍴50↑'string enviado=',env
[24]  EXPAA←EXPAA,[1]1 50⍴50↑'---------------------------------------'
[25]  →(i=i←i+1)/t1
[26] aca:qt7←⍴ms←(ms≠' ')/ms
[27]  ms←(8×⌈0.125×⍴ms)↑ms,'00000000'
[28]  i←1 ⋄ rai2←''
[29] t3:→(i>⍴ms)/finz
[30]  rai2←rai2,alfa[1+2 2 2 2⊥⍎ms[i],' ',ms[i+1],' ',ms[i+2],' ',ms[i+3]]
[31]  rai2←rai2,(alfa[1+2 2 2 2⊥⍎ms[i+4],' ',ms[i+5],' ',ms[i+6],' ',ms[i+7]]),' '
[32]  i←i+8
[33]  →t3
[34] finz:rai2←(40↑rai2),'bits signf=',3 0⍕qt7
```

```
[35]  r[1]←⊂fr
[36]  r[2]←⊂rai2
-------------------------------------------------------------
[ 0]  r←instacv xx;f;rd;qua;dic;i;ct;qbi;li;ra1;ra2;alfa
[ 1]  r←3⍴' '
[ 2]  →(0≠⍴xx)/veio
[ 3]  f←,frasessh[?1↑⍴frasessh;]
[ 4]  rd←remdupl qua←acertauni f[(⍴f)?⍴f]
[ 5]  →junta
[ 6] veio:
[ 7]  rd←remdupl qua←acertauni f←xx
[ 8] junta:
[ 9]  dic←((⍴rd),26)⍴' '
[10]  dic[;1]←((1↑⍴dic),1)⍴rd
[11]  i←1 ⋄ ct←0 ⋄ dic[;2]←'='
[12] t1:→(i>1↑⍴dic)/fim
[13]  dic[i;2+⍳24]←24↑(ct⍴'0'),'1'
[14]  ct←ct+1
[15]  i←i+1
[16]  →t1
[17] fim:li←''
[18]  i←1
[19] t2:→(i>⍴f)/mesmo
[20]  li←li,dic[(,dic[;1])⍳f[i];2+⍳24]
[21]  →(i=i←i+1)/t2
[22] mesmo:qbi←⍴li←(li≠' ')/li
[23] ⍝ 'quantidade de bits ',⍕ qbi
[24] ⍝ 'string de bits ',li
[25]  li←(8×⌈qbi×0.125)↑li,'00000000'
[26]  i←1 ⋄ alfa←'0123456789ABCDEF' ⋄ ra2←''
[27] t3:→(i>⍴li)/ufa
[28]  ra2←ra2,alfa[1+2 2 2 2⊥⍸li[i],' ',li[i+1],' ',li[i+2],' ',li[i+3]]
[29]  ra2←ra2,(alfa[1+2 2 2 2⊥⍸li[i+4],' ',li[i+5],' ',li[i+6],' ',li[i+7]]),' '
[30]  i←i+8
[31]  →t3
[32] ufa:r[1]←⊂f
[33]  r[2]←⊂(40↑ra2),'bits signf=',3 0⍕qbi
[34]  r[3]←⊂qua
-------------------------------------------------------------
[ 0]  r←instash xx;fr;uni;dic;ra2;fr1
[ 1]  r←3⍴' '
[ 2]  →(0≠⍴xx)/veio
[ 3]  fr←,frasessh[?1↑⍴frasessh;]
[ 4]  fr1←fr[(⍴fr)?⍴fr]
[ 5]  →junta
[ 6] veio:fr1←fr←xx
[ 7] junta:
[ 8]  uni←acertauni fr1
[ 9]  DIC←dic←gerashan uni
[10]  ra2←dic comprimesh fr1
[11]  r[1]←⊂fr
[12]  r[2]←⊂ra2
[13]  r[3]←⊂uni
-------------------------------------------------------------
[ 0]  listatodassumas x;i;z;lixo;SHR101;aspa;aa;y
[ 1] ⍝ esta funcao lista todas as sumas
[ 2]  y←x[;1+⍳3]
[ 3]  aspa←''''
[ 4]  y←y[⍋⍉⍎⍕x;]
[ 5]  →zebra
[ 6]  z←0 60⍴' '
[ 7]  i←1
[ 8] t7:→(i>1↑⍴y)/oba
```

```
[ 9]  z←z,[1]1 60⍴60↑'latex suma',y[i;]
[10]  z←z,[1]1 60⍴60↑'dvipdfm suma',y[i;]
[11] t8:
[12]  i←i+1
[13]  →t7
[14] oba:
[15]  z ⎕FM'c:\apl2\lsuma.bat'
[16]  'primeira parte OK'
[17] zebra:
[18]  lixo←101 SVOFFER'SHR101'
[19]  SHR101←0
[20]  i←1
[21] t1:→(i>300)/fim
[22]  aa←')copy ',aspa,'f:\p\apl2\vivo',y[i;],'.apl',aspa,⎕TC[2],'listasuma',⎕TC[2],'⎕io',
      ⎕TC[2],')clear'
[23]  SHR101←aa
[24] t2:
[25]  i←i+1
[26]  →(i>300)/fim
[27]  →(3=+/y[i;]=y[i-1;])/t2
[28]  →t1
[29] fim:
[30]  SHR101←0
-------------------------------------------------------------
[ 0]  r←makepdf1 lixotudo;lixo;i;tera;SHR101;coma;sinal;xxx
[ 1] ⍝ 'tamanho do operador x',⍕⍴lixotudo
[ 2] ⍝ geradire
[ 3] ⍝ geracartela
[ 4]  lixo←101 SVOFFER'SHR101'
[ 5]  i←1
[ 6] t1:
[ 7]  →(i>330)/gui
[ 8]  SHR101←lixotudo[i;⍳30],⎕TC[2],lixotudo[i;30+⍳12],⎕TC[2],')clear'
[ 9]  i←i+1
[10]  →t1
[11] gui:
[12] ⍝ SHR101←0
-------------------------------------------------------------
[ 0]  r←makepdf2 lixotudo;lixo;i;tera;SHR101;coma;sinal;xxx
[ 1] ⍝ 'tamanho do operador x',⍕⍴lixotudo
[ 2] ⍝ geradire
[ 3] ⍝ geracartela
[ 4]  lixo←101 SVOFFER'SHR101'
[ 5]  i←331
[ 6] t1:→(i>1↑⍴lixotudo)/gui
[ 7]  SHR101←lixotudo[i;⍳30],⎕TC[2],lixotudo[i;30+⍳12],⎕TC[2],')clear'
[ 8]  i←i+1
[ 9]  →t1
[10] gui:
[11] ⍝ SHR101←0
-------------------------------------------------------------
[ 0]  r←makepdf3 lixotudo;lixo;i;tera1;tera2;coma;sinal;xxx
[ 1] ⍝ 'tamanho do operador x',⍕⍴lixotudo
[ 2] ⍝ geradire
[ 3] ⍝ geracartela
[ 4]  tera1←0 14⍴' '
[ 5]  tera2←0 110⍴' '
[ 6]  coma←'pdftk '
[ 7]  sinal←1
[ 8]  i←1
[ 9] t1:
[10]  →(i>1↑⍴lixotudo)/fi8
[11]  →(lixotudo[i;56]='a')/menos
```

```
[12]  tera1←tera1,[1]lixotudo[i;42+⍳14]
[13]  coma←coma,lixotudo[i;50+⍳6],'.pdf '
[14]  →soma
[15] menos:
[16]  tera1←tera1,[1]lixotudo[i;42+⍳13],' '
[17]  coma←coma,lixotudo[i;50+⍳5],'.pdf '
[18] soma:
[19]  i←i+1
[20]  →(0≠7|i)/t1
[21] fi8:
[22]  coma←coma,' output a',('00'↑⍕sinal),' dont_ask'
[23]  sinal←sinal+1
[24]  tera2←tera2,[1]1 110⍴110↑coma
[25]  coma←'pdftk '
[26]  →(i>1↑⍴lixotudo)/gui
[27]  →t1
[28] gui:
[29]  tera2←tera2,[1]1 110⍴110↑'latex diredire    '
[30]  tera2←tera2,[1]1 110⍴110↑'dvipdfm diredire  -q  '
[31]  tera2←tera2,[1]1 110⍴110↑'latex cartvivo    '
[32]  tera2←tera2,[1]1 110⍴110↑'dvipdfm cartvivo -q '
[33]  tera2←tera2,[1]1 110⍴110↑'pdftk a01 a02 a03 a04 a05 a06 a07 a08 a09 a10 output b1 do
      nt_ask'
[34]  tera2←tera2,[1]1 110⍴110↑'pdftk a11 a12 a13 a14 a15 a16 a17 a18 a19 a20 output b2 do
      nt_ask'
[35]  tera2←tera2,[1]1 110⍴110↑'pdftk a21 a22 a23 a24 a25 a26 a27 a28 a29 a30 output b3 do
      nt_ask'
[36]  tera2←tera2,[1]1 110⍴110↑'pdftk a31 a32 a33 a34 a35 a36 a37 a38 a39 a40 output b4 do
      nt_ask'
[37]  tera2←tera2,[1]1 110⍴110↑'pdftk a41 a42 a43 a44 a45 a46 a47 a48 a49 a50 output b5 do
      nt_ask'
[38]  tera2←tera2,[1]1 110⍴110↑'pdftk a51 a52 a53 a54 a55 a56 a57 a58 a59 a60 output b6 do
      nt_ask'
[39]  tera2←tera2,[1]1 110⍴110↑'pdftk a61 a62 a63 a64 a65 a66 a67 a68 a69 a70 output b7 do
      nt_ask'
[40]  tera2←tera2,[1]1 110⍴110↑'pdftk a71 a72 a73 a74 a75 a76 a77 a78 a79 a80 output b8 do
      nt_ask'
[41]  tera2←tera2,[1]1 110⍴110↑'pdftk a81 a82 a83 a84 a85 a86 a87 a88 a89 a90 output b9 do
      nt_ask'
[42]  tera2←tera2,[1]1 110⍴110↑'pdftk a91 a92 a93 a94 a95 output ba dont_ask'
[43] ⍝ nao esquecer de incluir os arquivos faltantes a97 a98 ...
[44]  tera2←tera2,[1]1 110⍴110↑'copy c:\apl2\paper_expl_vivos.tex .'
[45]  tera2←tera2,[1]1 110⍴110↑'latex paper_expl_vivos'
[46]  tera2←tera2,[1]1 110⍴110↑'dvipdfm -o pap.pdf paper_expl_vivos -q '
[47]  tera2←tera2,[1]1 110⍴110↑'latex diredire'
[48]  tera2←tera2,[1]1 110⍴110↑'dvipdfm diredire -q '
[49]  tera2←tera2,[1]1 110⍴110↑'pdftk c:\apl2\capa.pdf pap.pdf c:\apl2\eista03.pdf diredir
      e.pdf cartvivo.pdf output b0 dont_ask'
[50]  tera2←tera2,[1]1 110⍴110↑'pdftk b0 c:\apl2\exer_alg.pdf capa2.pdf b1 b2 b3 b4 b5 out
      put VIVOFLS1.PDF dont_ask'
[51]  tera2←tera2,[1]1 110⍴110↑'pdftk b6 b7 b8 b9 ba output VIVOFLS2.PDF dont_ask'
[52]  tera2←tera2,[1]1 110⍴110↑'pdftk VIVOFLS1.PDF VIVOFLS2.PDF output VIVOFLS.PDF dont_as
      k'
[53]  lixo←tera1 ⎕FM'c:\apl2\mera1.bat'
[54]  lixo←tera2 ⎕FM'c:\apl2\mera2.bat'
-------------------------------------------------------------
[0]  r←pedemail x
[1]  →(40≠+/' '=x)/aindanao
[2]  r←80↑'Por favor, informe seu e-mail: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_'
[3]  →junnao
[4] aindanao:r←80↑'e-mail cadastrado: \verb+',x,'+'
[5] junnao:
-------------------------------------------------------------
```

```
[0]  r←populagrandegrupo;z;i;qt
[1]  z←GRANDEGRUPO
[2]  i←1
[3] t1:→(i>1↑⍴z)/fim
[4]  qt←+/z[i;1]=,IKVI[;2]
[5]  z[i;50+⍳4]←4 0⍕qt
[6]  i←i+1
[7]  →t1
[8] fim:r←z
-------------------------------------------------------------
[ 0]  r←qt provaaa me;dic;me1;qu;vv;le;ve
[ 1]  dic←4 8⍴'A1   000','B01  000','C001 000','D0001000' ⋄ r←''
[ 2]  EXPAP←0 50⍴' '
[ 3]  me1←qt bina me
[ 4] t1:
[ 5]  EXPAP←EXPAP,[1]1 50⍴50↑'dicionario ='
[ 6]  EXPAP←EXPAP,[1]4 50↑dic
[ 7]  qu←prox me1
[ 8]  EXPAP←EXPAP,[1]1 50⍴50↑'string lido=',qu
[ 9]  me1←(⍴qu)↓me1
[10]  qu←4↑qu
[11]  vv←(+/dic[1;1+⍳4]=qu),(+/dic[2;1+⍳4]=qu),(+/dic[3;1+⍳4]=qu),+/dic[4;1+⍳4]=qu
[12]  le←(vv=4)/,dic[;1]
[13]  EXPAP←EXPAP,[1]1 50⍴50↑'letra=',le
[14]  r←r,le
[15]  ve←⍬,dic[;5+⍳3],' '
[16]  ve←ve+vv=4
[17]  dic[;5+⍳3]←4 3⍴'000'⍕ve
[18]  dic[;1]←dic[⍒ve;1]
[19]  dic[;5+⍳3]←dic[⍒ve;5+⍳3]
[20]  EXPAP←EXPAP,[1]1 50⍴50↑'---------------------------------'
[21]  →(0=⍴me1)/acabou
[22]  →t1
[23] acabou:
-------------------------------------------------------------
[0]  r←prox m
[1]  r←(1↑(m='1')/(m='1')×⍳⍴m)↑m
-------------------------------------------------------------
[0]  r←quais
[1]  r←0 ¯30↓((IKVI[;1]='L')∨(IKVI[;1]='P')∨(IKVI[;1]='V'))/[1]IKVI
-------------------------------------------------------------
[0]  r←quaisl;aa
[1]  aa←⍴r←0 ¯10↓(IKVI[;1]='L')/[1]IKVI
[2]  r←r,[1]1 70⍴70↑' quantidade = ',⍕1↑aa
-------------------------------------------------------------
[ 0]  r←quebra x;t
[ 1]  t←⌈(⍴x)÷2
[ 2] t1:→(x[t]=' ')/oba
[ 3]  t←t+1
[ 4]  →(t>⍴x)/xabu
[ 5]  →t1
[ 6] oba:r←(2,t)⍴(t↑x),t↓x
[ 7]  →0
[ 8] xabu:r←-1
-------------------------------------------------------------
[0]  r←remdupl x
[1]  r←((x⍳x)=⍳⍴x)/x
-------------------------------------------------------------
[ 0]  testa;i;x
[ 1]  i←1
[ 2] t1:→(i>100000)/0
[ 3]  x←raizq i
[ 4]  →((⍬10 1⍕RAIZ)=⍬10 1⍕i*0.5)/blz
```

```
[ 5]  i
[ 6] blz:i←i+1
[ 7] ⍝ i,QTDOPS
[ 8]  →t1
-------------------------------------------------------------
[0]  r←tiraduplo z;i;⎕IO
[1]  i←1 ⋄ r←'' ⋄ ⎕IO←1
[2] volta:→(i>⍴z)/fim
[3]  →(z[i]∈r)/tem
[4]  r←r,z[i]
[5] tem:→(i=i←i+1)/volta
[6] fim:
-------------------------------------------------------------
[0]  r←trim2 x;z
[1] ⍝f corta as linhas inferiores que sao brancas
[2]  →(2≠⍴⍴x)/erro
[3]  z←+/[2]x=' '
[4]  r←(z≠1↓⍴x)/[1]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
-------------------------------------------------------------
[ 0]  opesq vivo767a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;lixo1;ddc;aaa;xxsh;xxcv;xxaa
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL767   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA767←ajusta80 FOLHALA767
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA767)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 38⍴' '
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←12 80⍴' '
[15]  f←FOLHALA767
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[23] inica:
[24]  xxsh←instash''
[25]  resp←(3 0⍎resp),' ',10↑⊃xxsh[1]
[26]  esse[8;]←80↑⊃xxsh[3]
[27]  esse[9;]←80↑⊃xxsh[2]
[28]  xxcv←instacv''
[29]  resp←resp,'|',10↑⊃xxcv[1]
[30]  esse[10;]←80↑⊃xxcv[3]
[31]  esse[11;]←80↑⊃xxcv[2]
[32]  xxaa←instaaa''
[33]  resp←resp,'|',12↑⊃xxaa[1]
[34]  esse[12;]←80↑⊃xxaa[2]
[35]  resu←resu,[1]1 38⍴resp
[36]  acuja←(f[;2]='#')/⍳1↑⍴f
[37]  f[acuja;]←esse[⌽,f[acuja;3 4 5],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[39]  ⍞←(⍎xk←xk+1),'-'
```

```
[40]  →testa
[41] fim:upag←(1 0+⍴f)⍴' '
[42]  →(1=≡n)/elafa
[43]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[44]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[45]  upag[2+⍳1↑⍴resu;⍳38]←resu
[46]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[47]  →terminando
[48] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 4↓resu)
[49]  aaa[1;35 36]←2 0⍕CORRECAO
[50]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[51]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[52] terminando:
[53]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[54]  relat[1↑⍴relat;;]←upag
[55]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[56] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[57]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[58]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  vivotod;tera
[ 1]  EVENTO←'PL0701'
[ 2]  vivo070k 1 2
[ 3]  EVENTO←'PL0702'
[ 4]  vivo070k 1 4
[ 5]  EVENTO←'PL0703'
[ 6]  vivo070k 1 7
[ 7]  EVENTO←'PL0704'
[ 8]  vivo070k 1 8
[ 9]  EVENTO←'PL0705'
[10]  vivo070k 1 9
[11]  EVENTO←'PL0706'
[12]  vivo070k 1 10
[13]  EVENTO←'PL0707'
[14]  vivo070k 1 11
[15]  EVENTO←'PL0708'
[16]  vivo070k 1 13
[17]  EVENTO←'PL0709'
[18]  vivo070k 1 14
[19]  EVENTO←'PL0710'
[20]  vivo070k 1 16
[21]  EVENTO←'PL0711'
[22]  vivo070k 1 18
[23]  tera←0 80⍴' '
[24]  tera←tera,[1]1 80⍴80↑'latex -quiet pl0701'
[25]  tera←tera,[1]1 80⍴80↑'latex -quiet pl0702'
[26]  tera←tera,[1]1 80⍴80↑'latex -quiet pl0703'
[27]  tera←tera,[1]1 80⍴80↑'latex -quiet pl0704'
[28]  tera←tera,[1]1 80⍴80↑'latex -quiet pl0705'
[29]  tera←tera,[1]1 80⍴80↑'latex -quiet pl0706'
[30]  tera←tera,[1]1 80⍴80↑'latex -quiet pl0707'
[31]  tera←tera,[1]1 80⍴80↑'latex -quiet pl0708'
[32]  tera←tera,[1]1 80⍴80↑'latex -quiet pl0709'
[33]  tera←tera,[1]1 80⍴80↑'latex -quiet pl0710'
[34]  tera←tera,[1]1 80⍴80↑'latex -quiet pl0711'
[35]  tera←tera,[1]1 80⍴80↑'dvipdfm pl0701'
[36]  tera←tera,[1]1 80⍴80↑'dvipdfm pl0702'
[37]  tera←tera,[1]1 80⍴80↑'dvipdfm pl0703'
[38]  tera←tera,[1]1 80⍴80↑'dvipdfm pl0704'
[39]  tera←tera,[1]1 80⍴80↑'dvipdfm pl0705'
[40]  tera←tera,[1]1 80⍴80↑'dvipdfm pl0706'
[41]  tera←tera,[1]1 80⍴80↑'dvipdfm pl0707'
[42]  tera←tera,[1]1 80⍴80↑'dvipdfm pl0708'
```

```
[43]  tera←tera,[1]1 80⍴80↑'dvipdfm pl0709'
[44]  tera←tera,[1]1 80⍴80↑'dvipdfm pl0710'
[45]  tera←tera,[1]1 80⍴80↑'dvipdfm pl0711'
[46]  tera←tera,[1]1 80⍴80↑'pdftk pl0701.pdf pl0702.pdf pl0703.pdf pl0704.pdf pl0705.pdf o
      utput p71.pdf'
[47]  tera←tera,[1]1 80⍴80↑'pdftk pl0706.pdf pl0707.pdf pl0708.pdf pl0709.pdf pl0710.pdf o
      utput p72.pdf'
[48]  tera←tera,[1]1 80⍴80↑'pdftk p71.pdf p72.pdf pl0711.pdf output pl070.pdf dont_ask'
[49]  tera ⎕FM'c:\apl2\tera70.bat'
-------------------------------------------------------------
```

vivo768

```
[ 0]  r←acertauni fr;fr1;i;ct
[ 1]  fr1←remdupl fr
[ 2]  i←1 ⋄ ct←(⍴fr1)⍴0
[ 3] t1:→(i>⍴fr1)/fi
[ 4]  ct[i]←+/fr=fr1[i]
[ 5]  →(i=i←i+1)/t1
[ 6] fi:fr1←fr1[⍒ct]
[ 7]  ct←ct[⍒ct]
[ 8]  r←''
[ 9]  i←1
[10] t2:→(i>⍴fr1)/fi0
[11]  r←r,(⎕ucs ct)[i]⍴fr1[i]
[12]  →(i=i←i+1)/t2
[13] fi0:
-------------------------------------------------------------
[0]  r←a ate b
[1]  r←(a-1)+⍳(b-a)+1
-------------------------------------------------------------
[0]  r←qt bina m;alfa;vet;i
[1]  alfa←'0123456789ABCDEF' ⋄ r←''
[2]  vet←16 5⍴'0000010001200103001140100501016011070111810009100 1A1010B1011C1100D1101E111
      0F1111'
[3]  i←1
[4] t1:→(i>⍴m)/aca
[5]  r←r,vet[alfa⍳m[i];1+⍳4]
[6]  →(i=i←i+1)/t1
[7] aca:r←qt↑r
-------------------------------------------------------------
[ 0]  r←compfil x;i;a1;a2;a3;a4;y;ct
[ 1]  r←'' ⋄ x←,x ⋄ y←x,'&%$#@*'
[ 2]  i←1
[ 3] t1:→(i>⍴x)/fim
[ 4]  a1←y[i]
[ 5]  a2←y[i+1]
[ 6]  a3←y[i+2]
[ 7]  a4←y[i+3]
[ 8]  →((a1=a2)∧(a2=a3)∧(a3=a4))/foi
[ 9]  r←r,y[i]
[10]  →(i=i←i+1)/t1
[11] foi:ct←0
[12] t2:→(a1≠y[i])/aca
[13]  ct←ct+1
[14]  i←i+1
[15]  →(i>⍴x)/aca
[16]  →t2
[17] aca:r←r,'\',a1,1 0⍕ct
[18]  →t1
[19] fim:
-------------------------------------------------------------
```

```
[ 0]  r←comphuf ffa;i;m1;tt;r1;bs
[ 1]  ffa←' .'edit ffa
[ 2]  →(∧/ffa∈,dichuf[;1])/blz
[ 3]  'existe letra que nao esta dicionarizada... Use ',,dichuf[;1]
[ 4]  →0
[ 5] blz:
[ 6]  i←1 ⋄ m1←''
[ 7] t1:→(i>⍴ffa)/fi1
[ 8]  m1←m1,dichuf[(,dichuf[;1])⍳ffa[i];1+⍳7]
[ 9]  →(i=i←i+1)/t1
[10] fi1:tt←8×⌈0.125×bs←⍴m1←(m1≠' ')/m1
[11]  m1←tt↑m1,'000000000'
[12]  m1←((tt÷8),8)⍴m1
[13]  i←1 ⋄ r1←''
[14] t2:→(i>1↑⍴m1)/fi3
[15]  r1←r1,'0123456789ABCDEF'[1+2 2 2 2⊥⍉(8⍴1 0)⊤m1[i;⍳4]]
[16]  r1←r1,'0123456789ABCDEF'[1+2 2 2 2⊥⍉(8⍴1 0)⊤m1[i;4+⍳4]],' '
[17]  →(i=i←i+1)/t2
[18] fi3:r←r1,'/// ',(⍕bs),' b.s.'
-------------------------------------------------------------
[ 0]  r←compmor ffa;rai1;rai2;inds;j;i;pal
[ 1]  i←1 ⋄ pal←''
[ 2] t2:→(i>⍴ffa)/fi1
[ 3]  →(ffa[i]=' ')/espaco
[ 4]  pal←pal,dicmorse[(,dicmorse[;1])⍳ffa[i];1+⍳4],'1'
[ 5]  →(i=i←i+1)/t2
[ 6] espaco:pal←pal,'2'
[ 7]  →(i=i←i+1)/t2
[ 8] fi1:pal←pal,'2'
[ 9]  pal←(pal≠' ')/pal
[10]  r←pal
-------------------------------------------------------------
[ 0]  r←descompfil x;i
[ 1]  x←,x
[ 2]  r←''
[ 3]  i←1
[ 4] t1:→(i>⍴x)/fim
[ 5]  →(x[i]='⍀')/bar
[ 6]  r←r,x[i]
[ 7]  →(i=i←i+1)/t1
[ 8] bar:r←r,(⌽x[i+2])⍴x[i+1]
[ 9]  →(i=i←i+3)/t1
[10] fim:
-------------------------------------------------------------
[ 0]  r←gerafil2;perg;resp;inds
[ 1]  r←2⍴' '
[ 2]  resp←2 40⍴' '
[ 3]  perg←2 40⍴' '
[ 4]  inds←2?1↑⍴frasesfil
[ 5]  resp[1;]←40↑compfil frasesfil[inds[1];]
[ 6]  resp[2;]←40↑compfil frasesfil[inds[2];]
[ 7]  perg[1;]←40↑frasesfil[inds[1];]
[ 8]  perg[2;]←40↑frasesfil[inds[2];]
[ 9]  r[1]←⊂resp
[10]  r[2]←⊂perg
-------------------------------------------------------------
[ 0]  r←gerahuf;inds;j;i;m1;tt;r1;bs;rai1;rai2
[ 1]  r←2⍴' '
[ 2]  rai2←3 80⍴' ' ⋄ rai1←3 10⍴' '
[ 3]  inds←3?1↑⍴fraseshu
[ 4]  j←1
[ 5] t0:→(j>3)/acabou
[ 6]  i←1 ⋄ m1←''
```

```
[ 7] t1:→(i>10)/fi1
[ 8]  m1←m1,dichuf[(,dichuf[;1])⍳fraseshu[inds[j];i];1+⍳7]
[ 9]  →(i=i←i+1)/t1
[10] fi1:tt←8×⌈0.125×bs←⍴m1←(m1≠' ')/m1
[11]  m1←tt↑m1,'000000000'
[12]  m1←((tt÷8),8)⍴m1
[13]  i←1 ⋄ r1←''
[14] t2:→(i>1↑⍴m1)/fi3
[15]  r1←r1,'0123456789ABCDEF'[1+2 2 2 2⊥⍣(8⍴1 0)⊢m1[i;⍳4]]
[16]  r1←r1,'0123456789ABCDEF'[1+2 2 2 2⊥⍣(8⍴1 0)⊢m1[i;4+⍳4]],' '
[17]  →(i=i←i+1)/t2
[18] fi3:rai2[j;⍳30]←30↑r1
[19]  rai2[j;40+⍳30]←30↑(4 0⍕bs),' bits significativos'
[20]  rai1[j;]←fraseshu[inds[j];]
[21]  →(j=j←j+1)/t0
[22] acabou:r[1]←⊂rai1
[23]  r[2]←⊂rai2
------------------------------------------------------------
[ 0]  r←geramor;rai1;rai2;inds;j;i;pal
[ 1]  r←2⍴' ' ⋄ rai2←3 40⍴' '
[ 2]  inds←3?1↑⍴frasesmor
[ 3]  rai1←frasesmor[inds;]
[ 4]  j←1
[ 5] t1:→(j>3)/acabou
[ 6]  i←1 ⋄ pal←''
[ 7] t2:→(i>6)/fi1
[ 8]  pal←pal,dicmorse[(,dicmorse[;1])⍳rai1[j;i];1+⍳4],'1'
[ 9]  →(i=i←i+1)/t2
[10] fi1:pal←pal,'2'
[11]  pal←(pal≠' ')/pal
[12]  rai2[j;]←40↑pal
[13]  →(j=j←j+1)/t1
[14] acabou:r[1]←⊂rai1
[15]  r[2]←⊂rai2
------------------------------------------------------------
[ 0]  r←instaaa2 xx;ms;fr;dici;i;alfa;vv;yy;qt7;rai2;ia;env
[ 1]  EXPAA←0 50⍴' '
[ 2]  ms←'' ⋄ r←2⍴' '
[ 3]  →(0≠⍴xx)/puok
[ 4] ok:fr←((¯1+?4)⍴'A'),((¯1+?4)⍴'B'),((¯1+?4)⍴'C'),(¯1+?4)⍴'D'
[ 5]  →(7≥⍴fr)/ok
[ 6]  fr←fr[(⍴fr)?⍴fr]
[ 7]  →junta
[ 8] puok:fr←xx
[ 9]  EXPAA←EXPAA,[1]1 50⍴50↑'frase=',fr
[10] junta:
[11]  dici←4 8⍴'A1   000','B01  000','C001 000','D0001000'
[12]  i←1 ⋄ alfa←'0123456789ABCDEF'
[13] t1:→(i>⍴fr)/aca
[14]  ms←ms,env←dici[ia←(,dici[;1])⍳fr[i];1+⍳4]
[15]  EXPAA←EXPAA,[1]1 50⍴50↑'dicionario ='
[16]  EXPAA←EXPAA,[1]4 50↑dici
[17]  dici[ia;5+⍳3]←'000'⍕1+⊥dici[ia;5+⍳3]
[18]  EXPAA←EXPAA,[1]1 50⍴50↑'letra=',dici[ia;1]
[19]  vv←⊥,dici[;5+⍳3],' '
[20]  yy←⍋vv
[21]  dici[;1]←dici[yy;1]
[22]  dici[;5+⍳3]←4 3⍴'000'⍕vv[yy]
[23]  EXPAA←EXPAA,[1]1 50⍴50↑'string enviado=',env
[24]  EXPAA←EXPAA,[1]1 50⍴50↑'-------------------------------------'
[25]  →(i=i←i+1)/t1
[26] aca:qt7←⍴ms←(ms≠' ')/ms
[27]  ms←(8×⌈0.125×⍴ms)↑ms,'00000000'
```

```
[28]  i←1 ⋄ rai2←''
[29] t3:→(i>ρms)/finz
[30]  rai2←rai2,alfa[1+2 2 2 2⊥⍷ms[i],' ',ms[i+1],' ',ms[i+2],' ',ms[i+3]]
[31]  rai2←rai2,(alfa[1+2 2 2 2⊥⍷ms[i+4],' ',ms[i+5],' ',ms[i+6],' ',ms[i+7]]),' '
[32]  i←i+8
[33]  →t3
[34] finz:rai2←(40↑rai2),'bits signf=',3 0⍕qt7
[35]  r[1]←⊂fr
[36]  r[2]←⊂rai2
------------------------------------------------------------
[ 0]  r←qt provaaa me;dic;me1;qu;vv;le;ve
[ 1]  dic←4 8ρ'A1   000','B01  000','C001 000','D0001000' ⋄ r←''
[ 2]  EXPAP←0 50ρ' '
[ 3]  me1←qt bina me
[ 4] t1:
[ 5]  EXPAP←EXPAP,[1]1 50ρ50↑'dicionario ='
[ 6]  EXPAP←EXPAP,[1]4 50↑dic
[ 7]  qu←prox me1
[ 8]  EXPAP←EXPAP,[1]1 50ρ50↑'string lido=',qu
[ 9]  me1←(ρqu)↓me1
[10]  qu←4↑qu
[11]  vv←(+/dic[1;1+⍳4]=qu),(+/dic[2;1+⍳4]=qu),(+/dic[3;1+⍳4]=qu),+/dic[4;1+⍳4]=qu
[12]  le←(vv=4)/,dic[;1]
[13]  EXPAP←EXPAP,[1]1 50ρ50↑'letra=',le
[14]  r←r,le
[15]  ve←⍷,dic[;5+⍳3],' '
[16]  ve←ve+vv=4
[17]  dic[;5+⍳3]←4 3ρ'000'⍕ve
[18]  dic[;1]←dic[⍒ve;1]
[19]  dic[;5+⍳3]←dic[⍒ve;5+⍳3]
[20]  EXPAP←EXPAP,[1]1 50ρ50↑'---------------------------------'
[21]  →(0=ρme1)/acabou
[22]  →t1
[23] acabou:
------------------------------------------------------------
[0]  r←prox m
[1]  r←(1↑(m='1')/(m='1')×⍳ρm)↑m
------------------------------------------------------------
[0]  r←remdupl x
[1]  r←((x⍳x)=⍳ρx)/x
------------------------------------------------------------
[ 0]  opesq vivo768a n;CORRECAO;EVENTO;ylu;relat;f;resp;xx;xk;esse;dhx;resu;acuja;upag;lix
      onol;lixo1;ddc;aaa;xxsh;xxcv;xxaa
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL768   '
[ 6]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕⍳n
[ 9]  FOLHALA768←164 ajusta FOLHALA768
[10]  relat←((2+1↑ρylu),1 0+ρFOLHALA768)ρ' '
[11]  relat[1;;]←(1↓ρrelat)↑⎕FM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 164ρ' '
[13] testa:→(xk>1↑ρylu)/fim
[14]  esse←19 80ρ' '
[15]  f←FOLHALA768
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[19]  esse[4;]←80↑ylu[xk;⍳6]
```

```
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[18;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[19;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  xx←geramor
[27]  esse[8 9 10;]←3 80↑⊃xx[2]
[28]  resp←(3 0⍕resp),'--',,(⊃xx[1]),' '
[29]  xx←gerafil2
[30]  esse[11 12;]←2 80↑⊃xx[2]
[31]  resp←resp,,(⊃xx[1]),' '
[32]  xx←gerahuf
[33]  esse[13 14 15;]←3 80↑⊃xx[2]
[34]  resp←resp,¯1↓,(⊃xx[1]),' '
[35]  xx←instaaa2''
[36]  esse[16;]←80↑⊃xx[2]
[37]  resp←resp,12↑(11↑⊃xx[1]),' '
[38]  xx←instaaa2''
[39]  esse[17;]←80↑⊃xx[2]
[40]  resp←resp,12↑(11↑⊃xx[1]),' '
[41]  resu←resu,[1]1 164⍴resp
[42]  acuja←(f[;2]='#')/⍳1↑⍴f
[43]  f[acuja;]←19 164↑esse[⍋,f[acuja;3 4 5],' ';]
[44]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[45]  ⍞←(⍕xk←xk+1),'-'
[46]  →testa
[47] fim:upag←(1 0+⍴f)⍴' '
[48]  →(1=≡n)/elafa
[49]  upag[1;]←(1↓⍴upag)↑'{\tiny \begin{verbatim}'
[50]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[51]  upag[2+⍳1↑⍴resu;⍳164]←resu
[52]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim} }'
[53]  →terminando
[54] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 4↓resu)
[55]  aaa[1;35 36]←2 0⍕CORRECAO
[56]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[57]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[58] terminando:
[59]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[60]  relat[1↑⍴relat;;]←upag
[61]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[62] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[63]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[64]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo770

```
[0]  r←geracaso;lam;Ts;n
[1] ⍝fgera uma instancia do problema de caixas do SM
[2] ⍝d:[1]=lambda, [2]=Ts, [3]=n
[3]  lam←170+10×?5
[4]  Ts←2+?3
[5]  n←⌈(3+?3)+lam÷(60÷Ts)
[6]  r←lam,Ts,n
-------------------------------------------------------------
[ 0]  r←geratab;i;j
[ 1]  r←11 12⍴0
[ 2]  r[;1]←0 1 2 3 4 5 10 20 30 40 50
[ 3]  r[1;]←0 0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1
[ 4]  i←1
```

```
[ 5] t1:→(i>10)/aca
[ 6]  j←1
[ 7] t2:→(j>11)/f1
[ 8]  r[i+1;j+1]←r[i+1;1]prob r[1;j+1]
[ 9]  →(j=j←j+1)/t2
[10] f1:→(i=i←i+1)/t1
[11] aca:
------------------------------------------------------------
[ 0]  r←krarup dad;lam;Ts;Tf;T;Lf;Ls;L;mi;ro;n
[ 1] ⍝fcalcula 7 medidas do sistema de fila
[ 2] ⍝rdad[1]=lambda, dad[2]=Ts, dad[3]=n
[ 3] ⍝d[1]=ro, [2]=Lf, [3]=Ls, [4]=L, [5]=Tf, [6]=Ts, [7]=T
[ 4]  lam←dad[1] ⋄ Ts←dad[2] ⋄ n←dad[3]
[ 5]  mi←÷Ts
[ 6]  ro←lam÷n×mi
[ 7]  Lf←((n prob ro)×ro)÷1-ro
[ 8]  Ls←lam÷mi
[ 9]  L←Lf+Ls
[10]  Tf←Lf÷lam
[11]  Ts←Ls÷lam
[12]  T←Tf+Ts
[13]  r←ro,Lf,Ls,L,Tf,Ts,T
------------------------------------------------------------
[0]  r←m prob ro;n;num;den;fra
[1]  n←¯1+⍳m
[2]  num←+/((m×ro)*n)÷!n
[3]  n←n,m
[4]  den←+/((m×ro)*n)÷!n
[5]  fra←num÷den
[6]  r←(1-fra)÷1-ro×fra
------------------------------------------------------------
[ 0]  ref;i;j;k;candi;qt;zz;r
[ 1]  zz←ΔFM'f:/infoland/lixo1234'
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10]  →(0=' 'є⍳↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80⍴80↑⍳↑candi
[15]  candi←j↓candi
[16]  →((⍴candi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80⍴80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
[22]  y←r
------------------------------------------------------------
[ 0]  opesq vivo770a n;CORRECAO;EVENTO;ylu;guampa;relat;f;resp;xk;esse;dhx;resu;xa;xb;xc;r
      i;x;zzz;acuja;upag;lixonol;lixo1;aaa;zzz;c1;c2;xx
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←2 ⋄ EVENTO←'PL770   '
[ 5]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
```

```
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 8]  FOLHALA770←ajusta80 FOLHALA770
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA770)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[11]  xk←1 ⋄ resu←0 3⍴0
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←10 80⍴' '
[14]  f←FOLHALA770
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍕VERSAOa←1.03
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[22] inica:
[23]  esse[8 9 10;]←3 80⍴80 0⍕xx←geracaso
[24]  c1←krarup((xx[1]÷60)÷xx[3]),xx[2],1
[25]  c2←krarup(xx[1]÷60),xx[2],xx[3]
[26]  resp←resp,c1[7],c2[7]
[27]  resu←resu,[1](1,3)⍴resp
[28]  acuja←(f[;2]='#')/⍳1↑⍴f
[29]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[30]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[31]  ⍞←(⍕xk←xk+1),'-'
[32]  →testa
[33] fim:upag←(1 0+⍴f)⍴' '
[34]  →(1=≡n)/elafa
[35]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[36]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[37]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0)⍕resu
[38]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[39]  →terminando
[40] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),5 0⍕0 1↓resu)
[41]  aaa[1;35 36]←2 0⍕CORRECAO
[42]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[43]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[44] terminando:
[45]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[46]  relat[1↑⍴relat;;]←upag
[47]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.t
      ex'
[48]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[49]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo772

```
[ 0]  r←RFIFO m;i;fila;proc;rodando;quem
[ 1]  M←m
[ 2]  r←((1↑⍴m),4)⍴0 ⋄ fila←0 3⍴0 ⋄ proc←180⍴' '
[ 3]  i←1 ⋄ rodando←''
[ 4] testa:→(i>180)/fim
[ 5]  →(~i∈m[;2])/naotem
[ 6] tem:fila←fila,[1](m[;2]∈i)/[1]m
[ 7] naotem:→(0=⍴rodando)/vazio
[ 8]  →(1≠⍴rodando)/naoultimo
[ 9]  r[((m[;1]∈quem[1])/⍳1↑⍴m);2]←i
[10] naoultimo:proc[i]←1↑rodando
[11]  rodando←1↓rodando
[12]  →soma
```

```
[13] vazio:→(0=1↑⍴fila)/soma
[14]  →(i<fila[1;2])/soma
[15]  quem←,fila[1;]
[16]  fila←1 0↓fila
[17]  rodando←(quem[3])⍴⎕AV[quem[1]]
[18]  proc[i]←1↑rodando
[19]  rodando←1↓rodando
[20]  r[((m[;1]∈quem[1])/⍳1↑⍴m);1]←i
[21]  →soma
[22] soma:→(i=i←i+1)/testa
[23] fim:r[;3]←1+r[;2]-r[;1]
[24]  r[;4]←1+r[;2]-m[;2]
[25]  PROC←proc
[26]  R←r
-------------------------------------------------------------
[ 0]  r←qt RRR m;fila;proc;i;rodando;quantum;quem
[ 1]  M←m
[ 2]  r←((1↑⍴m),4)⍴0 ⋄ fila←0 4⍴0 ⋄ proc←180⍴' ' ⋄ m←m,0 ⋄ m[;4]←m[;3]
[ 3]  i←1 ⋄ rodando←'' ⋄ quantum←1
[ 4] testa:→(i>180)/fim
[ 5]  →(~i∈m[;2])/naotem
[ 6] tem:fila←fila,[1]((m[;2]∈i)/[1]m)
[ 7] naotem:→(0=⍴rodando)/vazio
[ 8]  →(1≠⍴rodando)/naoultimo
[ 9]  r[((m[;1]∈quem[1])/⍳1↑⍴m);2]←i
[10] naoultimo:proc[i]←1↑rodando
[11]  rodando←1↓rodando
[12]  quantum←quantum+1
[13]  →(quantum<qt)/soma
[14]  →(quem[4]≤qt)/pulao
[15]  quem[4]←quem[4]-qt
[16]  fila←fila,[1]1 4⍴quem
[17] pulao:rodando←''
[18]  quantum←1
[19]  →soma
[20] vazio:→(0=1↑⍴fila)/soma
[21]  →(i<fila[1;2])/soma
[22]  quem←,fila[1;]
[23]  fila←1 0↓fila
[24]  rodando←quem[4]⍴⎕AV[quem[1]]
[25]  proc[i]←1↑rodando
[26]  quantum←1
[27]  rodando←1↓rodando
[28]  →(0≠⍴rodando)/uca
[29]  r[((m[;1]∈quem[1])/⍳1↑⍴m);2]←i
[30] uca:→(quem[3]≠quem[4])/soma
[31]  r[((m[;1]∈quem[1])/⍳1↑⍴m);1]←i
[32]  →soma
[33] soma:→(i=i←i+1)/testa
[34] fim:r[;3]←1+r[;2]-r[;1]
[35]  r[;4]←1+r[;2]-m[;2]
[36]  PROC←proc
[37]  R←r
-------------------------------------------------------------
[ 0]  r←RSJF m;i;fila;proc;rodando;quem;uca
[ 1]  M←m
[ 2]  r←((1↑⍴m),4)⍴0 ⋄ fila←0 3⍴0 ⋄ proc←180⍴' '
[ 3]  i←1 ⋄ rodando←''
[ 4] testa:→(i>180)/fim
[ 5]  →(~i∈m[;2])/naotem
[ 6] tem:fila←fila,[1](m[;2]∈i)/[1]m
[ 7] naotem:→(0=⍴rodando)/vazio
[ 8]  →(1≠⍴rodando)/naoultimo
```

```
[ 9]  r[((m[;1]∈quem[1])/⍳1↑⍴m);2]←i
[10] naoultimo:proc[i]←1↑rodando
[11]  rodando←1↓rodando
[12]  →soma
[13] vazio:→(0=1↑⍴fila)/soma
[14]  →(i<fila[1;2])/soma
[15]  quem←,fila[((uca←soprimeiro fila[;3]=⌊/fila[;3])/⍳1↑⍴fila);]
[16]  fila←(~uca)/[1]fila
[17]  rodando←(quem[3])⍴⎕AV[quem[1]]
[18]  proc[i]←1↑rodando
[19]  rodando←1↓rodando
[20]  r[((m[;1]∈quem[1])/⍳1↑⍴m);1]←i
[21]  →soma
[22] soma:→(i=i←i+1)/testa
[23] fim:r[;3]←1+r[;2]-r[;1]
[24]  r[;4]←1+r[;2]-m[;2]
[25]  PROC←proc
[26]  R←r
-------------------------------------------------------------
[0]  r←geradads qtd;aux
[1]  r←(qtd,5)⍴0
[2]  r[;1]←⍳qtd
[3]  aux←(?qtd⍴20)+(?(⌈qtd÷2)⍴3),?(⌈qtd÷2)⍴28
[4]  r[;2]←aux←aux[⍋aux]
[5]  r[;3 4]←⍉60 60⊤600+aux×5
[6]  aux←5×1+(?(⌈3×qtd÷4)⍴5),(⌊qtd÷4)⍴0
[7]  r[;5]←aux[(⍴aux)?⍴aux]
-------------------------------------------------------------
[0]  r←geraso n
[1] ⍝ gera n linhas de servicos em filas
[2]  r←(n,3)⍴0
[3]  r[;1]←65+n?26
[4]  r[;2]←n?3×n
[5]  r[;3]←1+?n⍴10
[6]  r←r[⍋r[;2];]
-------------------------------------------------------------
[ 0]  r←p resolvea xx;tempo;caixa1;fila1;cliente;xcli;agora
[ 1] ⍝ solucao com 1 caixa e fila unica; p[1] espera; p[2]precli; p[3]preca
[ 2]  tempo←1 ⋄ caixa1←80⍴0 ⋄ fila1←0 3⍴0 ⋄ cliente←((1↑⍴xx),4)⍴0
[ 3] testa:→(tempo>60)/fim
[ 4]  agora←(xx[;2]=tempo)/[1]xx
[ 5] testa1:→(0=1↑⍴agora)/acabou
[ 6]  →(p[1]=1↑⍴fila1)/cheio
[ 7]  fila1←fila1,[1]agora[1;]
[ 8]  agora←1 0↓agora
[ 9]  →testa1
[10] cheio:cliente[agora[1;1];1]←9   ⍝ indica cliente desprezado
[11]  agora←1 0↓agora
[12]  →testa1
[13] acabou:
[14]  →(caixa1[tempo]≠0)/inctempo
[15]  →(0=1↑⍴fila1)/inctempo
[16]  caixa1[(tempo-1)+⍳fila1[1;3]]←fila1[1;1]
[17]  cliente[fila1[1;1];]←1,fila1[1;2],tempo,tempo+fila1[1;3]
[18]  fila1←1 0↓fila1
[19] inctempo:→(tempo=tempo←tempo+1)/testa
[20] fim:cliente[fila1[;1];1]←9
[21]  xcli←(cliente[;1]=1)/[1]cliente
[22]  r←(1↑⍴xcli),(+/5×xcli[;4]-xcli[;2])÷1↑⍴xcli
[23]  r←r,5×+/0=60↑caixa1
[24]  r←r,p[3]+p[2]×+/cliente[;1]=9
[25]  r←r,r[4]÷r[1]
-------------------------------------------------------------
```

```
[ 0]  r←p resolveb xx;tempo;c1;c2;c3;fila1;cliente;xcli;agora
[ 1] ⍝ solucao com 1 caixa e fila unica; p[1] espera; p[2]precli; p[3]preca
[ 2]  tempo←1 ⋄ c1←c2←c3←80⍴0 ⋄ fila1←0 3⍴0 ⋄ cliente←((1↑⍴xx),4)⍴0
[ 3] testa:→(tempo>60)/fim
[ 4]  agora←(xx[;2]=tempo)/[1]xx
[ 5] testa1:→(0=1↑⍴agora)/acabou
[ 6]  →(p[1]=1↑⍴fila1)/cheio
[ 7]  fila1←fila1,[1]agora[1;]
[ 8]  agora←1 0↓agora
[ 9]  →testa1
[10] cheio:cliente[agora[1;1];1]←9   ⍝ indica cliente desprezado
[11]  agora←1 0↓agora
[12]  →testa1
[13] acabou:
[14]  →(c1[tempo]≠0)/tc2
[15]  →(0=1↑⍴fila1)/inctempo
[16]  c1[(tempo-1)+⍳fila1[1;3]]←fila1[1;1]
[17]  cliente[fila1[1;1];]←1,fila1[1;2],tempo,tempo+fila1[1;3]
[18]  fila1←1 0↓fila1
[19] tc2:→(c2[tempo]≠0)/tc3
[20]  →(0=1↑⍴fila1)/inctempo
[21]  c2[(tempo-1)+⍳fila1[1;3]]←fila1[1;1]
[22]  cliente[fila1[1;1];]←2,fila1[1;2],tempo,tempo+fila1[1;3]
[23]  fila1←1 0↓fila1
[24] tc3:→(c3[tempo]≠0)/inctempo
[25]  →(0=1↑⍴fila1)/inctempo
[26]  c3[(tempo-1)+⍳fila1[1;3]]←fila1[1;1]
[27]  cliente[fila1[1;1];]←3,fila1[1;2],tempo,tempo+fila1[1;3]
[28]  fila1←1 0↓fila1
[29] inctempo:→(tempo=tempo←tempo+1)/testa
[30] fim:cliente[fila1[;1];1]←9
[31]  xcli←(cliente[;1]<4)/[1]cliente
[32]  r←(1↑⍴xcli),(+/5×xcli[;4]-xcli[;2])÷1↑⍴xcli
[33]  r←r,5×(+/0=60↑c1)+(+/0=60↑c2)++/0=60↑c3
[34]  r←r,(3×p[3])+p[2]×+/cliente[;1]=9
[35]  r←r,r[4]÷r[1]
------------------------------------------------------------
[ 0]  r←p resolvec xx;tempo;c1;c2;c3;f1;f2;f3;cliente;xcli;agora;men;tam
[ 1] ⍝ solucao com 3 caixa e 3 filas; p[1] espera; p[2]precli; p[3]preca
[ 2]  tempo←1 ⋄ c1←c2←c3←80⍴0 ⋄ f1←f2←f3←0 3⍴0 ⋄ cliente←((1↑⍴xx),4)⍴0
[ 3] testa:→(tempo>60)/fim
[ 4]  agora←(xx[;2]=tempo)/[1]xx
[ 5] testa1:→(0=1↑⍴agora)/acabou
[ 6]  tam←(1↑⍴f1),(1↑⍴f2),1↑⍴f3
[ 7]  →(p[1]<+/tam)/cheio
[ 8]  men←⌊/tam
[ 9]  →(men=tam[1])/primeiro
[10]  →(men=tam[2])/segundo
[11]  f3←f3,[1]agora[1;]
[12]  agora←1 0↓agora
[13]  →testa1
[14] primeiro:f1←f1,[1]agora[1;]
[15]  agora←1 0↓agora
[16]  →testa1
[17] segundo:f2←f2,[1]agora[1;]
[18]  agora←1 0↓agora
[19]  →testa1
[20] cheio:cliente[agora[1;1];1]←9   ⍝ indica cliente desprezado
[21]  agora←1 0↓agora
[22]  →testa1
[23] acabou:
[24]  →(c1[tempo]≠0)/tc2
[25]  →(0=1↑⍴f1)/tc2
```

```
[26]  c1[(tempo-1)+⍳⍴f1[1;3]]←f1[1;1]
[27]  cliente[f1[1;1];]←1,f1[1;2],tempo,tempo+f1[1;3]
[28]  f1←1 0↓f1
[29] tc2:→(c2[tempo]≠0)/tc3
[30]  →(0=1↑⍴f2)/tc3
[31]  c2[(tempo-1)+⍳⍴f2[1;3]]←f2[1;1]
[32]  cliente[f2[1;1];]←2,f2[1;2],tempo,tempo+f2[1;3]
[33]  f2←1 0↓f2
[34] tc3:→(c3[tempo]≠0)/inctempo
[35]  →(0=1↑⍴f3)/inctempo
[36]  c3[(tempo-1)+⍳⍴f3[1;3]]←f3[1;1]
[37]  cliente[f3[1;1];]←3,f3[1;2],tempo,tempo+f3[1;3]
[38]  f3←1 0↓f3
[39] inctempo:→(tempo=tempo←tempo+1)/testa
[40] fim:cliente[f1[;1];1]←9
[41] fim:cliente[f2[;1];1]←9
[42] fim:cliente[f3[;1];1]←9
[43]  xcli←(cliente[;1]<4)/[1]cliente
[44]  r←(1↑⍴xcli),(+/5×xcli[;4]-xcli[;2])÷1↑⍴xcli
[45]  r←r,5×(+/0=60↑c1)+(+/0=60↑c2)++/0=60↑c3
[46]  r←r,(3×⍴[3])+⍴[2]×+/cliente[;1]=9
[47]  r←r,r[4]÷r[1]
-------------------------------------------------------------
[ 0]  r←⍴ resolved xx;tempo;c1;c2;c3;c4;c5;fila1;cliente;xcli;agora
[ 1] ⍝ solucao com 1 caixa e fila unica; p[1] espera; p[2]precli; p[3]preca
[ 2]  tempo←1 ⋄ c1←c2←c3←c4←c5←80⍴0 ⋄ fila1←0 3⍴0 ⋄ cliente←((1↑⍴xx),4)⍴0
[ 3] testa:→(tempo>60)/fim
[ 4]  agora←(xx[;2]=tempo)/[1]xx
[ 5] testa1:→(0=1↑⍴agora)/acabou
[ 6]  →(⍴[1]=1↑⍴fila1)/cheio
[ 7]  fila1←fila1,[1]agora[1;]
[ 8]  agora←1 0↓agora
[ 9]  →testa1
[10] cheio:cliente[agora[1;1];1]←9   ⍝ indica cliente desprezado
[11]  agora←1 0↓agora
[12]  →testa1
[13] acabou:
[14]  →(c1[tempo]≠0)/tc2
[15]  →(0=1↑⍴fila1)/inctempo
[16]  c1[(tempo-1)+⍳⍴fila1[1;3]]←fila1[1;1]
[17]  cliente[fila1[1;1];]←1,fila1[1;2],tempo,tempo+fila1[1;3]
[18]  fila1←1 0↓fila1
[19] tc2:→(c2[tempo]≠0)/tc3
[20]  →(0=1↑⍴fila1)/inctempo
[21]  c2[(tempo-1)+⍳⍴fila1[1;3]]←fila1[1;1]
[22]  cliente[fila1[1;1];]←2,fila1[1;2],tempo,tempo+fila1[1;3]
[23]  fila1←1 0↓fila1
[24] tc3:→(c3[tempo]≠0)/tc4
[25]  →(0=1↑⍴fila1)/inctempo
[26]  c3[(tempo-1)+⍳⍴fila1[1;3]]←fila1[1;1]
[27]  cliente[fila1[1;1];]←3,fila1[1;2],tempo,tempo+fila1[1;3]
[28]  fila1←1 0↓fila1
[29] tc4:→(c4[tempo]≠0)/tc5
[30]  →(0=1↑⍴fila1)/inctempo
[31]  c4[(tempo-1)+⍳⍴fila1[1;3]]←fila1[1;1]
[32]  cliente[fila1[1;1];]←4,fila1[1;2],tempo,tempo+fila1[1;3]
[33]  fila1←1 0↓fila1
[34] tc5:→(c5[tempo]≠0)/inctempo
[35]  →(0=1↑⍴fila1)/inctempo
[36]  c5[(tempo-1)+⍳⍴fila1[1;3]]←fila1[1;1]
[37]  cliente[fila1[1;1];]←5,fila1[1;2],tempo,tempo+fila1[1;3]
[38]  fila1←1 0↓fila1
[39] inctempo:→(tempo=tempo←tempo+1)/testa
```

```
[40] fim:cliente[fila1[;1];1]←9
[41]  xcli←(cliente[;1]<6)/[1]cliente
[42]  r←(1↑⍴xcli),(+/5×xcli[;4]-xcli[;2])÷1↑⍴xcli
[43]  r←r,5×(+/0=60↑c1)+(+/0=60↑c2)+(+/0=60↑c3)+(+/0=60↑c4)++/0=60↑c5
[44]  r←r,(5×p[3])+p[2]×+/cliente[;1]=9
[45]  r←r,r[4]÷r[1]
-------------------------------------------------------------
[0]  r←soprimeiro x;y
[1]  y←1↑x/⍳⍴x
[2]  r←(⍴x)⍴0
[3]  r[y]←1
-------------------------------------------------------------
[  0]  opesq vivo772a n;CORRECAO;EVENTO;ylu;guampa;relat;f;resp;xk;esse;dhx;resu;acuja;upag
      ;lixonol;xxx;yyy;r1;r2;r3;r4;espera;precli;precai;onde;gg;rr;aaa;lixo1
[  1]  →(0≠⎕NC'opesq')/qveio
[  2]  opesq←''
[  3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[  4]  CORRECAO←0 ⋄ EVENTO←'PL772   ' ⍝ poderia ser CORRECAO←8, mas tem os erros de arred
[  5]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[  6]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[  7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[  8]  FOLHALA772←ajusta80 FOLHALA772
[  9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA772)⍴' '
[ 10]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLOI'
[ 11]  xk←1 ⋄ resu←0 9⍴0
[ 12] testa:→(xk>1↑⍴ylu)/fim
[ 13]  esse←68 80⍴' '
[ 14]  f←FOLHALA772
[ 15]  esse[1;]←80↑dhx[1;]
[ 16]  esse[2;]←80↑dhx[2;]
[ 17]  esse[3;]←80↑4 2⍎VERSAOa←2.04
[ 18]  esse[4;]←80↑ylu[xk;⍳6]
[ 19]  esse[5;]←80↑ylu[xk;6+⍳30]
[ 20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[ 21]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[ 22] inica:
[ 23]  xxx←geradads 40
[ 24]  yyy←'55 & 55 h 55 & 55 & '⍎xxx[⍳20;1 3 4 5]
[ 25]  esse[7+⍳20;]←20 80↑yyy←yyy,[2]'55 & 55 h 55 & 55 \\ \hline'⍎xxx[20+⍳20;1 3 4 5]
[ 26]  esse[28;⍳6]←6 0⍎5
[ 27]  esse[29;⍳6]←6 0⍎espera←10+?4
[ 28]  esse[30;⍳6]←6 0⍎precli←500+100×?4
[ 29]  esse[31;⍳6]←6 0⍎precai←600+200×?6
[ 30]  r1←(espera,precli,precai)resolvea ajusta xxx
[ 31]  r2←(espera,precli,precai)resolveb ajusta xxx
[ 32]  r3←(espera,precli,precai)resolvec ajusta xxx
[ 33]  r4←(espera,precli,precai)resolved ajusta xxx
[ 34]  resp←resp,r1[1],r2[1],r3[1],r4[1],r1[5],r4[5]
[ 35] segundaparte:
[ 36]  onde←?3
[ 37]  →(onde=1)/sjf
[ 38]  →(onde=2)/rr3
[ 39] rr7:
[ 40]  gg←geraso 15
[ 41]  esse[32;]←80↑'\textbf{Round Robin, com q=7}'
[ 42]  esse[32+⍳15;]←15 80↑'55555 &555 &555 &555 &555 &555 \\ \hline'⍎gg[;2 3],rr←7 RRR gg
[ 43]  esse[32+⍳15;1]←15 1⍴⎕AV[,gg[;1]] ⋄ esse[32+⍳15;2]←'&'
[ 44]  esse[47+⍳4;⍳66]←4 66⍴(24 10⍴240↑PROC),' '
[ 45]  esse[52 53;⍳10]←2 10⍴10 1⍎(+/[1]rr[;3 4])÷15
[ 46]  gg←geraso 15
[ 47]  esse[53+⍳15;]←15 80↑'55555 &555 &&&&\\ \hline'⍎gg[;2 3] ⋄ rr←7 RRR gg
[ 48]  esse[53+⍳15;1]←15 1⍴⎕AV[,gg[;1]] ⋄ esse[53+⍳15;2]←'&'
```

```
[ 49]  resp←resp,(+/[1]rr[;3 4])÷15
[ 50]  →acaba
[ 51] rr3:
[ 52]  gg←geraso 15
[ 53]  esse[32;]←80↑'\textbf{Round Robin, com q=3}'
[ 54]  esse[32+⍳15;]←15 80↑'55555 &555 &555 &555 &555 &555 \\ \hline'⍪gg[;2 3],rr←3 RRR gg
[ 55]  esse[32+⍳15;1]←15 1ρ□AV[,gg[;1]] ⋄ esse[32+⍳15;2]←'&'
[ 56]  esse[47+⍳4;⍳66]←4 66ρ(24 10ρ240↑PROC),' '
[ 57]  esse[52 53;⍳10]←2 10ρ10 1⍪(+/[1]rr[;3 4])÷15
[ 58]  gg←geraso 15
[ 59]  esse[53+⍳15;]←15 80↑'55555 &555 &&&&\\ \hline'⍪gg[;2 3] ⋄ rr←3 RRR gg
[ 60]  esse[53+⍳15;1]←15 1ρ□AV[,gg[;1]] ⋄ esse[53+⍳15;2]←'&'
[ 61]  resp←resp,(+/[1]rr[;3 4])÷15
[ 62]  →acaba
[ 63] sjf:
[ 64]  gg←geraso 15
[ 65]  esse[32;]←80↑'\textbf{Shortest Job First}'
[ 66]  esse[32+⍳15;]←15 80↑'55555 &555 &555 &555 &555 &555 \\ \hline'⍪gg[;2 3],rr←RSJF gg
[ 67]  esse[32+⍳15;1]←15 1ρ□AV[,gg[;1]] ⋄ esse[32+⍳15;2]←'&'
[ 68]  esse[47+⍳4;⍳66]←4 66ρ(24 10ρ240↑PROC),' '
[ 69]  esse[52 53;⍳10]←2 10ρ10 1⍪(+/[1]rr[;3 4])÷15
[ 70]  gg←geraso 15
[ 71]  esse[53+⍳15;]←15 80↑'55555 &555 &&&&\\ \hline'⍪gg[;2 3] ⋄ rr←RSJF gg
[ 72]  esse[53+⍳15;1]←15 1ρ□AV[,gg[;1]] ⋄ esse[53+⍳15;2]←'&'
[ 73]  resp←resp,(+/[1]rr[;3 4])÷15
[ 74]  →acaba
[ 75] acaba:
[ 76]  resu←resu,[1](1,9)ρresp
[ 77]  acuja←(f[;2]='#')/⍳1↑ρf
[ 78]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[ 79]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\newpage'
[ 80]  □←(⍪xk←xk+1),'-'
[ 81]  →testa
[ 82] fim:upag←(1 0+ρf)ρ' '
[ 83]  →(1=≡n)/elafa
[ 84]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[ 85]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[ 86]  upag[2+⍳1↑ρresu;⍳¯4++/lixo1]←(lixo1←4 0 8 0 4 0 4 0 4 0 9 1 9 1 7 1 7 1)⍪resu
[ 87]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[ 88]  →terminando
[ 89] elafa:aaa←(ylu,(((1↑ρylu),4)ρ' 0.0'),4 0 4 0 4 0 4 0 9 1 9 1 7 1 7 1⍪0 1↓resu)
[ 90]  aaa[1;35 36]←2 0⍪CORRECAO
[ 91]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[ 92]  '!!!!!  Arquivo GPA com ',(⍪1↑ρaaa),' linhas e ',(⍪1↓ρaaa),' colunas'
[ 93] terminando:
[ 94]  upag[1↑ρupag;]←(1↓ρupag)↑'\end{document}'
[ 95]  relat[1↑ρrelat;;]←upag
[ 96]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.t
       ex'
[ 97]  lixonol←□EX 2 10ρ'quantos   matriz    '
[ 98]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo775

```
[ 0]  r←geradir x;lin;i;tam
[ 1]  r←(((+/(,x)='%')÷2),4)ρ0
[ 2]  tam←0
[ 3]  lin←1
[ 4]  i←1
[ 5] t1:→(i>1↑ρx)/fim
[ 6]  →((x[i;1]='%')∧(x[i;2]='i'))/comeca
```

```
[ 7]  →((x[i;1]='%')∧(x[i;2]='f'))/termina
[ 8]  tam←tam+1
[ 9]  i←i+1
[10]  →t1
[11] comeca:r[lin;1]←⍎x[i;3 4 5]
[12]  →(~x[i;6]=' ')/⎕LC+1 ⋄ x[i;6]←'0'
[13]  r[lin;2]←⍎x[i;6]
[14]  r[lin;3]←i
[15]  tam←0
[16]  i←i+1
[17]  →t1
[18] termina:r[lin;4]←tam
[19]  lin←lin+1
[20]  i←i+1
[21]  →t1
[22] fim:
------------------------------------------------------------
[ 0]  r←geraenu a;esse;f;deveir;tenun;acuja;i;x
[ 1]  esse←⊃a[1] ⋄ f←⊃a[2] ⋄ deveir←⊃a[3] ⋄ tenun←⊃a[4]
[ 2]  r←0 80⍴' '
[ 3]  acuja←7↑(f[;2]='#')/⍳1↑⍴f
[ 4]  f[acuja;⍳80]←esse[⍎,f[acuja;3 4],' ';]
[ 5]  i←1
[ 6] volta:→(i>1↑⍴f)/fim
[ 7]  →(2=+/f[i;1 2]='⍀#')/tralha
[ 8]  r←r,[1]f[i;]
[ 9]  →(i=i←i+1)/volta
[10] tralha:x←ENUN[tenun[deveir[1];3]+⍳tenun[deveir[1];4];]
[11]  r←r,[1]x
[12]  deveir←1↓deveir
[13]  →(i=i←i+1)/volta
[14] fim:
------------------------------------------------------------
[ 0]  r←gerares a;esse;f;deveir;tresp;acuja;i;x
[ 1]  esse←⊃a[1] ⋄ deveir←⊃a[2] ⋄ tresp←⊃a[3]
[ 2]  r←0 80⍴' '
[ 3]  r←2 80⍴160↑,esse
[ 4]  i←1
[ 5] volta:→(0=⍴deveir)/fim
[ 6]  x←RESP[tresp[deveir[1];3]+⍳tresp[deveir[1];4];]
[ 7]  r←r,[1]x
[ 8]  deveir←1↓deveir
[ 9]  →(i=i←i+1)/volta
[10] fim:
------------------------------------------------------------
[ 0]  opesq vivo775a n;CORRECAO;EVENTO;cabeca;deveir;dhx;esse;ev;f;i;lixonol;quais;resp;sa
      ienu;saires;tenun;tresp;xk;ylu
[ 1]  alma←1 2⍴5 1
[ 2]  'sendo rodado com parametro de questoes = ',,⍕alma
[ 3]  →(0≠⎕NC'opesq')/qveio
[ 4]  opesq←''
[ 5] qveio:
[ 6]  tenun←geradir ENUN
[ 7]  tresp←geradir RESP
[ 8]  cabeca←ΔFM'c:⍀apl2⍀VIVOBLOI'
[ 9]  saienu←((1↑⍴cabeca),80)↑cabeca
[10]  saires←0 80⍴' '
[11]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[12]  CORRECAO←0 ⋄ EVENTO←'PL775   '
[13]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[14]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[15]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
```

```
[16]  xk←1
[17]  FOLHALA775←ajusta80 FOLHALA775
[18] testa:→(xk>1↑⍴ylu)/fim
[19]  esse←7 80⍴' '
[20]  f←((1↑⍴FOLHALA775),80)↑FOLHALA775
[21]  esse[1;]←80↑dhx[1;]
[22]  esse[2;]←80↑dhx[2;]
[23]  esse[3;]←80↑4 2⍕VERSAOa←1.02
[24]  esse[4;]←80↑ylu[xk;⍳6]
[25]  esse[5;]←80↑ylu[xk;6+⍳30]
[26]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[27]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[28] inica:
[29] ⍝ achando as questoes
[30]  i←1 ⋄ deveir←⍳0
[31] oba:→(i>1↑⍴alma)/achou22
[32]  quais←(tenun[;2]=alma[i;2])/[1]tenun[;1]
[33]  deveir←deveir,quais[alma[i;1]?+/tenun[;2]=alma[i;2]]
[34] ⍝ em deveir estao os numeros (tenun[;1]) a serem incluidos
[35]  →(i=i←i+1)/oba
[36] achou22:
[37]  saienu←saienu,[1]geraenu(esse f deveir tenun)
[38]  saires←saires,[1]gerares(esse[4 5;]deveir tresp)
[39]  xk←xk+1
[40]  saienu←saienu,[1]1 80⍴80↑'\newpage'
[41]  ⎕←(⍕xk),'-'
[42]  →testa
[43] fim:
[44]  lixonol←saires ⎕FM('c:\apl2\',(ev←((~⍬∧\⍬EVENTO=' ')/EVENTO)),'R')
[45]  saienu←saienu,[1]1 80⍴80↑'\end{document}'
[46]  lixonol←saienu ⎕FM'c:\apl2\',ev,'.tex'
[47]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[48]  'Arquivo ENUNCIADO criado com o nome de c:\apl2\',ev,'.tex'
[49]  'Arquivo RESPOSTAS criado com o nome de c:\apl2\',ev,'R'
-------------------------------------------------------------
```

vivo780

```
[ 0]  r←v55 fibonacci aa;m;i;val
[ 1] ⍝aa[1] e o valor m, aa[2] e a quantidade (mais 55), v55 sao 55 vals
[ 2]  m←aa[1]
[ 3]  →(0=2|m)/ok
[ 4]  'm tem que ser par'
[ 5]  →0
[ 6] ok:r←⍳0
[ 7]  i←1
[ 8] vvo:→(i>aa[2])/acab
[ 9]  r←r,val←m|v55[55+i-24]+v55[55+i-55]
[10]  v55←v55,val
[11]  →(i=i←i+1)/vvo
[12] acab:
-------------------------------------------------------------
[0]  r←incremental aa;sem;i;next
[1] ⍝ aa[1]=semente; aa[2]=a;  aa[3]=c;  a[4]=m;   aa[5]=qtd
[2]  r←⍳0 ⋄ sem←aa[1]
[3]  i←1
[4] vv1:→(i>aa[5])/fim
[5]  r←r,next←aa[4]|(aa[2]×sem)+aa[3]
[6]  sem←next
[7]  →(i=i←i+1)/vv1
[8] fim:
-------------------------------------------------------------
```

```
[ 0]  r←neumann aa;i;uva;uvb;k;⎕PP
[ 1] ⍝ aa[1] e a semente, aa[2] e o valor de k; aa[3] e a quantidade gerada
[ 2]  →(3≠⍴aa)/erro
[ 3]  →(100000000≤aa[1])/erro   ⍝ por restricoes do APL
[ 4]  i←1 ⋄ k←aa[2] ⋄ ⎕PP←16
[ 5]  r←⍳0 ⋄ uva←aa[1]*2
[ 6] volta:→(i>aa[3])/acabou
[ 7]  uvb←⍒uva
[ 8] ufa:→(0=⍴uvb)/erro
[ 9]  →((k=⍴uvb)∨(k=1+⍴uvb))/oba
[10]  uvb←¯1↓(1↓uvb)
[11]  →ufa
[12] oba:r←r,⊃uvb
[13]  uva←(⊃uvb)*2
[14]  →(i=i←i+1)/volta
[15] acabou:
[16]  →0
[17] erro:'parametros errados'
[18]  r←aa[3]⍴¯1
-------------------------------------------------------------
[ 0]  opesq vivo780a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aux;av;lixo1;mm;qum;rr;sem;vm;aaa
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←5 ⋄ EVENTO←'PL780   '
[ 5]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 8]  FOLHALA780←ajusta80 FOLHALA780
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA780)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[11]  xk←1 ⋄ resu←0 6⍴0
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←58 80⍴' '
[14]  f←FOLHALA780
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍎VERSAOa←3.42
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[22]  esse[57;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[58;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25] uk1:rr←neumann(sem←999+?9000),4,4
[26]  →(¯1=1↑rr)/uk1
[27]  esse[8;]←80↑'Semente=',(4 0⍎sem),', k=4, $X_1$=',(4 0⍎rr[1]),', $X_2$=',(4 0⍎rr[2]),
      ', $X_3$=',(4 0⍎rr[3]),', $X_4$=',4 0⍎rr[4]
[28] uk2:rr←neumann(sem←999+?9000),4,4
[29]  →(¯1=1↑rr)/uk2
[30]  esse[9;]←80↑'Semente=',(4 0⍎sem),', k=4, $X_1$=',(4 0⍎rr[1]),', $X_2$=',(4 0⍎rr[2]),
      ', $X_3$=',(4 0⍎rr[3]),', $X_4$=',4 0⍎rr[4]
[31] uk3:rr←neumann(sem←999+?9000),4,4
[32]  →(¯1=1↑rr)/uk3
[33]  esse[10;]←80↑'Semente=',(4 0⍎sem),', k=4'
[34]  resp←resp,rr[4]
[35] uk4:rr←neumann(sem←999+?9000),4,4
[36]  →(¯1=1↑rr)/uk4
[37]  esse[11;]←80↑'Semente=',(4 0⍎sem),', k=4'
[38]  resp←resp,rr[4]
```

```
[39] ⍝------------------------------
[40]  rr←(qum←?55⍴999)fibonacci(vm←2×100+?100),4
[41]  esse[12;]←80↑5 0⍕qum[⍳14]
[42]  esse[13;]←80↑5 0⍕qum[14+⍳14]
[43]  esse[14;]←80↑5 0⍕qum[28+⍳14]
[44]  esse[15;]←80↑5 0⍕qum[42+⍳13]
[45]  esse[16;]←80↑4 0⍕vm
[46]  esse[17 18 19;]←3 80⍴80 0⍕3↑rr
[47]  rr←(qum)fibonacci(vm←2×100+?100),4
[48]  esse[20;]←80↑4 0⍕vm
[49]  resp←resp,rr[4]
[50] ⍝------------------------------
[51]  aux←21 221 421 621 821
[52]  rr←incremental(vm←999+?9000),(av←aux[?5]),1,(mm←4999+?5000),4
[53]  esse[20+⍳8;]←8 80⍴80 0⍕mm,av,1,vm,rr
[54]  rr←incremental(vm←999+?9000),(av←aux[?5]),1,(mm←4999+?5000),4
[55]  esse[28+⍳8;]←8 80⍴80 0⍕mm,av,1,vm,rr
[56]  rr←incremental(vm←999+?9000),(av←aux[?5]),1,(mm←4999+?5000),4
[57]  esse[36+⍳8;]←8 80⍴80 0⍕mm,av,1,vm,rr
[58]  rr←incremental(vm←999+?9000),(av←aux[?5]),1,(mm←4999+?5000),4
[59]  esse[44+⍳4;]←4 80⍴80 0⍕mm,av,1,vm
[60]  resp←resp,rr[4]
[61]  rr←incremental(vm←999+?9000),(av←aux[?5]),1,(mm←4999+?5000),4
[62]  esse[48+⍳4;]←4 80⍴80 0⍕mm,av,1,vm
[63]  resp←resp,rr[4]
[64]  resu←resu,[1](1,6)⍴resp
[65]  acuja←(f[;2]='#')/⍳1↑⍴f
[66]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[67]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[68]  □←(⍕xk←xk+1),'-'
[69]  →testa
[70] fim:upag←(1 0+⍴f)⍴' '
[71]  →(1=≡n)/elafa
[72]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[73]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[74]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0 8 0 8 0 8 0)⍕resu
[75]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[76]  →terminando
[77] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),7 0⍕0 1↓resu)
[78]  aaa[1;35 36]←2 0⍕CORRECAO
[79]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[80]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[81] terminando:
[82]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[83]  relat[1↑⍴relat;;]←upag
[84]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.t
      ex'
[85]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[86]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo781

```
[0]  r←abaixo p
[1]  r←p-0 1
------------------------------------------------------------
[ 0]  r←acerta xx;lin;col
[ 1]  r←5 0⍕xx
[ 2]  r[;1+5×⍳¯1+1↓⍴xx]←'&'
[ 3]  lin←1
[ 4] vv1:→(lin>1↑⍴xx)/ufa
[ 5]  col←1
```

```
[ 6] vv2:→(col>1↓⍴xx)/oza
[ 7]  →(xx[lin;col]≠0)/soma
[ 8]  r[lin;(1+5×¯1+col)+⍳4]←' '
[ 9]  →final2
[10] soma:→(999≠xx[lin;col])/final
[11]  r[lin;(1+5×¯1+col)+⍳4]←'   i'
[12]  →final2
[13] final:→(¯999≠xx[lin;col])/final2
[14]  r[lin;(1+5×¯1+col)+⍳4]←'  -i'
[15] final2:
[16]  →(col=col←col+1)/vv2
[17] oza:→(lin=lin←lin+1)/vv1
[18] ufa:
[19]  r←r,'∤'
[20]  r←r,'∤'
[21]  r←'¯-'edit r
-------------------------------------------------------------
[0]  r←acima p
[1]  r←p+0 1
-------------------------------------------------------------
[0]  r←p antes lista
[1] ⍝ p tem 2 valores, respectivamente coluna e linha
[2]  x←p[1]-1
[3] vorta:→(lista[p[2];x]≠0)/achou
[4]  x←x-1
[5]  →vorta
[6] achou:r←x,p[2]
-------------------------------------------------------------
[0]  r←h criavazia chaves
[1]  r←((h+1),chaves+2)⍴0
[2]  r[;1]←-999
[3]  r[;(1↓⍴r)]←999
[4]  r[1;]←0
-------------------------------------------------------------
[0]  r←p depois lista;x
[1] ⍝ p tem 2 valores, respectivamente coluna e linha
[2]  x←p[1]+1
[3] vorta:→(lista[p[2];x]≠0)/achou
[4]  x←x+1
[5]  →vorta
[6] achou:r←x,p[2]
-------------------------------------------------------------
[ 0]  r←h gerainstancia chaves;quais;lin;col
[ 1]  r←((h+1),chaves+2)⍴0
[ 2]  r[;1]←-999
[ 3]  r[;(1↓⍴r)]←999
[ 4]  r[1;]←0
[ 5]  quais←chaves?99
[ 6]  quais←quais[⍋quais]
[ 7]  r[2;1+⍳chaves]←quais
[ 8]  lin←2
[ 9] cc1:→(lin>h)/ajusta
[10]  col←2
[11] cc2:→(col>1+chaves)/aca0
[12]  →(r[lin;col]=0)/soma
[13]  →(1<?2)/soma
[14]  r[lin+1;col]←r[lin;col]
[15] soma:→(col=col←col+1)/cc2
[16] aca0:→(lin=lin←lin+1)/cc1
[17] ajusta:r[1↑⍴r;1+⍳chaves]←0
-------------------------------------------------------------
[ 0]  r←chave pesquisa lista;p;zzz;xxx;CT
[ 1]  CT←0
```

```
[ 2]  p←1,(¯1+1↑⍴lista)
[ 3] vv1:zzz←abaixo p
[ 4]  →(lista[zzz[2];zzz[1]]=0)/blz
[ 5]  p←abaixo p
[ 6] vv2:xxx←p depois lista
[ 7]  CT←CT+1
[ 8]  →(lista[xxx[2];xxx[1]]>chave)/achou
[ 9]  p←xxx
[10]  →vv2
[11] achou:→vv1
[12] blz:   ⍝r  ←p[1]
[13]  r←CT
-------------------------------------------------------------
[0]  r←ve l
[1]  r←⌽[1]l
[2]  r←¯1 0↓r
-------------------------------------------------------------
[ 0]  opesq vivo781a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;caso;x;resu;quic;resultado
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←1 ⋄ EVENTO←'PL781   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA781←ajusta80 FOLHALA781
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA781)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[12]  xk←1 ⋄ resu←0 2⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←14 80⍴' '
[15]  f←FOLHALA781
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.12
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23] inica:
[24]  esse[7+⍳6;]←6 80↑acerta ve caso←6 gerainstancia 12
[25]  quic←?99
[26]  resultado←quic pesquisa caso
[27]  esse[14;]←80↑4 0⍕quic
[28]  resu←resu,[1]1 2⍴resp,resultado
[29]  acuja←(f[;2]='#')/⍳1↑⍴f
[30]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[31]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[32]  ⍞←(⍕xk←xk+1),'-'
[33]  →testa
[34] fim:upag←(1 0+⍴f)⍴' '
[35]  →(1=≡n)/elafa
[36]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[37]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[38]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0)⍕resu
[39]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[40]  →terminando
[41] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),5 0⍕0 1↓resu)
[42]  aaa[1;35 36]←2 0⍕CORRECAO
[43]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.gpa')
```

```
[44]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[45] terminando:
[46]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[47]  relat[1↑⍴relat;;]←upag
[48]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[49] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[50]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.tex'
[51]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[52]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo782

```
[ 0]  AVISO
[ 1]  'Para demonstrar aos alunos, faca:'
[ 2]  ''
[ 3]  ' jogou 1'
[ 4]  'a interpretacao: NMG NMP MG MP          '
[ 5]  'a masseratti esta em m=2               '
[ 6]  'o fregues escolheu f=2                '
[ 7]  'as portas ruins sao ruins=1 3        '
[ 8]  'foi aberta a porta mostra=3         '
[ 9]  'a porta fechada ruim ainda e a nm=1'
[10]  'nao mudou e ganhou'
[11]  '1 0 0 0    -> naomudganhou naomudperdeu mudouganh mudouperd'
[12]  'dai, faca 1000 simulaçoes:'
[13]  'testaporta 1000'
[14]  '158 352 318 172 '
[15]  ''
[16]  'agora as questoes de prova'
[17]  '1000 testaquest 5000 '
[18]  ' 1000 simulaçoes com um tamanho de banco de dados de 5000 questoes'
[19]  '575 425                '
[20]  ' resposta => NAO houve questoes repetidas, HOUVE questoes repetidas'
[21]  ''
[22]  'importante: o primeiro numero deve ser 1000,10000,1000000,...'
[23]  '----------------------------------------'
[24]  'para gerar folhas, nao esqueca de travar a lingua do testaquest'
[25]  'colocando dentro dele MOSTRA←0'
------------------------------------------------------------
[ 0]  r←jogou aa;m;f;ruins;mostra;nm
[ 1]  r←4⍴0
[ 2]  m←?3
[ 3]  →(aa≠1)/ola1
[ 4]  'a interpretacao: 1=NMG  2=NMP  3=MG  4=MP'
[ 5]  'a ferrari esta em =',(⍕m),'         mas o fregues nao sabe disso'
[ 6] ola1:
[ 7]  f←?3
[ 8]  →(aa≠1)/ola2
[ 9]  'o fregues escolheu =',(⍕f),'        mas esta porta ainda nao e aberta'
[10] ola2:
[11]  →(m=f)/coincidiu
[12] naocoincidiu:
[13]  ruins←(m≠⍳3)/⍳3
[14]  →(aa≠1)/ola3
[15]  'as portas ruins sao =',⍕ruins
[16] ola3:
[17]  mostra←(ruins≠f)/ruins
[18]  →(aa≠1)/ola4
[19]  'foi aberta a porta =',⍕mostra
[20] ola4:
[21]  nm←(mostra≠ruins)/ruins
```

```
[22]  →(aa≠1)/ola5
[23]  'a porta fechada ruim ainda eh a =',⍕nm
[24] ola5:
[25]  →decide
[26] decide:→(2=?2)/muda
[27] naomuda:
[28]  →(aa≠1)/ola6
[29]  ' o fregues nao mudou de porta'
[30] ola6:
[31]  →(f=m)/ok1
[32] ok2:
[33]  →(aa≠1)/ola7
[34]  'perdeu'
[35] ola7:
[36]  r←0 1 0 0
[37]  →0
[38] ok1:
[39]  →(aa≠1)/ola8
[40]  'ganhou'
[41] ola8:
[42]  r←1 0 0 0
[43]  →0
[44] muda:
[45]  →(aa≠1)/ola9
[46]  'fregues MUDOU de porta'
[47] ola9:
[48]  f←m
[49]  →(aa≠1)/ola11
[50]  'ganhou'
[51] ola11:
[52]  r←0 0 1 0
[53]  →0
[54] coincidiu:
[55]  ruins←(m≠⍳3)/⍳3
[56]  →(aa≠1)/ola21
[57]  'as portas ruins sao =',⍕ruins
[58] ola21:
[59]  mostra←ruins[?2]
[60]  →(aa≠1)/ola22
[61]  'foi aberta a porta =',⍕mostra
[62] ola22:
[63]  nm←(mostra≠ruins)/ruins
[64]  →(aa≠1)/ola23
[65]  'a porta fechada ruim ainda e a =',⍕nm
[66] ola23:
[67]  →decide22
[68] decide22:
[69]  →(2=?2)/ufa
[70]  →(aa≠1)/ola24
[71]  'nao mudou e ganhou'
[72] ola24:
[73]  r←1 0 0 0
[74]  →0
[75] ufa:
[76]  →(aa≠1)/ola25
[77]  'mudou  e perdeu'
[78] ola25:
[79]  r←0 0 0 1
-------------------------------------------------------------
[0]  testaporta qtos;r;i
[1]  r←4⍴0
[2]  i←1
[3] t1:→(i>qtos)/fim
```

```
[4]  r←r+jogou 0
[5]  i←i+1
[6]  →t1
[7] fim:r
-------------------------------------------------------------
[ 0]  r←qtd testaquest tbd;ctn;cts;i;p1;p2;MOSTRA
[ 1]  MOSTRA←1
[ 2]  →(MOSTRA=0)/oba
[ 3]  'serao geradas ',(⍕qtd),' simulacoes'
[ 4]  'com um BD contendo ',(⍕tbd),' questoes'
[ 5] oba:
[ 6]  ctn←cts←0
[ 7]  i←1
[ 8] t1:→(i>qtd)/acabou
[ 9]  p1←50?tbd
[10]  p2←50?tbd
[11]  →(∨/p1∈p2)/sim
[12] nao:ctn←ctn+1
[13]  →novo
[14] sim:cts←cts+1
[15]  →novo
[16] novo:
[17]  i←i+1
[18]  →t1
[19] acabou:r←ctn,cts
[20]  →(MOSTRA=0)/0
[21]  'Houve ',(⍕cts),' casos com duplicidade de questoes'
[22]  'e ',(⍕ctn),' casos em que as 2 provas nao repetiram questoes'
-------------------------------------------------------------
[ 0]  opesq vivo782a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;nomes;num
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL782   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA782←ajusta80 FOLHALA782
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA782)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 2⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←20 80⍴' '
[16]  f←FOLHALA782
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.01
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:
[28]  esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
```

```
[32]  esse[19;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[20;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] ini1:
[35]  esse[8;]←80↑'1'
[36]  esse[9;]←80↑'1'
[37]  esse[10;]←80↑'1'
[38]  esse[11;]←80↑'1'
[39]  esse[12;]←80↑'1'
[40]  resu←resu,[1]1 2⍴resp
[41]  acuja←(f[;2]='#')/⍳1↑⍴f
[42]  f[acuja;]←esse[⍬,f[acuja;3 4],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[44]  ⎕←(⍕xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+⍴f)⍴' '
[47]  →terminando
[48]  →(1=≡n)/elafa
[49]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[50]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[51]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←4 0 8 0)⍕resu
[52]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[53]  →terminando
[54] elafa:aaa←(ylu[;⍳36],4 0⍕0 1↓resu)
[55]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[56]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[57] terminando:
[58]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[59]  relat[1↑⍴relat;;]←upag
[60]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[61] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[62]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[63]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'    (.tex)'
------------------------------------------------------------
```

vivo785

```
[ 0]  opesq vivo175a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL175   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA175←ajusta80 FOLHALA175
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA175)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALA175
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
```

```
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34] ⍝ xx←geracaso
[35] ⍝ esse[7+⍳3;]←3 80↑acertaca xx
[36] ⍝ resp←resp,,xx[2 3;5]
[37]  resu←resu,[1]1 3⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⍞←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍕resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[51]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo785a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL785   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA785←ajusta80 FOLHALA785
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA785)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALA785
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
```

```
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34] ⍝ xx←geracaso
[35] ⍝ esse[7+⍳3;]←3 80↑acertaca xx
[36] ⍝ resp←resp,,xx[2 3;5]
[37]  resu←resu,[1]1 3⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍤,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⍞←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍕resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[51]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex)'
------------------------------------------------------------
```

vivo790

```
[0]  r←achafonpkan frase;x;i
[1]  x←qubv frase
[2]  r←''
[3]  i←1
[4] t1:→(i>⍴x)/fim
[5]  r←r,(fonpkan,⊃x[i]),' '
[6]  i←i+1
[7]  →t1
[8] fim:
------------------------------------------------------------
[0]  r←achasoundex frase;x;i
[1]  x←qubv frase
[2]  r←''
[3]  i←1
[4] t1:→(i>⍴x)/fim
[5]  r←r,(soundex,⊃x[i]),' '
[6]  i←i+1
[7]  →t1
[8] fim:
------------------------------------------------------------
[ 0]  r←fonpkan nome;cons;j;i
[ 1]  cons←'BCDFGHJKLMNPQRSTVWXYZ'
```

```
[ 2]  i←⍴nome
[ 3]  →(0=i)/fim2
[ 4] t1:→(i<1)/fim
[ 5]  →(~nome[i]∈cons)/fim
[ 6]  nome←¯1↓nome
[ 7]  i←i-1
[ 8]  →t1
[ 9] fim:i←1
[10] t2:→(i>⍴nome)/fim2
[11]  →(nome[i]=' ')/soma
[12]  →((i+2)>⍴nome)/procura2
[13] procura3:j←1
[14] t7:→(j>1↑⍴tabpkan3)/procura2
[15]  →(3=+/nome[i,(i+1),i+2]=tabpkan3[j;1 2 3])/subs3
[16]  j←j+1
[17]  →t7
[18] subs3:nome←((i-1)↑nome),tabpkan3[j;4 5 6],(i+2)↓nome
[19]  j←j+1
[20]  →t7
[21] procura2:
[22]  →((i+1)>⍴nome)/procura1
[23]  j←1
[24] t6:→(j>1↑⍴tabpkan2)/procura1
[25]  →(2=+/nome[i,i+1]=tabpkan2[j;1 2])/subs2
[26]  j←j+1
[27]  →t6
[28] subs2:nome←((i-1)↑nome),tabpkan2[j;4 5 6],(i+1)↓nome
[29]  j←j+1
[30]  →t6
[31] procura1:j←1
[32] t5:→(j>1↑⍴tabpkan1)/soma
[33]  →(nome[i]=tabpkan1[j;1])/subs1
[34]  j←j+1
[35]  →t5
[36] subs1:nome←((i-1)↑nome),tabpkan1[j;4 5 6],i↓nome
[37]  j←j+1
[38]  →t5
[39] soma:i←i+1
[40]  →t2
[41] fim2:r←(nome≠' ')/nome
-------------------------------------------------------------
[ 0]  r←gerainst;x;zz
[ 1]  r←6 31⍴' '
[ 2]  x←4+2?31
[ 3]  r[1;]←31↑zz←PAS[x[1];]
[ 4]  r[2;]←31↑achasoundex zz
[ 5]  r[3;]←31↑achafonpkan zz
[ 6]  r[4;]←31↑zz←PAS[x[2];]
[ 7]  r[5;]←31↑achasoundex zz
[ 8]  r[6;]←31↑achafonpkan zz
-------------------------------------------------------------
[0]  r←qubv x
[1]  r←⍪∈''''',x,↑''''((x=' ')/x)←⊂''' '''
-------------------------------------------------------------
[ 0]  r←soundex nome;qt;i
[ 1]  QT←qt←⍉2 26⍴'AEIOUHWYBFPVCGJKQSXZDTLMNR00000000011112222222233455 6'
[ 2]  →(' '∈nome)/erro
[ 3]  r←40⍴' '
[ 4]  →(0=⍴nome)/f3
[ 5]  r[1]←nome[1]
[ 6]  i←2
[ 7] t1:→(i>⍴nome)/f1
[ 8]  r[i]←qt[qt[;1]⍳nome[i];2]
```

```
[ 9]  →(i=i←i+1)/t1
[10] f1:
[11]  i←2
[12] t2:→(i>ρr)/f2
[13]  →(r[i-1]=r[i])/iguais
[14]  i←i+1
[15]  →t2
[16] iguais:r←((i-1)↑r),i↓r
[17]  i←i+1
[18]  →t2
[19] f2:r←(r≠' ')/r
[20]  r←4↑((r≠'0')/r),'000'
[21]  →0
[22] erro:'Existe espaco no nome, reentre'
[23]  →0
[24] f3:r←''
[25]  →0
------------------------------------------------------------
[ 0]  opesq vivo790a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;num;relat
      ;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←8 ⋄ EVENTO←'PL790   '
[ 6]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕⍳n
[ 9]  FOLHALA790←ajusta80 FOLHALA790
[10]  relat←((2+1↑ρylu),1 47+ρFOLHALA790)ρ' '
[11]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 127ρ''
[13] testa:→(xk>1↑ρylu)/fim
[14]  esse←9 127ρ' '
[15]  f←((1↑ρFOLHALA790),127)↑FOLHALA790
[16]  esse[1;]←127↑dhx[1;]
[17]  esse[2;]←127↑dhx[2;]
[18]  esse[3;]←127↑4 2⍕VERSAOa←1.01
[19]  esse[4;]←127↑ylu[xk;⍳6]
[20]  esse[5;]←127↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←127↑(3 0⍕resp←xk),' ',opesq
[23] ini1:
[24]  kk←gerainst
[25]  esse[8;]←127↑kk[1;]
[26]  esse[9;]←127↑kk[4;]
[27]  resu←resu,[1]1 127ρ(3 0⍕resp),,kk[2 3 5 6;]
[28]  acuja←(f[;2]='#')/⍳1↑ρf
[29]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[30]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\newpage'
[31]  ⍞←(⍕xk←xk+1),'-'
[32]  →testa
[33] fim:upag←(1 0+ρf)ρ' '
[34]  →(1=≡n)/elafa
[35]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[36]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[37]  upag[2+⍳1↑ρresu;]←resu
[38]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[39]  →terminando
[40] elafa:aaa←(ylu,(((1↑ρylu),4)ρ' 0.0'),0 1↓resu)
[41]  aaa[1;35 36]←2 0⍕CORRECAO
[42]  lixonol←aaa ΔFM('c:\apl2\',((~⍬∧\⍬EVENTO=' ')/EVENTO),'.gpa')
```

```
[43]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[44] terminando:
[45]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[46]  relat[1↑⍴relat;;]←upag
[47]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[48] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[49]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[50]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo798

```
[ 0]  opesq vivo798a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;caso;oba2
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL798   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA798←ajusta80 FOLHALA798
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA798)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 0⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←7 80⍴' '
[15]  f←FOLHALA798
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23] inica:
[24]  acuja←(f[;2]='#')/⍳1↑⍴f
[25]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[26]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[27]  ⍞←(⍕xk←xk+1),'-'
[28]  →testa
[29] fim:
[30] terminando:
[31]  relat[1↑⍴relat;1↑1↓⍴relat;]←80↑'\end{document}'
[32]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[33] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[34]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[35]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[36]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo799

vivo802

```
[0]  AVISO;aspa
[1]  aspa←''''
```

```
[2]  'Para executar, chame:'
[3]  'MUL2UN simula ',aspa,'00000000000011100000000000000000'
[4]  'multiplica o 3 (111) por 2, dando 6 (111111)'
[5]  'ou'
[6]  ' MDCUN simula ',aspa,'000000000000110111100000000000000000000000',aspa
[7]  ' acha o MDC entre dois numeros unarios. acima: 2 e 4'
[8] ⍝ MDCUN simula '000000000000110111100000000000000000000000'
------------------------------------------------------------
[ 0]  como_simula;aspa
[ 1]  aspa←''''
[ 2]  '  As variaveis usadas na simulacao tem:'
[ 3]  '  col 1 = estado atual '
[ 4]  '  col 2 = o que chega'
[ 5]  '  col 3 = escreve o que (so eh relevante se for diferente da entrada)'
[ 6]  '  col 4 = anda (21=D, 22=E, 23=Pare) '
[ 7]  '  col 5 = vai para o estado ...'
[ 8]  'Para executar, chame:'
[ 9]  ' MDCUN simula ',aspa,'000000000000110111100000000000000000000000',aspa
------------------------------------------------------------
[0]  r←geracaso
[1] denovo:r←(?7),¯1+?5⍴2
[2]  →((r[1]=6)∧(r[2]=0))/denovo
------------------------------------------------------------
[0]  r←gfitalea
[1]  r←46⍴'0'
[2]  r[10+10?26]←'1'
------------------------------------------------------------
[0]  r←linha x
[1]  r←(x=¯1+⍳8)/1 3 5 7 9 11 13 14
------------------------------------------------------------
[ 0]  rx←mtalea t;i;r
[ 1]  r←(t,5)⍴0
[ 2]  r[;1]←t↑⌊0.5×¯1+⍳2×t
[ 3]  r[;2]←t⍴0 1
[ 4]  i←1
[ 5] t1:→(i>t)/fim
[ 6]  r[i;3]←((probv 0.45),r[i;2])[?2]
[ 7]  r[i;4]←(22 21)[1+probv 0.35]
[ 8]  r[i;5]←(,r[;1])[?t]
[ 9]  i←i+1
[10]  →t1
[11] fim:r[(2?t);4]←23
[12]  r[1;]←0 0 0 21 0
[13]  rx←r[;1 2 5 3 4]
------------------------------------------------------------
[0]  r←probv x;y;z
[1]  y←⌊x×100
[2]  z←((y)⍴1),100⍴0
[3]  r←z[?100]
------------------------------------------------------------
[ 0]  ref;i;j;k;candi;qt;zz;r
[ 1]  zz←ΔFM'f:/infoland/lixo1234'
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10]  →(0=' 'ϵj↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
```

```
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80⍴80↑j↑candi
[15]  candi←j↓candi
[16]  →((⍴candi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80⍴80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
[22]  y←r
-------------------------------------------------------------
[ 0]  r←resolve caso;i;ne
[ 1] ⍝ caso[1] estado atual; caso[2 3 4 5 6] entradas
[ 2]  →((caso[1]=6)∧(caso[2]=0))/erro
[ 3]  i←2
[ 4]  ne←caso[1]
[ 5] vorta:→(i>⍴caso)/fim
[ 6] ⍝ 'ne=',⍕ne
[ 7]  ne←MTX[caso[i]+linha ne;3]
[ 8] ⍝ '                                                dne=',⍕ne
[ 9]  →(i=⍴caso)/fim
[10]  →((MTX[caso[i+1]+linha ne;5]=3)∧(MTX[caso[i+1]+linha ne;2]=caso[i+1]))/pare
[11]  →(i=i←i+1)/vorta
[12] fim:r←ne
[13]  →0
[14] pare:r←¯2   ⍝ PARE
[15]  →0
[16] erro:r←¯1
[17]  →0
-------------------------------------------------------------
[ 0]  r←maq simula fita;i;estatua;pmaq;ctx
[ 1] ⍝ PARADA←1
[ 2]  'simulador de MT - P.kantek - 08/2004 - ea=estado atual'
[ 3] ⍝ maq eh matriz m,15, caracter e fita eh a entrada tambem caracter. Cada
[ 4] ⍝ coluna ocupa 3 caracteres. a maq sempre comeca no estado zero.
[ 5] ⍝ maq=estado,chega,escreve,anda,vaipara. Anda pode ser: D=21, E=22, P=23
[ 6] ⍝ maq
[ 7]  ctx←0
[ 8]  i←1
[ 9]  estatua←'0'
[10] f1:
[11]  ctx←ctx+1
[12]  →(i>⍴fita)/erro
[13]  →(i<1)/erro
[14]  →(PARADA≠1)/vua
[15]  lixo←⍞
[16] vua:
[17]  (4 0⍕ctx),' fita=',fita,' ea=',⍪estatua
[18]  '          ',((i-1)⍴' '),'¯'
[19]  pmaq←((⍪,maq[;1 2 3],' ')=⍪estatua)/[1]maq
[20] ⍝ pmaq: as 2 saidas para o estado atual
[21]  →(fita[i]='1')/eum
[22] ezero:fita[i]←pmaq[1;9]
[23]  →((⍪pmaq[1;10 11 12])=23)/acabou
[24]  →(21=⍪pmaq[1;10 11 12])/edir
[25] eesq:i←i-1
[26]  →pula1
[27] edir:i←i+1
[28] pula1:estatua←pmaq[1;13 14 15]
[29]  →f1
[30] eum:fita[i]←pmaq[2;9]
[31]  →((⍪pmaq[2;10 11 12])=23)/acabou
[32]  →(21=⍪pmaq[2;10 11 12])/mdir
```

```
[33] mesq:i←i-1
[34]  →mpul
[35] mdir:i←i+1
[36] mpul:estatua←pmaq[2;13 14 15]
[37]  →f1
[38] acabou:r←'resu=',fita
[39]  →0
[40] erro:'coloque muitos zeros na frente e atras...'
-------------------------------------------------------------
[ 0]  r←maq simulalea fita;i;estatua;pmaq;ctx
[ 1] ⍝ funcao baseada na simula (convencional), mas que devolve
[ 2] ⍝ quantos ciclos a maquina demora para parar.
[ 3] ⍝ Caso 200 ciclos sejam atingidos sem que a maquina pare, ela retorna -1.
[ 4] ⍝ se a fita acabar, ela tambem termina com -1
[ 5]  ctx←0
[ 6]  i←1
[ 7]  estatua←'0'
[ 8] f1:
[ 9]  →(ctx≥200)/er200
[10]  ctx←ctx+1
[11]  →(i>⍴fita)/erro
[12]  →(i<1)/erro
[13] ⍝ (4 0⍕ctx),' fita=',fita,' ea=',⍪estatua
[14] ⍝ '          ',((i-1)⍴' '),'¯'
[15]  pmaq←((⍪,maq[;1 2 3],' ')=⍪estatua)/[1]maq
[16] ⍝ pmaq: as 2 saidas para o estado atual
[17]  →(fita[i]='1')/eum
[18] ezero:fita[i]←pmaq[1;9]
[19]  →((⍪pmaq[1;10 11 12])=23)/acabou
[20]  →(21=⍪pmaq[1;10 11 12])/edir
[21] eesq:i←i-1
[22]  →pula1
[23] edir:i←i+1
[24] pula1:estatua←pmaq[1;13 14 15]
[25]  →f1
[26] eum:fita[i]←pmaq[2;9]
[27]  →((⍪pmaq[2;10 11 12])=23)/acabou
[28]  →(21=⍪pmaq[2;10 11 12])/mdir
[29] mesq:i←i-1
[30]  →mpul
[31] mdir:i←i+1
[32] mpul:estatua←pmaq[2;13 14 15]
[33]  →f1
[34] acabou:⍝r←'resu=',fita
[35]  r←ctx
[36]  →0
[37] erro:r←-1
[38] ⍝'coloque muitos zeros na frente e atras...'
[39]  →0
[40] er200:
[41]  r←200
-------------------------------------------------------------
[ 0]  opesq vivo802a n;CORRECAO;EVENTO;aaa;acuja;caso;dhx;esse;f;fi;lixo1;lixonol;nomes;ob
      a2;ql39;qlinha;relat;resp;resu;rr;upag;xixo;xk;xx;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL802   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
```

```
[ 9]  ylu←n grupo ylu
[10]  FOLHALA802←ajusta80 FOLHALA802
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA802)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←36 80⍴' '
[16]  f←FOLHALA802
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←3.27
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:
[28]  esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[32]  esse[35;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[36;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] inica:
[35]  oba2←resolve caso←geracaso
[36]  esse[7+⍳6;]←6 80⍴80 0⍕caso
[37]  resp←resp,oba2
[38]  xx←3 0⍕mtalea 20
[39]  fi←gfitalea
[40]  rr←xx simulalea fi
[41]  resp←resp,rr
[42]  esse[13+⍳20;]←20 80↑0 6↓xx
[43]  esse[34;]←80↑fi
[44]  resu←resu,[1]1 3⍴resp
[45]  acuja←(f[;2]='#')/⍳1↑⍴f
[46]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[47]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[48]  ⍞←(⍕xk←xk+1),'-'
[49]  →testa
[50] fim:upag←(1 0+⍴f)⍴' '
[51]  →(1=≡n)/elafa
[52]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[53]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[54]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←5 0 10 0 4 0)⍕¯2 99 edit resu
[55]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[56]  →terminando
[57] elafa:aaa←(ylu[;⍳36],'¯-'edit 5 0⍕¯2 99 edit 0 1↓resu)
[58]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[59]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[60] terminando:
[61]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[62]  relat[1↑⍴relat;;]←upag
[63]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[64] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[65]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[66]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[67]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo805

```
[0]  AVISO
[1]  'Este ws foi modificado: ao inves de 1 folha por aluno,'
[2]  ' agora ele emite 6 folhas distribuindo os alunos entre elas'
-------------------------------------------------------------
[ 0]  opesq vivo805a n;CORRECAO;EVENTO;aaa;acuja;caso;cores;dhx;esse;f;j;k;lixo1;lixonol;o
      ba2;relat;resp;resu;upag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:
[ 4]  cores←6 12⍴(12↑'azul'),(12↑'vermelha'),(12↑'verde'),(12↑'amarela'),(12↑'cinza'),12↑'
      laranja'
[ 5]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 6]  CORRECAO←0 ⋄ EVENTO←'PL805   '
[ 7]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 9]  →(~isnum n)/1+⎕LC ⋄ n←6⌈n ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[10]  ylu←(((⌈6×(1↑⍴ylu)÷6),36)↑ylu
[11]  FOLHALA805←ajusta80 FOLHALA805
[12]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA805)⍴' '
[13]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[14]  xk←1 ⋄ resu←0 0⍴0
[15] testa:→(xk>6)/fim
[16]  esse←18 80⍴' '
[17]  f←FOLHALA805
[18]  esse[1;]←80↑dhx[1;]
[19]  esse[2;]←80↑dhx[2;]
[20]  esse[3;]←80↑4 2⍎VERSAOa←3.04
[21] ⍝ esse[4;]←80↑ylu[xk;⍳6]     mudado para deixar de imprimir o
[22] ⍝ esse[5;]←80↑ylu[xk;6+⍳30]  "antigo" dono desta folha.
[23]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[24]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[25]  esse[8;]←80↑cores[xk;]
[26]  j←xk
[27]  k←1
[28] t1:→(j>1↑⍴ylu)/inica
[29]  esse[8+k;]←80↑ylu[j;]
[30]  j←j+6
[31]  k←k+1
[32]  →t1
[33] inica:
[34]  acuja←(f[;2]='#')/⍳1↑⍴f
[35]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[36]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[37]  ⍞←(⍎xk←xk+1),'-'
[38]  →testa
[39] fim:
[40] terminando:
[41]  relat[1↑⍴relat;1↑1↓⍴relat;]←80↑'\end{document}'
[42]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[43] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[44]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[45]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[46]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo807

```
[0]  r←geracaso807;x
[1]  r←4⍴0
```

```
[2]  r[1]←⊂x←gerasta 4 4
[3]  r[2]←⊂+/,novosta x
[4]  r[3]←⊂x←gerasta 15 15
[5]  r[4]←⊂+/,novosta x
------------------------------------------------------------
[0]  r←gerasta t;vv
[1]  vv←((×/t)⍴1),(×/t)⍴6
[2]  vv←?vv
[3]  vv←vv[(⍴vv)?⍴vv]
[4]  vv←vv-1
[5]  r←t⍴vv
------------------------------------------------------------
[ 0]  r←novosta x;tabs;y;i;j;k;z1;z2
[ 1]  tabs←56 6⍴0    ⍝ 9 significa don't care
[ 2]  r←(2 2+⍴x)⍴0
[ 3]  tabs[1;]←0 0 0 0 3 1
[ 4]  tabs[2;]←0 0 0 1 2 2
[ 5]  tabs[3;]←0 0 0 1 3 1
[ 6]  tabs[4;]←0 0 0 1 5 2
[ 7]  tabs[5;]←0 0 0 2 5 5
[ 8]  tabs[6;]←0 0 0 3 1 5
[ 9]  tabs[7;]←0 0 0 3 2 3
[10]  tabs[8;]←0 0 0 4 2 2
[11]  tabs[9;]←1 0 0 0 0 0
[12]  tabs[10;]←1 0 0 0 1 0
[13]  tabs[11;]←1 0 0 0 3 3
[14]  tabs[12;]←1 0 0 0 4 0
[15]  tabs[13;]←1 0 0 3 3 0
[16]  tabs[14;]←1 0 0 4 3 1
[17]  tabs[15;]←1 0 3 2 1 3
[18]  tabs[16;]←1 1 2 5 3 1
[19]  tabs[17;]←1 2 4 5 3 3
[20]  tabs[18;]←2 0 0 0 0 0
[21]  tabs[19;]←2 0 0 1 5 5
[22]  tabs[20;]←2 0 0 2 2 0
[23]  tabs[21;]←2 0 2 0 2 0
[24]  tabs[22;]←2 0 2 1 5 5
[25]  tabs[23;]←2 0 2 3 5 3
[26]  tabs[24;]←2 0 2 5 2 5
[27]  tabs[25;]←3 0 0 0 1 0
[28]  tabs[26;]←3 0 0 0 3 0
[29]  tabs[27;]←3 0 0 1 1 0
[30]  tabs[28;]←3 0 0 1 2 1
[31]  tabs[29;]←3 0 1 2 1 1
[32]  tabs[30;]←3 0 1 2 3 1
[33]  tabs[31;]←3 1 1 2 2 1
[34]  tabs[32;]←3 1 1 2 3 1
[35]  tabs[33;]←3 1 2 1 5 1
[36]  tabs[34;]←3 1 2 2 3 1
[37]  tabs[35;]←3 1 2 3 3 1
[38]  tabs[36;]←3 1 2 3 5 5
[39]  tabs[37;]←3 1 4 3 2 1
[40]  tabs[38;]←3 1 4 5 2 5
[41]  tabs[39;]←4 0 0 0 3 5
[42]  tabs[40;]←4 0 0 4 3 4
[43]  tabs[41;]←4 0 2 1 2 4
[44]  tabs[42;]←4 0 2 3 2 4
[45]  tabs[43;]←4 0 2 4 2 4
[46]  tabs[44;]←4 0 2 5 2 0
[47]  tabs[45;]←4 0 3 2 5 5
[48]  tabs[46;]←5 0 0 2 2 5
[49]  tabs[47;]←5 0 0 3 2 5
[50]  tabs[48;]←5 0 2 1 2 4
```

```
[51]  tabs[49;]←5 0 2 2 2 0
[52]  tabs[50;]←5 0 3 2 2 0
[53]  tabs[51;]←0 9 9 9 9 0
[54]  tabs[52;]←1 9 9 9 9 4
[55]  tabs[53;]←2 9 9 9 9 2
[56]  tabs[54;]←3 9 9 9 9 3
[57]  tabs[55;]←4 9 9 9 9 3
[58]  tabs[56;]←5 9 9 9 9 2
[59]  y←0,[1](0,x,0),[1]0
[60]  i←2
[61] t1:→(i≥1↑⍴y)/fim
[62]  j←2
[63] t2:→(j≥1↓⍴y)/soma
[64]  z1←y[i;j],y[i-1;j],y[i;j+1],y[i+1;j],y[i;j-1]
[65]  z2←y[i;j],9,9,9,9
[66]  k←1
[67] t3:→((5=+/z1=tabs[k;⍳5])∨(5=+/z2=tabs[k;⍳5]))/achou
[68]  k←k+1
[69]  →t3
[70] achou:r[i;j]←tabs[k;6]
[71]  j←j+1
[72]  →t2
[73] soma:
[74]  i←i+1
[75]  →t1
[76] fim:r←1 1↓¯1 ¯1↓r
-------------------------------------------------------------
[ 0]  opesq vivo807a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL807   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA807←ajusta80 FOLHALA807
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA807)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←28 80⍴' '
[16]  f←FOLHALA807
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.06
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[27;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[28;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
```

```
[34]  xx←geracaso807
[35]  esse[7+⍳4;]←4 80↑3 0⍕⊃xx[1]
[36]  resp←resp,,⊃xx[2]
[37]  esse[11+⍳15;]←15 80↑2 0⍕⊃xx[3]
[38]  resp←resp,,⊃xx[4]
[39]  resu←resu,[1]1 3⍴resp
[40]  acuja←(f[;2]='#')/⍳1↑⍴f
[41]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[42]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[43]  ⍞←(⍕xk←xk+1),'-'
[44]  →testa
[45] fim:upag←(1 0+⍴f)⍴' '
[46]  →(1=≡n)/elafa
[47]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[48]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[49]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍕resu
[50]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[51]  →terminando
[52] elafa:aaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[53]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[54]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[55] terminando:
[56]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[57]  relat[1↑⍴relat;;]←upag
[58]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[59]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[60]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[61]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo809

```
[ 0]  opesq vivo809a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;caso;oba2
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL809   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA809←ajusta80 FOLHALA809
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA809)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 0⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←9 80⍴' '
[15]  f←FOLHALA809
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.02
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[8;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[9;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  acuja←(f[;2]='#')/⍳1↑⍴f
[27]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
```

```
[28]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\newpage'
[29]  ⍞←(⍕xk←xk+1),'-'
[30]  →testa
[31] fim:
[32] terminando:
[33]  relat[1↑ρrelat;1↑1↓ρrelat;]←80↑'\end{document}'
[34]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[35] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[36]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[37]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[38]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'    .tex - nao ha GPA'
------------------------------------------------------------
```

vivo810

```
[ 0]  opesq vivo810a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo810 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10ρ' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PL810   '
[ 9]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[45]  acuja←(f[;2]='#')/⍳1↑⍴f
[46]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[47]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[48]  ⎕←(⍕xk←xk+1),'-'
[49]  →testa
[50] fim:upag←(1 0+⍴f)⍴' '
[51]  →terminando ⍝ pula o processamento do arquivo GPA
[52]  →(1=≡n)/elafa
[53]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[54]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[55]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍕resu
[56]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[57]  →terminando
[58] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[59] elafa:aaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[60] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[61]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[62]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[63] terminando:
[64]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[65]  relat[1↑⍴relat;;]←upag
[66]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[67] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[68]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[69]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[70]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'.tex = NAO HA GPA'
------------------------------------------------------------
```

vivo814

```
[0]  r←acertalins x
[1]  r←3 0⍕x
[2]  r[;4 7 10 13 16 19 22]←'&'
[3]  r←r,[2]'\'
[4]  r←r,[2]'\'
------------------------------------------------------------
[ 0]  achaonde casa;i;k;j
[ 1]  i←1 ⋄ k←1
[ 2] t1:→(i>1↑⍴casa)/fim
[ 3]  j←1
[ 4] t2:→(j>1↓⍴casa)/f0
[ 5]  →(casa[i;j]≠3)/soma
[ 6]  ONDE[k;]←i,j
[ 7] ⍝ 'aspirador ',(  ⍕k),' em ', 2 0   ⍕i,j
[ 8]  k←k+1
[ 9] soma:→(j=j←j+1)/t2
[10] f0:→(i=i←i+1)/t1
[11] fim:
------------------------------------------------------------
[ 0]  ambiente k;j
[ 1]  CASA←k geracaso1 7 8
[ 2]  CUSTO←k⍴0   ⍝ custos individuais por aspirador
[ 3]  LIGADO←k⍴1   ⍝ estado de cada aspirador
[ 4]  SENSOR←(k,3)⍴0 0 1   ⍝ situacao dos 3 sensores de cada aspirador
[ 5] ⍝ a cada iteracao do "aspirador" ele mesmo atualiza
[ 6]  ONDE←(k,2)⍴0   ⍝ matriz inicial da localizacao dos 3 aspiradores
[ 7]  achaonde CASA   ⍝ preenchimento da matriz ONDE
[ 8]  ULTIMO←k⍴1   ⍝ ultima direcao seguida por cada aspirador: 1  ↑ 2  → 3  ↓ 4  ←a
[ 9] t1:→(0=∨/LIGADO)/acabou
[10]  j←1
[11] t2:→(j>k)/f8
[12]  CUSTO[j]←CUSTO[j]+aspirador j
```

```
[13]  →(j=j←j+1)/t2
[14] f8:→t1
[15] acabou:j←1
[16] t3:→(j>k)/acamesmo
[17]  →(2∈CASA)/acamesmo
[18]  CUSTO[j]←CUSTO[j]-500÷k
[19]  →(j=j←j+1)/t3
[20] acamesmo:
------------------------------------------------------------
[ 0]  r←ult anda x
[ 1] ⍝ CASA
[ 2]  →(ult=1)/norte
[ 3]  →(ult=2)/leste
[ 4]  →(ult=3)/sul
[ 5]  →(ult=4)/oeste
[ 6] erro:'deu zebra'
[ 7]  →0
[ 8] norte:
[ 9]  →(CASA[ONDE[x;1]-1;ONDE[x;2]]=1)/oban
[10]  CASA[ONDE[x;1];ONDE[x;2]]←1   ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝
      ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝
[11]  ONDE[x;]←ONDE[x;]-1 0
[12]  →(CASA[ONDE[x;1];ONDE[x;2]]≠2)/fim
[13]  SENSOR[x;2]←1
[14]  →fim
[15] oban:SENSOR[x;1]←1
[16]  →fim
[17] leste:
[18]  →(CASA[ONDE[x;1];ONDE[x;2]+1]=1)/obal
[19]  CASA[ONDE[x;1];ONDE[x;2]]←1   ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝
      ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝
[20]  ONDE[x;]←ONDE[x;]+0 1
[21]  →(CASA[ONDE[x;1];ONDE[x;2]]≠2)/fim
[22]  SENSOR[x;2]←1
[23]  →fim
[24] obal:SENSOR[x;1]←1
[25]  →fim
[26] sul:
[27]  →(CASA[ONDE[x;1]+1;ONDE[x;2]]=1)/obas
[28]  CASA[ONDE[x;1];ONDE[x;2]]←1   ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝
      ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝
[29]  ONDE[x;]←ONDE[x;]+1 0
[30]  →(CASA[ONDE[x;1];ONDE[x;2]]≠2)/fim
[31]  SENSOR[x;2]←1
[32]  →fim
[33] obas:SENSOR[x;1]←1
[34]  →fim
[35] oeste:
[36]  →(CASA[ONDE[x;1];ONDE[x;2]-1]=1)/obao
[37]  CASA[ONDE[x;1];ONDE[x;2]]←1   ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝
      ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝  ⍝
[38]  ONDE[x;]←ONDE[x;]-0 1
[39]  →(CASA[ONDE[x;1];ONDE[x;2]]≠2)/fim
[40]  SENSOR[x;2]←1
[41]  →fim
[42] obao:SENSOR[x;1]←1
[43]  →fim
[44] fim:
------------------------------------------------------------
[ 0]  r←aspirador x;custo;aa
[ 1] ⍝ 'sensor ',  ⍕SENSOR[x;]
[ 2] ⍝ 'onde   ',  ⍕ONDE[x;]
[ 3]  →(SENSOR[x;3]≠1)/oba
```

```
[ 4]  ⍎'CAMINHO',(1 0⍕x),'  ←0  ⍴0'
[ 5]  SENSOR[x;3]←0
[ 6] oba:custo←0
[ 7]  →(SENSOR[x;1]≠1)/conta1
[ 8]  aa←ULTIMO[x]←1+4|ULTIMO[x]
[ 9]  ⍎'CAMINHO',(1 0⍕x),'  ←CAMINHO',(1 0⍕x),',aa,ONDE[',(1 0⍕x),';]'
[10]  SENSOR[x;1]←0
[11]  custo←0
[12]  →aca
[13] conta1:→(SENSOR[x;2]≠1)/conta2
[14]  pulso x
[15]  custo←1
[16]  →aca
[17] conta2:
[18]  aa←ULTIMO[x]
[19]  ULTIMO[x]anda x
[20]  ⍎'CAMINHO',(1 0⍕x),'  ←CAMINHO',(1 0⍕x),',aa,ONDE[',(1 0⍕x),';]'
[21]  custo←1
[22] aca:r←custo
[23]  →(2∈CASA)/tchau
[24]  r←custo+⍎'(  ⍴CAMINHO',(1 0⍕x),')  ÷3'
[25]  LIGADO[x]←0
[26] tchau:
-------------------------------------------------------------
[ 0]  r←qt geracaso1 m;a;b;c;inds;jh
[ 1]  a←×/m
[ 2]  b←(a⍴0),(⌊0.3×a)⍴2
[ 3]  c←b[a?⍴b]
[ 4]  r←m⍴c
[ 5]  inds←4 2⍴2,2,2,(m[2]-1),(m[1]-1),2,(m[1]-1),m[2]-1
[ 6]  inds←inds[4?4;]
[ 7]  jh←1
[ 8] kuj:→(jh>qt)/aca
[ 9]  r[inds[jh;1];inds[jh;2]]←3
[10]  →(jh=jh←jh+1)/kuj
[11] aca:
[12]  r[1;]←r[m[1];]←1
[13]  r[;1]←r[;m[2]]←1
[14]  ULTIMACASA←r
[15]  →0
[16] tempo:r←lixocasa
-------------------------------------------------------------
[0]  pulso x
[1]  →(CASA[ONDE[x;1];ONDE[x;2]]≠2)/erro
[2]  CASA[ONDE[x;1];ONDE[x;2]]←0
[3]  SENSOR[x;2]←0
[4]  →0
[5] erro:'deu zebra, pois a celula contem ',⍕CASA[ONDE[x;1];ONDE[x;2]]
-------------------------------------------------------------
[ 0]  ref;i;j;k;candi;qt;zz;r
[ 1]  zz←ΔFM'f:/infoland/lixo1234'
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10]  →(0=' '∈j↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
```

```
[14] ufa:r←r,[⎕IO]1 80ρ80↑jtcandi
[15]  candi←j↓candi
[16]  →((ρcandi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80ρ80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
[22]  y←r
------------------------------------------------------------
[ 0]  opesq vivo814a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←1 ⋄ EVENTO←'PL814   '
[ 6]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕⍳n
[ 9]  FOLHALA814←ajusta80 FOLHALA814
[10]  relat←((2+1↑ρylu),1 0+ρFOLHALA814)ρ' '
[11]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 2ρ0
[13] testa:→(xk>1↑ρylu)/fim
[14]  esse←14 80ρ' '
[15]  f←FOLHALA814
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.14
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23] inica:
[24]  ambiente 1
[25]  esse[7+⍳7;]←7 80↑7 30↑acertalins ULTIMACASA
[26]  resu←resu,[1]1 2ρresp,CUSTO
[27]  acuja←(f[;2]='#')/⍳1↑ρf
[28]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[29]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\newpage'
[30]  ⍞←(⍕xk←xk+1),'-'
[31]  →testa
[32] fim:upag←(1 0+ρf)ρ' '
[33]  →(1=≡n)/elafa
[34]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[35]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[36]  upag[2+⍳1↑ρresu;⍳+/lixo1]←'¯'-'edit(lixo1←5 0 10 0)⍕resu
[37]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[38]  →terminando
[39] elafa:aaa←(ylu,(((1↑ρylu),4)ρ' 0.0'),5 0⍕0 1↓resu)
[40]  aaa[1;35 36]←2 0⍕CORRECAO
[41]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[42]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[43] terminando:
[44]  upag[1↑ρupag;]←(1↓ρupag)↑'\end{document}'
[45]  relat[1↑ρrelat;;]←upag
[46]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[47] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[48]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[49]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[50]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
```

```
------------------------------------------------------------
```

vivo815

```
[ 0]  opesq vivo815a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;fz;lixo1;lixonol;qh;quais;r1;r
      elat;resp;resu;upag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL815   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA815←ajusta80 FOLHALA815
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA815)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 83⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←48 80⍴' '
[15]  f←FOLHALA815
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←3.06
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[23] inica:
[24]  qh←+/DB815[;1;1]≠' '
[25]  quais←1?qh
[26]  esse[7+⍳40;]←DB815[quais[1];;]
[27]  r1←(3 0⍎resp),RESP815[quais[1];]
[28]  resu←resu,[1]1 83⍴r1
[29]  acuja←(f[;2]='#')/⍳1↑⍴f
[30]  f[acuja;⍳80]←esse[⍤,f[acuja;3 4],' ';]
[31]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[32]  ⍞←(⍎xk←xk+1),'-'
[33]  →testa
[34] fim:upag←(1 0+⍴f)⍴' '
[35]  →(1=≡n)/elafa
[36]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[37]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[38]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑resu
[39]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[40]  →terminando
[41] elafa:aaa←(ylu,0 3↓resu)
[42]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[43]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[44] terminando:
[45]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[46]  relat[1↑⍴relat;;]←upag
[47]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[48] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[49]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[50]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[51]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo817

```
[ 0]  opesq vivo817a n;CORRECAO;EVENTO;aaa;acuja;caso;dhx;esse;f;lixo1;lixonol;oba2;relat;
      resp;resu;upag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL817   '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[ 9]  FOLHALA817←ajusta80 FOLHALA817
[10]  relat←((2+1↑ρylu),1 0+ρFOLHALA817)ρ' '
[11]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 0ρ0
[13] testa:→(xk>1↑ρylu)/fim
[14]  esse←9 80ρ' '
[15]  f←FOLHALA817
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←3.02
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[23]  esse[8;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[9;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  acuja←(f[;2]='#')/⍳1↑ρf
[27]  f[acuja;⍳80]←esse[⍤,f[acuja;3 4],' ';]
[28]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\newpage'
[29]  ⍞←(⍎xk←xk+1),'-'
[30]  →testa
[31] fim:
[32] terminando:
[33]  relat[1↑ρrelat;1↑1↓ρrelat;]←80↑'\end{document}'
[34]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[35] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[36]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[37]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[38]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo819

```
[ 0]  r←ask onde;lissim
[ 1]  lissim←LISSIM
[ 2] testa:→(0=ρlissim)/acabou
[ 3]  →(20=+/mem[onde;⍳20]=,mem[1↑lissim;⍳20])/igual
[ 4]  lissim←1↓lissim
[ 5]  →testa
[ 6] acabou:r←1
[ 7]  →0
[ 8] igual:r←0
[ 9]  →0
------------------------------------------------------------
[0]  ciclofo qt;i;inds
[1]  inicializa ⋄ inds←10?20
[2]  i←1
[3] volta:→(i>qt)/fim
```

```
[4]  (2+?2)entrafo CIDADES[inds[i];;]
[5]  →(i=i←i+1)/volta
[6] fim:limpamem
[7]  limpaobj
-------------------------------------------------------------
[0]  r←divide a;met
[1]  a←((2×⌈0.5×1↑⍴a),(1↓⍴a))↑a
[2]  met←0.5×1↑⍴a
[3]  r←0 1↓(1 numera a[⍳met;]),((met,1)⍴'|'),(1+met)numera a[met+⍳met;]
-------------------------------------------------------------
[ 0]  num entrafo mat;xx;ant;inds;ii
[ 1]  uobj←uobj+1
[ 2]  obj[uobj;⍳20]←mat[1;⍳20]
[ 3]  umem←umem+1
[ 4]  obj[uobj;20+⍳3]←3 0⍪umem
[ 5]  inds←1+num?8
[ 6]  ii←2
[ 7]  mem[umem;]←(mat[inds[1];]),' ¯1'
[ 8]  ant←umem
[ 9] loop:→(ii>⍴inds)/fim
[10]  umem←umem+1
[11]  mem[umem;]←(20↑mat[inds[ii];]),' ¯1'
[12]  mem[ant;20+⍳3]←3 0⍪umem
[13]  ant←umem
[14]  ii←ii+1
[15]  →loop
[16] fim:
-------------------------------------------------------------
[ 0]  geracaso;xx;x;y
[ 1] volta:inicializa
[ 2]  ciclofo 8
[ 3]  pergunta
[ 4]  xx←1↑⍴TUDOP
[ 5]  →(xx>4)/ze
[ 6]  □←'  ↓'
[ 7]  →volta
[ 8] ze:→(xx<9)/ze2
[ 9]  □←'  ↑'   ⍝ significa que a instancia gerada e' muito grande
[10]  →volta
[11] ze2:' '
[12]  x←TUDOP
[13]  y←TUDOR
[14]  x←2 0↓x
[15]  x←¯2 0↓x
[16]  y←2↓y
[17]  y←¯2↓y
[18]  NUMERO←2+⍴y
[19] ufa:→(0≠⍴y)/mesmo
[20]  □←'  →'
[21]  →volta
[22] mesmo:
[23]  →((y[⍴y]='s')∨(y[⍴y]='n'))/achou
[24]  NUMERO←NUMERO-1
[25]  y←¯1↓y
[26]  x←¯1 0↓x
[27]  →ufa
[28] achou:RESPOSTA←TUDOP[NUMERO;]
[29]  TUDOP[NUMERO;]←1 50⍴50↑10⍴'?'
-------------------------------------------------------------
[0]  inicializa
[1]  mem←40 23⍴' '
[2]  obj←10 23⍴' '
[3]  umem←0
```

```
[4]  uobj←0
------------------------------------------------------------
[0]  limpamem
[1]  mem←(mem[;1]≠' ')/[1]mem
------------------------------------------------------------
[0]  limpaobj
[1]  obj←(obj[;1]≠' ')/[1]obj
------------------------------------------------------------
[ 0]  r←pergunta;x;resp
[ 1]  TUDOP←0 50⍴' ' ⋄ TUDOR←'' ⋄ RESPS←''
[ 2]  x←1 ⋄ LISSIM←⍳0 ⋄ LISNAO←⍳0
[ 3] teste:→(x>uobj)/fim
[ 4]  →(1=obj[x;⍳20]tente(⍎obj[x;20+⍳3]))/achou
[ 5] soma:→(x=x←x+1)/teste
[ 6] achou:TUDOP←TUDOP,[1]1 50⍴50↑'encontrado ',obj[x;⍳20],' continua?'
[ 7]  TUDOR←TUDOR,resp←respondera
[ 8]  →('n'=resp)/0
[ 9]  →soma
[10] fim:TUDOP←TUDOP,[1]1 50⍴50↑'Nao encontrado'
[11]  TUDOR←TUDOR,'X'
------------------------------------------------------------
[ 0]  r←respondera;x
[ 1] ⍝r  ←  □
[ 2] ⍝  →0
[ 3]  x←?20
[ 4]  →(0=⍴RESPS)/nao
[ 5]  →(x<12)/sim
[ 6]  →(x<17)/nao
[ 7]  →('p'∈RESPS)/nao
[ 8]  r←'p'
[ 9]  →fim
[10] sim:r←'s'
[11]  →fim
[12] nao:r←'n'
[13] fim:RESPS←RESPS,r
------------------------------------------------------------
[ 0]  r←nome tente onde;resp;y
[ 1]  →(0=tentenao onde)/dev0
[ 2]  →(0=tentesim onde)/dev0
[ 3] terte:→(onde=¯1)/fim
[ 4]  →(0=ask onde)/pula
[ 5] denovo:TUDOP←TUDOP,[1]1 50⍴50↑'possui ',mem[onde;⍳20],' ? '
[ 6]  TUDOR←TUDOR,resp←respondera
[ 7]  →(resp='s')/sim
[ 8]  →(resp='n')/nao
[ 9]  →(resp='p')/porque
[10]  →denovo
[11] pula:onde←⍎mem[onde;20+⍳3]
[12]  →terte
[13] sim:LISSIM←LISSIM,onde
[14]  onde←⍎mem[onde;20+⍳3]
[15]  →terte
[16] nao:LISNAO←LISNAO,onde
[17]  r←0
[18]  →0
[19] porque:TUDOP←TUDOP,[1]1 50⍴50↑'tentando ',nome
[20]  TUDOR←TUDOR,' '
[21]  →(0=⍴LISSIM)/acag
[22]  y←1
[23] t55:→(y>⍴LISSIM)/acag
[24]  TUDOP←TUDOP,[1]1 50⍴50↑'possui/tem ',mem[LISSIM[y];⍳20]
[25]  TUDOR←TUDOR,' '
[26]  →(y=y←y+1)/t55
```

```
[27] acag:
[28]  →(0=ρLISNAO)/acaf
[29]  y←1
[30] t66:→(y>ρLISNAO)/acaf
[31]  TUDOP←TUDOP,[1]1 50ρ50↑'nao possui/tem ',mem[LISNAO[y];⍳20]
[32]  TUDOR←TUDOR,' '
[33]  →(y=y←y+1)/t66
[34] acaf:
[35]  →terte
[36] fim:r←1
[37]  →0
[38] dev0:r←0
------------------------------------------------------------
[ 0]  r←tentenao onde;lisnao;x
[ 1]  lisnao←LISNAO
[ 2]  x←1
[ 3] d1:→(x>ρlisnao)/tra
[ 4] d2:→(20=+/mem[onde;⍳20]=mem[lisnao[x];⍳20])/tems
[ 5]  →(x=x←x+1)/d1
[ 6] tems:r←0
[ 7]  →0
[ 8] tra:r←1
[ 9]  →0
------------------------------------------------------------
[ 0]  r←tentesim onde;lissim;x;on;achou
[ 1]  x←1 ⋄ lissim←LISSIM
[ 2] ino:→(x>ρlissim)/fim
[ 3]  on←onde
[ 4]  achou←0
[ 5] tes:→(on=¯1)/acabo
[ 6]  →(20=+/mem[lissim[x];⍳20]=mem[on;⍳20])/nao   ⍝ era   ≠ e estava errado
[ 7]  achou←99
[ 8] nao:on←⊃mem[on;20+⍳3]
[ 9]  →tes
[10] acabo:→(achou=99)/ufa
[11]  r←0
[12]  →0
[13] ufa:→(x=x←x+1)/ino
[14] fim:r←1
[15]  →0
------------------------------------------------------------
[ 0]  opesq vivo819a n;CORRECAO;EVENTO;aa;aaa;acuja;dhx;esse;f;lixo1;lixonol;relat;resp;re
      su;upag;x;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL819   '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[ 9]  FOLHALA819←ajusta80 FOLHALA819
[10]  relat←((2+1↑ρylu),1 0+ρFOLHALA819)ρ' '
[11]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[12]  xk←1 ⋄ resu←0 53ρ0
[13] testa:→(xk>1↑ρylu)/fim
[14]  esse←39 80ρ' '
[15]  f←FOLHALA819
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←3.13
[19]  esse[4;]←80↑ylu[xk;⍳6]
```

```
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23] inica:
[24] novo:geracaso
[25]  →((1↑⍴obj)>8)/zebra
[26]  esse[7+⍳8;]←8 80↑obj
[27]  →((1↑⍴TUDOP)<30)/oki
[28] zebra:⍞←'u'
[29]  →novo
[30] oki:esse[15+⍳15;]←aa←15 80↑'¯-'edit divide mem
[31]  esse[30+⍳9;]←(9 50↑TUDOP),(9 1⍴9↑TUDOR),9 29⍴' '
[32] ⍝------------------------------
[33]  resu←resu,[1]1 53⍴53↑(3 0⍕resp),,RESPOSTA
[34]  acuja←(f[;2]='#')/⍳1↑⍴f
[35]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[36]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[37]  ⍞←(⍕xk←xk+1),'-'
[38]  →testa
[39] fim:upag←(1 0+⍴f)⍴' '
[40]  →(1=≡n)/elafa
[41]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[42]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[43]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑resu
[44]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[45]  →terminando
[46] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 3↓resu)
[47]  aaa[1;35 36]←2 0⍕CORRECAO
[48]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[49]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[50] terminando:
[51]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\begin{verbatim}'
[52]  relat[1↑⍴relat;;]←upag
[53]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[54] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[55]  lixonol←lixonol,[1](ajusta80 INSTRUC819),[1]1 80⍴80↑'\end{verbatim} \end{document}'
[56]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[57]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[58]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo820

```
[ 0]  opesq vivo820a n;CORRECAO;EVENTO;aaa;acuja;caso;dhx;esse;f;lixo1;lixonol;nomes;oba2;
      ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL820   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA820←ajusta80 FOLHALA820
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA820)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLOI'
[13]  xk←1 ⋄ resu←0 0⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←9 80⍴' '
[16]  f←FOLHALA820
```

```
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←3.01
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] ⍝⍝⍝
```

```
[5]  r←r+m[l;c]
[6]  →(i=i←i+1)/t1
[7] fim:
------------------------------------------------------------
[0]  r←aa ajustata bb;xx
[1]  bb←(bb≠' ')/bb
[2]  aa←tiraduplo aa
[3]  bb←tiraduplo bb
[4]  bb←bb[xx←⍋AV⍋bb]
[5]  aa←aa[xx]
[6]  r←,(((⍴aa),1)⍴aa),'=',(((⍴aa),1)⍴bb),' '
------------------------------------------------------------
[ 0]  r←arrt;i
[ 1] ⍝ gera os 720 caminhos hamiltonianos possiveis em um grafo de 6 vertices
[ 2]  r←720 6⍴' '
[ 3]  r[⍳120;1]←'1'
[ 4]  r[⍳24;2]←'2'
[ 5]  r[24+⍳24;2]←'3'
[ 6]  r[48+⍳24;2]←'4'
[ 7]  r[72+⍳24;2]←'5'
[ 8]  r[96+⍳24;2]←'6'
[ 9]  r[120+⍳120;1]←'2'
[10]  r[120+⍳24;2]←'1'
[11]  r[120+24+⍳24;2]←'3'
[12]  r[120+48+⍳24;2]←'4'
[13]  r[120+72+⍳24;2]←'5'
[14]  r[120+96+⍳24;2]←'6'
[15]  r[240+⍳120;1]←'3'
[16]  r[240+⍳24;2]←'1'
[17]  r[240+24+⍳24;2]←'2'
[18]  r[240+48+⍳24;2]←'4'
[19]  r[240+72+⍳24;2]←'5'
[20]  r[240+96+⍳24;2]←'6'
[21]  r[360+⍳120;1]←'4'
[22]  r[360+⍳24;2]←'1'
[23]  r[360+24+⍳24;2]←'2'
[24]  r[360+48+⍳24;2]←'3'
[25]  r[360+72+⍳24;2]←'5'
[26]  r[360+96+⍳24;2]←'6'
[27]  r[480+⍳120;1]←'5'
[28]  r[480+⍳24;2]←'1'
[29]  r[480+24+⍳24;2]←'2'
[30]  r[480+48+⍳24;2]←'3'
[31]  r[480+72+⍳24;2]←'4'
[32]  r[480+96+⍳24;2]←'6'
[33]  r[600+⍳120;1]←'6'
[34]  r[600+⍳24;2]←'1'
[35]  r[600+24+⍳24;2]←'2'
[36]  r[600+48+⍳24;2]←'3'
[37]  r[600+72+⍳24;2]←'4'
[38]  r[600+96+⍳24;2]←'5'
[39]  i←1
[40] t1:→(i>30)/fim
[41]  r[((24×i-1)+⍳24);2+⍳4]←g24(~'123456'∈r[(1+24×i-1);1 2])/'123456'
[42]  →(i=i←i+1)/t1
[43] fim:
------------------------------------------------------------
[ 0]  r←g24 a;b1;b2;b3;b4;i
[ 1] ⍝ gera as 24 possibilidades de permutacao de 4 objetos
[ 2] ⍝ ja no formato (24 x 6) pronto para a funcao arrt
[ 3]  r←24 4⍴' '
[ 4]  b1←1 1 1 1 1 1 2 2 3 4 3 4 2 2 3 4 3 4 2 2 3 4 3 4
[ 5]  b2←2 2 3 4 3 4 1 1 1 1 1 1 3 4 2 2 4 3 3 4 2 2 4 3
```

```
[ 6]  b3←3 4 2 2 4 3 3 4 2 2 4 3 1 1 1 1 1 1 4 3 4 3 2 2
[ 7]  b4←4 3 4 3 2 2 4 3 4 3 2 2 4 3 4 3 2 2 1 1 1 1 1 1
[ 8]  i←1
[ 9] t1:→(i>24)/fim
[10]  r[i;b1[i]]←a[1]
[11]  r[i;b2[i]]←a[2]
[12]  r[i;b3[i]]←a[3]
[13]  r[i;b4[i]]←a[4]
[14]  →(i=i←i+1)/t1
[15] fim:
-------------------------------------------------------------
[ 0]  r←geracavi;t;d;ini;dis;i;v;men;v
[ 1] ⍝ gera instancias de conjuntos de 6 cidades conexas. O grafo eh dirigido
[ 2] ⍝ na 7 linha, da a resposta, a saber:
[ 3] ⍝ cidade inicial, kilometragem, quantidade de caminhos iguais ao
[ 4] ⍝ menor comprimento e o primeiro deles.
[ 5]  t←arrt
[ 6] denovo:d←6 6⍴4+?36⍴11
[ 7]  d[1;1]←d[2;2]←d[3;3]←d[4;4]←d[5;5]←d[6;6]←0
[ 8]  ini←?6
[ 9]  dis←t[(120×ini-1)+⍳120;]
[10]  i←1 ⋄ v←120⍴0
[11] t1:→(i>120)/fim
[12]  v[i]←dis[i;]achacomp d
[13]  →(i=i←i+1)/t1
[14] fim:
[15]  men←⌊/v
[16]  r←7 6⍴0
[17]  r[⍳6;]←d
[18]  r[7;1]←ini
[19]  r[7;2]←men
[20]  r[7;3]←+/men=v   ⍝ quantidade de caminhos distintos que tem menor valor
[21]  →(1=r[7;3])/blz1
[22] erro:⍞←'*'
[23]  →denovo
[24] blz1:
[25]  r[7;4]←⍎,dis[(1↑(men=v)/⍳120);]   ⍝ o primeiro caminho destes
-------------------------------------------------------------
[ 0]  r←geracrip;y1;y2;y3;aa;t;y;letras;let;x1;x2;x3
[ 1] ⍝ gera um problema criptografico, envolvendo + ou -.
[ 2]  y1←(4⍴10)⊤x1←4999+?5000
[ 3]  y2←(4⍴10)⊤x2←¯1+?5000
[ 4]  →(5>?10)/menos
[ 5]  y3←(5⍴10)⊤x3←x1+x2
[ 6]  aa←'+'
[ 7]  →volta
[ 8] menos:y3←(5⍴10)⊤x3←x1-x2
[ 9]  aa←'-'
[10] volta:→(y3[1]≠0)/blz
[11]  y3←1↓y3
[12] blz:
[13]  t←⍴y←tiraduplo y1,y2,y3
[14]  letras←'ABCDEFGHJKLMNPRSTUVWXY'
[15]  let←10?⍴letras
[16]  let←letras[let]
[17]  r←5 56⍴' '
[18]  r[1;⍳6]←aa,' ',let[1+y1]
[19]  r[2;⍳6]←'  ',let[1+y2]
[20]  r[3;⍳6]←'-'
[21]  r[4;⍳6]←((6-⍴y3)⍴' '),let[1+y3]
[22]  r[5;]←56↑,((t,1)⍴let[1+y]),((t,1)⍴1 0⍕y),'/'
-------------------------------------------------------------
[0]  r←gerahano;z;w;x
```

```
[1]  r←2ρ' '
[2]  z←8000+500×?8
[3]  w←42+?18
[4]  x←z hanoi w
[5]  r←z,w,x
-------------------------------------------------------------
[ 0]  r←alfa geramais n;⎕PP;ica;z;x1;x2;y1;y2;y3
[ 1]  →(n>15)/erro
[ 2]  ⎕PP←20
[ 3]  →(0≠⎕NC'alfa')/qveio
[ 4]  alfa←'ABCDEFGHJKLMNPQRSTUVWXYZ'
[ 5] qveio:
[ 6]  alfa←(alfa≠' ')/alfa
[ 7]  alfa←((alfa⍳alfa)=⍳ρalfa)/alfa
[ 8]  →(10>ρalfa)/erro
[ 9]  alfa←alfa[(ρalfa)?ρalfa]
[10]  x1←((10*n-1)+?(-10*n-1)+10*n),(10*n-1)+?(-10*n-1)+10*n
[11]  x2←+/x1
[12]  y1←alfa[1+(nρ10)⊤x1[1]]
[13]  y2←alfa[1+(nρ10)⊤x1[2]]
[14]  y3←alfa[1+((z←⌈10⊛x2)ρ10)⊤x2]
[15]  r←3ρ0
[16]  r[3]←⊂(y1,y2,y3)ajustata⍉x1,x2
[17]  →(z≠n)/vaium
[18]  ica←(3,n+2)ρ('  ',y1),('  ',y2),'  ',y3
[19]  ica[2;1]←'+'
[20]  r[1]←⊂ica
[21]  r[2]←⊂(3,n)ρ⍉(⍉x1[1]),(⍉x1[2]),⍉x2
[22]  →0
[23] erro:'so funciona ate tam=15'
[24]  →0
[25] vaium:
[26]  ica←(3,z+1)ρ('  ',y1),('  ',y2),' ',y3
[27]  ica[2;1]←'+'
[28]  r[1]←⊂ica
[29]  r[2]←⊂(3,z)ρ(' ',⍉x1[1]),(' ',⍉x1[2]),⍉x2
[30]  →0
[31] erro:'alfa fornecido nao tem 10 caracteres distintos'
-------------------------------------------------------------
[ 0]  r←alfa geramenos n;x1;x2;y1;y2;y3;z;⎕PP;aux;ica
[ 1]  ⎕PP←20
[ 2]  →(n>15)/erro2
[ 3]  →(0≠⎕NC'alfa')/qveio
[ 4]  alfa←'ABCDEFGHJKLMNPQRSTUVWXYZ'
[ 5] qveio:
[ 6]  alfa←(alfa≠' ')/alfa
[ 7]  alfa←((alfa⍳alfa)=⍳ρalfa)/alfa
[ 8]  →(10>ρalfa)/erro
[ 9]  alfa←alfa[(ρalfa)?ρalfa]
[10]  x1←((10*n-1)+?(-10*n-1)+10*n),(10*n-1)+?(-10*n-1)+10*n
[11]  →(x1[1]>x1[2])/ok
[12]  aux←x1[1]
[13]  x1[1]←x1[2]
[14]  x1[2]←aux
[15] ok:
[16]  x2←x1[1]-x1[2]
[17]  y1←alfa[1+(nρ10)⊤x1[1]]
[18]  y2←alfa[1+(nρ10)⊤x1[2]]
[19]  y3←alfa[1+(nρ10)⊤x2]
[20]  r←3ρ0
[21]  r[3]←⊂(y1,y2,y3)ajustata⍉x1,x2
[22]  ica←(3,n+2)ρ('  ',y1),('- ',y2),'  ',y3
[23]  ica[2;1]←'-'
```

```
[24]  r[1]←⊂ica
[25]  r[2]←⊂(3,n)ρ⍕(⍕x1[1]),(⍕x1[2]),(nρ'0')⍕x2
[26]  →0
[27] erro:'alfa fornecido nao tem 10 caracteres distintos'
[28]  →0
[29] erro2:'nao pode tam>15, resultados imprevisiveis'
------------------------------------------------------------
[0]  r←vezes hanoi nd
[1]  r←⌊(2*nd)÷vezes×60×60×24×365
------------------------------------------------------------
[0]  r←listadb2 aa;i;zz
[1]  r←(0,(zz←¯1↑ρaa))ρ' '
[2]  i←1
[3] t1:→(i>1↑ρaa)/fim
[4]  →((×/1↓ρaa)=+/' '=,,aa[i;;])/soma
[5]  r←r,[1](1,zz)ρzz↑'================',(3 0⍕i),' ================'
[6]  r←r,[1](((ρaa)[3])≠+/' '=aa[i;;])/[1]aa[i;;]
[7] soma:→(i=i←i+1)/t1
[8] fim:
------------------------------------------------------------
[0]  r←naobrancos z
[1]  r←+/~∧/∧/z=' '
------------------------------------------------------------
[0]  r←orig numera2 oper;aa;⎕IO
[1]  ⎕IO←orig
[2]  r←4 0⍕oper
[3]  r←(((3 0⍕(((1↑ρoper),1)ρ⍳1↑ρoper)),[⎕IO+1]'|'),[⎕IO+1]' '),r
[4]  r←((1,aa)ρ'     ',4 0⍕⍳1↓ρoper),[⎕IO]((1,aa←5+4×1↓ρoper)ρ'   +',100ρ'-'),[⎕IO]r
------------------------------------------------------------
[0]  r←pedemail x
[1]  →(40≠+/' '=x)/aindanao
[2]  r←80↑'Por favor, informe seu e-mail: ⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_'
[3]  →junnao
[4] aindanao:r←80↑'e-mail cadastrado: ⍀verb+',x,'+'
[5] junnao:
------------------------------------------------------------
[ 0]  ref;i;j;k;candi;qt;zz;r
[ 1]  zz←ΔFM'f:/infoland/lixo1234'
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80ρ' '
[ 6] te:→(i≥⎕IO+1↑ρzz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>ρcandi)/eca
[ 9]  j←qt
[10]  →(0=' 'ϵj↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80ρ80↑j↑candi
[15]  candi←j↓candi
[16]  →((ρcandi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80ρ80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
[22]  y←r
------------------------------------------------------------
[0]  r←tiraduplo z;i;⎕IO
[1]  i←1 ⋄ r←'' ⋄ ⎕IO←1
[2] volta:→(i>ρz)/fim
```

```
[3]  →(z[i]∈r)/tem
[4]  r←r,z[i]
[5] tem:→(i=i←i+1)/volta
[6] fim:
------------------------------------------------------------
[ 0]  opesq vivo821a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;r1;rr;xx;qual
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL821   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA821←112 ajusta FOLHALA821
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA821)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[12]  xk←1 ⋄ resu←0 112⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←66 112⍴' '
[15]  f←((1↑⍴FOLHALA821),112)↑FOLHALA821
[16]  esse[1;]←112↑dhx[1;]
[17]  esse[2;]←112↑dhx[2;]
[18]  esse[3;]←112↑4 2⍎VERSAOa←3.58
[19]  esse[4;]←112↑ylu[xk;⍳6]
[20]  esse[5;]←112↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←112↑EVENTO
[22]  esse[7;]←112↑(3 0⍎resp←xk),' ',opesq
[23]  esse[65;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[66;]←112↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  →(2=?2)/mamenos
[27]  rr←geramais 10
[28]  →pumenos
[29] mamenos:
[30]  rr←geramenos 10
[31] pumenos:
[32]  esse[7+⍳4;]←4 112↑acertaco⊃rr[1]
[33]  resp←(3 0⍎resp),'-',39↑⊃rr[3]
[34]  qual←?naobrancos BANCOTRAJ
[35]  esse[61 62;1]←,BANCOTRAJ[qual;1;1 2]
[36]  esse[11+⍳13;]←13 112↑BANCOTRAJ[qual;1+⍳12;]
[37]  resp←resp,'/',RESPOTRAJ[qual;⍳30]
[38]  esse[24+⍳13;]←' '
[39]  qual←?naobrancos BANCOVELH
[40]  esse[37+⍳13;]←13 112↑BANCOVELH[qual;;]
[41]  xx←geracavi
[42]  esse[51;⍳3]←(1 0⍎xx[7;1]),'\\'
[43]  esse[51+⍳8;]←8 112↑1 numera2 xx[⍳6;]
[44]  esse[60;⍳2]←2 0⍎xx[7;3]
[45]  resp←resp,30↑'compr=',(3 0⍎xx[7;2]),'  qtd=',(2 0⍎xx[7;3]),' cam=',⍎xx[7;4]
[46]  xx←gerahano
[47]  esse[63;]←112↑5 0⍎xx[1]
[48]  esse[64;]←112↑3 0⍎xx[2]
[49]  resp←resp,8 0⍎xx[3]
[50]  resu←resu,[1]1 112⍴resp
[51]  acuja←(f[;2]='#')/⍳1↑⍴f
[52]  f[acuja;⍳112]←esse[⍋,f[acuja;3 4],' ';]
[53]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[54]  ⍞←(⍎xk←xk+1),'-'
[55]  →testa
```

```
[56] fim:upag←(1 0+⍴f)⍴' '
[57]  →(1=≡n)/elafa
[58]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[59]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[60]  upag[2+⍳1↑⍴resu;⍳112]←resu
[61]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[62]  →terminando
[63] elafa:aaa←(ylu,0 3↓resu)
[64]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[65]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[66] terminando:
[67]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[68]  relat[1↑⍴relat;;]←upag
[69]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[70] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[71]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[72]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[73]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo824

```
[0]  AVISO
[1]  'Para emitir um gabarito qualquer faca:'
[2]  'criaarvore dados-da-folha'
[3]  'resolve'
[4]  '2 1 PRINTF   ¯ - edit 1 numera 4 0  ⍕PRONTO'
-------------------------------------------------------------
[0]  r←achacandidato;i
[1]  i←1
[2] ttf:→(i>IND)/fim
[3]  →(ARV[i;7]=1)/prox
[4] ⍝ 'o candidato e o ',  ⍕i
[5]  r←i
[6]  →0
[7] prox:→(i=i←i+1)/ttf
[8] fim:r←¯1
-------------------------------------------------------------
[ 0]  r←criaarvore x;y;zz;h;lix1;lix2
[ 1] ⍝ imaginando jogos com 3 pilhas
[ 2]  ARV←1000 8⍴0
[ 3] ⍝ x1,x2 e x3=jogada; [4]=pai[5]=nivel;[6]=quemjogou;[7]=jaexplodiu? [8]=aval
[ 4]  ARV[1;]←x,¯1,0,1,0,0   ⍝ jogador1=sou eu
[ 5]  IND←1
[ 6] devolta:y←achacandidato
[ 7]  →(y=¯1)/acabou
[ 8]  ARV[y;7]←1
[ 9]  zz←gerador2 ARV[y;⍳3]
[10] ⍝ 'zz criado'
[11] ⍝   ⍕zz
[12] ⍝ 'arvore'
[13] ⍝ vearv
[14] ⍝ '0=termina'
[15] ⍝   →(0=  □)/0
[16]  h←1
[17] gg:→(h>1↑⍴zz)/ufa
[18]  IND←IND+1
[19]  →(0=+/zz[h;])/tudozero
[20]  →(1=+/zz[h;])/tudoum
[21]  ARV[IND;]←zz[h;],y,(ARV[y;5]+1),-ARV[y;6],0,0
[22] somi:→(h=h←h+1)/gg
[23] tudozero:lix1←-ARV[y;6]
```

```
[24]  ARV[IND;]←0 0 0,y,(ARV[y;5]+1),lix1,1,99×lix1
[25]  →somi
[26] tudoum:lix2←-ARV[y;6]
[27]  ARV[IND;]←1 0 0,y,(ARV[y;5]+1),lix2,1,¯99×lix2
[28]  →somi
[29] ufa:→devolta
[30] acabou:r←ARV[⍳IND;]
-------------------------------------------------------------
[ 0]  r←geracaso;x
[ 1] denovo:r←?3⍴3
[ 2]  r[?3]←1
[ 3]  r[?3]←?8
[ 4]  →(33>x←1↑⍴criaarvore r)/baixo
[ 5]  →(63<x)/alto
[ 6]  →0
[ 7] baixo:⍞←'↑'
[ 8]  →denovo
[ 9] alto:⍞←'↓'
[10]  →denovo
-------------------------------------------------------------
[ 0]  r←gerador2 estado;lixo;i
[ 1]  estado←,estado
[ 2]  r←(0,⍴estado)⍴0
[ 3]  i←1
[ 4] tt:→(i>⍴estado)/fim
[ 5]  →(estado[i]=0)/soma
[ 6]  →(estado[i]>1)/tem2
[ 7]  lixo←estado
[ 8]  lixo[i]←0
[ 9]  r←r mandaver lixo
[10]  →soma
[11] tem2:lixo←estado
[12]  lixo[i]←1
[13]  r←r mandaver lixo
[14]  lixo[i]←0
[15]  r←r mandaver lixo
[16]  →soma
[17] soma:→(i=i←i+1)/tt
[18] fim:→0   ⍝ ta caindo fora
[19]  →(1≠⍴estado)/blz
[20]  i←1
[21] iii:→(i>1↑⍴r)/blz
[22]  →(r[i;1]=1)/eum
[23]  →(r[i;1]=0)/ezero
[24]  →(i=i←i+1)/iii
[25] eum:r[i;1]←100000
[26]  →(i=i←i+1)/iii
[27] ezero:r[i;1]←¯100000
[28]  →(i=i←i+1)/iii
[29] blz:
-------------------------------------------------------------
[0]  r←junta;x
[1]  x←vearv
[2]  →(0=2|1↑⍴x)/par
[3] par:x←((1+1↑⍴x),32)↑x
[4]  x←(2,((1↑⍴x)÷2),32)⍴x
[5]  r←x[1;;],((((⍴x)[2]),5)⍴' '),x[2;;]
-------------------------------------------------------------
[ 0]  r←a mandaver b;i;igu
[ 1]  b←b[⍋b]
[ 2]  i←1 ⋄ igu←0
[ 3] tr:→(i>1↑⍴a)/fi
[ 4]  →((⍴b)=+/b=a[i;])/iguais
```

```
[ 5] som:→(i=i←i+1)/tr
[ 6] iguais:igu←1
[ 7]  →som
[ 8] fi:→(1=igu)/pula
[ 9]  r←a,[1](1,ρb)ρb
[10]  →fim
[11] pula:r←a
[12] fim:
------------------------------------------------------------
[ 0]  ref;i;j;k;candi;qt;zz;r
[ 1]  zz←ΔFM'f:/infoland/lixo1234'
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80ρ' '
[ 6] te:→(i≥⎕IO+1↑ρzz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>ρcandi)/eca
[ 9]  j←qt
[10]  →(0=' 'ϵj↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80ρ80↑j↑candi
[15]  candi←j↓candi
[16]  →((ρcandi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80ρ80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
[22]  y←r
------------------------------------------------------------
[ 0]  r←resolve;x;y;quais;quems;maiorpai
[ 1]  x←ARV[ιIND;]
[ 2]  y←(x[;4]=1)/ι1↑ρx
[ 3] volta:maiorpai←⌈/,x[;4]
[ 4] ⍝ 'maiorpai=',  ⍕maiorpai
[ 5]  →(maiorpai=¯1)/acabou
[ 6]  quais←(x[;4]=maiorpai)/ι1↑ρx
[ 7]  quems←x[quais;]
[ 8] ⍝ 'quems'
[ 9] ⍝ quems
[10] ⍝   →(0=  ⎕)/0
[11]  →(0=1↑ρquems)/novo
[12]  →(x[maiorpai;6]=¯1)/min
[13] max:x[maiorpai;8]←⌈/,quems[;8]
[14]  →novo
[15] min:x[maiorpai;8]←⌊/,quems[;8]
[16] novo:x[quais;4]←¯2
[17]  →volta
[18] acabou:PRONTO←x
[19]  r←(x[y;8]=⌈/,x[y;8])/y
------------------------------------------------------------
[0]  r←vearv
[1]  r←1 numera 5 0 3 0 3 0 4 0 4 0 5 0 4 0⍕1 1 1 1 1 1 0 1/[2](IND,8)↑ARV
[2]  r←(1 32ρ'       J1 J2 J3  PAI NIV QUEM  VL'),[1]r
[3]  r←'¯'-'edit r
------------------------------------------------------------
[ 0]  opesq vivo824a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;relat;resp;resu;
      upag;xixo;xk;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
```

```
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←1 ⋄ EVENTO←'PL824   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA824←ajusta80 FOLHALA824
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA824)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 2⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←42 80⍴' '
[15]  f←FOLHALA824
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.17
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[41;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[42;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  geracaso
[27]  zz←resolve
[28]  resp←resp,zz
[29]  esse[8;]←80↑(3 0⍕ARV[1;⍳3])
[30]  esse[8+⍳32;]←32 80↑junta
[31] ⍝--------------------------------
[32]  resu←resu,[1]1 2⍴resp
[33]  acuja←(f[;2]='#')/⍳1↑⍴f
[34]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[35]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[36]  ⎕←(⍕xk←xk+1),'-'
[37]  →testa
[38] fim:upag←(1 0+⍴f)⍴' '
[39]  →(1=≡n)/elafa
[40]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[41]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[42]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0)⍕resu
[43]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[44]  →terminando
[45] elafa:aaa←(ylu,5 0⍕0 1↓resu)
[46]  aaa[1;35 36]←2 0⍕CORRECAO
[47]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[48]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[49] terminando:
[50]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\begin{verbatim}'
[51]  relat[1↑⍴relat;;]←upag
[52]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[53] ⍝ lixonol←lixonol,[1](ajusta80 INSTRUC824),[1]1 80⍴80↑'\end{verbatim} \end{document}'
[54]  lixonol←lixonol,[1]1 80⍴80↑'\end{verbatim} \end{document}'
[55] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[56]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[57]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[58]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo825

```
[0]  AVISO
```

```
[1]  'Foram geradas 4 variaveis: A1T e A1N: primeira arvore e '
[2]  'A2T e A2N: segunda arvore'
-------------------------------------------------------------
[ 0]  r←acerta xx;li;co;k
[ 1] ⍝f corta o tripao do qtrex em linhas de ate 70 caracteres, onde ha brancos
[ 2]  r←5 70⍴' '
[ 3]  li←1 ⋄ co←1 ⋄ k←1
[ 4] fi:→(k>⍴xx)/fim
[ 5]  r[li;co]←xx[k]
[ 6]  co←co+1
[ 7]  k←k+1
[ 8]  →(co>65)/quebra
[ 9]  →fi
[10] quebra:r[li;co]←xx[k]
[11]  co←co+1
[12]  k←k+1
[13]  →(k>⍴xx)/fim
[14]  →(xx[k]=' ')/ufa
[15]  →quebra
[16] ufa:li←li+1 ⋄ co←1 ⋄ k←k+1
[17]  →fi
[18] fim:
-------------------------------------------------------------
[ 0]  r←ARV avaliamax eab;alfa;fils;i;beta;u
[ 1] ⍝f parte do algoritmo minimax-alfa-beta. Faz a avaliacao max
[ 2] ⍝ 'max chamado com ',⍕AV[ARV[eab[1];1]],' ',⍕eab[2 3]
[ 3]  u←eab[1] ⋄ alfa←eab[2] ⋄ beta←eab[3]
[ 4]  →(ARV[u;2]=0)/efolha
[ 5]  fils←(ARV[u;4 5 6]≠0)/ARV[u;4 5 6]
[ 6]  i←1
[ 7] t1:→(i>⍴fils)/fifa
[ 8]  alfa←alfa⌈ARV avaliamin(fils[i],alfa,beta)
[ 9]  →(alfa≥beta)/aca
[10]  →(i=i←i+1)/t1
[11] aca:r←beta
[12] ⍝ 'max=',⍕alfa,beta
[13]  QTO←QTO+1
[14] ⍝'===CORTE BETA==='
[15]  →0
[16] fifa:r←alfa
[17]  →0
[18] efolha:r←ARV[u;7]
-------------------------------------------------------------
[ 0]  r←ARV avaliamin eab;alfa;fils;val;i;beta;u
[ 1] ⍝f parte do algoritmo minimax-alfa-beta. Faz a avaliacao min
[ 2]  u←eab[1] ⋄ alfa←eab[2] ⋄ beta←eab[3]
[ 3] ⍝'min chamado com ' ⍕AV[ARV[eab[1];1]],' ',⍕eab[2 3]
[ 4]  →(ARV[u;2]=0)/efolha
[ 5]  fils←(ARV[u;4 5 6]≠0)/ARV[u;4 5 6]
[ 6]  i←1
[ 7] t1:→(i>⍴fils)/fifa
[ 8]  beta←beta⌊ARV avaliamax fils[i],alfa,beta
[ 9]  →(beta≤alfa)/aca
[10]  →(i=i←i+1)/t1
[11] aca:r←alfa
[12] ⍝ 'min=',⍕alfa,beta
[13] ⍝ '===CORTE ALFA==='
[14]  QTO←QTO+1
[15]  →0
[16] fifa:r←beta
[17]  →0
[18] efolha:r←ARV[u;7]
-------------------------------------------------------------
```

```
[ 0]  r←criamat;ARV;grau;qtos;linhasadef;linhas;qual;lj;quens;la
[ 1] ⍝fcria uma arvore minimax conforme descrito abaixo, com dados inventados
[ 2] inicio:ARV←26 7⍴0
[ 3]  ARV[;1]←65+⍳26 ⍝ letra identificadora do nodo
[ 4] ⍝ ARV[;2] e o endereco do pai
[ 5] ⍝ ARV[;3] e o grau deste nodo (0,1,2 ou 3)
[ 6] ⍝ ARV[;4 5 6] podem ser os enderecos dos filhos (coerentes com o grau)
[ 7] ⍝ ARV[;7] e o valor deste nodo (valido apenas para nodos folha)
[ 8]  ARV[1;2]←¯1
[ 9]  ARV[1;3]←grau←3
[10]  ARV[1;3+⍳grau]←1+⍳grau
[11]  qtos←1+grau
[12] fi:→(qtos>23)/fim
[13]  linhasadef←(0≠,ARV[;3+⍳3])/,ARV[;3+⍳3]
[14]  linhas←(,ARV[linhasadef;2]=0)/linhasadef
[15]  qual←1↑linhas
[16]  →(qual=0)/inicio
[17]  ARV[qual;2]←(∨/[2]qual=ARV[;3+⍳3])/⍳26
[18]  grau←1+?2
[19]  ARV[qual;3]←grau
[20]  ARV[qual;3+⍳grau]←qtos+⍳grau
[21]  qtos←qtos+grau
[22]  →fi
[23] fim:ARV←(qtos,7)↑ARV
[24]  lj←(ARV[;2]=0)/⍳1↑⍴ARV
[25]  la←qtos-lj
[26]  quens←(⍴la)⍴⍳9
[27]  quens←quens[(⍴la)?⍴la]
[28]  ARV[lj;7]←quens
[29]  r←ARV
------------------------------------------------------------
[ 0]  r←arv geratrex a
[ 1] ⍝fgera a tripa trex referente a uma arvore que foi criada pelo criamat
[ 2]  →(arv[a;3]=3)/tres
[ 3]  →(arv[a;3]=2)/dois
[ 4]  →(arv[a;3]=1)/um
[ 5]  →(arv[a;3]=0)/zero
[ 6]  'deu erro: xabu'
[ 7]  →0
[ 8] zero:r←' .',⎕AV[arv[a;1]],' ',(2 0⍕arv[a;7]),' '
[ 9]  →0
[10] um:r←'[ .',⎕AV[arv[a;1]],' [ ',(arv geratrex arv[a;4]),' ] ] '
[11]  →0
[12] dois:r←'[ .',⎕AV[arv[a;1]],' [ ',(arv geratrex arv[a;4]),' ] [ ',(arv geratrex arv[a;
      5]),' ] ]'
[13]  →0
[14] tres:r←'[ .',⎕AV[arv[a;1]],' [ ',(arv geratrex arv[a;4]),' ] [ ',(arv geratrex arv[a;
      5]),' ] [ ',(arv geratrex arv[a;6]),' ] ] '
[15]  →0
------------------------------------------------------------
[0]  r←geraum;aa
[1] ⍝fdevolve a tripa trex e a matriz minimax de uma instancia de problema (inventada)
[2]  r←2⍴0
[3]  aa←criamat
[4]  r[1]←⊂acerta aa geratrex 1
[5]  r[2]←⊂aa
------------------------------------------------------------
[ 0]  r←geraummonte;zz
[ 1] ⍝fgera 14 arvores para diversao geral
[ 2]  r←0 70⍴' ' ⋄ xyz←0 26 7⍴0
[ 3]  zz←geraum
[ 4]  r←r,[1]1 70⍴70↑'1 ↓trex '
[ 5]  r←r,[1]⊃zz[1]
```

```
[ 6]  xyz←xyz,[1]26 7↑⊃zz[2]
[ 7]  zz←geraum
[ 8]  r←r,[1]1 70⍴70↑'2 ⍀trex '
[ 9]  r←r,[1]⊃zz[1]
[10]  xyz←xyz,[1]26 7↑⊃zz[2]
[11]  zz←geraum
[12]  r←r,[1]1 70⍴70↑'3 ⍀trex '
[13]  r←r,[1]⊃zz[1]
[14]  xyz←xyz,[1]26 7↑⊃zz[2]
[15]  zz←geraum
[16]  r←r,[1]1 70⍴70↑'4 ⍀trex '
[17]  r←r,[1]⊃zz[1]
[18]  xyz←xyz,[1]26 7↑⊃zz[2]
[19]  zz←geraum
[20]  r←r,[1]1 70⍴70↑'5 ⍀trex '
[21]  r←r,[1]⊃zz[1]
[22]  xyz←xyz,[1]26 7↑⊃zz[2]
[23]  zz←geraum
[24]  r←r,[1]1 70⍴70↑'6 ⍀trex '
[25]  r←r,[1]⊃zz[1]
[26]  xyz←xyz,[1]26 7↑⊃zz[2]
[27]  zz←geraum
[28]  r←r,[1]1 70⍴70↑'7 ⍀trex '
[29]  r←r,[1]⊃zz[1]
[30]  xyz←xyz,[1]26 7↑⊃zz[2]
[31]  zz←geraum
[32]  r←r,[1]1 70⍴70↑'8 ⍀trex '
[33]  r←r,[1]⊃zz[1]
[34]  xyz←xyz,[1]26 7↑⊃zz[2]
[35]  zz←geraum
[36]  r←r,[1]1 70⍴70↑'9 ⍀trex '
[37]  r←r,[1]⊃zz[1]
[38]  xyz←xyz,[1]26 7↑⊃zz[2]
[39]  zz←geraum
[40]  r←r,[1]1 70⍴70↑'10 ⍀trex '
[41]  r←r,[1]⊃zz[1]
[42]  xyz←xyz,[1]26 7↑⊃zz[2]
[43]  zz←geraum
[44]  r←r,[1]1 70⍴70↑'11 ⍀trex '
[45]  r←r,[1]⊃zz[1]
[46]  xyz←xyz,[1]26 7↑⊃zz[2]
[47]  zz←geraum
[48]  r←r,[1]1 70⍴70↑'12 ⍀trex '
[49]  r←r,[1]⊃zz[1]
[50]  xyz←xyz,[1]26 7↑⊃zz[2]
[51]  zz←geraum
[52]  r←r,[1]1 70⍴70↑'13 ⍀trex '
[53]  r←r,[1]⊃zz[1]
[54]  xyz←xyz,[1]26 7↑⊃zz[2]
[55]  zz←geraum
[56]  r←r,[1]1 70⍴70↑'14 ⍀trex '
[57]  r←r,[1]⊃zz[1]
[58]  xyz←xyz,[1]26 7↑⊃zz[2]
-------------------------------------------------------------
[0]  r←most x
[1] ⍝fmostra uma arvore gerada
[2]  x←26 7⍴x
[3]  x←(x[;1]≠0)/[1]x
[4]  r←1 numera(((1↑⍴x),1)⍴⎕AV[x[;1]]),3 0⍕x[;1+⍳6]
-------------------------------------------------------------
[ 0]  ref;i;j;k;candi;qt;zz;r
[ 1]  zz←⎕FM'f:/infoland/lixo1234'
[ 2]  qt←78
```

```
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10]  →(0=' '∈j↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80⍴80↑j↑candi
[15]  candi←j↓candi
[16]  →((⍴candi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80⍴80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
[22]  y←r
------------------------------------------------------------
[ 0]  opesq vivo825a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;guampa;lixo1;lixonol;relat;res
      p;resu;ri;upag;x;xa;xb;xc;xk;xxx;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←4 ⋄ EVENTO←'PL825   '
[ 5]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 8]  FOLHALA825←ajusta80 FOLHALA825
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA825)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[11]  xk←1 ⋄ resu←0 5⍴0
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←17 80⍴' '
[14]  f←FOLHALA825
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍎VERSAOa←3.04
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[22] inica:
[23]  xxx←geraum
[24]  esse[7+⍳5;]←5 80↑(A1T←⊃xxx[1])
[25]  QTO←0
[26]  zzz←(A1N←⊃xxx[2])avaliamax 1,¯99,99
[27]  resp←resp,zzz,QTO>0
[28]  xxx←geraum
[29]  esse[12+⍳5;]←5 80↑(A2T←⊃xxx[1])
[30]  QTO←0
[31]  zzz←(A2N←⊃xxx[2])avaliamax 1,¯99,99
[32]  resp←resp,zzz,QTO>0
[33]  resu←resu,[1]1 5⍴resp
[34]  acuja←(f[;2]='#')/⍳1↑⍴f
[35]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[36]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[37]  ⍞←(⍎xk←xk+1),'-'
[38]  →testa
[39] fim:upag←(1 0+⍴f)⍴' '
```

```
[40]  →(1=≡n)/elafa
[41]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[42]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[43]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 5 0 5 0)⍀resu
[44]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[45]  →terminando
[46] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),5 0⍀0 1↓resu)
[47]  aaa[1;35 36]←2 0⍀CORRECAO
[48]  lixonol←aaa ⍙FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[49]  '!!!!!  Arquivo GPA com ',(⍀1↑⍴aaa),' linhas e ',(⍀1↓⍴aaa),' colunas'
[50] terminando:
[51]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[52]  relat[1↑⍴relat;;]←upag
[53]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)⍙FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.t
      ex'
[54]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[55]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo826

```
[0]  AVISO
[1]  'este WS é a juncao do 822 (QC8) com o 823 (jarras).'
[2]  '826b = emite ambos em cada folha...'
[3]  '826z = emite um e outro na sequencia para os alunos...'
[4]  '826t = so o tarkin com as regras da implementacao'
[5]  '826j = so as jarras, idem idem'
------------------------------------------------------------
[0]  r←acertaG f
[1]  r←0 0 1 0 0 1 0 0 1\[2]f
[2]  r[;4 7]←'&'
[3]  r←r,'\'
[4]  r←r,'\'
------------------------------------------------------------
[  0]  r←achafilho yy;qtd;capa;conf
[  1] ⍝yy[1]=menor em arvore, [2]=qual operador(1..12), [3,4,5,6]=capacidades,
[  2] ⍝[7 8 9 10]=objetivos
[  3]  capa←yy[2+⍳4]
[  4]  conf←arv[yy[1];⍳4]
[  5]  →(yy[2]=1)/e1
[  6]  →(yy[2]=2)/e2
[  7]  →(yy[2]=3)/e3
[  8]  →(yy[2]=4)/e4
[  9]  →(yy[2]=5)/e5
[ 10]  →(yy[2]=6)/e6
[ 11]  →(yy[2]=7)/e7
[ 12]  →(yy[2]=8)/e8
[ 13]  →(yy[2]=9)/e9
[ 14]  →(yy[2]=10)/ea
[ 15]  →(yy[2]=11)/eb
[ 16]  →(yy[2]=12)/ec
[ 17]  'oops, apareceu um yy[2]=',⍀yy[2]
[ 18]  →0
[ 19] e1:qtd←capa[2]-conf[2]   ⍝ jarra 1   → 2
[ 20]  →(conf[1]≥qtd)/p1
[ 21]  qtd←conf[1]
[ 22] p1:conf[1]←conf[1]-qtd
[ 23]  conf[2]←conf[2]+qtd
[ 24]  →fim
[ 25] e2:qtd←capa[3]-conf[3]   ⍝ 1   → 3
[ 26]  →(conf[1]≥qtd)/p2
[ 27]  qtd←conf[1]
```

```
[ 28] p2:conf[1]←conf[1]-qtd
[ 29]  conf[3]←conf[3]+qtd
[ 30]  →fim
[ 31] e3:qtd←capa[4]-conf[4]   ⍝ 1   → 4
[ 32]  →(conf[1]≥qtd)/p3
[ 33]  qtd←conf[1]
[ 34] p3:conf[1]←conf[1]-qtd
[ 35]  conf[4]←conf[4]+qtd
[ 36]  →fim
[ 37] e4:qtd←capa[1]-conf[1]   ⍝ 2   → 1
[ 38]  →(conf[2]≥qtd)/p4
[ 39]  qtd←conf[2]
[ 40] p4:conf[2]←conf[2]-qtd
[ 41]  conf[1]←conf[1]+qtd
[ 42]  →fim
[ 43] e5:qtd←capa[3]-conf[3]   ⍝ 2   → 3
[ 44]  →(conf[2]≥qtd)/p5
[ 45]  qtd←conf[2]
[ 46] p5:conf[2]←conf[2]-qtd
[ 47]  conf[3]←conf[3]+qtd
[ 48]  →fim
[ 49] e6:qtd←capa[4]-conf[4]   ⍝ 2   → 4
[ 50]  →(conf[2]≥qtd)/p6
[ 51]  qtd←conf[2]
[ 52] p6:conf[2]←conf[2]-qtd
[ 53]  conf[4]←conf[4]+qtd
[ 54]  →fim
[ 55] e7:qtd←capa[1]-conf[1]   ⍝ 3   → 1
[ 56]  →(conf[3]≥qtd)/p7
[ 57]  qtd←conf[3]
[ 58] p7:conf[3]←conf[3]-qtd
[ 59]  conf[1]←conf[1]+qtd
[ 60]  →fim
[ 61] e8:qtd←capa[2]-conf[2]   ⍝ 3   → 2
[ 62]  →(conf[3]≥qtd)/p8
[ 63]  qtd←conf[3]
[ 64] p8:conf[3]←conf[3]-qtd
[ 65]  conf[2]←conf[2]+qtd
[ 66]  →fim
[ 67] e9:qtd←capa[4]-conf[4]   ⍝ 3   → 4
[ 68]  →(conf[3]≥qtd)/p9
[ 69]  qtd←conf[3]
[ 70] p9:conf[3]←conf[3]-qtd
[ 71]  conf[4]←conf[4]+qtd
[ 72]  →fim
[ 73] ea:qtd←capa[1]-conf[1]   ⍝ 4   → 1
[ 74]  →(conf[4]≥qtd)/pa
[ 75]  qtd←conf[4]
[ 76] pa:conf[4]←conf[4]-qtd
[ 77]  conf[1]←conf[1]+qtd
[ 78]  →fim
[ 79] eb:qtd←capa[2]-conf[2]   ⍝ 4   → 2
[ 80]  →(conf[4]≥qtd)/pb
[ 81]  qtd←conf[4]
[ 82] pb:conf[4]←conf[4]-qtd
[ 83]  conf[2]←conf[2]+qtd
[ 84]  →fim
[ 85] ec:qtd←capa[3]-conf[3]   ⍝ 4   → 3
[ 86]  →(conf[4]≥qtd)/pc
[ 87]  qtd←conf[4]
[ 88] pc:conf[4]←conf[4]-qtd
[ 89]  conf[3]←conf[3]+qtd
[ 90]  →fim
```

```
[ 91] fim:
[ 92]  r←conf
-------------------------------------------------------------
[0]  r←criaarv casol;estim
[1]  arvore←(tamanho,8)⍴¯1
[2]  estim←estimador casol
[3]  arvore[1;]←casol,¯1,¯1,¯1,¯1,1,estim
[4]  r←1   ⍝ endereco da raiz
-------------------------------------------------------------
[0]  r←duplo a
[1]  ar1←(8≠+/arv=0)/[1]arv
[2]  r←4∊+/ar1[;⍳4]=((1↑⍴ar1),4)⍴a
-------------------------------------------------------------
[ 0]  r←epossivel x;vetorx;sucessor;contador;i
[ 1]  →fmesmo
[ 2]  vetorx←(9⍴10)⊤x
[ 3]  i←1 ⋄ contador←0
[ 4] comeco:→(i>9)/fim
[ 5]  contador←contador++/vetorx[i]>i↓vetorx
[ 6]  →(i=i←i+1)/comeco
[ 7] fim:r←2|contador
[ 8]  →0
[ 9] fmesmo:r←0
-------------------------------------------------------------
[ 0]  r←estimador casol;casolsep;i;linx;liny;colx;coly;soma;xasol
[ 1]  casolsep←3 3⍴(9⍴10)⊤casol ⋄ xasol←3 3⍴⍳9
[ 2] ⍝ r  ←+/casolsep  ≠  ⍳9   ⍝ este caso e para 1 2 3 4 5 6 7 8 9
[ 3] ⍝ r  ←+/casolsep  ≠ 1 2 3 8 9 4 7 6 5   ⍝ este e' para o eights do lisp
[ 4] ⍝ estimador para o caso de movimentos ate o alvo
[ 5]  i←1 ⋄ soma←0
[ 6] tes:
[ 7]  →(i>9)/aca
[ 8]  coly←(∨/[1]i=casolsep)/⍳3
[ 9]  liny←(∨/[2]i=casolsep)/⍳3
[10]  colx←(∨/[1]i=xasol)/⍳3
[11]  linx←(∨/[2]i=xasol)/⍳3
[12]  soma←soma+(|coly-colx)+|liny-linx
[13]  →(i=i←i+1)/tes
[14] aca:r←soma
-------------------------------------------------------------
[ 0]  filho uu;n;contag;adraux;menor;ACABOUMESMO;vetvaz;xcaca;ultimonodo;menor;adresspai;R
      ESO
[ 1]  adresspai←1 ⋄ ultimonodo←1   ⍝ inicio sempre e na raiz da arvore pos. 1
[ 2] comecao:→(uu≤ultimonodo)/fika
[ 3]  n←1↑(arvore[adresspai;1+⍳4]=¯1)/⍳4   ⍝ n contem o primeiro   ¯1
[ 4]  xcaca←operador(n,arvore[adresspai;1])   ⍝ se xaca=  ¯1 => operador invalido
[ 5]  →(¯1≠xcaca)/vaiindo   ⍝ se nao for   ¯1 pula a excessao e prossegue
[ 6]  arvore[adresspai;1+n]←0   ⍝ marca com 0 o nodo impossivel e ...
[ 7]  →frufru   ⍝ pula todo o processamento principal
[ 8] vaiindo:arvore[adresspai;1+n]←ultimonodo←ultimonodo+1
[ 9] ⍝ a linha de cima incrementa o num_nodo e coloca-o no pai
[10]  arvore[ultimonodo;1]←operador(n,arvore[adresspai;1])
[11] ⍝ a linha de cima coloca no endereco do filho o casol ja operado
[12]  arvore[ultimonodo;6]←adresspai   ⍝ coloca no filho, o endereco do pai
[13]  contag←0 ⋄ adraux←adresspai   ⍝ vai calcular g (profundidade) do pai
[14] ⍝ a linha acima era conta  ←1. Foi mudada para compatibilizar com a teoria
[15] ⍝ em 28/02/01. Se der confusao, retornar
[16] contrr:→(arvore[adraux;6]=¯1)/acabou   ⍝  ¯1 no &pai indica raiz:logo acabou
[17]  contag←contag+1 ⋄ adraux←arvore[adraux;6]   ⍝ contag e' o acumulador de g
[18]  →contrr   ⍝ volta para o loop la em cima
[19] acabou:arvore[adresspai;7]←contag×PESOG   ⍝ em 7 do pai vai o valor de g
[20]  arvore[ultimonodo;7]←(contag+1)×PESOG   ⍝ em 7 do filho vai g+1
[21]  arvore[adresspai;8]←PESOH×estimador arvore[adresspai;1]
```

```
[22] ⍝ linha de cima: no 8 do pai vai o seu estimador (h')
[23]  arvore[ultimonodo;8]←PESOH×estimador arvore[ultimonodo;1]   ⍝ no 8 f.=idem
[24] frufru:→(n≠4)/okok   ⍝ vamos ver se os 4 operadores do pai ja foram...
[25] ⍝ 'ult = ',(4 0   ⍕ultimonodo),' ',(4 0   ⍕menor),' - ', 9 0 5 0 5 0 5 0 5 0 5 0 6 1
      6 1   ⍕arvore[menor;]
[26]  arvore[adresspai;8]←10000+arvore[adresspai;8]
[27] ⍝ linha de cima: se ja foram, bota 10000 em h =>nunca mais sera o menor
[28] okok:
[29]  →(arvore[ultimonodo;8]=0)/fimmesmo   ⍝ testa se acabou
[30]  menor←(,+/[2]arvore[⍳ultimonodo;7 8])⍳⌊/+/[2]arvore[⍳ultimonodo;7 8]
[31] ⍝ linha de cima: acha o menor g+h' para continuar
[32]  adresspai←menor   ⍝ coloca em adresspai, e ...
[33]  →comecao   ⍝ volta la para cima
[34] fimmesmo:ACABOUMESMO←ultimonodo   ⍝ vai recuperar a lista
[35]  vetvaz←ACABOUMESMO   ⍝ ponto de partida
[36] contrar:→(1=ACABOUMESMO←arvore[ACABOUMESMO;6])/joia   ⍝ &pai=1 => raiz
[37]  vetvaz←ACABOUMESMO,vetvaz   ⍝ concatena...
[38]  →contrar   ⍝ volta...
[39] joia:RESO←arvore[(1,vetvaz);1]   ⍝ monta vetor de movimentos
[40]  →0
[41] fika:
------------------------------------------------------------
[0]  r←gabajar j;x;y
[1]  x←jarras j
[2]  r←1 numera x
[3]  y←'       j1   j2   j3   j4 prof hlin  pai opus ultk'
[4]  r←(1 49⍴y),[1]r
------------------------------------------------------------
[0]  r←qual gabatarkin caso;zz
[1]  'chame 7 gabatarkin 972561834'
[2]  qual tarkin caso
[3]  r←verarv
------------------------------------------------------------
[0]  r←geracaso
[1]  r←⍎'123456789'[9?9]
------------------------------------------------------------
[ 0]  r←geracaso23 bb;aa;cap;vic;i
[ 1] ⍝ Se geracaso for chamado com operador inferior a 11, ele devolve uma
[ 2] ⍝ figuracao valida que tem resposta finita.
[ 3] ⍝ Se chamado com qualquer numero maior do que 11, ela devolve um caso
[ 4] ⍝ totalmente hipotetico que provavelmente nao tem solucao. Mas como o
[ 5] ⍝ objetivo do exercicio e' apenas montar a arvore e nao resolve-lo,
[ 6] ⍝ nao ha problema.
[ 7] ⍝
[ 8]  aa←7 6 5 4 1 1 1 4 7 4 3 2 1 3 1 2
[ 9]  aa←aa,8 4 3 2 3 1 3 1 8 3 5 3 3 3 1 1 12 9 7 5 3 1 3 5
[10]  aa←aa,8 5 7 3 2 2 1 3 10 9 6 4 2 2 2 4 10 9 1 7 2 2 1 5
[11]  aa←aa,9 5 2 6 2 2 2 3 10 5 2 6 3 2 2 3 11 3 4 5 3 3 3 2
[12]  aa←aa,''
[13]  aa←((0.125×⍴aa),8)⍴aa
[14]  →(bb>11)/aleat
[15]  r←aa[bb;]
[16]  →0
[17] aleat:cap←5+4?6
[18]  vic←4⍴0
[19]  i←1
[20] in5:→(cap[1]≤+/vic)/aca
[21]  →(vic[i]≥cap[i])/full
[22]  vic[i]←vic[i]+¯1+?2
[23] full:→(i=i←?4)/in5
[24] aca:r←cap,vic
------------------------------------------------------------
[0]  r←conf hlinha obj;x;soma
```

```
[1]  soma←0
[2]  x←conf-obj
[3]  x←x××x
[4]  r←+/x
-------------------------------------------------------------
[ 0]  r←jarras caso;arv;ar1;xun;men;deu;qtd;f;onde;k1;k2;fim;f
[ 1]  arv←250 9⍴0 ⋄ k1←k2←1
[ 2]  arv[1;]←caso[1],0,0,0,0,((caso[1],0 0 0)hlinha caso[4+⍳4]),¯1,¯1,1
[ 3] ⍝ 1,2,3,4=conf, 5=prof, 6=hlinha, 7=pai, 8=operador usado, 9=ultimo k
[ 4]  fim←0 ⋄ qtd←1
[ 5] ini:→(fim≠0)/finaliza
[ 6]  ar1←(qtd,9)⍴arv
[ 7]  xun←(ar1[;5]×k1)+(ar1[;6]×k2)
[ 8]  →(1000>⌊/xun)/ok88
[ 9]  fim←1   ⍝ nao tem solucao
[10]  →ini
[11] ok88:
[12]  men←xun⍳⌊/xun
[13] ⍝ 'men=',(  ⍕men),'   qtd=',(  ⍕qtd),'     ⍴ar1',(  ⍕1  ↑  ⍴ar1),'   xun=',(  ⍕xun),'
       fim=',  ⍕fim
[14] ⍝ 1 numera 3 0   ⍕ar1
[15]  f←ar1[men;9]
[16] t2:
[17]  deu←achafilho men,f,caso
[18]  →(1=duplo deu)/mais1
[19]  qtd←qtd+1
[20]  →(qtd<250)/manda3
[21]  fim←1
[22]  →ini
[23] manda3:
[24]  arv[qtd;⍳4]←deu
[25]  arv[qtd;5]←arv[men;5]+1
[26]  arv[qtd;6]←deu hlinha caso[4+⍳4]
[27]  arv[qtd;7 8 9]←men,f,1
[28] mais1:arv[men;9]←f+1
[29]  →(0≠deu hlinha caso[4+⍳4])/somaf
[30]  fim←1
[31]  onde←qtd-1
[32]  ar1←(qtd,9)⍴arv
[33]  →ini
[34] somaf:→(f<12)/ini
[35] prox:arv[men;5]←9999
[36]  →ini
[37] finaliza:
[38]  →(20>1↑⍴ar1)/deuxabu
[39]  r←ar1
[40]  →0
[41] deuxabu:r←1 8⍴¯1
-------------------------------------------------------------
[ 0]  r←operador operando;mataux;col;lin;rkk
[ 1] ⍝ operando[1] e o numero do operador [1:4]
[ 2] ⍝ operando[2] e o casol
[ 3]  mataux←3 3⍴(9⍴10)⍪operando[2]
[ 4]  col←(∨/[1]9=mataux)/⍳3
[ 5]  lin←(∨/[2]9=mataux)/⍳3
[ 6]  →(operando[1]≠1)/edois
[ 7]  →(lin=1)/erro
[ 8]  mataux[lin;col]←mataux[lin-1;col] ⋄ mataux[lin-1;col]←9
[ 9]  →tacerto
[10] edois:→(operando[1]≠2)/etres
[11]  →(col=3)/erro
[12]  mataux[lin;col]←mataux[lin;col+1] ⋄ mataux[lin;col+1]←9
[13]  →tacerto
```

```
[14] etres:→(operando[1]≠3)/equatro
[15]  →(lin=3)/erro
[16]  mataux[lin;col]←mataux[lin+1;col] ⋄ mataux[lin+1;col]←9
[17]  →tacerto
[18] equatro:
[19]  →(col=1)/erro
[20]  mataux[lin;col]←mataux[lin;col-1] ⋄ mataux[lin;col-1]←9
[21]  →tacerto
[22] erro:r←¯1
[23]  →0
[24] tacerto:rkk←(9⍴10)⊥,mataux
[25]  →(rkk∈,arvore[⍳ultimonodo;1])/jatem
[26]  r←rkk
[27]  →0
[28] jatem:r←¯1
-------------------------------------------------------------
[0]  r←pedemail x
[1]  →(40≠+/' '=x)/aindanao
[2]  r←80↑'Por favor, informe seu e-mail: ⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_'
[3]  →junnao
[4] aindanao:r←80↑'e-mail cadastrado: ⍀verb+',x,'+'
[5] junnao:
-------------------------------------------------------------
[ 0]  ref;i;j;k;candi;qt;zz;r
[ 1]  zz←ΔFM'f:/infoland/lixo1234'
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10]  →(0=' '∈j↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80⍴80↑j↑candi
[15]  candi←j↓candi
[16]  →((⍴candi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80⍴80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
[22]  y←r
-------------------------------------------------------------
[0]  uu tarkin x;r;raiz;hj;xxx;i;raiz
[1] ⍝ x e o casol de inicio, por exemplo 123654789 (9 e branco)
[2]  hj←~epossivel x
[3]  →(hj)/pode
[4] naopode:'Nao e possivel resolver este tarkin'
[5]  →0
[6] pode:raiz←criaarv x
[7]  filho uu
-------------------------------------------------------------
[0]  r←verarv;nl
[1]  nl←+/arvore[;1]≠¯1
[2]  r←(4 0⍕(nl,1)⍴⍳nl),'-',10 0 5 0 5 0 5 0 5 0 5 0 5 0 8 0⍕(nl,8)↑arvore
[3]  cab←1 53⍴53↑' nodo caso----- --f1 --f2 --f3 --f4 &pai  prof   hlin'
[4]  r←cab,[1]r
-------------------------------------------------------------
[ 0]  opesq vivo826b n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
```

```
      l;xixo;aaa;lixo1;xx;ind;yy
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←9 ⋄ EVENTO←'PL826b  '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA826b←ajusta80 FOLHALA826b
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA826b)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 14⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←17 80⍴' '
[15]  f←FOLHALA826b
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←2.11
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[23]  esse[16;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[17;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inicai:
[26]  xx←geracaso
[27]  15 tarkin xx
[28]  yy←verarv
[29]  ind←5+?3
[30]  esse[7+⍳3;]←3 80↑acertaG 3 3⍴9 0⍎xx
[31]  esse[11;]←1 80⍴80↑2 0⍎ind-1
[32]  resp←resp,,⍪(18⍴1 0)⍉yy[ind;6+⍳9]
[33] ⍝----
[34] volta:caso←geracaso23?20
[35]  reso←jarras,caso
[36]  →(¯1=1↑⍴,reso)/volta
[37]  linha←4+?3
[38]  esse[12;]←80↑(2 0⍎caso[1]),',',(2 0⍎caso[2]),',',(2 0⍎caso[3]),',',2 0⍎caso[4]
[39]  esse[13;]←80↑(2 0⍎caso[5]),',',(2 0⍎caso[6]),',',(2 0⍎caso[7]),',',2 0⍎caso[8]
[40]  esse[14;]←80↑2 0⍎linha
[41]  esse[15;]←80↑2 0⍎caso[1] ⍝ inserido em 11/03/08, verificar...
[42]  resp←resp,(,reso[linha;⍳4])
[43]  resu←resu,[1](1,14)⍴resp
[44]  acuja←(f[;2]='#')/⍳1↑⍴f
[45]  f[acuja;⍳80]←esse[⍪,f[acuja;3 4],' ';]
[46]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[47]  ⍞←(⍎xk←xk+1),'-'
[48]  →testa
[49] fim:upag←(1 0+⍴f)⍴' '
[50]  →(1=≡n)/elafa
[51]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[52]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[53]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯'-'edit(lixo1←5 0 10 0 3 0 3 0 5 0 3 0 3 0 5 0 3 0 3 0 8
      0 3 0 3 0 3 0)⍎resu
[54]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[55]  →terminando
[56] elafa:aaa←(ylu,'¯'-'edit 3 0 3 0 3 0 5 0 3 0 3 0 5 0 3 0 3 0 8 0 3 0 3 0 3 0⍎0 1↓resu)
[57]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[58]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[59] terminando:
[60]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\begin{verbatim}'
```

```
[61]  relat[1↑⍴relat;;]←upag
[62]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[63]  lixonol←lixonol,[1]1 80⍴80↑'\end{verbatim} \end{document}'
[64] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[65]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[66]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[67]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo826j n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;caso;reso;linha
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←4 ⋄ EVENTO←'PL826j   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA826j←ajusta80 FOLHALA826j
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA826j)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 5⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←13 80⍴' '
[15]  f←FOLHALA826j
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←3.17
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[23]  esse[12;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[13;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26] volta:caso←geracaso23?20
[27]  reso←jarras,caso
[28]  →(¯1=1↑,reso)/volta
[29]  linha←10+?8
[30]  esse[8;]←80↑(2 0⍎caso[1]),',',(2 0⍎caso[2]),',',(2 0⍎caso[3]),',',2 0⍎caso[4]
[31]  esse[9;]←80↑(2 0⍎caso[5]),',',(2 0⍎caso[6]),',',(2 0⍎caso[7]),',',2 0⍎caso[8]
[32]  esse[10;]←80↑2 0⍎linha
[33]  esse[11;]←80↑2 0⍎caso[1]
[34] continua:
[35]  resp←resp,,reso[linha;⍳4]
[36]  resu←resu,[1](1,5)⍴resp
[37]  acuja←(f[;2]='#')/⍳1↑⍴f
[38]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[39]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[40]  ⍞←(⍎xk←xk+1),'-'
[41]  →testa
[42] fim:upag←(1 0+⍴f)⍴' '
[43]  →(1=≡n)/elafa
[44]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[45]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[46]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 5 0 5 0)⍎resu
[47]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[48]  →terminando
[49] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),4 0⍎0 1↓resu)
[50]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[51]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[52] terminando:
```

```
[53]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\begin{verbatim}'
[54]  relat[1↑⍴relat;;]←upag
[55]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[56]  lixonol←lixonol,[1](ajusta80 INSTRUC826j),[1]1 80⍴80↑'\end{verbatim} \end{document}'
[57] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[58]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[ 0]  opesq vivo826t n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;ind;lixo1;lixonol;nomes;ql39;q
      linha;relat;resp;resu;upag;xixo;xk;xx;ylu;yy
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←9 ⋄ EVENTO←'PL826t   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA826t←ajusta80 FOLHALA826t
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA826t)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[13]  xk←1 ⋄ resu←0 10⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←13 80⍴' '
[16]  f←FOLHALA826t
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←4.15
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[22]  →(36=1↓⍴ylu)/zebra
[23]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[24]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[25]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[26]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[27]  →maiszebra
[28] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[52]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[53]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 3 0 3 0 5 0 3 0 3 0 5 0 3 0 3 0)⍕resu
[54]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[55]  →terminando
[56] elafa:aaa←(ylu[;⍳36],3 0⍕0 1↓resu)
[57]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[58]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[59] terminando:
[60]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[61]  relat[1↑⍴relat;;]←upag
[62]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[63]  lixonol←lixonol,[1](ajusta80 INSTRUC826t),[1]1 80⍴80↑'⍀end{verbatim} ⍀end{document}'
[64] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[65]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[66]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[67]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo826z n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;xx;ind;yy
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←9 ⋄ EVENTO←'PL826   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA822←(((1↑⍴FOLHALA822)⌈(1↑⍴FOLHALA823)),80)↑ajusta80 FOLHALA822
[10]  FOLHALA823←(((1↑⍴FOLHALA822)⌈(1↑⍴FOLHALA823)),80)↑ajusta80 FOLHALA823
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA822)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[13]  xk←1 ⋄ resu←0 10⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  →(0=2|xk)/epar
[16]  esse←11 80⍴' '
[17]  f←FOLHALA822
[18]  esse[1;]←80↑dhx[1;]
[19]  esse[2;]←80↑dhx[2;]
[20]  esse[3;]←80↑4 2⍕VERSAOa←4.17
[21]  esse[4;]←80↑ylu[xk;⍳6]
[22]  esse[5;]←80↑ylu[xk;6+⍳30]
[23]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO[⍳4],'{⍀large{',EVENTO[4+⍳4],'}}'
[24]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[25] inicai:
[26]  xx←geracaso
[27]  15 tarkin xx
[28]  yy←verarv
[29]  ind←6+?3
[30]  esse[7+⍳3;]←3 80↑acertaG 3 3⍴9 0⍕xx
[31]  esse[11;]←1 80⍴80↑2 0⍕ind-1
[32]  resp←resp,,⍪(18⍴1 0)⍀yy[ind;6+⍳9]
[33]  resu←resu,[1](1,10)⍴resp
[34]  acuja←(f[;2]='#')/⍳1↑⍴f
[35]  f[acuja;⍳80]←esse[⍪,f[acuja;3 4],' ';]
[36]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[37]  ⍞←(⍕xk←xk+1),'-'
[38]  →testa
[39] epar:
[40]  esse←11 80⍴' '
[41]  f←FOLHALA823
[42]  esse[1;]←80↑dhx[1;]
[43]  esse[2;]←80↑dhx[2;]
```

```
[44]  esse[3;]←80↑4 2⍕VERSAOa←3.18
[45]  esse[4;]←80↑ylu[xk;⍳6]
[46]  esse[5;]←80↑ylu[xk;6+⍳30]
[47]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO[⍳4],'{\large{',EVENTO[4+⍳4],'}}'
[48]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[49] inicap:
[50] volta:caso←geracaso23?20
[51]  reso←jarras,caso
[52]  →(¯1=1↑,reso)/volta
[53]  linha←4+?3
[54]  esse[8;]←80↑(2 0⍕caso[1]),',',(2 0⍕caso[2]),',',(2 0⍕caso[3]),',',2 0⍕caso[4]
[55]  esse[9;]←80↑(2 0⍕caso[5]),',',(2 0⍕caso[6]),',',(2 0⍕caso[7]),',',2 0⍕caso[8]
[56]  esse[10;]←80↑2 0⍕linha
[57]  esse[11;]←80↑2 0⍕caso[1] ⍝ inserido em 11/03/08, verificar...
[58] continua:
[59]  resp←resp,(,reso[linha;⍳4]),5⍴¯9
[60]  resu←resu,[1](1,10)⍴resp
[61]  acuja←(f[;2]='#')/⍳1↑⍴f
[62]  f[acuja;⍳80]←esse[⍙,f[acuja;3 4],' ';]
[63]  relat[1+xk;;]←(ULTIMOa←f),[1](1,1↓⍴f)⍴200↑'\newpage'
[64]  ⎕←(⍕xk←xk+1),'-'
[65]  →testa
[66] fim:upag←(1 0+⍴f)⍴' '
[67]  →(1=≡n)/elafa
[68]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[69]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[70]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯'-'edit(lixo1←5 0 10 0 3 0 3 0 5 0 3 0 3 0 5 0 3 0 3 0)⍕r
      esu
[71]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[72]  →terminando
[73] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),'¯'-'edit 3 0⍕0 1↓resu)
[74]  aaa[1;35 36]←2 0⍕CORRECAO
[75]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[76]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[77] terminando:
[78]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\begin{verbatim}'
[79]  relat[1↑⍴relat;;]←upag
[80]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[81]  lixonol←lixonol,[1]1 80⍴80↑'\end{verbatim} \end{document}'
[82] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[83]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[84]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[85]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo830

```
[ 0]  AVISO
[ 1]  'Existe uma variavel global chamada CARAC que pode ser alterada'
[ 2]  'E um vetor de 4 caracteres, a saber:'
[ 3]  'CARAC[1]=espaco vazio no laberinto (usualmente um +)'
[ 4]  'CARAC[2]=casa inicial do laberinto (usualmente um I)'
[ 5]  'CARAC[3]=casa final... (F)'
[ 6]  'CARAC[4]=obstaculo... (o)'
[ 7]  ' zz←totali830 xx desenha830 acerta830 resolve830 xx←28 gera830 34 68'
[ 8]  'pode fazer:'
[ 9]  '⎕PW←200'
[10]  ' zz←totali830 xx desenha830 acerta830 resolve830 xx←4000 gera830 1000 1000'
[11]  ' xx[⍳300;⍳150]'
[12]  '1 numera ARV'
-------------------------------------------------------------
[ 0]  r←acerta830 p;raiz
```

```
[ 1]  p[1;2]←p[1;2]+1
[ 2]  P←p
[ 3]  r←2 2⍴p[(1↑⍴p);3 4],p[(1↑⍴p);1 2]
[ 4]  raiz←p[(1↑⍴p);5]
[ 5] t1:→(raiz=¯1)/aca
[ 6]  r←r,[1]2 2⍴p[raiz;3 4],p[raiz;1 2]
[ 7]  raiz←p[raiz;5]
[ 8]  →t1
[ 9] aca:r←R←⌽[1]r
-------------------------------------------------------------
[0]  r←acertaexemplo x
[1]  r←'$I'edit x
[2]  r←'+F'edit r
[3]  r←'-+'edit r
[4]  r←'*o'edit r
-------------------------------------------------------------
[ 0]  r←x achadir t;fim
[ 1] t1:→(x[t[1];t[2]]=CARAC[3])/ulala
[ 2]  →(x[t[1];t[2]]≠CARAC[1])/term
[ 3]  fim←(1+⌊((,x)⍳CARAC[3])÷1↓⍴x),(1↓⍴x)⊥(,x)⍳CARAC[3]
[ 4]  t←t+0 1
[ 5]  →(t[2]>fim[2])/term
[ 6]  →t1
[ 7] term:r←t+0 ¯1
[ 8]  →0
[ 9] ulala:r←t
-------------------------------------------------------------
[ 0]  r←l desenha830 re;i;alfa
[ 1]  r←l
[ 2]  i←1
[ 3] t1:
[ 4]  →(i≥1↑⍴re)/fim
[ 5]  alfa←re[i;]
[ 6]  →(re[i;1]=re[i+1;1])/desdir
[ 7]  →(re[i;1]<re[i+1;1])/desbai
[ 8] descim:
[ 9] t33:→(2=+/alfa=re[i+1;])/soma
[10]  r[alfa[1];alfa[2]]←'^'
[11]  alfa←alfa+¯1 0
[12]  →t33
[13] desbai:
[14] t34:→(2=+/alfa=re[i+1;])/soma
[15]  r[alfa[1];alfa[2]]←'v'
[16]  alfa←alfa+1 0
[17]  →t34
[18] desdir:
[19] t35:→(2=+/alfa=re[i+1;])/soma
[20]  r[alfa[1];alfa[2]]←'>'
[21]  alfa←alfa+0 1
[22]  →t35
[23] soma:i←i+1
[24]  →t1
[25] fim:
-------------------------------------------------------------
[ 0]  r←m envolta u;z
[ 1]  →((u[1]=1↑⍴m)∨(u[1]=1)∨(u[2]=1)∨(u[2]=1↓⍴m))/erro
[ 2]  z←m[u[1]-1;u[2]-1]
[ 3]  z←z,m[u[1]-1;u[2]]
[ 4]  z←z,m[u[1]-1;u[2]+1]
[ 5]  z←z,m[u[1];u[2]-1]
[ 6]  z←z,m[u[1];u[2]]
[ 7]  z←z,m[u[1];u[2]+1]
[ 8]  z←z,m[u[1]+1;u[2]-1]
```

```
[ 9]  z←z,m[u[1]+1;u[2]]
[10]  z←z,m[u[1]+1;u[2]+1]
[11]  →(1=∧/CARAC[1]=z)/ok
[12] erro:
[13]  r←1
[14]  →0
[15] ok:→((1↑⍴m)≠+/,(m[;u[2]])=CARAC[1])/erro
[16]  r←0
[17]  →0
------------------------------------------------------------
[ 0]  r←q gera830 tam;E;S;aa;alt;col;colmax;i;in;j;lar;max;nc;psu;qtd;vv;pontos;verts;cont
[ 1] ini:
[ 2]  qtd←0
[ 3]  r←tam⍴CARAC[1]
[ 4]  pontos←0 4⍴0
[ 5]  verts←0 2⍴0
[ 6]  i←1
[ 7] t1:→(i>q)/fim
[ 8]  qtd←qtd+1
[ 9]  →(qtd<10000)/ok8
[10] ⍝←'!'
[11]  →ini
[12] ok8:
[13]  in←?×/tam
[14]  lar←3 3 3 3 3 4 4 4 4 5 5 5 6 6 6 7 7 8 8 10 14 18 22 25
[15]  lar←lar[?⍴lar]
[16]  alt←3 3 3 3 3 4 4 4 4 5 5 5 6 6 6 7 7 8 8 10 14 18 22 25
[17]  alt←alt[?⍴alt]
[18]  psu←(1+⌈in÷tam[1]),tam[2]|in
[19]  vv←(psu-2),(psu[1]+alt),(psu[2]+lar)
[20]  →((1<⌊/vv)∧(vv[3]<tam[1])∧(vv[4]<tam[2]))/ok
[21] ⍝←'*'
[22]  →t1
[23] ok:
[24]  →(1=∧/CARAC[1]=,r[vv[1]+⍳alt+2;vv[2]+⍳lar+2])/ok2
[25] ⍝←'o'
[26]  →t1
[27] ⍝ok2:r[vv[1]+1+⍳alt;vv[2]+1+⍳lar]←'123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ'[1+35|i]
[28] ok2:r[vv[1]+1+⍳alt;vv[2]+1+⍳lar]←CARAC[4]  ⍝ o que preencher
[29]  pontos←pontos,[1]1 4⍴psu,alt,lar
[30]  i←i+1
[31]  →t1
[32] fim:
[33] ⍝ pondo a parede de baixo
[34]  col←⌊tam[2]÷2 ⋄ max←0
[35] t5:→(col>tam[2]-5)/fim81
[36]  nc←⌊/+/[2]∧⍀[2]CARAC[1]=⌽⍉[1]r[;col+¯1 0 1]
[37]  →(nc≤max)/blz1
[38]  max←nc
[39]  colmax←col
[40] blz1:col←col+1
[41]  →t5
[42] fim81:
[43]  max←¯1+max⌊⌊tam[1]÷1.5
[44]  r[(tam[1]-max)+⍳max;colmax]←CARAC[4]
[45]  verts←4 2⍴(tam[1]-max),(colmax-1),tam[1],(colmax-1),(tam[1]-max),(colmax+1),tam[1],c
      olmax+1
[46] ⍝ pondo a parede de cima
[47]  col←⌊tam[2]÷2 ⋄ max←0
[48] t67:→(col<6)/fim83
[49]  nc←⌊/+/[2]∧⍀[2]CARAC[1]=⌽r[;col+¯1 0 1]
[50]  →(nc≤max)/blz77
[51]  max←nc
```

```
[52]  colmax←col
[53] blz77:col←col-1
[54]  →t67
[55] fim83:
[56]  max←¯1+max[⌊tam[1]÷1.5
[57]  r[⍳max;colmax]←CARAC[4]
[58]  verts←verts,[1]4 2⍴1,(colmax-1),(max+1),(colmax-1),1,(colmax+1),(max+1),colmax+1
[59] ⍝ achando E e S
[60] xxx:
[61]  →(1=?2)/coroa
[62] cara: ⍝E encima, S embaixo
[63]  E←(1+?tam[1]-⌈tam[1]÷2),((2 3 4)[?3])
[64]  S←(aa+?tam[1]-aa←⌈tam[1]÷2),((tam[2]-1 2 3)[?3])
[65]  →juntara
[66] coroa: ⍝ E embaixo, S encima
[67]  E←(aa+?tam[1]-aa←⌈tam[1]÷2),((2 3 4)[?3])
[68]  S←(1+?tam[1]-⌈tam[1]÷2),((tam[2]-1 2 3)[?3])
[69] juntara:
[70]  →((0≠r envolta E)∨(0≠r envolta S))/xxx
[71]  r[E[1];E[2]]←CARAC[2]  ⍝ inicio
[72]  r[S[1];S[2]]←CARAC[3]  ⍝ fim
[73] ⍝ calculando os vertices
[74]  verts←(1 2⍴E),[1]verts
[75]  j←1
[76] t2:→(j≥i)/mesmo
[77]  verts←verts,[1]1 2⍴(pontos[j;1]-1),pontos[j;2]-1
[78]  verts←verts,[1]1 2⍴(pontos[j;1]-1),pontos[j;2]+pontos[j;4]
[79]  verts←verts,[1]1 2⍴(pontos[j;1]+pontos[j;3]),pontos[j;2]-1
[80]  verts←verts,[1]1 2⍴(pontos[j;1]+pontos[j;3]),pontos[j;2]+pontos[j;4]
[81]  j←j+1
[82]  →t2
[83] mesmo:verts←verts,[1]1 2⍴S
------------------------------------------------------------
[ 0]  r←alfa numerac x;⎕IO;zz;a1;a2;a3;a4;t
[ 1] ⍝ v.1.4
[ 2]  ⎕IO←1
[ 3]  →(~isnum x)/isalpha
[ 4]  t←(1+⍴⍕⌈/,x)   ⍝ t recebe o tamanho desejado para o format
[ 5]  →(alfa=¯1)/alfabeto
[ 6]  →(alfa=0)/zero
[ 7]  r←(((1↑⍴x),3)⍴3 0⍕¯1+alfa+⍳1↑⍴x),'-',(t,0)⍕x
[ 8]  →0
[ 9] zero:r←(((1↑⍴x),3)⍴3 0⍕¯1+⍳1↑⍴x),'-',(t,0)⍕x
[10]  →0
[11] alfabeto:
[12]  zz←2 702⍴' '
[13]  a1←(26⍴' '),(26⍴'a'),(26⍴'b'),(26⍴'c'),(26⍴'d'),(26⍴'e'),(26⍴'f'),26⍴'g'
[14]  a2←(26⍴'h'),(26⍴'i'),(26⍴'j'),(26⍴'k'),(26⍴'l'),(26⍴'m'),(26⍴'n'),26⍴'o'
[15]  a3←(26⍴'p'),(26⍴'q'),(26⍴'r'),(26⍴'s'),(26⍴'t'),(26⍴'u'),(26⍴'v'),26⍴'w'
[16]  a4←(26⍴'x'),(26⍴'y'),(26⍴'z')
[17]  zz[1;]←a1,a2,a3,a4
[18]  zz[2;]←702⍴'abcdefghijklmnopqrstuvwxyz'
[19]  r←((((1↑⍴x),2)↑⍉zz),')'),(t,0)⍕x
[20]  →0
[21] isalpha:
[22]  →(alfa=¯1)/nnnbeto
[23]  →(alfa=0)/nnnzero
[24]  r←(1,(4+1↓⍴x))⍴'    ',(1↓⍴x)⍴'1234567890'
[25]  r←r,[1](((1↑⍴x),3)⍴3 0⍕¯1+alfa+⍳1↑⍴x),' ',x
[26]  →0
[27] nnnzero:r←(((1↑⍴x),3)⍴3 0⍕¯1+⍳1↑⍴x),'-',x
[28]  →0
[29] nnnbeto:zz←2 702⍴' '
```

```
[30]  a1←(26⍴' '),(26⍴'a'),(26⍴'b'),(26⍴'c'),(26⍴'d'),(26⍴'e'),(26⍴'f'),26⍴'g'
[31]  a2←(26⍴'h'),(26⍴'i'),(26⍴'j'),(26⍴'k'),(26⍴'l'),(26⍴'m'),(26⍴'n'),26⍴'o'
[32]  a3←(26⍴'p'),(26⍴'q'),(26⍴'r'),(26⍴'s'),(26⍴'t'),(26⍴'u'),(26⍴'v'),26⍴'w'
[33]  a4←(26⍴'x'),(26⍴'y'),(26⍴'z')
[34]  zz[1;]←a1,a2,a3,a4
[35]  zz[2;]←702⍴'abcdefghijklmnopqrstuvwxyz'
[36]  r←((((1↑⍴x),2)↑⍉zz),')'),x
[37]  →0
-------------------------------------------------------------
[0]  r←a pitag b
[1]  r←(((a[1]-b[1])*2)+((a[2]-b[2])*2))*0.5
-------------------------------------------------------------
[ 0]  r←resolve830 labe;aa;arv;arva;atu;bb;cam;fim;ini;k1;k2;pai;temp;ult;xx
[ 1]  ult←0 ⋄ k1←k2←1
[ 2] ⍝ acha I=ini e depois F=fim
[ 3]  ini←(1+⌊((,labe)⍳CARAC[2])÷1↓⍴labe),(1↓⍴labe)|(,labe)⍳CARAC[2]
[ 4]  fim←(1+⌊((,labe)⍳CARAC[3])÷1↓⍴labe),(1↓⍴labe)|(,labe)⍳CARAC[3]
[ 5]  arv←100 9⍴0 ⋄ cam←1 2⍴ini ⋄ atu←ini+0 1
[ 6] anda:→(labe[atu[1];atu[2]]≠CARAC[1])/pula
[ 7]  cam←cam,[1]1 2⍴atu
[ 8]  atu←atu+0 1
[ 9]  →anda
[10] pula:
[11]  ult←ult+1
[12]  arv[ult;]←ini,(atu-0 1),¯1 0 0,((atu-0 1)pitag fim),0
[13] achamenor:
[14]  aa←(arv[⍳ult;8]×k1)+arv[⍳ult;9]×k2
[15]  xx←aa⍳⌊/aa
[16]  temp←,arv[xx;3 4]
[17]  pai←⌊xx
[18] ⍝ →(arv[xx;6]≠0)/filho2
[19] filho1:
[20] t1:→(labe[temp[1];temp[2]+1]=CARAC[1])/achou1
[21]  temp←temp+¯1 0
[22]  →(temp[1]<1)/fim1
[23]  →t1
[24] achou1:
[25]  ult←ult+1
[26]  bb←labe achadir temp
[27]  arv[ult;]←temp,bb,pai,0 0,(temp pitag fim),arv[pai;9]+1
[28] ⍝ →juntara1
[29]  →filho2
[30] fim1:
[31]  ult←ult+1
[32]  arv[ult;]←temp,bb,pai,0 0,((bb←temp)pitag fim),9999
[33] ⍝ →juntara1
[34] filho2:
[35]  temp←arv[xx;3 4]
[36] t2:→(labe[temp[1];temp[2]+1]=CARAC[1])/achou2
[37]  temp←temp+1 0
[38]  →(temp[1]>1↑⍴labe)/fim2
[39]  →t2
[40] achou2:
[41]  ult←ult+1
[42]  bb←labe achadir temp
[43]  arv[ult;]←temp,bb,pai,0 0,(temp pitag fim),arv[pai;9]+1
[44]  →juntara2
[45] fim2:
[46]  ult←ult+1
[47]  arv[ult;]←temp,bb,pai,0 0,((bb←temp)pitag fim),9999
[48]  →juntara2
[49] juntara2:
[50]  arv[pai;7]←ult
```

```
[51]  arv[pai;9]←9999
[52] ⍝ →oba1
[53] juntara1:
[54]  arv[pai;6]←ult-1 ⍝ ???????????????? a 11/04/14, para consertar a arvore
[55] oba1:→(bb[2]=fim[2])/acabou
[56]  →achamenor
[57] acabou:
[58] ⍝ xx,bb,temp,ult
[59]  pai←ult
[60]  →(bb[1]>fim[1])/sobe
[61]  →(bb[1]<fim[1])/desce
[62]  →finalzao
[63] desce:
[64]  arva←0
[65] t3:→(2=+/,(bb+arva,0)=fim)/uga2
[66]  arva←arva+1
[67]  →t3
[68] uga2:
[69]  arv[ult;7]←ult+1
[70]  ult←ult+1
[71]  arv[ult;]←bb,fim,pai,0,0,(bb pitag fim),0
[72]  →finalzao
[73] sobe:
[74]  arva←0
[75] t4:→(2=+/,(bb-arva,0)=fim)/uga3
[76]  arva←arva+1
[77]  →t4
[78] uga3:
[79]  arv[ult;6]←ult+1
[80]  ult←ult+1
[81]  arv[ult;]←bb,fim,pai,0,0,(bb pitag fim),0
[82]  →finalzao
[83] finalzao:r←ARV←arv[⍳ult;]
------------------------------------------------------------
[ 0]  r←resolve830_obsoleto labe;aa;arv;arva;atu;bb;cam;fim;ini;k1;k2;pai;temp;ult;xx
[ 1] ⍝ obsoleto porque nao gera os 2 filhos e em geral eh pior do que o outro...
[ 2]  ult←0 ⋄ k1←k2←1
[ 3] ⍝ acha $=ini e depois +=fim
[ 4]  ini←(1+⌊((,labe)⍳'$')÷1↓⍴labe),(1↓⍴labe)|(,labe)⍳'$'
[ 5]  fim←(1+⌊((,labe)⍳'+')÷1↓⍴labe),(1↓⍴labe)|(,labe)⍳'+'
[ 6]  arv←100 9⍴0 ⋄ cam←1 2⍴ini ⋄ atu←ini+0 1
[ 7] anda:→(labe[atu[1];atu[2]]≠'0')/pula
[ 8]  cam←cam,[1]1 2⍴atu
[ 9]  atu←atu+0 1
[10]  →anda
[11] pula:
[12]  ult←ult+1
[13]  arv[ult;]←ini,(atu-0 1),¯1 0 0,((atu-0 1)pitag fim),0
[14] achamenor:
[15]  aa←(arv[⍳ult;8]×k1)+arv[⍳ult;9]×k2
[16]  xx←aa⍳⌊/aa
[17]  temp←,arv[xx;3 4]
[18]  pai←|xx
[19]  →(arv[xx;6]≠0)/filho2
[20] filho1:
[21] t1:→(labe[temp[1];temp[2]+1]='0')/achou1
[22]  temp←temp+¯1 0
[23]  →(temp[1]<1)/fim1
[24]  →t1
[25] achou1:
[26]  ult←ult+1
[27]  bb←labe achadir temp
[28]  arv[ult;]←temp,bb,pai,0 0,(temp pitag fim),arv[pai;9]+1
```

```
[29]  →juntara1
[30] fim1:
[31]  ult←ult+1
[32]  arv[ult;]←temp,bb,pai,0 0,((bb←temp)pitag fim),9999
[33]  →juntara1
[34] filho2:
[35] t2:→(labe[temp[1];temp[2]+1]='0')/achou2
[36]  temp←temp+1 0
[37]  →(temp[1]>1↑⍴labe)/fim2
[38]  →t2
[39] achou2:
[40]  ult←ult+1
[41]  bb←labe achadir temp
[42]  arv[ult;]←temp,bb,pai,0 0,(temp pitag fim),arv[pai;9]+1
[43]  →juntara2
[44] fim2:
[45]  ult←ult+1
[46]  arv[ult;]←temp,bb,pai,0 0,((bb←temp)pitag fim),9999
[47]  →juntara2
[48] juntara2:
[49]  arv[pai;7]←ult
[50]  arv[pai;9]←9999
[51]  →oba1
[52] juntara1:
[53]  arv[pai;6]←ult
[54] oba1:→(bb[2]=fim[2])/acabou
[55]  →achamenor
[56] acabou:
[57] ⍝ xx,bb,temp,ult
[58]  pai←ult
[59]  →(bb[1]>fim[1])/sobe
[60]  →(bb[1]<fim[1])/desce
[61]  →finalzao
[62] desce:
[63]  arva←0
[64] t3:→(2=+/,(bb+arva,0)=fim)/uga2
[65]  arva←arva+1
[66]  →t3
[67] uga2:
[68]  ult←ult+1
[69]  arv[ult;]←bb,fim,pai,0,0,(bb pitag fim),0
[70]  →finalzao
[71] sobe:
[72]  arva←0
[73] t4:→(2=+/,(bb-arva,0)=fim)/uga3
[74]  arva←arva+1
[75]  →t4
[76] uga3:
[77]  ult←ult+1
[78]  arv[ult;]←bb,fim,pai,0,0,(bb pitag fim),0
[79]  →finalzao
[80] finalzao:r←ARV←arv[⍳ult;]
------------------------------------------------------------
[0]  testa;i;lixo;lixo2
[1]  i←1
[2]  →(i>1000)/0
[3]  lixo←totali830 x desenha830 acerta830 resolve830a x←30 gera830 40 70
[4]  lixo2←totali830 x desenha830 acerta830 resolve830 x
[5]  i,lixo,lixo2
[6]  i←i+1
[7]  →2
------------------------------------------------------------
[0]  r←totali830 z
```

```
[1]  z←,z
[2]  r←(+/z='^')+(+/z='>')++/z='v'
-------------------------------------------------------------
[ 0]  opesq vivo830a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz;yy
[ 1] ⍝ CARAC←'+IFo'
[ 2] ⍝  )copy vivo830 grupo
[ 3] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 4] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 5]  →(0≠⎕NC'opesq')/qveio
[ 6]  opesq←10⍴' '
[ 7] qveio:
[ 8]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 9]  EVENTO←'PL830   '
[10]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[11]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[12]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[13] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[14]  ylu←n grupo ylu
[15] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[58] fim:upag←(1 0+ρf)ρ' '
[59]  →(1=≡n)/elafa
[60]  upag[1;]←(1↓ρupag)↑'⍀begin{verbatim}'
[61]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[62]  upag[2+ι1↑ρresu;ι+/lixo1]←(lixo1←5 0 10 0)⍉resu
[63]  upag[3+1↑ρresu;]←(1↓ρupag)↑'⍀end{verbatim}'
[64]  →terminando
[65] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[66] elafa:aaa←(ylu[;ι36],9 0⍉0 1↓resu)
[67] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[68]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[69]  '!!!!!  Arquivo GPA com ',(⍉1↑ρaaa),' linhas e ',(⍉1↓ρaaa),' colunas'
[70] terminando:
[71]  upag[1↑ρupag;]←(1↓ρupag)↑'⍀end{document}'
[72]  relat[1↑ρrelat;;]←upag
[73]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[74] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[75]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[76]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[77]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo831

```
[0]  AVISO
[1]  'A funcao 50 50 mostra CAM - mostra o caminho percorrido na folha CAM (ultima)'
[2]  'Veja prova: e uma matriz 50x50 na qual um caminho tortuoso de uns eh construido'
[3]  'a funcao       provan←montaprova prova    cria uma matriz provan onde ficam os uns
      e'
[4]  'onde tinha zero ela coloca 1000'
[5]  'Ao executar astar provan, e depois 50 50 mostra CAM, ve-se que a funcao opera direi
      tinho'
-------------------------------------------------------------
[ 0]  r←astar e;f1;f2;f3;f4;h;i;inf;j;la;menor;ocara;t;zica;ult;uba
[ 1]  inf←10000000000
[ 2]  h←(ρe)ρ⌊/,e
[ 3]  t←1↑ρe
[ 4]  i←t
[ 5] t1:→(i<1)/fim
[ 6]  j←t
[ 7] t2:→(j<1)/oba
[ 8]  h[i;j]←h[i;j]×¯1+(t-i-1)+t-j-1
[ 9]  j←j-1
[10]  →t2
[11] oba:i←i-1
[12]  →t1
[13] fim:ULTH←h
[14]  la←0 5ρ0
[15]  la←la,[1]1 1,e[1;1],(e[1;1]+h[1;1]),¯1
[16] ⍝ la = LIN, COL, SOMA, CUSTO, PAI
[17] comeco:
[18]  menor←1↑(la[;4]∈zica←⌊/la[;4])/[1]ι1↑ρla
[19]  ocara←,la[menor;]
[20]  la[menor;4]←la[menor;4]+inf
[21]  f1←ocara[ι2]+¯1 0 ⍝ acima
[22]  f2←ocara[ι2]+0 1 ⍝ direita
[23]  f3←ocara[ι2]+1 0 ⍝ baixo
[24]  f4←ocara[ι2]+0 ¯1 ⍝ esquerda
[25]  →((0=⌊/f1)∨(t<⌈/f1))/pula1
[26]  →(∨/2=+/la[;1 2]=(((1↑ρla),2)ρf1))/pula1
[27]  la←la,[1]1 5ρf1,(ocara[3]+e[f1[1];f1[2]]),(ocara[3]+e[f1[1];f1[2]]+h[f1[1];f1[2]]),m
      enor
```

```
[28]  →(2=+/(2ρt)=f1)/orra
[29] pula1:
[30]  →((0=⌊/f2)∨(t<⌈/f2))/pula2
[31]  →(∨/2=+/la[;1 2]=(((1↑ρla),2)ρf2))/pula2
[32]  la←la,[1]1 5ρf2,(ocara[3]+e[f2[1];f2[2]]),(ocara[3]+e[f2[1];f2[2]]+h[f2[1];f2[2]]),m
      enor
[33]  →(2=+/(2ρt)=f2)/orra
[34] pula2:
[35]  →((0=⌊/f3)∨(t<⌈/f3))/pula3
[36]  →(∨/2=+/la[;1 2]=(((1↑ρla),2)ρf3))/pula3
[37]  la←la,[1]1 5ρf3,(ocara[3]+e[f3[1];f3[2]]),(ocara[3]+e[f3[1];f3[2]]+h[f3[1];f3[2]]),m
      enor
[38]  →(2=+/(2ρt)=f3)/orra
[39] pula3:
[40]  →((0=⌊/f4)∨(t<⌈/f4))/pula4
[41]  →(∨/2=+/la[;1 2]=(((1↑ρla),2)ρf4))/pula4
[42]  la←la,[1]1 5ρf4,(ocara[3]+e[f4[1];f4[2]]),(ocara[3]+e[f4[1];f4[2]]+h[f4[1];f4[2]]),m
      enor
[43]  →(2=+/(2ρt)=f4)/orra
[44] pula4:
[45]  →comeco
[46] orra:
[47] ⍝ '-----------------'
[48] ⍝ 1 numera la
[49] ⍝ '-----------------'
[50]  LA←la
[51]  ult←1↑ρla
[52]  CAM←0 2ρ0
[53]  r←la[ult;3]
[54] tg:→(ult=¯1)/fim33
[55]  CAM←CAM,[1]1 2ρla[ult;⍳2]
[56]  ult←la[ult;5]
[57]  →tg
[58] fim33:
[59]  r←r,1↑ρCAM
[60]  →0
-------------------------------------------------------------
[ 0]  k1←sim docf ja;i
[ 1] ⍝fgera uma matriz de caracteres com a ⎕CR da funcao
[ 2] ⍝rse 1 docf 'funcao' gera uma matriz simples so numerada
[ 3] ⍝rse docf 'funcao' gera a matriz com ∇ acima e abaixo
[ 4] ⍝da matriz com ou sem ∇
[ 5]  k1←⎕CR ja
[ 6]  k1←(((1↑ρk1),6)ρ' '),k1
[ 7]  i←0
[ 8] testa:→(i≥1↑ρk1)/aca
[ 9]  →(i≥10)/mai1
[10]  k1[i+1;3 4 5]←'[',(1 0⍕i),']'
[11]  →soma
[12] mai1:→(i≥100)/mai2
[13]  k1[i+1;2 3 4 5]←'[',(2 0⍕i),']'
[14]  →soma
[15] mai2:k1[i+1;1 2 3 4 5]←'[',(3 0⍕i),']'
[16] soma:→(i=i←i+1)/testa
[17] aca:
[18]  →(0≠⎕NC'sim')/0
[19]  k1←((1,1↓ρk1)ρ1000↑'     ∇'),[1]k1
[20]  k1←k1,[1](1,1↓ρk1)ρ1000↑'     ∇'
-------------------------------------------------------------
[ 0]  r←nom geracaso831 num;cam;lix;x;y;w
[ 1]  w←7000?9999
[ 2]  w←w[⍋w]
[ 3]  w←w[⍳1500],w[6000+⍳1000]
```

```
[ 4]  w←w[2500?2500]
[ 5]  r←2ρ0
[ 6] ⍝ x←50 50ρ2500?9999
[ 7]  x←50 50ρw
[ 8]  nom←3↑(trim nom),'XXX'
[ 9]  cam←'c:\apl2\'
[10]  y←astar x
[11]  r←y
[12]  X←x
[13]  lix←(5 0⍕x)⎕FM(cam,nom,'AST','00'⍕num)
-------------------------------------------------------------
[ 0]  r←montaprova x;i;j
[ 1]  r←(ρx)ρ0
[ 2]  i←1
[ 3] t1:→(i>1↑ρx)/fim
[ 4]  j←1
[ 5] t2:→(j>1↓ρx)/oba
[ 6]  →(x[i;j]='1')/um
[ 7]  r[i;j]←1000
[ 8]  →soma
[ 9] um:r[i;j]←1
[10] soma:j←j+1
[11]  →t2
[12] oba:i←i+1
[13]  →t1
[14] fim:
-------------------------------------------------------------
[ 0]  r←dim mostra cam;i
[ 1] ⍝ dim e l,c com o tamanho da matriz a mostrar
[ 2] ⍝ cam eh a matriz CAM da ultima execucao
[ 3]  r←dimρ' '
[ 4]  i←1
[ 5] t1:→(i≥1↑ρcam)/fim
[ 6]  →((cam[i;1]=cam[i+1;1])∧(cam[i;2]>cam[i+1;2]))/direita
[ 7]  →((cam[i;1]=cam[i+1;1])∧(cam[i;2]<cam[i+1;2]))/esquerda
[ 8]  →((cam[i;1]<cam[i+1;1])∧(cam[i;2]=cam[i+1;2]))/sobe
[ 9]  →((cam[i;1]>cam[i+1;1])∧(cam[i;2]=cam[i+1;2]))/desce
[10]  '?'
[11] direita:r[cam[i+1;1];cam[i+1;2]]←'→'
[12]  →soma
[13] esquerda:r[cam[i+1;1];cam[i+1;2]]←'←'
[14]  →soma
[15] sobe:r[cam[i+1;1];cam[i+1;2]]←'↑'
[16]  →soma
[17] desce:r[cam[i+1;1];cam[i+1;2]]←'↓'
[18]  →soma
[19] soma:i←i+1
[20]  →t1
[21] fim:
-------------------------------------------------------------
[ 0]  opesq vivo831a n;CORRECAO;EVENTO;IDX;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;q
      linha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL831   '
[ 6]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ IDX←3↑2↓n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕⍳n ⋄ IDX←'XXX'
[ 9]  ylu←n grupo ylu
[10]  FOLHALA831←ajusta80 FOLHALA831
```

```
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA831)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALA831
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.07
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←IDX geracaso831 xk
[35]  esse[8;]←1 80⍴80↑IDX,'AAST','00'⍕xk
[36]  resp←resp,,xx
[37]  resu←resu,[1]1 3⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⌽,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⍞←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴presu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍕resu
[48]  upag[3+1↑⍴presu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[51]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo835

```
[ 0]  r←geragrade x;lin;i;tam;tr
[ 1]  r←(((+/(,x[;1])='%')÷3),6)⍴0
[ 2]  tam←0
[ 3]  lin←1
[ 4]  i←1
[ 5] t1:→(i>1↑⍴x)/fim
[ 6]  →((x[i;1]='%')∧(x[i;2]='i'))/comeca
[ 7]  →((x[i;1]='%')∧(x[i;2]='r'))/termina
[ 8]  →((x[i;1]='%')∧(x[i;2]='f'))/fmesmo
```

```
[ 9]  tam←tam+1
[10]  i←i+1
[11]  →t1
[12] comeca:r[lin;1]←⍕x[i;3 4]
[13]  r[lin;2]←⍕x[i;5 6 7]
[14]  r[lin;3]←i
[15]  tam←0
[16]  i←i+1
[17]  →t1
[18] termina:r[lin;4]←tam
[19]  r[lin;5]←i
[20]  i←i+1
[21]  tam←0
[22]  →t1
[23] fmesmo:r[lin;6]←tam
[24]  lin←lin+1
[25]  i←i+1
[26]  →t1
[27] fim:
-------------------------------------------------------------
[ 0]  imprimetodos;i;zz;oba
[ 1]  'gera o arquivo chesstodo.tex em c:\apl2'
[ 2]  EXERCS←ajusta80 EXERCS
[ 3]  oba←ajusta80 ΔFM'c:\apl2\VIVOBLOI'
[ 4]  oba←oba,[1]80↑'\begin{description}'
[ 5]  i←1
[ 6]  zz←geragrade EXERCS
[ 7] t1:→(i>1↑⍴zz)/fim
[ 8]  oba←oba,[1]80↑'\item{',(4 0⍕zz[i;1 2]),'}'
[ 9]  oba←oba,[1]EXERCS[zz[i;3]+⍳zz[i;4];]
[10]  oba←oba,[1]3 80⍴240↑(80⍴' '),'==== Resposta ===='
[11]  oba←oba,[1]EXERCS[zz[i;5]+⍳zz[i;6];]
[12]  →(i=i←i+1)/t1
[13] fim:oba←oba,[1]2 80⍴160↑(80↑'\end{description}'),80↑'\end{document}'
[14]  oba ΔFM'c:\apl2\chesstodo.tex'
[15]  'feito'
-------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i>1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10] te3:→(candi[j]=' ')/ufa
[11]  j←j-1
[12]  →te3
[13] ufa:r←r,[⎕IO]1 80⍴80↑j↑candi
[14]  candi←j↓candi
[15]  →((⍴candi)=+/candi=' ')/som
[16]  →te2
[17] eca:r←r,[⎕IO]1 80⍴80↑candi
[18] som:i←i+1
[19]  →te
[20] fim:'acabou'
-------------------------------------------------------------
[ 0]  opesq vivo835a n;CORRECAO;EVENTO;aaa;acuja;caso;dhx;esse;f;linha;lixo1;lixonol;relat
      ;reso;resp;resu;upag;xixo;xk;ylu;yyy;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
```

```
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL835'
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA835←ajusta80 FOLHALA835
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA835)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 203⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←75 80⍴' '
[15]  f←FOLHALA835
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.14
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[74;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[75;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  zzz←geragrade EXERCS
[27]  yyy←(zzz[;1]=1)/[1]zzz
[28]  esse[7+⍳8;]←8 80↑EXERCS[yyy[aaa;3]+⍳⍴yyy[aaa←?1↑⍴yyy;4];]
[29]  resp←(3 0⍕resp),40↑,EXERCS[yyy[aaa;5]+1;]
[30]  yyy←(zzz[;1]=2)/[1]zzz
[31]  esse[15+⍳8;]←8 80↑EXERCS[yyy[aaa;3]+⍳⍴yyy[aaa←?1↑⍴yyy;4];]
[32]  resp←resp,40↑,EXERCS[yyy[aaa;5]+1;]
[33]  yyy←(zzz[;1]=3)/[1]zzz
[34]  esse[23+⍳10;]←10 80↑EXERCS[yyy[aaa;3]+⍳⍴yyy[aaa←?1↑⍴yyy;4];]
[35]  resp←resp,40↑,EXERCS[yyy[aaa;5]+1;]
[36]  yyy←(zzz[;1]=4)/[1]zzz
[37]  esse[33+⍳10;]←10 80↑EXERCS[yyy[aaa;3]+⍳⍴yyy[aaa←?1↑⍴yyy;4];]
[38]  resp←resp,40↑,EXERCS[yyy[aaa;5]+1;]
[39]  yyy←(zzz[;1]=5)/[1]zzz
[40]  esse[43+⍳30;]←30 80↑EXERCS[yyy[aaa;3]+⍳⍴yyy[aaa←?1↑⍴yyy;4];]
[41]  resp←resp,40↑,EXERCS[yyy[aaa;5]+1;]
[42]  resu←resu,[1](1,203)⍴resp
[43]  acuja←(f[;2]='#')/⍳1↑⍴f
[44]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[45]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[46]  ⍞←(⍕xk←xk+1),'-'
[47]  →testa
[48] fim:→(~1=≡n)/terminando
[49]  aaa←(ylu,0 3↓resu)
[50]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[51]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[52] terminando:
[53]  lixonol←((1+×/2↑⍴relat),80)⍴(,relat),80↑'\end{document}'
[54]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[55]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[56]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo841

```
[0]  cria cc
[1]  pesos←4 9⍴0
[2]  pesos[;1]←¯2
```

```
[3]  c←cc
-------------------------------------------------------------
[ 0]  r←ent fazrna certo;i;saida
[ 1] ⍝ 'pesos na entrada'
[ 2] ⍝ pesos
[ 3]  ent←ent+¯1×~ent   ⍝ transforma 0 em -1 na entrada
[ 4]  certo←certo+¯1×~certo   ⍝ transforma 0 em -1 na saida
[ 5]  i←1 ⋄ saida←4⍴0
[ 6] te:→(i>4)/ok
[ 7]  saida[i]←(¯1 1)[1+(+/pesos[i;]×1,ent)≥0]
[ 8]  →(i=i←i+1)/te
[ 9] ok:pesos[;1+⍳8]←pesos[;1+⍳8]+c×(⍉8 4⍴certo-saida)×4 8⍴ent
[10] ⍝ 'pesos na saida'
[11] ⍝ pesos
[12]  r←saida=1
-------------------------------------------------------------
[0]  r←prna ent;saida
[1]  ent←ent+¯1×~ent
[2]  i←1 ⋄ saida←4⍴0
[3] te:→(i>4)/ok
[4]  saida[i]←(¯1 1)[1+(+/pesos[i;]×1,ent)≥0]
[5]  →(i=i←i+1)/te
[6] ok:
[7]  r←saida=1
-------------------------------------------------------------
[ 0]  r←qt reform zz;i;j;k;candi
[ 1]  →(0≠⎕NC'qt')/luga
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i>1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10] te3:→(candi[j]=' ')/ufa
[11]  j←j-1
[12]  →te3
[13] ufa:r←r,[1]1 80⍴80↑j↑candi
[14]  candi←j↓candi
[15]  →((⍴candi)=+/candi=' ')/som
[16]  →te2
[17] eca:r←r,[1]1 80⍴80↑candi
[18] som:i←i+1
[19]  →te
[20] fim:'acabou'
-------------------------------------------------------------
[ 0]  opesq vivo841a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;cx;quens;i;entrada;ss;c;lix;pesos
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←8 ⋄ EVENTO←'PL841   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⍙FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA841←ajusta80 FOLHALA841
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA841)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑⍙FM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 9⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
```

```
[14]  esse←23 80ρ' '
[15]  f←FOLHALA841
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←4.21
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[22;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[23;⍳17]←esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[5+⍳5]
[25] inica:
[26]  cx←(?4)÷10
[27]  quens←?6ρ4
[28]  entrada←(0 1)[?8ρ2]
[29]  esse[9 11 13 15 17 19;]←6 80↑1 0⍕ENTRADAS[quens;]
[30]  esse[10 12 14 16 18 20;]←6 80↑1 0⍕SAIDAS[quens;]
[31]  esse[8;]←80↑3 1⍕cx
[32]  esse[21;]←80↑1 0⍕entrada
[33]  i←1 ⋄ cria cx
[34] volta:→(i>6)/fof
[35]  lix←ENTRADAS[quens[i];]fazrna SAIDAS[quens[i];]
[36] ⍝ pesos
[37]  →(i=i←i+1)/volta
[38] fof:ss←prna entrada
[39]  resp←resp,pesos[1;3],pesos[2;4],pesos[3;5],pesos[4;6],ss
[40]  resu←resu,[1]1 9ρresp
[41]  acuja←(f[;2]='#')/⍳1↑ρf
[42]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\newpage'
[44]  ⎕←(⍕xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+ρf)ρ' '
[47]  →(1=≡n)/elafa
[48]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[49]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[50]  upag[2+⍳1↑ρresu;⍳¯4++/lixo1]←'¯-'edit(lixo1←5 0 10 1 5 1 5 1 5 1 8 0 3 0 3 0 3 0)⍕re
      su
[51]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[52]  →terminando
[53] elafa:aaa←'¯-'edit(ylu,(((1↑ρylu),4)ρ' '),5 1 5 1 5 1 5 1 5 0 2 0 2 0 2 0⍕0 1↓resu)
[54]  aaa[1;35 36]←2 0⍕CORRECAO
[55]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[56]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[57] terminando:
[58]  upag[1↑ρupag;]←(1↓ρupag)↑'\end{document}'
[59]  relat[1↑ρrelat;;]←upag
[60]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[61] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[62]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[63]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[64]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo845

```
[0]  AVISO
[1]  'Para ver o exemplo, faca 1 resolve exemplo'
[2]  ' Se quiser dar casos para a turma testar os programas, faca'
[3]  ' x←geracaso'
[4]  ' mostracaso x'
-------------------------------------------------------------
```

```
[0]  r←acertae1 x;i
[1]  r←3 80⍴' '
[2]  i←1
[3] t1:→(i>3)/fim
[4]  r[i;]←80↑'$N_',(1 0⍕i),'$&',(7 1⍕x[i;1]),'&',(7 1⍕x[i;2]),'&',(7 1⍕x[i;3]),'\\ \hlin
      e'
[5]  i←i+1
[6]  →t1
[7] fim:
[8]  r←'¯-'edit r
-------------------------------------------------------------
[0]  r←acertae2 x
[1]  r←2 80⍴' '
[2]  r[1;]←80↑'$N_4$&',(7 1⍕x[1;1]),'&',(7 1⍕x[1;2]),'&',(7 1⍕x[1;3]),'&',(7 1⍕x[1;4]),'\
      \ \hline'
[3]  r[2;]←80↑'$N_5$&',(7 1⍕x[2;1]),'&',(7 1⍕x[2;2]),'&',(7 1⍕x[2;3]),'&',(7 1⍕x[2;4]),'\
      \ \hline'
[4]  r←'¯-'edit r
-------------------------------------------------------------
[ 0]  r←geracaso;aa
[ 1]  r←6⍴0
[ 2] t1:aa←?9⍴30
[ 3]  →(15∈aa)/t1
[ 4]  r[1]←⊂3 3⍴¯1.5+aa÷10
[ 5] t2:aa←?8⍴30
[ 6]  →(15∈aa)/t2
[ 7]  r[2]←⊂2 4⍴¯1.5+aa÷10
[ 8] t3:aa←?2⍴30
[ 9]  →(15∈aa)/t3
[10]  r[3]←⊂¯1.5+aa÷10
[11] t4:aa←?2⍴30
[12]  →(15∈aa)/t4
[13]  r[4]←⊂¯1.5+aa÷10
[14]  r[5]←⊂2,2,2,?2⍴2  ⍝ 1=linear, 2=sigmoidal
[15]  r[6]←(0.05 0.07 0.09 0.1 0.11 0.12)[?6]
-------------------------------------------------------------
[ 0]  geraexemplo
[ 1]  exemplo←6⍴0
[ 2]  exemplo[1]←⊂3 3⍴¯0.1 0.2 0.2 0.3 ¯0.1 0.3 0.1 0.1 0.9
[ 3]  exemplo[2]←⊂2 4⍴0.2 0.1 ¯0.1 ¯0.1 ¯0.1 0.5 0.2 1.1
[ 4]  exemplo[3]←⊂0.1 0.7
[ 5]  exemplo[4]←⊂0.2 1
[ 6]  exemplo[5]←⊂2 2 2 1 2
[ 7]  exemplo[6]←⊂0.1
-------------------------------------------------------------
[ 0]  r←mostracaso x
[ 1]  r←28 75⍴' '
[ 2]  r[1;]←75↑'Especificacao de um caso  -  gerado em ','99 /99/ 9999'⍕⎕TS[3 2 1]
[ 3]  r[2;]←75↑'Pesos da camada 1:'
[ 4]  r[3 4 5;]←'¯-'edit 3 75↑6 1⍕3 3⍴⊃x[1]
[ 5]  r[6;]←75↑'Pesos da camada 2:'
[ 6]  r[7 8;]←2 75↑'¯-'edit 6 1⍕2 4⍴⊃x[2]
[ 7]  r[9;]←75↑'Entradas reais:'
[ 8]  r[10;]←75↑'¯-'edit 10 3⍕⊃x[3]
[ 9]  r[11;]←75↑'Saidas esperadas:'
[10]  r[12;]←75↑'¯-'edit 10 3⍕⊃x[4]
[11]  r[13;]←75↑'Tipos dos neuronios (1=linear; 2=sigmoidal)'
[12]  r[14;]←75↑3 0⍕⊃x[5]
[13]  r[15;]←75↑'Taxa de aprendizagem:'
[14]  r[16;]←75↑10 3⍕⊃x[6]
[15]  r[16+⍳10;]←10 75↑1 resolve x
[16]  r[27;]←75↑'Resultado final:'
[17]  r[28;]←75↑15 8⍕0 resolve x
```

```
------------------------------------------------------------
[ 0]  r←mos resolve x;c1;c2;e;s;t;alfa;N1;N2;N3;N4;N5;R1;R2;R3;R4;R5;W11;W12;W13
[ 1]  r←11 75⍴' '
[ 2] ⍝ se mos=0 nao mostra e se ≠0 mostra tudo
[ 3]  c1←⊃x[1] ⍝ camada 1 (3 neuronios) : ⍴=3 3
[ 4]  c2←⊃x[2] ⍝ camada 2 (2 neuronios) : ⍴=2 4
[ 5]  e←⊃x[3] ⍝ entradas
[ 6]  s←⊃x[4] ⍝ saidas
[ 7]  t←⊃x[5] ⍝ tipos dos neuronios 1=linear, 2=sigmoidal
[ 8]  alfa←⊃x[6] ⍝ fator de aprendizagem
[ 9] ⍝ neuronio 1
[10]  N1←+/c1[1;]×1,e
[11]  →(t[1]=1)/j1
[12]  N1←7○N1
[13] j1:
[14]  →(mos=0)/a1
[15]  r[1;]←75↑'¯'-'edit'Valor do neuronio 1 = ',⍕N1
[16] a1:
[17] ⍝ neuronio 2
[18]  N2←+/c1[2;]×1,e
[19]  →(t[2]=1)/j2
[20]  N2←7○N2
[21] j2:
[22]  →(mos=0)/a2
[23]  r[2;]←75↑'¯'-'edit'Valor do neuronio 2 = ',⍕N2
[24] a2:
[25] ⍝ neuronio 3
[26]  N3←+/c1[3;]×1,e
[27]  →(t[3]=1)/j3
[28]  N3←7○N3
[29] j3:
[30]  →(mos=0)/a3
[31]  r[3;]←75↑'¯'-'edit'Valor do neuronio 3 = ',⍕N3
[32] a3:
[33] ⍝ neuronio 4
[34]  N4←+/c2[1;]×1,N1,N2,N3
[35]  →(t[4]=1)/j4
[36]  N4←7○N4
[37] j4:
[38]  →(mos=0)/a4
[39]  r[4;]←75↑'¯'-'edit'Valor do neuronio 4 = ',⍕N4
[40] a4:
[41] ⍝ neuronio 5
[42]  N5←+/c2[2;]×1,N1,N2,N3
[43]  →(t[5]=1)/j5
[44]  N5←7○N5
[45] j5:
[46]  →(mos=0)/a5
[47]  r[5;]←75↑'¯'-'edit'Valor do neuronio 5 = ',⍕N5
[48] a5:
[49] ⍝ note que N4=saida1  e  N5=saida2
[50] ⍝retropropagacao do N4
[51]  R4←s[1]-N4
[52]  →(t[4]=1)/k4
[53]  R4←R4×1-R4*2
[54] k4:
[55]  →(mos=0)/a6
[56]  r[6;]←75↑'¯'-'edit'Valor do erro em 4 = ',⍕R4
[57] a6:
[58] ⍝ retropropagacao de N5
[59]  R5←s[2]-N5
[60]  →(t[5]=1)/k5
[61]  R5←R5×1-N5*2
```

```
[62] k5:
[63]  →(mos=0)/a7
[64]  r[7;]←75↑'¯-'edit'Valor do erro em 5 = ',⍕R5
[65] a7:
[66] ⍝ retropropagacao do N3
[67]  R3←(R4×c2[1;4])+(R5×c2[2;4])
[68]  →(t[3]=1)/k3
[69]  R3←R3×1-N3*2
[70] k3:
[71]  →(mos=0)/a8
[72]  r[8;]←75↑'¯-'edit'Valor do erro em 3 = ',⍕R3
[73] a8:
[74] ⍝ retropropagacao do N2
[75]  R2←(R4×c2[1;3])+(R5×c2[2;3])
[76]  →(t[2]=1)/k2
[77]  R2←R2×1-N2*2
[78] k2:
[79]  →(mos=0)/a9
[80]  r[9;]←75↑'¯-'edit'Valor do erro em 2 = ',⍕R2
[81] a9:
[82] ⍝ retropropagacao do N1
[83]  R1←(R4×c2[1;2])+(R5×c2[2;2])
[84]  →(t[1]=1)/k1
[85]  R1←R1×1-N1*2
[86] k1:
[87]  →(mos=0)/b1
[88]  r[10;]←75↑'¯-'edit'Valor do erro em 1 = ',⍕R1
[89] b1:
[90] ⍝ calculo dos novos pesos
[91]  W11←c1[1;2]+¯2×alfa×N1×R1
[92]  W12←c1[2;2]+¯2×alfa×N2×R2
[93]  W13←c1[3;2]+¯2×alfa×N3×R3
[94]  r[11;]←75↑'¯-'edit 15 8⍕W11,W12,W13
[95] ⍝
[96]  →(mos≠0)/0
[97]  r←W11,W12,W13
-------------------------------------------------------------
[ 0]  opesq vivo845a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo845 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PL845   '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[24]  esse[3;]←80↑4 2⍕VERSAOa←1.07
[25]  esse[4;]←80↑ylu[xk;⍳6]
[26] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[27]  →(36=1↓⍴ylu)/zebra
[28]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[29]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[30]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[31]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[32]  →maiszebra
[33] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[ 7]  r[1+⍳15;2]←x
[ 8]  r[16+⍳2;1]←beta←(○2?180)÷180  ⍝ dados que a rede treinada deve achar
[ 9]  r[16+⍳2;2]←r[1;1]○beta         ⍝ resultado correto
-------------------------------------------------------------
[ 0]  r←geracaso846adhoc nvezes;x;nn;alfa;beta
[ 1]  r←((nvezes+3),2)⍴0
[ 2]  r[1;1]←?3 ⍝ 1=sen(x), 2=cos(x), 3=tg(x)
[ 3]  r[1;2]←nn←4 ⍝ numero de neuronios na camada intermediaria
[ 4]  x←(r[1;1]○alfa←(○?nvezes⍴180)÷180)
[ 5] ⍝ x←x+(¯1000+15?2000)÷10000
[ 6]  r[1+⍳nvezes;1]←alfa
[ 7]  r[1+⍳nvezes;2]←x
[ 8]  r[nvezes+1+⍳2;1]←beta←(○2?180)÷180  ⍝ dados que a rede treinada deve achar
[ 9]  r[nvezes+1+⍳2;2]←r[1;1]○beta         ⍝ resultado correto
-------------------------------------------------------------
[0]  r←gerapesos846
[1]  r←2 4⍴(8?1000)÷10000
-------------------------------------------------------------
[ 0]  r←pesos resolve846 dados;alfa;azul;erro;i;marrom;np;ocre;rr
[ 1]  i←1
[ 2]  alfa←0.001
[ 3]  rr←((1+1↑⍴dados),2 4)⍴0
[ 4]  rr[1;;]←pesos
[ 5] t1:→(i>1↑⍴dados)/fim
[ 6]  azul←7○pesos[1;]×dados[i;1]
[ 7]  marrom←+/azul×pesos[2;]
[ 8] ⍝ 'deu=',⍕marrom
[ 9]  erro←dados[i;2]-marrom
[10] ⍝ 'erro=',⍕erro
[11]  ocre←4⍴0
[12]  ocre[1]←pesos[2;1]×erro×1-azul[1]*2
[13]  ocre[2]←pesos[2;2]×erro×1-azul[2]*2
[14]  ocre[3]←pesos[2;3]×erro×1-azul[3]*2
[15]  ocre[4]←pesos[2;4]×erro×1-azul[4]*2
[16]  np←2 4⍴0
[17]  np[1;1]←pesos[1;1]+(¯2×alfa×azul[1]×ocre[1])
[18]  np[1;2]←pesos[1;2]+(¯2×alfa×azul[2]×ocre[2])
[19]  np[1;3]←pesos[1;3]+(¯2×alfa×azul[3]×ocre[3])
[20]  np[1;4]←pesos[1;4]+(¯2×alfa×azul[4]×ocre[4])
[21]  np[2;1]←pesos[2;1]+(¯2×alfa×erro×azul[1])
[22]  np[2;2]←pesos[2;2]+(¯2×alfa×erro×azul[2])
[23]  np[2;3]←pesos[2;3]+(¯2×alfa×erro×azul[3])
[24]  np[2;4]←pesos[2;4]+(¯2×alfa×erro×azul[4])
[25]  pesos←rr[i+1;;]←np
[26]  i←i+1
[27]  →t1
[28] fim:
[29] ⍝ agora vamos aplicar as 2 entradas desconhecidas (dados[17 18;1])
[30] ⍝ e ver o que a rede responde
[31]  r←(+/pesos[2;]×(7○dados[17;1]×pesos[1;])),+/pesos[2;]×(7○dados[18;1]×pesos[1;])
-------------------------------------------------------------
[ 0]  r←resolve846adhoc dados;alfa;erro;i;np;ocre;rr;pesos;caso;resc;y;t
[ 1]  i←1
[ 2]  alfa←0.001
[ 3]  pesos←4 2⍴0.001 0.0015 0.0005 0.0017 0.0012 0.0016 0.0008 0.0009
[ 4] t1:→(i>10000)/fim
[ 5]  caso←(○?180)÷180
[ 6]  resc←1○caso ⍝ seno
[ 7]  t←7○pesos[;1]×caso
[ 8]  y←7○+/t×pesos[;2]
[ 9]  erro←y-resc
[10] ⍝ 'erro=',20 6⍕erro
[11]  ocre←4⍴0
```

```
[12]  ocre[1]←pesos[1;2]×erro×1-t[1]*2
[13]  ocre[2]←pesos[2;2]×erro×1-t[2]*2
[14]  ocre[3]←pesos[3;2]×erro×1-t[3]*2
[15]  ocre[4]←pesos[4;2]×erro×1-t[4]*2
[16]  np←4 2⍴0
[17]  np[1;1]←pesos[1;1]+(¯2×alfa×t[1]×ocre[1])
[18]  np[2;1]←pesos[2;1]+(¯2×alfa×t[2]×ocre[2])
[19]  np[3;1]←pesos[3;1]+(¯2×alfa×t[3]×ocre[3])
[20]  np[4;1]←pesos[4;1]+(¯2×alfa×t[4]×ocre[4])
[21]  np[1;2]←pesos[1;2]+(¯2×alfa×erro×t[1])
[22]  np[2;2]←pesos[2;2]+(¯2×alfa×erro×t[2])
[23]  np[3;2]←pesos[3;2]+(¯2×alfa×erro×t[3])
[24]  np[4;2]←pesos[4;2]+(¯2×alfa×erro×t[4])
[25]  pesos←np
[26]  i←i+1
[27]  →t1
[28] fim:
[29] ⍝ agora vamos aplicar as 2 entradas desconhecidas (dados[17 18;1])
[30] ⍝ e ver o que a rede responde
[31]  r←(7○+/pesos[;2]×(7○dados[17;1]×pesos[;1])),7○+/pesos[;2]×(7○dados[18;1]×pesos[;1])
[32]  '--------------------'
[33]  'angulos = ',⍕dados[17 18;1]
[34]  'resposta correta = ',⍕1○dados[17 18;1]
[35]  'pesos'
[36]  pesos
[37]  '------------'
------------------------------------------------------------
[ 0]  opesq vivo846a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;pp;ql39;ql
      inha;relat;resp;resu;rr;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL846   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA846←ajusta80 FOLHALA846
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA846)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←29 80⍴' '
[16]  f←FOLHALA846
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[28;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[29;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
```

```
[34]  pp←gerapesos846
[35]  xx←geracaso846
[36]  rr←pp resolve846 xx
[37]  esse[8;]←80↑(3 20ρ(20↑'seno(x)'),(20↑'cosseno(x)'),(20↑'tangente(x)'))[xx[1;1];]
[38]  esse[9 10;]←2 80↑12 4⍕pp
[39]  esse[10+⍳15;]←15 80↑20 10⍕xx[1+⍳15;]
[40]  esse[25+⍳2;]←2 80↑2 20ρ20 10⍕xx[17 18;1]
[41]  resp←resp,,rr
[42]  resu←resu,[1]1 3ρresp
[43]  acuja←(f[;2]='#')/⍳1↑ρf
[44]  f[acuja;⍳80]←esse[⌸,f[acuja;3 4],' ';]
[45]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\clearpage'
[46]  ⍞←(⍕xk←xk+1),'-'
[47]  →testa
[48] fim:upag←(1 0+ρf)ρ' '
[49]  →(1=≡n)/elafa
[50]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[51]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO,'/',opesq
[52]  upag[2+⍳1↑ρresu;⍳45]←'¯'-'edit(lixo1←5 0 20 10 20 10)⍕resu
[53]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[54]  →terminando
[55] elafa:aaa←(ylu[;⍳36],20 10⍕0 1↓resu)
[56]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[57]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[58] terminando:
[59]  upag[1↑ρupag;]←(1↓ρupag)↑'\end{document}'
[60]  relat[1↑ρrelat;;]←upag
[61]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[62]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[63]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[64]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo847

```
[0]  AVISO
[1]  'este assunto esta em c:\p\n\847\p3, inclusive o PDF do livro.'
[2]  ' bem como em http:http://neuralnetworksanddeeplearning.com'
-------------------------------------------------------------
[ 0]  opesq vivo847a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL847   '
[ 6]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA847←ajusta80 FOLHALA847
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALA847)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←12 80ρ' '
[16]  f←FOLHALA847
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
```

```
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'↑#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34] ⍝ xx←geracaso
[35] ⍝ esse[7+⍳3;]←3 80↑acertaca xx
[36] ⍝ resp←resp,,xx[2 3;5]
[37]  resu←resu,[1]1 3⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'↑clearpage'
[41]  ⍞←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45] ⍝ upag[1;]←(1↓⍴upag)↑'↑begin{verbatim}'
[46] ⍝ upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47] ⍝ upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍕resu
[48] ⍝ upag[3+1↑⍴resu;]←(1↓⍴upag)↑'↑end{verbatim}'
[49]  →terminando
[50] elafa:
[51] ⍝aaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[52] ⍝ lixonol←aaa ⎕FM('c:↑apl2↑',((~⍷∧↑⍷EVENTO=' ')/EVENTO),'.gpa')
[53] ⍝ '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'↑end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol ⎕FM'c:↑apl2↑',((~⍷∧↑⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:↑apl2↑',EVENTO,'    (.tex)'
------------------------------------------------------------
```

vivo848

```
[0]  AVISO
[1]  'Imprimir no verso da folha pedida, o arquivo f:↑p↑n↑848↑rna_848.tex'
------------------------------------------------------------
[ 0]  opesq vivo848a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;caso;oba2
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL848   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:↑apl2↑',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA848←ajusta80 FOLHALA848
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA848)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:↑apl2↑VIVOBLOI'
[12]  xk←1 ⋄ resu←0 0⍴0
```

```
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←9 80⍴' '
[15]  f←FOLHALA848
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.02
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[8;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[9;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  acuja←(f[;2]='#')/⍳1↑⍴f
[27]  f[acuja;⍳80]←esse[⌸,f[acuja;3 4],' ';]
[28]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[29]  ⎕←(⍕xk←xk+1),'-'
[30]  →testa
[31] fim:
[32] terminando:
[33]  relat[1↑⍴relat;1↑1↓⍴relat;]←80↑'\end{document}'
[34]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[35] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[36]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[37]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[38]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo851

```
[ 0]  opesq vivo851a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL851   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA851←ajusta80 FOLHALA851
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA851)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALA851
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
```

```
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34] ⍝ xx←geracaso
[35] ⍝ esse[7+⍳3;]←3 80↑acertaca xx
[36] ⍝ resp←resp,,xx[2 3;5]
[37]  resu←resu,[1]1 3⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍬,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⎕←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →terminando  ⍝ nao ha GPA
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍕resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[52] ⍝ lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[53] ⍝ '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54]  'Nao ha GPA'
[55] terminando:
[56]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[57]  relat[1↑⍴relat;;]←upag
[58]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[59]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[60]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[61]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo856

```
[0]  AVISO
[1]  'Nao esqueca de gerar "geraexemplofolha" e imprimi-la para'
[2]  'levar para a aula e preencher a primeira parte das folhas'
------------------------------------------------------------
[0]  entra x
[1]  →(140≠+/BDR[x;]=' ')/0
[2]  BDQ[x;]
[3]  BDR[x;]←140↑⎕
------------------------------------------------------------
[ 0]  gaba856a;folha;dhx;ylu;resp;resultado;xk;lixao;flm;lixonol;esse;resu;ii;nums;essafol
      ha;d;r
[ 1]  lixonol←FUNSNEC856 ⎕COPY'ALLAUTIL'
[ 2]  2 0 PRINTFL leiaf'ALLABLOI'
[ 3]  esse←87 70⍴' ' ⋄ ii←1 ⋄ resultado←0 43 140⍴' '
[ 4]  flm←300 80↑FOLHALA856
[ 5]   ⋄ d←((40×⌈(1↑⍴BDQ)÷40),140)↑BDQ
[ 6]  r←(⍴d)↑BDR
[ 7] denovo:→((ii×40)>1↑⍴d)/fim
[ 8]  nums←((ii-1)×40)+⍳40
[ 9]  esse[7+⍳80;]←80 70⍴d[nums;]
[10]  resu←43 140⍴' '
[11]  resu[1;⍳15]←'Exercicio: ',4 0⍕ii ⋄ resu[2;]←140↑'\begin{enumerate}'
[12]  resu[2+⍳40;]←(40 6⍴'\item '),40 134↑r[nums;]
[13]  resu[43;]←140↑'\end{enumerate}'
[14]  resultado←resultado,[1]resu
[15]  2 0 PRINTFL ULTIMOa←essafolha←esse montafol flm
```

```
[16]  2 0 PRINTFL 1 40ρ40↑'⍀newpage'
[17]  ii←ii+1
[18]  →denovo
[19] fim:
[20]  ii←1
[21] inija:→(ii>1↑ρresultado)/jaera
[22]  2 0 PRINTFL'  ¯-'edit resultado[ii;;]
[23]  →(ii=ii←ii+1)/inija
[24] jaera:
[25]  2 0 PRINTFL leiaf'ALLABLOF'
[26]  FECHAF
[27]  FUNCOES←docfuncoes FUNSNEC856
[28]  lixonol←⎕EX FUNSNEC856
[29]  lixonol←⎕EX 2 8ρ'CORRECAOEVENTO  '
[30]  'acabou'
------------------------------------------------------------
[ 0]  geraexemplfolha;dhx;cabe;zz;fol;xk;bloco;iikbd;lixo
[ 1]  CABE←ajusta80 CABE
[ 2]  EXEM←ajusta80 EXEM
[ 3]  fol←0 80ρ' '
[ 4]  fol←fol,[1]CABE
[ 5]  fol←fol,[1]1 80ρ80↑'⍀section*{Exemplos da folha}'
[ 6]  fol←fol,[1]EXEM
[ 7] fim:fol←fol,[1]1 80ρ80↑'⍀end{document}'
[ 8]  lixo←fol ⍙FM'c:⍀apl2⍀respexem.tex'
[ 9]  'gerada a cartela em c:⍀apl2⍀respexem.tex'
------------------------------------------------------------
[0]  mo
[1]  1 numera(100 30↑BDQ),'-',(100 30↑BDR)
------------------------------------------------------------
[ 0]  ref;i;j;k;candi;qt;zz;r
[ 1]  zz←⍙FM'f:/infoland/lixo1234'
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80ρ' '
[ 6] te:→(i≥⎕IO+1↑ρzz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>ρcandi)/eca
[ 9]  j←qt
[10]  →(0=' 'ϵj↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80ρ80↑j↑candi
[15]  candi←j↓candi
[16]  →((ρcandi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80ρ80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
[22]  y←r
------------------------------------------------------------
[0]  r←trim2 x;z
[1] ⍝f corta as linhas inferiores que sao brancas
[2]  →(2≠ρρx)/erro
[3]  z←+/[2]x=' '
[4]  r←(z≠1↓ρx)/[1]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
------------------------------------------------------------
[0]  r←trim3 x;z
```

```
[1] ⍝f corta as colunas direitas que sao 0
[2]  →(2≠⍴⍴x)/erro
[3]  z←+/[1]x=0
[4]  r←(z≠1↑⍴x)/[2]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
------------------------------------------------------------
[0]  r←trim4 x;z
[1] ⍝f corta as colunas direitas que sao brancos
[2]  →(2≠⍴⍴x)/erro
[3]  z←+/[1]x=' '
[4]  r←(z≠1↑⍴x)/[2]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
------------------------------------------------------------
[ 0]  opesq vivo856a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;ii;lixo1;lixonol;nums;relat;re
      sp;resu;upag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL856   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⍎'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA856←ajusta80 FOLHALA856
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA856)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑⍎'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄⍝resu←0___⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←89 80⍴' '
[15]  f←FOLHALA856
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←3.05
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[23]  esse[88;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[89;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26] denovo:
[27]  nums←40?1↑⍴BDQ
[28] ⍝ nums  ←nums[  ⍋nums]
[29]  esse[7+⍳80;]←80 80↑80 70⍴BDQ[nums;]
[30]  resu←43 140⍴' '
[31]  resu[1;⍳15]←'Exercicio: ',4 0⍎resp ⋄ resu[2;]←140↑'\begin{enumerate}'
[32]  resu[2+⍳40;]←(40 6⍴'\item '),40 134↑BDR[nums;]
[33]  resu[43;]←140↑'\end{enumerate}'
[34] ⍝ resultado  ←resultado,[1]resu
[35]  acuja←(f[;2]='#')/⍳1↑⍴f
[36]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[37]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[38]  ⍞←(⍎xk←xk+1),'-'
[39]  →testa
[40] fim:upag←(1 0+⍴f)⍴' '
[41]  →(1=≡n)/elafa
[42] ⍝ upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[43] ⍝ upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[44] ⍝ upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑resu  ⍝ estaria certo este 80↑ ????
[45] ⍝ upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0)⍎resu
```

```
[46] ⍝ upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[47]  →terminando
[48] elafa:
[49] ⍝aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 5↓resu)
[50]  aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'))
[51]  aaa[1;35 36]←2 0⍕CORRECAO
[52] ⍝ lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[53]  'NAO FOI GERADO !!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[59]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[60]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[61]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo857

```
[0]  AVISO
[1]  'Veja os teoremas demonstrados no arquivo TEOREMAS.TEX'
[2]  'um texto de apoio aos alunos esta em TEOR_ALUN.TEX'
[3]  ''
[4]  ' o exercicio "b" da como resposta SIM e SIM'
[5]  ' o exercicio "c" da como resposta NAO e NAO'
-------------------------------------------------------------
[0]  editadb n;x
[1]  x←DB827[n;;]
[2]  ⎕EDIT'x'
[3]  DB827[n;;]←(1↓⍴DB827)↑x
-------------------------------------------------------------
[0]  r←geracaso;som;qua
[1]  som←⍴RESP857
[2]  qua←5?som
[3]  r←qua,,RESP857[qua]
-------------------------------------------------------------
[0]  r←geracasob;som;qua
[1]  som←2 3 5 9
[2]  qua←som[2?4]
[3]  r←qua,,RESP857[qua]
-------------------------------------------------------------
[0]  r←geracasoc;som;qua
[1]  som←4 6 7 8
[2]  qua←som[2?4]
[3]  r←qua,,RESP857[qua]
-------------------------------------------------------------
[ 0]  ref;i;j;k;candi;qt;zz;r
[ 1]  zz←⎕FM'f:/infoland/lixo1234'
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10]  →(0=' '∊j↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80⍴80↑j↑candi
```

```
[15]  candi←j↓candi
[16]  →((⍴candi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80⍴80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
[22]  y←r
-------------------------------------------------------------
[ 0]  opesq vivo857a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xxx;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL857   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA857a←ajusta80 FOLHALA857a
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA857a)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 6⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←97 80⍴' '
[15]  f←FOLHALA857a
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←3.06
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  →(36=1↓⍴ylu)/zebra
[21]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[22]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[23]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[24]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[25]  →maiszebra
[26] zebra:
[27]  esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[96;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[97;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xxx←geracaso
[35]  esse[7+⍳17;]←DB857[xxx[1];;]
[36]  esse[24+⍳17;]←DB857[xxx[2];;]
[37]  esse[41+⍳17;]←DB857[xxx[3];;]
[38]  esse[58+⍳17;]←DB857[xxx[4];;]
[39]  esse[75+⍳17;]←DB857[xxx[5];;]
[40]  resu←resu,[1]1 6⍴resp,xxx[5+⍳5]
[41]  acuja←(f[;2]='#')/⍳1↑⍴f
[42]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[44]  ⍞←(⍎xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+⍴f)⍴' '
[47]  →(1=≡n)/elafa
[48]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[49]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[50]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 3 0 3 0 3 0 3 0)⍎resu
[51]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
```

```
[52]  →terminando
[53] elafa:aaa←(ylu,5 0⍕0 1↓resu)
[54]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[55]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[56] terminando:
[57]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[58]  relat[1↑⍴relat;;]←upag
[59]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[60] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[61]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[62]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[63]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo857b n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xxx;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL857b  '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA857b←ajusta80 FOLHALA857b
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA857b)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[12]  xk←1 ⋄ resu←0 3⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←43 80⍴' '
[15]  f←FOLHALA857b
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.26
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  →(36=1↓⍴ylu)/zebra
[21]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[22]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[23]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[24]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[25]  →maiszebra
[26] zebra:
[27]  esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[42;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[43;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xxx←geracasob
[35]  esse[7+⍳17;]←DB857[xxx[1];;]
[36]  esse[24+⍳17;]←DB857[xxx[2];;]
[37]  resu←resu,[1]1 3⍴resp,xxx[2+⍳2]
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[41]  ⎕←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 3 0)⍕resu
```

```
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu,5 0⍕0 1↓resu)
[51]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[58]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo857c n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xxx;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL857c  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA857c←ajusta80 FOLHALA857c
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA857c)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 3⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←43 80⍴' '
[15]  f←FOLHALA857c
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.26
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  →(36=1↓⍴ylu)/zebra
[21]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[22]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[23]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[24]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[25]  →maiszebra
[26] zebra:
[27]  esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[42;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[43;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xxx←geracasoc
[35]  esse[7+⍳17;]←DB857[xxx[1];;]
[36]  esse[24+⍳17;]←DB857[xxx[2];;]
[37]  resu←resu,[1]1 3⍴resp,xxx[2+⍳2]
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[41]  ⍞←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
```

```
[47]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 3 0)⍪resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu,5 0⍪0 1↓resu)
[51]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[58]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo860

```
[ 0]  opesq vivo860b n;CORRECAO;EVENTO;aaa;acuja;caso;dhx;esse;f;lixo1;lixonol;nomes;oba2;
      ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL860b  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA860b←ajusta80 FOLHALA860b
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA860b)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 0⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←9 80⍴' '
[16]  f←FOLHALA860b
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←3.02
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] ⍝⍝⍝
```

```
[42] terminando:
[43]  relat[1↑⍴relat;1↑1↓⍴relat;]←80↑'\end{document}'
[44]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[45] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[46]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[47]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[48]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo860c n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;nomes;num
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL860c  '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA860c←ajusta80 FOLHALA860c
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA860c)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 2⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←20 80⍴' '
[16]  f←FOLHALA860c
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.01
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:
[28]  esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[32]  esse[19;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[20;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] ini1:
[35]  resu←resu,[1]1 2⍴resp
[36]  acuja←(f[;2]='#')/⍳1↑⍴f
[37]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[39]  ⍞←(⍎xk←xk+1),'-'
[40]  →testa
[41] fim:upag←(1 0+⍴f)⍴' '
[42]  →terminando
[43]  →(1=≡n)/elafa
[44]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[45]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[46]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←4 0 8 0)⍎resu
[47]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[48]  →terminando
[49] elafa:aaa←(ylu[;⍳36],4 0⍎0 1↓resu)
[50]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[51]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[52] terminando:
```

```
[53]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[54]  relat[1↑⍴relat;;]←upag
[55]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[56] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[57]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[58]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex)'
[59]  ' nao ha arquivo GPA'
-------------------------------------------------------------
[ 0]  opesq vivo860d n;CORRECAO;EVENTO;aaa;acuja;caso;dhx;esse;f;lixo1;lixonol;nomes;oba2;
      ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL860d  '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA860d←ajusta80 FOLHALA860d
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA860d)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 0⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←9 80⍴' '
[16]  f←FOLHALA860d
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←3.02
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] ⍝⍝⍝
```

vivo861

```
[ 0]  opesq vivo861a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo861 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PL861   '
[ 9]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[59] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[60] elafa:⍝aaaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[61] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[62] ⍝ lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[63]  '!!!!!  Nao ha GPA'
[64] terminando:
[65]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[66]  relat[1↑⍴relat;;]←upag
[67]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[68] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[69]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[70]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[71]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'    (.tex)'
------------------------------------------------------------
```

vivo862

```
[ 0]  opesq vivo862a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo862 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PL862   '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[43] ⍝ esse[7+⍳3;]←3 80↑acertaca xx
[44] ⍝ resp←resp,,xx[2 3;5]
[45]  resu←resu,[1]1 3⍴resp
[46]  acuja←(f[;2]='#')/⍳1↑⍴f
[47]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[48]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[49]  ⎕←(⍕xk←xk+1),'-'
[50]  →testa
[51] fim:upag←(1 0+⍴f)⍴' '
[52]  →elafa
[53]  →(1=≡n)/elafa
[54]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[55]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[56]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍕resu
[57]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[58]  →terminando
[59] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[60] elafa:⍝aaaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[61] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[62] ⍝ lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[63]  '!!!!!  Nao ha GPA'
[64] terminando:
[65]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[66]  relat[1↑⍴relat;;]←upag
[67]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[68] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[69]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[70]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[71]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'    (.tex)'
------------------------------------------------------------
```

vivo863

```
[ 0]  opesq vivo863a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo863 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PL863   '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[27]  →(36=1↓⍴ylu)/zebra
[28]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[29]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[30]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[31]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[32]  →maiszebra
[33] ⍝⍝⍝
```

```
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

vivo865

```
[ 0]  opesq vivo865a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo865 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PL865   '
[ 9]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[59] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[60] elafa:⍝aaaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[61] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[62] ⍝ lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[63]  '!!!!!  Nao ha GPA'
[64] terminando:
[65]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[66]  relat[1↑⍴relat;;]←upag
[67]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[68] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[69]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[70]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[71]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'    (.tex)'
------------------------------------------------------------
```

vivo866

```
[ 0]  opesq vivo866a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo866 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PL866   '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[43] ⍝ esse[7+⍳3;]←3 80↑acertaca xx
[44] ⍝ resp←resp,,xx[2 3;5]
[45]  resu←resu,[1]1 3⍴resp
[46]  acuja←(f[;2]='#')/⍳1↑⍴f
[47]  f[acuja;⍳80]←esse[⌽,f[acuja;3 4],' ';]
[48]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[49]  ⎕←(⍕xk←xk+1),'-'
[50]  →testa
[51] fim:upag←(1 0+⍴f)⍴' '
[52]  →elafa
[53]  →(1=≡n)/elafa
[54]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[55]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[56]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍕resu
[57]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[58]  →terminando
[59] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[60] elafa:⍝aaaa←(ylu[;⍳36],9 0⍴0 1↓resu)
[61] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[62] ⍝ lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[63]  '!!!!!  Nao ha GPA'
[64] terminando:
[65]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[66]  relat[1↑⍴relat;;]←upag
[67]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[68] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[69]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[70]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[71]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'    (.tex)'
------------------------------------------------------------
```

vivo869

```
[ 0]  opesq vivo869a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL869   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA869←ajusta80 FOLHALA869
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA869)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALA869
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
```

```
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34] ⍝ xx←geracaso
[35] ⍝ esse[7+⍳3;]←3 80↑acertaca xx
[36] ⍝ resp←resp,,xx[2 3;5]
[37]  resu←resu,[1]1 3⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⍞←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44] terminando:
[45]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[46]  relat[1↑⍴relat;;]←upag
[47]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[48]  lixonol←lixonol ⍙FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[49]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo870

```
[ 0]  opesq vivo870a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;caso;oba2
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL870   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⍙FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA870←ajusta80 FOLHALA870
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA870)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑⍙FM'c:\apl2\VIVOBLO1'
[12]  xk←1 ⋄ resu←0 0⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←9 80⍴' '
[15]  f←FOLHALA870
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.04
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[8;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[9;⍳17]←esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[5+⍳5]
[25] inica:
[26]  acuja←(f[;2]='#')/⍳1↑⍴f
[27]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[28]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[29]  ⍞←(⍕xk←xk+1),'-'
[30]  →testa
[31] fim:
[32] terminando:
```

```
[33]  relat[1↑⍴relat;1↑1↓⍴relat;]←80↑'\end{document}'
[34]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[35] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[36]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[37]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[38]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'    (.tex)'
[39]  'Nao ha arquivo GPA'
------------------------------------------------------------
```

vivo871

```
[ 0]  opesq vivo871a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo871 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PL871   '
[ 9]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[49]  ⍞←(⍕xk←xk+1),'-'
[50]  →testa
[51] fim:upag←(1 0+⍴f)⍴' '
[52]  →elafa
[53]  →(1=≡n)/elafa
[54]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[55]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[56]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍕resu
[57]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[58]  →terminando
[59] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[60] elafa:⍝aaaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[61] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[62] ⍝ lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[63]  '!!!!!  Nao ha GPA'
[64] terminando:
[65]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[66]  relat[1↑⍴relat;;]←upag
[67]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[68] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[69]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[70]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[71]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'    (.tex)'
------------------------------------------------------------
```

vivo872

```
[ 0]  opesq vivo872a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo872 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PL872   '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[33] ⍝⍝⍝
```

```
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←97 80⍴' '
[14]  f←FOLHALA877
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍕VERSAOa←3.06
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[22]  esse[96;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[97;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25]  qh←+/DB877[;1;1]≠' '
[26]  quais←8?qh
[27]  esse[7+⍳11;]←DB877[quais[1];;]
[28]  r1←(3 0⍕resp),RESP877[quais[1];],fz←⎕AV[14]
[29]  esse[18+⍳11;]←DB877[quais[2];;]
[30]  r2←'   ',RESP877[quais[2];],fz
[31]  esse[29+⍳11;]←DB877[quais[3];;]
[32]  r3←'   ',RESP877[quais[3];],fz
[33]  esse[40+⍳11;]←DB877[quais[4];;]
[34]  r4←'   ',RESP877[quais[4];],fz
[35]  esse[51+⍳11;]←DB877[quais[5];;]
[36]  r5←'   ',RESP877[quais[5];],fz
[37]  esse[62+⍳11;]←DB877[quais[6];;]
[38]  r6←'   ',RESP877[quais[6];],fz
[39]  esse[73+⍳11;]←DB877[quais[7];;]
[40]  r7←'   ',RESP877[quais[7];],fz
[41]  esse[84+⍳11;]←DB877[quais[8];;]
[42]  r8←'   ',RESP877[quais[8];],fz
[43]  resu←resu,[1]1 680⍴r1,r2,r3,r4,r5,r6,r7,r8
[44]  acuja←(f[;2]='#')/⍳1↑⍴f
[45]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[46]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[47]  ⎕←(⍕xk←xk+1),'-'
[48]  →testa
[49] fim:upag←(1 0+⍴f)⍴' '
[50]  →(1=≡n)/elafa
[51]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[52]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[53]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[54]  →terminando
[55] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 3↓resu)
[56]  aaa[1;35 36]←2 0⍕CORRECAO
[57]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[58]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[59] terminando:
[60]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[61]  relat[1↑⍴relat;;]←upag
[62]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.t
      ex'
[63]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[64]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo878

```
[0]  AVISO
[1]  'Este WS so aguenta imprimir ate 50 exercicios por vez'
-------------------------------------------------------------
[0]  r←acertar x;y
```

```
[1]  y←((1↑⍴x),75)↑x
[2]  r←(75≠+/y=' ')/[1]y
-------------------------------------------------------------
[0]  r←cortabrancos x
[1]  r←(80≠+/[2]x=' ')/[1]x
-------------------------------------------------------------
[0]  entdef x
[1]  y←DB831[x;;]
[2]  ⎕EDIT'y'
[3]  DB831[x;;]←11 80↑y
-------------------------------------------------------------
[0]  entres x;y
[1]  y←RESP831[x;;]
[2]  ⎕EDIT'y'
[3]  RESP831[x;;]←11 80↑y
-------------------------------------------------------------
[0]  imprimdb87x quem;x;y
[1]  x←40 80⍴3200↑70↓80 0⍕⍳40
[2]  y←x,[2]quem
[3]  grava 480 80⍴y
-------------------------------------------------------------
[ 0]  listatudo;i
[ 1] ⍝ gera uma listagem completa do DB e das respostas
[ 2]  i←1 ⋄ r←ajusta80 CABE,[1]1 80⍴80↑'\begin{description}'
[ 3] ini:→(i>1↑⍴DB831)/fim
[ 4]  →((×/1↓⍴DB831)=+/' '=,DB831[i;;])/soma
[ 5]  r←r,[1]1 80⍴80↑'\item[',(3 0⍕i),']'
[ 6]  r←r,[1]cortabrancos DB831[i;;]
[ 7]  r←r,[1]1 80⍴80↑'\begin{verbatim}'
[ 8]  r←r,[1]cortabrancos RESP831[i;;]
[ 9]  r←r,[1]1 80⍴80↑'\end{verbatim}'
[10] soma:→(i=i←i+1)/ini
[11] fim:r←r,[1]2 80⍴(80↑'\end{description}'),80↑'\end{document}'
[12]  r ⎕NFM'c:\apl2\lista831.tex'
[13]  'gerada a listagem com o nome de c:\apl2\lista831.tex'
-------------------------------------------------------------
[0]  mostra n
[1]  ⎕PW←81
[2]  '**** questao ****'
[3]  ((80≠+/[2]' '=DB831[n;;])/[1]DB831[n;;])
[4]  '**** resposta ****'
[5]  (80≠+/[2]' '=RESP831[n;;])/[1]RESP831[n;;]
-------------------------------------------------------------
[ 0]  opesq vivo878a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;lixo;aaa;quais;qh
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←0 ⋄ EVENTO←'PL878   '
[ 5]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 8]  FOLHALA878←ajusta80 FOLHALA878
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA878)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLOI'
[11]  xk←1 ⋄ resu←0 75⍴0
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←97 80⍴' '
[14]  f←FOLHALA878
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍕VERSAOa←3.02
```

```
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[22]  esse[96;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[97;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25]  qh←+/DB878[;1;1]≠' '
[26]  quais←8?qh
[27]  esse[7+⍳11;]←DB878[quais[1];;]
[28]  resu←resu,[1]1 75⍴(4 0⍕resp),(51⍴'='),20⍴' '
[29]  resu←resu,[1]acertar RESP878[quais[1];;]
[30]  esse[18+⍳11;]←DB878[quais[2];;]
[31]  resu←resu,[1]acertar RESP878[quais[2];;]
[32]  esse[29+⍳11;]←DB878[quais[3];;]
[33]  resu←resu,[1]acertar RESP878[quais[3];;]
[34]  esse[40+⍳11;]←DB878[quais[4];;]
[35]  resu←resu,[1]acertar RESP878[quais[4];;]
[36]  esse[51+⍳11;]←DB878[quais[5];;]
[37]  resu←resu,[1]acertar RESP878[quais[5];;]
[38]  esse[62+⍳11;]←DB878[quais[6];;]
[39]  resu←resu,[1]acertar RESP878[quais[6];;]
[40]  esse[73+⍳11;]←DB878[quais[7];;]
[41]  resu←resu,[1]acertar RESP878[quais[7];;]
[42]  esse[84+⍳11;]←DB878[quais[8];;]
[43]  resu←resu,[1]acertar RESP878[quais[8];;]
[44]  acuja←(f[;2]='#')/⍳1↑⍴f
[45]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[46]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[47]  ⎕←(⍕xk←xk+1),'-'
[48]  →testa
[49] fim:upag←(1 0+⍴f)⍴' '
[50]  →(1=≡n)/elafa
[51]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[52]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[53]  upag[3;]←(1↓⍴upag)↑'\end{verbatim}'
[54]  →terminando
[55] elafa:→terminando ⍝ colocado aqui para pular a geracao do resultado a corrigir
[56]  aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 4↓resu)
[57]  aaa[1;35 36]←2 0⍕CORRECAO
[58]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[59]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[60] terminando:
[61]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[62]  relat[1↑⍴relat;;]←upag
[63]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.t
      ex'
[64]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[65]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo879

```
[ 0]  opesq vivo879a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;caso;oba2
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL879   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
```

```
[ 7]  →(isnum n)/1+⎕LC ◇ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ◇ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ◇ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA879←ajusta80 FOLHALA879
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA879)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ◇ resu←0 0⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←9 80⍴' '
[15]  f←FOLHALA879
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.02
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ◇ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[8;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[9;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  acuja←(f[;2]='#')/⍳1↑⍴f
[27]  f[acuja;⍳80]←esse[⌽,f[acuja;3 4],' ';]
[28]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[29]  ⍞←(⍕xk←xk+1),'-'
[30]  →testa
[31] fim:
[32] terminando:
[33]  relat[1↑⍴relat;1↑1↓⍴relat;]←80↑'\end{document}'
[34]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[35] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[36]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[37]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[38]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo891

```
[0]  r←geracaso
[1]  r←4 80⍴' '
[2]  r[1;]←,1 80↑X1[?1↑¯1+⍴X1;]
[3]  r[2;]←,1 80↑X2[?1↑¯1+⍴X2;]
[4] ⍝ r[3;]←,1 80↑X3[?1↑⍴X3;]
[5]  r[3;]←,1 80↑X4[?1↑¯1+⍴X4;]
[6]  r[4;]←,1 80↑X5[?1↑¯1+⍴X5;]
[7] ⍝ o ¯1+⍴Xn, deve-se ao fato de que a ultima linha de
[8] ⍝ cada vari┼avel esta resolvida como exemplo na folha
------------------------------------------------------------
[ 0]  opesq vivo891a n;CORRECAO;EVENTO;aaa;acuja;caso;dhx;esse;f;fz;lixo1;lixonol;relat;re
      sp;resu;upag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ◇ EVENTO←'PL891   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ◇ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ◇ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ◇ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA891←ajusta80 FOLHALA891
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA891)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ◇ resu←0 70⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
```

```
[14]  esse←14 80ρ' '
[15]  f←FOLHALA891
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.04
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[13;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[14;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  caso←geracaso
[27]  esse[7+⍳4;]←caso
[28] ⍝ resu←resu,[1]
[29]  acuja←(f[;2]='#')/⍳1↑ρf
[30]  f[acuja;⍳80]←esse[⍤,f[acuja;3 4],' ';]
[31]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\newpage'
[32]  ⍞←(⍕xk←xk+1),'-'
[33]  →testa
[34] fim:upag←(1 0+ρf)ρ' '
[35]  →(1=≡n)/elafa
[36]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[37]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[38]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[39]  →terminando
[40] elafa:
[41] ⍝aaa←(ylu,(((1↑ρylu),4)ρ' 0.0'),0 5↓resu)??????
[42] ⍝ aaa←(ylu,(((1↑ρylu),4)ρ' 0.0'))
[43] ⍝ lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[44] ⍝ '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[45] terminando:
[46]  upag[1↑ρupag;]←(1↓ρupag)↑'\end{document}'
[47]  relat[1↑ρrelat;;]←upag
[48]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[49] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[50]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[51]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[52]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo892

```
[0]  editadb n;x
[1]  x←DB834[n;;]
[2]  ⎕EDIT'x'
[3]  DB834[n;;]←(1↓ρDB834)↑x
-------------------------------------------------------------
[0]  r←listadb;i
[1]  r←0 80ρ' '
[2]  i←1
[3] t1:→(i>1↑ρDB834)/fim
[4]  →(1360=+/' '=,DB834[i;;])/soma
[5]  r←r,[1](80≠+/' '=DB834[i;;])/[1]DB834[i;;]
[6]  r←r,[1]1 80ρ80↑'----------------------'
[7] soma:→(i=i←i+1)/t1
[8] fim:
-------------------------------------------------------------
[ 0]  opesq vivo892a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;qh;quais;r1;r2;r
      3;r4;r5;relat;resp;resu;upag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
```

```
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL892   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA892←ajusta80 FOLHALA892
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA892)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 480⍴''
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←97 80⍴' '
[15]  f←FOLHALA892
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.04
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[96;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[97;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  qh←+/DB892[;1;1]≠' '
[27]  quais←5?qh
[28]  esse[7+⍳17;]←DB892[quais[1];;]
[29]  r1←(3 0⍕resp),RESP892[quais[1];]
[30]  esse[24+⍳17;]←DB892[quais[2];;]
[31]  r2←'   ',RESP892[quais[2];]
[32]  esse[41+⍳17;]←DB892[quais[3];;]
[33]  r3←'   ',RESP892[quais[3];]
[34]  esse[58+⍳17;]←DB892[quais[4];;]
[35]  r4←'   ',RESP892[quais[4];]
[36]  esse[75+⍳17;]←DB892[quais[5];;]
[37]  r5←'   ',RESP892[quais[5];]
[38]  resu←resu,[1]1 480⍴480↑r1,r2,r3,r4,r5
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[42]  ⍞←(⍕xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48] ⍝ upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑resu  ⍝ estaria certo este 80↑ ????
[49] ⍝ upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 5 0 5 0 5 0 5 0 5 0 5 0)⍕resu
[50]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[51]  →terminando
[52] elafa:
[53] ⍝aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 5↓resu)??????
[54]  aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'))
[55]  aaa[1;35 36]←2 0⍕CORRECAO
[56]  lixonol←aaa ΔFM('c:\apl2\',((~⍷⍤\⍷EVENTO=' ')/EVENTO),'.gpa')
[57]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[58] terminando:
[59]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\begin{verbatim}'
[60]  relat[1↑⍴relat;;]←upag
[61]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[62]  lixonol←lixonol,[1](((6×1↑⍴resu),80)⍴resu),[1]1 80⍴80↑'\end{verbatim} \end{document}
      '
[63] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
```

```
[64]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[65]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[66]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo900

```
[0]  AVISO
[1]  'Olhe a variavel QUAIS'
[2]  QUAIS
-------------------------------------------------------------
[0]  r←pedemail x
[1]  →(40≠+/' '=x)/aindanao
[2]  r←80↑'Por favor, informe seu e-mail: ⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_'
[3]  →junnao
[4] aindanao:r←80↑'e-mail cadastrado: ⍀verb+',x,'+'
[5] junnao:
-------------------------------------------------------------
[ 0]  opesq vivo900a n;CORRECAO;EVENTO;aa;acuja;bb;ctx;dhx;esse;f;lixonol;relat;upag;xk;yl
      u
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←8 ⋄ EVENTO←'PL900   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA900←ajusta80 FOLHALA900
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA900)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[12]  xk←1
[13]  ctx←((1↑⍴ylu),39 80)⍴' '
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←47 80⍴' '
[16]  f←FOLHALA900
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  esse[5;]←80↑ylu[xk;6+⍳30]
[22]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[23]  esse[7;]←80↑(3 0⍕xk),' ',opesq
[24] ⍝ esse[18;]←80↑pedemail ylu[xk;36+⍳40]
[25]  esse[46;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[26]  esse[47;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[27] ini1:
[28]  bb←1
[29]  aa←5?(⍴EXA01P)[1]
[30]  esse[7+⍳5;]←5 80↑bb numera EXA01P[aa;]
[31]  ctx[xk;⍳5;]←5 80↑bb numera EXA01R[aa;]
[32]  bb←bb+⍴aa
[33]  aa←3?(⍴EXA02P)[1]
[34]  esse[12+⍳3;]←3 80↑bb numera EXA02P[aa;]
[35]  ctx[xk;5+⍳3;]←3 80↑bb numera EXA02R[aa;]
[36]  bb←bb+⍴aa
[37]  aa←3?(⍴EXA03P)[1]
[38]  esse[15+⍳3;]←3 80↑bb numera EXA03P[aa;]
[39]  ctx[xk;8+⍳3;]←3 80↑bb numera EXA03R[aa;]
[40]  bb←bb+⍴aa
[41]  aa←3?(⍴EXA04P)[1]
```

```
[42]  esse[18+⍳3;]←3 80↑bb numera EXA04P[aa;]
[43]  ctx[xk;11+⍳3;]←3 80↑bb numera EXA04R[aa;]
[44]  bb←bb+⍴aa
[45]  aa←3?(⍴EXA05P)[1]
[46]  esse[21+⍳3;]←3 80↑bb numera EXA05P[aa;]
[47]  ctx[xk;14+⍳3;]←3 80↑bb numera EXA05R[aa;]
[48]  bb←bb+⍴aa
[49]  aa←4?(⍴EXA06P)[1]
[50]  esse[24+⍳4;]←4 80↑bb numera EXA06P[aa;]
[51]  ctx[xk;17+⍳4;]←4 80↑bb numera EXA06R[aa;]
[52]  bb←bb+⍴aa
[53]  aa←3?(⍴EXA09P)[1]
[54]  esse[28+⍳3;]←3 80↑bb numera EXA09P[aa;]
[55]  ctx[xk;21+⍳3;]←3 80↑bb numera EXA09R[aa;]
[56]  bb←bb+⍴aa
[57]  aa←3?(⍴EXA10P)[1]
[58]  esse[31+⍳3;]←3 80↑bb numera EXA10P[aa;]
[59]  ctx[xk;24+⍳3;]←3 80↑bb numera EXA10R[aa;]
[60]  bb←bb+⍴aa
[61]  aa←5?(⍴EXA11P)[1]
[62]  esse[34+⍳5;]←5 80↑bb numera EXA11P[aa;]
[63]  ctx[xk;27+⍳5;]←5 80↑bb numera EXA11R[aa;]
[64]  bb←bb+⍴aa
[65]  aa←3?(⍴EXA12P)[1]
[66]  esse[39+⍳3;]←3 80↑bb numera EXA12P[aa;]
[67]  ctx[xk;32+⍳3;]←3 80↑bb numera EXA12R[aa;]
[68]  bb←bb+⍴aa
[69]  aa←3?(⍴EXA13P)[1]
[70]  esse[42+⍳3;]←3 80↑bb numera EXA13P[aa;]
[71]  ctx[xk;35+⍳3;]←3 80↑bb numera EXA13R[aa;]
[72]  ctx[xk;39;]←80↑'\clearpage'
[73]  acuja←(f[;2]='#')/⍳1↑⍴f
[74]  f[acuja;]←esse[⍤,f[acuja;3 4],' ';]
[75]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[76]  □←(⍎xk←xk+1),'-'
[77]  →testa
[78] fim:upag←(1 0+⍴f)⍴' '
[79]  ctx←((×/2↑⍴ctx),80)⍴ctx
[80]  lixonol←ctx ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.ctx'
[81]  'arquivo de respostas com o nome de ',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.ctx'
[82] terminando:
[83]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[84]  relat[1↑⍴relat;;]←upag
[85]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[86]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[87]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .ctx)'
------------------------------------------------------------
```

vivo901

```
[ 0]  r←eprimo x;div
[ 1]  div←3
[ 2]  r←1
[ 3]  →((2=x)∨(x=1))/termina
[ 4]  →(0=2|x)/naoe
[ 5] testa:→(div>⌊x*0.5)/termina
[ 6]  →(0=div|x)/naoe
[ 7]  div←div+1
[ 8]  →testa
[ 9] naoe:r←0
[10] termina:
------------------------------------------------------------
```

```
[0]  r←factoridioms is;I
[1]  r←(0=I|is)/I←1+⍳⌊is÷2
------------------------------------------------------------
[0]  r←fatores x;y
[1]  (y=⌊y←x÷⍳x)/⍳x
------------------------------------------------------------
[ 0]  r←fatorizacao x;primos;i
[ 1]  primos←PRIMOS
[ 2]  i←1
[ 3]  r←0⍴0
[ 4] t1:→(i>⍴primos)/exau
[ 5]  →(0=primos[i]|x)/sim
[ 6] nao:i←i+1
[ 7]  →t1
[ 8] sim:r←r,primos[i]
[ 9]  x←x÷primos[i]
[10]  →(x∈primos)/final
[11]  →t1
[12] final:r←r,(primos∈x)/primos
[13]  →0
[14] exau:'deu xabu'
------------------------------------------------------------
[ 0]  geraprimos;i;c
[ 1]  PRIMOS←⍳0
[ 2]  i←1
[ 3]  c←2
[ 4] t1:→(i>500)/fim
[ 5] testaprimo:→(eprimo c)/esim
[ 6]  c←c+1
[ 7]  →testaprimo
[ 8] esim:PRIMOS←PRIMOS,c
[ 9]  c←c+1
[10]  i←i+1
[11]  →t1
[12] fim:
------------------------------------------------------------
[0]  r←mdc I;V
[1]  r←⌈/(∧/0=V∘.|I)/V←⍳⌊/I
------------------------------------------------------------
[0]  r←mmc I
[1]  r←(×/I)÷mdc I
------------------------------------------------------------
[0]  r←pedemail x
[1]  →(40≠+/' '=x)/aindanao
[2]  r←80⍴'Por favor, informe seu e-mail: ⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_'
[3]  →junnao
[4] aindanao:r←80⍴'e-mail cadastrado: ⍀verb+',x,'+'
[5] junnao:
------------------------------------------------------------
[0]  r←primosidioms is;I
[1]  r←(2=+⌿0=I∘.|I)/I←⍳is
------------------------------------------------------------
[ 0]  opesq vivo901a n;CORRECAO;EVENTO;aa;acuja;bb;ctx;dhx;esse;f;lixonol;relat;upag;xk;yl
      u
[ 1]  opesq←10⍴' '
[ 2] qveio:
[ 3]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←8 ◇ EVENTO←'PL901   '
[ 5]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ◇ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ◇ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ◇ ylu←(n,76)↑(n,4)⍴4 0⍎⍳n
[ 8]  FOLHALA901←ajusta80 FOLHALA901
```

```
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA901)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑⍙FM'c:\apl2\VIVOBLO1'
[11]  xk←1
[12]  ctx←((1↑⍴ylu),39 80)⍴' '
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←47 80⍴' '
[15]  f←FOLHALA901
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕xk),' ',opesq
[23] ⍝ esse[18;]←80↑pedemail ylu[xk;36+⍳40]
[24]  esse[46;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[25]  esse[47;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[26] ini1:
[27]  bb←1
[28]  aa←5?(⍴EXA01P)[1]
[29]  esse[7+⍳5;]←5 80↑bb numera EXA01P[aa;]
[30]  ctx[xk;⍳5;]←5 80↑bb numera EXA01R[aa;]
[31]  bb←bb+⍴aa
[32]  aa←3?(⍴EXA02P)[1]
[33]  esse[12+⍳3;]←3 80↑bb numera EXA02P[aa;]
[34]  ctx[xk;5+⍳3;]←3 80↑bb numera EXA02R[aa;]
[35]  bb←bb+⍴aa
[36]  aa←3?(⍴EXA03P)[1]
[37]  esse[15+⍳3;]←3 80↑bb numera EXA03P[aa;]
[38]  ctx[xk;8+⍳3;]←3 80↑bb numera EXA03R[aa;]
[39]  bb←bb+⍴aa
[40]  aa←3?(⍴EXA04P)[1]
[41]  esse[18+⍳3;]←3 80↑bb numera EXA04P[aa;]
[42]  ctx[xk;11+⍳3;]←3 80↑bb numera EXA04R[aa;]
[43]  bb←bb+⍴aa
[44]  aa←5?(⍴EXA05P)[1]
[45]  esse[21+⍳5;]←5 80↑bb numera EXA05P[aa;]
[46]  ctx[xk;14+⍳5;]←5 80↑bb numera EXA05R[aa;]
[47]  bb←bb+⍴aa
[48]  aa←5?(⍴EXA06P)[1]
[49]  esse[26+⍳5;]←5 80↑bb numera EXA06P[aa;]
[50]  ctx[xk;19+⍳5;]←5 80↑bb numera EXA06R[aa;]
[51]  bb←bb+⍴aa
[52]  aa←3?(⍴EXA07P)[1]
[53]  esse[31+⍳3;]←3 80↑bb numera EXA07P[aa;]
[54]  ctx[xk;24+⍳3;]←3 80↑bb numera EXA07R[aa;]
[55]  bb←bb+⍴aa
[56]  ctx[xk;39;]←80↑'\clearpage'
[57]  acuja←(f[;2]='#')/⍳1↑⍴f
[58]  f[acuja;]←esse[⍬,f[acuja;3 4],' ';]
[59]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[60]  ⍞←(⍕xk←xk+1),'-'
[61]  →testa
[62] fim:upag←(1 0+⍴f)⍴' '
[63]  ctx←((×/2↑⍴ctx),80)⍴ctx
[64]  lixonol←ctx ⍙FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.ctx'
[65]  'arquivo de respostas com o nome de ',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.ctx'
[66] terminando:
[67]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[68]  relat[1↑⍴relat;;]←upag
[69]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[70]  lixonol←lixonol ⍙FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[71]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .ctx)'
```

```
------------------------------------------------------------
```

vivo902

```
[0]  AVISO
[1]  'cuidado que esta funcao esta entrando em loop'
[2]  'se acontecer, cancele e chame de novo'
------------------------------------------------------------
[0]  r←geraex1;a;b;c;k;mn
[1]  k←?10
[2]  mn←2?10
[3]  mn←mn[⍋mn]
[4]  a←k×(mn[2]*2)-mn[1]*2
[5]  b←k×2×mn[1]×mn[2]
[6]  c←k×(mn[1]*2)+mn[2]*2
[7]  r←a,b,c
[8]  r←r[3?3]
------------------------------------------------------------
[0]  r←geraex2;pts
[1]  pts←2?100
[2]  r←pts,PONTOS[pts[1];]resolve2 PONTOS[pts[2];]
------------------------------------------------------------
[ 0]  r←geraex3;x;dd
[ 1] ⍝ dados 3 pontos, quanto de azulejo se necessita para cobrir ?
[ 2] ica:x←3?100
[ 3]  dd←resolve3,PONTOS[x;]
[ 4] ⍝ dd
[ 5]  →(dd≠¯1)/ufa
[ 6]  →(dd>5)/ufa
[ 7]  ⎕←'&'
[ 8]  →ica
[ 9] ufa:
[10]  r←x,dd
------------------------------------------------------------
[ 0]  r←geraex4;x;z
[ 1] ⍝ dados 3 pontos, quanto de azulejo se necessita para cobrir ?
[ 2] denovo:x←3?100
[ 3]  z←resolve4,PONTOS[x;]
[ 4]  →(z≥500)/blz
[ 5]  ⎕←'*'
[ 6]  →denovo
[ 7] blz:
[ 8]  r←x,z
------------------------------------------------------------
[ 0]  r←geraex5;x;z;g
[ 1] ⍝ dados 3 pontos, onde por o deposito ?
[ 2] denovo:x←3?100
[ 3]  z←resolve4,PONTOS[x;]
[ 4]  →(z≥500)/blz
[ 5]  ⎕←'*'
[ 6]  →denovo
[ 7] blz:
[ 8]  g←resolve5,PONTOS[x;]
[ 9]  r←x,g
------------------------------------------------------------
[ 0]  lixo
[ 1]  i←1
[ 2] t1:→(i>100)/0
[ 3]  →(PONTOS[i;1]>0)/oba1
[ 4]  →(1=?2)/oba1
[ 5]  PONTOS[i;1]←PONTOS[i;1]×¯1
[ 6] oba1:
```

```
[ 7]  →(PONTOS[i;2]>0)/oba2
[ 8]  →(1=?2)/oba2
[ 9]  PONTOS[i;2]←PONTOS[i;2]×¯1
[10] oba2:i←i+1
[11]  →t1
------------------------------------------------------------
[0]  r←p1 resolve2 p2
[1]  r←(((p1[1]-p2[1])*2)+((p1[2]-p2[2])*2))*0.5
------------------------------------------------------------
[ 0]  r←resolve3 x1y1x2y2x3y3;p1;p2;p3;db;a;b;c;dis
[ 1]  p1←x1y1x2y2x3y3[1 2]
[ 2]  p2←x1y1x2y2x3y3[3 4]
[ 3]  p3←x1y1x2y2x3y3[5 6]
[ 4]  →(p2[1]=p1[1])/xabu
[ 5]  db←p1 resolve2 p2
[ 6]  →(db<5)/xabu
[ 7]  a←(p2[2]-p1[2])÷p2[1]-p1[1]
[ 8]  b←-1
[ 9]  c←p1[2]-a×p1[1]
[10]  dis←(|((a×p3[1])+(b×p3[2])+c))÷((a*2)+(b*2))*0.5
[11]  →(dis<5)/xabu
[12]  r←dis
[13]  →0
[14] xabu:r←¯1
------------------------------------------------------------
[0]  r←resolve4 x;db;di
[1]  db←x[1 2]resolve2 x[3 4]
[2]  di←resolve3 x
[3]  r←db×di×0.5
------------------------------------------------------------
[ 0]  r←resolve5 x;a;d;e;x0;y0
[ 1]  a←3 3⍴x[1 2],1,x[3 4],1,x[5 6],1
[ 2]  d←3 3⍴(+/x[1 2]*2),x[2],1,(+/x[3 4]*2),x[4],1,(+/x[5 6]*2),x[6],1
[ 3]  e←3 3⍴(+/x[1 2]*2),x[1],1,(+/x[3 4]*2),x[3],1,(+/x[5 6]*2),x[5],1
[ 4]  a←sarrus a
[ 5]  d←-sarrus d
[ 6]  e←sarrus e
[ 7]  x0←(-d)÷2×a
[ 8]  y0←(-e)÷2×a
[ 9]  r←x0,y0
------------------------------------------------------------
[0]  r←sarrus x
[1]  r←(x[1;1]×x[2;2]×x[3;3])+(x[1;2]×x[2;3]×x[3;1])+(x[1;3]×x[2;1]×x[3;2])
[2]  r←r-(x[1;3]×x[2;2]×x[3;1])+(x[1;1]×x[2;3]×x[3;2])+(x[1;2]×x[2;1]×x[3;3])
------------------------------------------------------------
[ 0]  opesq vivo902a n;CD;CORRECAO;EVENTO;a;aaa;acuja;b;catu;dhx;esse;f;g1;iga;kk;lixo1;li
      xonol;mc;mr;num;qual;relat;resp;resu;ta;upag;xixo;xk;xx;ylu;ze
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←8 ⋄ EVENTO←'PL902   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALA902←ajusta80 FOLHALA902
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA902)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[12]  xk←1 ⋄ resu←0 7⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←22 80⍴' '
[15]  f←FOLHALA902
```

```
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←1.03
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[21;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[22;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25]  CD←CIDS,[2]'(',(100 3⍴'¯-'edit 3 0⍕PONTOS[;1]),[2]',',(100 3⍴'¯-'edit 3 0⍕PONTOS[;2]
      ),[2]')'
[26] ini1:
[27]  xx←geraex1
[28]  esse[8;]←80↑10 0⍕xx[1]
[29]  esse[9;]←80↑10 0⍕xx[2]
[30]  resp←resp,xx[3]
[31]  xx←geraex2
[32]  esse[10;]←80↑CD[xx[1];]
[33]  esse[11;]←80↑CD[xx[2];]
[34]  resp←resp,⍪8 1⍕xx[3]
[35]  xx←geraex3
[36]  esse[12;]←80↑CD[xx[1];]
[37]  esse[13;]←80↑CD[xx[2];]
[38]  esse[14;]←80↑CD[xx[3];]
[39]  resp←resp,⍪8 1⍕xx[4]
[40]  xx←geraex4
[41]  esse[15;]←80↑CD[xx[1];]
[42]  esse[16;]←80↑CD[xx[2];]
[43]  esse[17;]←80↑CD[xx[3];]
[44]  resp←resp,⍪8 1⍕xx[4]
[45]  xx←geraex5
[46]  esse[18;]←80↑CD[xx[1];]
[47]  esse[19;]←80↑CD[xx[2];]
[48]  esse[20;]←80↑CD[xx[3];]
[49]  resp←resp,⍪8 1⍕xx[4 5]
[50]  resu←resu,[1]1 7⍴resp
[51]  acuja←(f[;2]='#')/⍳1↑⍴f
[52]  f[acuja;]←esse[⍪,f[acuja;3 4],' ';]
[53]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[54]  ⍞←(⍕xk←xk+1),'-'
[55]  →testa
[56] fim:upag←(1 0+⍴f)⍴' '
[57]  →(1=≡n)/elafa
[58]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[59]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[60]  upag[2+⍳1↑⍴resu;⍳¯5++/lixo1]←'¯-'edit(lixo1←4 0 8 0 8 1 8 1 10 1 8 1 7 1)⍕resu
[61]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[62]  →terminando
[63] elafa:aaa←(ylu,'¯-'edit 8 0 8 1 8 1 10 1 8 1 7 1⍕0 1↓resu)
[64]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[65]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[66] terminando:
[67]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[68]  relat[1↑⍴relat;;]←upag
[69]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[70] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[71]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[72]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo903

```
[0]  r←achamais xxx
[1]  r←1÷(1-xxx*2)*0.5
------------------------------------------------------------
[ 0]  r←geracaso903;aa;bb;cc;dd;ee;ff;gg
[ 1]  r←10 78⍴' '
[ 2] ⍝ faca o grafico de tempo interno para um veiculo se movendo a r[1;] de c
[ 3]  aa←0.68+(?40)÷160
[ 4]  bb←((?5)÷100)+aa÷20
[ 5]  r[1;]←78↑5 2⍕aa
[ 6]  r[2;]←78↑5 2⍕bb
[ 7] ⍝ quanto mede um vagao com 100m parado, movendo-se a...
[ 8]  cc←0.8+(?18)÷102
[ 9]  r[3;]←78↑5 2⍕cc
[10] ⍝ um casal deixa um filho recem nascido e vai para Alfa Centauri com v=
[11]  dd←0.94+(?50)÷1001
[12]  r[4;]←78↑6 3⍕dd
[13] ⍝ uma estrela esta a ee anos luz. A quantos km ?
[14]  ee←20+?50
[15]  r[5;]←78↑3 0⍕ee
[16] ⍝ uma estrela esta a ff km. quanto tempo demora a luz a chegar ?
[17]  ff←3000000000+1000000000×?100
[18]  r[6;]←78↑16 0⍕ff
[19] ⍝ e se a c fosse 300 Km/h, e voc^e fosse a S~ao Paulo em um jato a gg km/h
[20]  gg←250+?45
[21]  r[7;]←78↑4 0⍕gg
[22]  OUTRO←(⊂r[1;]),(⊂r[2;]),(⊂r[3;]),(⊂r[4;]),(⊂r[5;]),(⊂r[6;]),⊂r[7;]
------------------------------------------------------------
[0]  r←resolve903 x;ano
[1]  r←7⍴0
[2]  r[1]←100×achamais x[3]
[3]  r[2]←30+ano←2×4.3÷x[4]
[4]  r[3]←ano×achamais x[4]
[5]  r[4]←(300000×60×60×24×365.25×x[5])÷1000000
[6]  r[5]←x[6]÷300000×60×60
[7]  r[6]←400÷x[7]
[8]  r[7]←achamais x[7]÷300
------------------------------------------------------------
[ 0]  opesq vivo903a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;nomes;num
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL903   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA903←ajusta80 FOLHALA903
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA903)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 8⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←16 80⍴' '
[16]  f←FOLHALA903
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
```

```
[22]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:
[28]  esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[32]  esse[15;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[16;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] ini1:
[35]  xx←geracaso903
[36]  esse[7+⍳7;]←7 80↑xx
[37]  zz←resolve903 OUTRO
[38]  resu←resu,[1]1 8⍴resp,zz
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[42]  ⎕←(⍕xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳¯8++/lixo1]←(lixo1←4 0 6 1 6 1 6 1 15 0 6 1 6 2 6 2)⍕resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],5 1 5 1 5 1 15 0 5 1 5 2 5 2⍕0 1↓resu)
[52]  lixonol←aaa ⍙FM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[59]  lixonol←lixonol ⍙FM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[60]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo911

```
[0]  r←bayes xyz
[1] ⍝ x=P(A), y=P(B|A), z=P(B|~A)
[2]  r←(xyz[1]×xyz[2])÷(xyz[1]×xyz[2])+xyz[3]×(1-xyz[1])
------------------------------------------------------------
[ 0]  r←geracaso911a;x;z;z1;z2;z3
[ 1]  x←2⍴' '
[ 2]  z←11 79⍴' '
[ 3]  z[1;]←79↑'1. Suponha que a probabilidade de uma pessoa na populaçto ter '
[ 4]  z[2;]←79↑'alergia séria à ingestto de crustáceos (como por exemplo camarto) é de'
[ 5]  z[3;]←79↑('9.9999'⍕z1←1÷5+?50),'.'
[ 6]  z[4;]←79↑'Pessoas que tem essa alergia e comem camarto incham o rosto'
[ 7]  z[5;]←79↑'em '
[ 8]  z[6;]←79↑(6 0⍕100×z2←((80+?19)÷100)),' ⍀% das vezes.'
[ 9]  z[7;]←79↑'Já a condiçto de inchaço no rosto ocorre em outras hipóteses também e assi
      m'
[10]  z[8;]←79↑'a probabilidade do inchaço ocorrer sem que haja alergia é de '
[11]  z[9;]←79↑('9.9999'⍕z3←(20+?30)÷100),'.'
[12]  z[10;]←79↑'Você deve calcular a probabilidade de que alguém seja alérgico dado que'
[13]  z[11;]←79↑'ele comeu camarto e seu rosto inchou completamente.'
```

```
[14]  x[1]←⊂z
[15]  x[2]←⊂'9.9999'⍕bayes z1,z2,z3
[16]  r←x
-------------------------------------------------------------
[ 0]  r←geracaso911b;x;z;z1;z2;z3
[ 1]  x←2⍴' '
[ 2]  z←11 79⍴' '
[ 3]  z[1;]←79↑'2. Suponha que a probabilidade de um aluno de BSI passar '
[ 4]  z[2;]←79↑'de ano na disciplina de Matemática Discreta é de'
[ 5]  z[3;]←79↑('9.9999'⍕z1←(75+?12)÷100),'.'
[ 6]  z[4;]←79↑'Pessoas que tiram 10 no 1$^o$ bimestre e depois sto aprovadas em MD'
[ 7]  z[5;]←79↑'ocorrem com probabilidade igual a '
[ 8]  z[6;]←79↑('9.9999'⍕z2←((80+?19)÷100)),'.'
[ 9]  z[7;]←79↑'Já às vezes ocorre do sujeito ou sujeita tirar 10 no 1$^o$ bimestre'
[10]  z[8;]←79↑'e depois ser reprovado em MD, em '
[11]  z[9;]←79↑(6 0⍕100×z3←(2+?10)÷100),' ⍀% das vezes.'
[12]  z[10;]←79↑'Você deve calcular a probabilidade de que alguém ser aprovado dado que'
[13]  z[11;]←79↑'ele ou ela tirou 10 no primeiro bimestre.'
[14]  x[1]←⊂z
[15]  x[2]←⊂'9.9999'⍕bayes z1,z2,z3
[16]  r←x
-------------------------------------------------------------
[ 0]  opesq vivo911a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL911   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA911←ajusta80 FOLHALA911
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA911)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←31 80⍴' '
[16]  f←FOLHALA911
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[30;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[31;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracaso911a
[35]  esse[7+⍳11;]←11 80↑⊃xx[1]
[36]  resp←resp,,⍪⊃xx[2]
[37]  xx←geracaso911b
[38]  esse[18+⍳11;]←11 80↑⊃xx[1]
```

```
[39]  resp←resp,,⍤⊃xx[2]
[40]  resu←resu,[1]1 3⍴resp
[41]  acuja←(f[;2]='#')/⍳1↑⍴f
[42]  f[acuja;⍳80]←esse[⍤,f[acuja;3 4],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[44]  □←(⍕xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+⍴f)⍴' '
[47]  →(1=≡n)/elafa
[48]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[49]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[50]  upag[2+⍳1↑⍴resu;⍳¯8++/lixo1]←(lixo1←5 0 10 4 8 4)⍕resu
[51]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[52]  →terminando
[53] elafa:aaa←(ylu[;⍳36],9 4⍕0 1↓resu)
[54]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[55]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[56] terminando:
[57]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[58]  relat[1↑⍴relat;;]←upag
[59]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[60] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[61]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[62]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[63]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo912

```
[ 0]  r←moedas analisa qt;i;v;sv
[ 1]  i←1
[ 2]  sv←⍳0
[ 3] t1:→(i>qt)/fim
[ 4]  v←sim moedas
[ 5]  sv←sv,v[1]
[ 6]  i←i+1
[ 7]  →t1
[ 8] fim:
[ 9]  sv←sv[⍋sv]
[10]  r←((+/sv)÷qt),sv[⌈qt÷2]
[11]  SV←sv
------------------------------------------------------------
[ 0]  r←moedas analisanova qt;i;v;sv
[ 1]  i←1
[ 2]  sv←⍳0
[ 3] t1:→(i>qt)/fim
[ 4]  v←simnova moedas
[ 5]  sv←sv,v
[ 6]  i←i+1
[ 7]  →t1
[ 8] fim:
[ 9]  sv←sv[⍋sv]
[10]  r←((+/sv)÷qt),sv[⌈qt÷2]
[11]  SV←sv
------------------------------------------------------------
[ 0]  r←ava x
[ 1]  →(3=+/'B'=x)/vinte
[ 2]  →(3=+/'S'=x)/quinze
[ 3]  →(3=+/'L'=x)/cinco
[ 4]  →(3=+/'C'=x)/tres
[ 5]  →((x[1]='C')∧(x[2]='C'))/dois
[ 6]  →(x[1]='C')/um
```

```
[ 7]  r←0
[ 8]  →0
[ 9] um:r←1
[10]  →0
[11] dois:r←2
[12]  →0
[13] tres:r←3
[14]  →0
[15] cinco:r←5
[16]  →0
[17] quinze:r←15
[18]  →0
[19] vinte:r←20
[20]  →0
------------------------------------------------------------
[0]  r←avanova j;i
[1]  i←1
[2] t1:
[3]  →(3=+/MAQ[i;1 2 3]=j)/achou
[4]  i←i+1
[5]  →t1
[6] achou:
[7]  r←⍪,MAQ[i;4 5 6]
------------------------------------------------------------
[ 0]  cavaleiro912a n;acuja;esse;f;lixo1;relat;resp;x;xk;xx;ylu;z;zz;moedas
[ 1]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 2]  FOLHALA912←ajusta80 FOLHALA912
[ 3]  relat←ΔFM'c:\apl2\VIVOBLO1'
[ 4]  xk←1
[ 5] testa:→(xk>n)/fim
[ 6]  esse←17 80⍴' '
[ 7]  f←FOLHALA912
[ 8]  esse[1;⍳⍴x]←x←' ---- Cavaleiros da Tavola Redonda ---'
[ 9]  esse[3;]←80↑4 2⍕1.05
[10]  esse[16;⍳8]←'@000000@'
[11] inica:
[12]  xx←gera912
[13]  MAQ←⊃xx[1]
[14]  esse[7+⍳7;]←7 80↑⊃xx[2]
[15]  moedas←7+?3
[16]  esse[15;]←80↑⍕moedas
[17]  x←⍪,(⊃xx[1])[;4 5 6]
[18]  resp←(64>+/x),((+/x)÷64),((+/x>1)÷64),((+/x≥1)÷64)
[19]  z←moedas analisanova 50
[20]  resp←resp,z[1]
[21]  acuja←(f[;2]='#')/⍳1↑⍴f
[22]  f[acuja;⍳80]←esse[⍪,f[acuja;3 4],' ';]
[23]  ⍞←(⍕xk←xk+1),'-'
[24]  f←(((1↑⍴relat),1↓⍴f)↑relat),[1]f
[25]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'\end{document}'
[26]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'%',⍕resp
[27]  lixo1←f ΔFM'c:\apl2\CA912a',('00'⍕xk-1),'.tex'
[28]  →testa
[29] fim:
------------------------------------------------------------
[ 0]  r←gera912;a;a1;a2;a3;a4;i;msg;q;z
[ 1] denovo:z←64 3⍴' '
[ 2]  z[;1]←(16⍴'B'),(16⍴'S'),(16⍴'L'),(16⍴'C')
[ 3]  z[;2]←64⍴(4⍴'B'),(4⍴'S'),(4⍴'L'),(4⍴'C')
[ 4]  z[;3]←64⍴'BSLC'
[ 5]  q←64⍴0
[ 6]  msg←7 77⍴' '
[ 7]  a←?4
```

```
[ 8]  →(1=a)/eum
[ 9]  →(2=a)/edois
[10]  →(3=a)/etres
[11]  →(4=a)/equatro
[12] eum:
[13]  q[1]←a1←16+?6
[14]  q[22]←a2←10+?8
[15]  q[43]←a3←4+?4
[16]  q[64]←a4←3+?2
[17]  msg[5;]←77↑'Finalmente, considere que qualquer aposta onde apareçam 2 BAR e '
[18]  msg[6;]←77↑'que nto tenha sido já premiada, paga 1 moeda.↯↯*'
[19]  i←1
[20] t1:→(i>64)/termina
[21]  →(((2=+/z[i;1 2]='BB')∨(2=+/z[i;1 3]='BB')∨(2=+/z[i;2 3]='BB'))∧(q[i]=0))/poe1
[22]  →soma1
[23] poe1:q[i]←1
[24] soma1:
[25]  i←i+1
[26]  →t1
[27] edois:
[28]  q[1]←a1←10+?6
[29]  q[22]←a2←5+?5
[30]  q[43]←a3←3+?3
[31]  q[64]←a4←2+?2
[32]  msg[5;]←77↑'Finalmente, considere que qualquer aposta onde apareçam duas frutas e '
[33]  msg[6;]←77↑'(eventualmente iguais) que nto tenha sido já premiada, paga 1 moeda.↯↯*'
[34]  i←1
[35] t2:→(i>64)/termina
[36]  →((((+/z[i;]='C')+(+/z[i;]='L'))>1)∧(q[i]=0))/poe2
[37]  →soma2
[38] poe2:q[i]←1
[39] soma2:
[40]  i←i+1
[41]  →t2
[42] etres:
[43]  q[1]←a1←10+?10
[44]  q[22]←a2←5+?9
[45]  q[43]←a3←3+?6
[46]  q[64]←a4←2+?4
[47]  msg[5;]←77↑'Considere que qualquer aposta onde apareça SINO nas bobinas 1 e 2 '
[48]  msg[6;]←77↑'que nto tenha sido já premiada, paga 2 moedas. Se o SINO só aparecer '
[49]  msg[7;]←77↑'na bobina 2 (sem ter sido já premiada) paga 1 moeda.↯↯*'
[50]  i←1
[51] t3:→(i>64)/termina
[52]  →((2=+/z[i;1 2]='SS')∧(q[i]=0))/poe3a
[53]  →((z[i;2]='S')∧(q[i]=0))/poe3b
[54]  →soma3
[55] poe3a:
[56]  q[i]←2
[57]  →soma3
[58] poe3b:
[59]  q[i]←1
[60] soma3:
[61]  i←i+1
[62]  →t3
[63] equatro:
[64]  q[1]←a1←10+?10
[65]  q[22]←a2←5+?9
[66]  q[43]←a3←3+?6
[67]  q[64]←a4←2+?4
[68]  msg[5;]←77↑'Considere que qualquer aposta onde apareça CEREJA nas bobinas 2 e 3 '
[69]  msg[6;]←77↑'que nto tenha sido já premiada, paga 2 moedas. Se o CEREJA só aparecer '
[70]  msg[7;]←77↑'na bobina 1 (sem ter sido já premiada) paga 1 moeda.↯↯*'
```

```
[71]  i←1
[72] t4:→(i>64)/termina
[73]  →((2=+/z[i;2 3]='CC')∧(q[i]=0))/poe4a
[74]  →((z[i;1]='C')∧(q[i]=0))/poe4b
[75]  →soma4
[76] poe4a:
[77]  q[i]←2
[78]  →soma4
[79] poe4b:
[80]  q[i]←1
[81] soma4:
[82]  i←i+1
[83]  →t4
[84] termina:
[85]  →(63<+/q)/deuxabu
[86]  msg[1;]←77↑'Considere 3 BAR pagando ',(⍕a1),' moedas.⍀⍀*'
[87]  msg[2;]←77↑'Considere 3 SINO pagando ',(⍕a2),' moedas.⍀⍀*'
[88]  msg[3;]←77↑'Considere 3 LIM⍋O pagando ',(⍕a3),' moedas.⍀⍀*'
[89]  msg[4;]←77↑'Considere 3 CEREJA pagando ',(⍕a4),' moedas.⍀⍀*'
[90]  r←2⍴0
[91]  r[1]←⊂z,3 0⍕64 1⍴q
[92]  r[2]←⊂msg
[93]  →0
[94] deuxabu:
[95]  ⍞←'o'
[96]  →denovo
-------------------------------------------------------------
[0]  r←rcn;a
[1]  a←(?4),(?4),?4
[2]  r←'BSLC'[a]
-------------------------------------------------------------
[0]  r←sim rec;i
[1]  i←0
[2] t1:→(rec<1)/fim
[3]  rec←rec-1
[4]  rec←rec+ava rcn
[5]  i←i+1
[6]  →t1
[7] fim:r←i,rec
-------------------------------------------------------------
[ 0]  r←simnova moeda;i
[ 1]  i←1
[ 2] t1:→(moeda<1)/fim
[ 3]  moeda←moeda-1
[ 4]  moeda←moeda+avanova rcn
[ 5]  i←i+1
[ 6]  →t1
[ 7] fim:
[ 8]  r←i
-------------------------------------------------------------
[ 0]  opesq vivo912a n;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;moedas;nomes;ql39;qlinha;
      relat;resp;resu;upag;x;xixo;xk;xx;ylu;z;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL912   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA912←ajusta80 FOLHALA912
```

```
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA912)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 6⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←17 80⍴' '
[16]  f←FOLHALA912
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[16;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[17;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera912
[35]  MAQ←⊃xx[1]
[36]  esse[7+⍳7;]←7 80↑⊃xx[2]
[37]  moedas←7+?3
[38]  esse[15;]←80↑⍕moedas
[39]  x←⍬,(⊃xx[1])[;4 5 6]
[40]  resp←resp,(64>+/x),((+/x)÷64),((+/x>1)÷64),((+/x≥1)÷64)
[41]  z←moedas analisanova 50
[42]  resp←resp,z[1]
[43]  resu←resu,[1]1 6⍴resp
[44]  acuja←(f[;2]='#')/⍳1↑⍴f
[45]  f[acuja;⍳80]←esse[⍬,f[acuja;3 4],' ';]
[46]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[47]  ⎕←(⍕xk←xk+1),'-'
[48]  →testa
[49] fim:upag←(1 0+⍴f)⍴' '
[50]  →(1=≡n)/elafa
[51]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[52]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[53]  upag[2+⍳1↑⍴presu;⍳¯10++/lixo1]←(lixo1←5 0 10 0 8 3 8 3 8 3 8 1)⍕resu
[54]  upag[3+1↑⍴presu;]←(1↓⍴upag)↑'\end{verbatim}'
[55]  →terminando
[56] elafa:aaa←(ylu[;⍳36],10 0 8 3 8 3 8 3 8 1⍕0 1↓resu)
[57]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[58]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴paaa),' linhas e ',(⍕1↓⍴paaa),' colunas'
[59] terminando:
[60]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[61]  relat[1↑⍴relat;;]←upag
[62]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[63]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[64]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo913

```
[ 0]  opesq vivo913a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
```

```
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL913   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA913←ajusta80 FOLHALA913
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA913)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALA913
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34] ⍝ xx←geracaso
[35] ⍝ esse[7+⍳3;]←3 80↑acertaca xx
[36] ⍝ resp←resp,,xx[2 3;5]
[37]  resu←resu,[1]1 3⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⍞←(⍎xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  'nao ha gpa'
[45]  →terminando
[46]  →(1=≡n)/elafa
[47]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[48]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[49]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍎resu
[50]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[51]  →terminando
[52] elafa:aaa←(ylu[;⍳36],9 0⍎0 1↓resu)
[53]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[54]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[55] terminando:
[56]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[57]  relat[1↑⍴relat;;]←upag
[58]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[59]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[60]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[61]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo922

```
[ 0]  rr←pad estereo mask;i;j;r;rand;anterior;padrao;alfa;aa;bb
[ 1] ⍝ modo de usar x  ← (  ⍳16) estereo mask (0=nivel inferior, 1,2,...)
[ 2]  r←(⍴mask)⍴0 ⋄ rr←(⍴mask)⍴' ' ⋄ i←1
[ 3] jj:→(i>1↑⍴mask)/fim0
[ 4]  rand←10+⍳20 ⋄ padrao←pad ⋄ anterior←mask[i;1] ⋄ j←1
[ 5] kk:→(j>1↓⍴mask)/fim1
[ 6]  →((⎕AV⍳mask[i;j])>(⎕AV⍳anterior))/acima
[ 7]  →((⎕AV⍳mask[i;j])<(⎕AV⍳anterior))/abaixo
[ 8] igual:r[i;j]←1↑padrao
[ 9]  padrao←1⌽padrao
[10]  →soma
[11] acima:padrao←(bb←(⍪mask[i;j])-(⍪anterior))↓padrao ⋄ anterior←mask[i;j]
[12]  →igual
[13] abaixo:padrao←((aa←(⍪anterior)-(⍪mask[i;j]))↑rand),padrao
[14]  anterior←mask[i;j]
[15]  rand←aa↓rand
[16]  →igual
[17] soma:→(j=j←j+1)/kk
[18] fim1:→(i=i←i+1)/jj
[19] fim0:i←1 ⋄ alfa←'ABCDEFGHIJKLMNOPQRSTUVWXYZ'
[20] ff:→(i>1↑⍴r)/fim8
[21]  alfa←alfa[26?26] ⋄ rr[i;]←alfa[r[i;]]
[22]  →(i=i←i+1)/ff
[23] fim8:
------------------------------------------------------------
[ 0]  r←gabarito inst;i;il0;il1;j
[ 1]  i←1 ⋄ il0←1 ⋄ il1←9 ⋄ r←14⍴0
[ 2] t1:→(i>8)/fim
[ 3]  j←2
[ 4] t2:→(j>18)/sc
[ 5]  →((inst[i;j-1]='0')∧(inst[i;j]='1'))/sobe01
[ 6]  →((inst[i;j-1]='1')∧(inst[i;j]='0'))/desce01
[ 7]  →((inst[i;j-1]='1')∧(inst[i;j]='2'))/sobe12
[ 8]  →((inst[i;j-1]='2')∧(inst[i;j]='1'))/desce12
[ 9] soma:→(j=j←j+1)/t2
[10] sobe01:r[il0]←i
[11]  r[7]←j
[12]  il0←il0+1
[13]  →soma
[14] desce01:
[15]  r[8]←j
[16]  →soma
[17] sobe12:r[il1]←i
[18]  r[13]←j
[19]  il1←il1+1
[20]  →soma
[21] desce12:
[22]  r[14]←j
[23]  →soma
[24] sc:→(i=i←i+1)/t1
[25] fim:
------------------------------------------------------------
[0]  r←gerainst2;l;c;l1;c1
[1]  r←8 18⍴'0'
[2]  l←1+?2
[3]  c←4+?4
[4]  r[l+⍳3+?2;c+⍳6+?2]←'1'
[5]  l1←l+?2
[6]  c1←c+1+?2
[7]  r[l1+⍳2;c1+⍳1+?2]←'2'
------------------------------------------------------------
```

```
[ 0]  opesq vivo922a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;relat;resp;resu;
      upag;x;xixo;xk;y;ylu;z
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←0 ⋄ EVENTO←'PL922   '
[ 5]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 8]  FOLHALA922←ajusta80 FOLHALA922
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA922)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[11]  xk←1 ⋄ resu←0 60⍴0
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←17 80⍴' '
[14]  f←FOLHALA922
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍎VERSAOa←3.03
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[22]  esse[16;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[17;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25]  esse[7+⍳8;]←8 80↑x←(⍳4)estereo z←gerainst2
[26]  resu←resu,[1]1 60⍴60↑(4 0⍎resp),4 0⍎gabarito z
[27]  acuja←(f[;2]='#')/⍳1↑⍴f
[28]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[29]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[30]  ⍞←(⍎xk←xk+1),'-'
[31]  →testa
[32] fim:upag←(1 0+⍴f)⍴' '
[33]  →(1=≡n)/elafa
[34]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[35]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[36]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑resu
[37]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[38]  →terminando
[39] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 4↓resu)
[40]  aaa[1;35 36]←2 0⍎CORRECAO
[41]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[42]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[43] terminando:
[44]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[45]  relat[1↑⍴relat;;]←upag
[46]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.t
      ex'
[47]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[48]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo925

```
[0]  r←acharesposta im
[1]  r←2⍴0   ⍝ quantidade de linhas e de colunas COMPLETAS
[2]  r[1]←+/'+'=im[9;]
[3]  r[2]←+/[1]'+'=im[;9]
-------------------------------------------------------------
[0]  criaimas ima;aa;bb;cc
```

```
[1]  IMAO←1 0⍉ima
[2]  IMAL←17 17⍴' '
[3]  IMAL[aa;aa←2×⍳8]←IMAO
[4]  IMAL[;1 9 17]←'+'
[5]  IMAL[1 9 17;]←'+'
-------------------------------------------------------------
[ 0]  r←geraimab;i;lin;col;ll;jj;im;im1;im2;im3;im4;im5;im6;im7;que
[ 1] ⍝ vai gerar uma imagem 8 x 8 com 10 niveis de cinza.
[ 2] denovo:i←1
[ 3] t1:→(i>5)/fim
[ 4]  im←8 8⍴0
[ 5]  lin←?5
[ 6]  col←?5
[ 7]  ll←1
[ 8] tc:→(ll>8)/vc
[ 9]  jj←1
[10] tj:→(jj>8)/vj
[11]  →((ll>lin)∧(jj>col))/nao
[12]  que←1 1 1 1 2 2 3 4
[13]  im[ll;jj]←que[1?8]
[14] nao:→(jj=jj←jj+1)/tj
[15] vj:→(ll=ll←ll+1)/tc
[16] vc:⍎'im',(1 0⍉i),'←',(((?5)-1)⍴'⍬⍬⍬⍬'),'im'
[17]  →(i=i←i+1)/t1
[18] fim:im←im1+im2 ⍝+im3+im4+im5   ⍝ +im6+im7
[19]  →(1>⌊/,im)/denovo
[20]  r←?im
[21]  →(9<⌈/,r)/denovo
-------------------------------------------------------------
[ 0]  homoge nivel
[ 1] ⍝ le IMAO e gera os riscos em IMAL
[ 2]  →(0=nivel saca 1 1 4)/p2
[ 3]  IMAL[5;2 3 4 5 6 7 8]←'+'
[ 4]  IMAL[2 3 4 5 6 7 8;5]←'+'
[ 5]  →(0=nivel saca 1 1 2)/p11
[ 6]  IMAL[3;2 3 4]←'+'
[ 7]  IMAL[2 3 4;3]←'+'
[ 8] p11:→(0=nivel saca 1 3 2)/p12
[ 9]  IMAL[3;6 7 8]←'+'
[10]  IMAL[2 3 4;7]←'+'
[11] p12:→(0=nivel saca 3 1 2)/p13
[12]  IMAL[7;2 3 4]←'+'
[13]  IMAL[6 7 8;3]←'+'
[14] p13:→(0=nivel saca 3 3 2)/p2
[15]  IMAL[7;6 7 8]←'+'
[16]  IMAL[6 7 8;7]←'+'
[17] p2:
[18]  →(0=nivel saca 1 5 4)/p3
[19]  IMAL[5;10 11 12 13 14 15 16]←'+'
[20]  IMAL[2 3 4 5 6 7 8;13]←'+'
[21]  →(0=nivel saca 1 5 2)/p21
[22]  IMAL[3;10 11 12]←'+'
[23]  IMAL[2 3 4;11]←'+'
[24] p21:→(0=nivel saca 1 7 2)/p22
[25]  IMAL[3;14 15 16]←'+'
[26]  IMAL[2 3 4;15]←'+'
[27] p22:→(0=nivel saca 3 5 2)/p23
[28]  IMAL[7;10 11 12]←'+'
[29]  IMAL[6 7 8;11]←'+'
[30] p23:→(0=nivel saca 3 7 2)/p3
[31]  IMAL[7;14 15 16]←'+'
[32]  IMAL[6 7 8;15]←'+'
[33] p3:
```

```
[34]  →(0=nivel saca 5 1 4)/p4
[35]  IMAL[13;2 3 4 5 6 7 8]←'+'
[36]  IMAL[10 11 12 13 14 15 16;5]←'+'
[37]  →(0=nivel saca 5 1 2)/p31
[38]  IMAL[11;2 3 4]←'+'
[39]  IMAL[10 11 12;3]←'+'
[40] p31:→(0=nivel saca 5 3 2)/p32
[41]  IMAL[11;6 7 8]←'+'
[42]  IMAL[10 11 12;7]←'+'
[43] p32:→(0=nivel saca 7 1 2)/p33
[44]  IMAL[15;2 3 4]←'+'
[45]  IMAL[14 15 16;3]←'+'
[46] p33:→(0=nivel saca 7 3 2)/p4
[47]  IMAL[15;6 7 8]←'+'
[48]  IMAL[14 15 16;7]←'+'
[49] p4:
[50]  →(0=nivel saca 5 5 4)/p5
[51]  IMAL[13;10 11 12 13 14 15 16]←'+'
[52]  IMAL[10 11 12 13 14 15 16;13]←'+'
[53]  →(0=nivel saca 5 5 2)/p41
[54]  IMAL[11;10 11 12]←'+'
[55]  IMAL[10 11 12;11]←'+'
[56] p41:→(0=nivel saca 5 7 2)/p42
[57]  IMAL[11;14 15 16]←'+'
[58]  IMAL[10 11 12;15]←'+'
[59] p42:→(0=nivel saca 7 5 2)/p43
[60]  IMAL[15;10 11 12]←'+'
[61]  IMAL[14 15 16;11]←'+'
[62] p43:→(0=nivel saca 7 7 2)/p5
[63]  IMAL[15;14 15 16]←'+'
[64]  IMAL[14 15 16;15]←'+'
[65] p5:TEMP←IMAL
[66]  retira
-------------------------------------------------------------
[ 0]  retira;i;j;tbs;tb
[ 1]  i←2
[ 2] t1:→(i>16)/fim0
[ 3]  j←3
[ 4] t2:→(j>16)/reca
[ 5]  →((IMAL[i;j-1]=IMAL[i;j+1])∧(IMAL[i;j]='+'))/poeb
[ 6]  →pulab
[ 7] poeb:IMAL[i;j]←' '
[ 8] pulab:→(j=j←j+2)/t2
[ 9] reca:→(i=i←i+2)/t1
[10] fim0:
[11]  i←2
[12] t3:→(i>16)/fim1
[13]  j←3
[14] t4:→(j>16)/fica
[15]  →((IMAL[j-1;i]=IMAL[j+1;i])∧(IMAL[j;i]='+'))/poec
[16]  →pulac
[17] poec:IMAL[j;i]←' '
[18] pulac:→(j=j←j+2)/t4
[19] fica:→(i=i←i+2)/t3
[20] fim1:tiracruz' '
[21]  tiracruz' '
-------------------------------------------------------------
[ 0]  r←nivel saca xx
[ 1] ⍝ ' saca = ',(⍕¯1+xx[1]+⍳xx[3]),' ; ',⍕¯1+xx[2]+⍳xx[3]
[ 2]  r←,IMAO[¯1+xx[1]+⍳xx[3];¯1+xx[2]+⍳xx[3]]
[ 3]  r←((2×⍴r)⍴1 0)⍀r
[ 4]  r←⌽r
[ 5]  r←r[⍋r]
```

```
[ 6]  →(nivel≤((¯1↑r)-1↑r))/sim
[ 7]  r←0
[ 8]  →0
[ 9] sim:r←1
------------------------------------------------------------
[ 0]  tiracruz qual;i;j;tbs;tb
[ 1]  tbs←5ρ' '
[ 2]  i←2
[ 3] t5:→(i>16)/fim2
[ 4]  j←2
[ 5] t6:→(j>16)/ufa
[ 6]  tbs[1]←IMAL[i;j]
[ 7]  tbs[2]←IMAL[i-1;j]
[ 8]  tbs[3]←IMAL[i+1;j]
[ 9]  tbs[4]←IMAL[i;j-1]
[10]  tbs[5]←IMAL[i;j+1]
[11]  tb←+/'+'=tbs[1+⍳4]
[12]  →((tbs[1]='+')∧(tb<2))/poed
[13]  →pulad
[14] poed:IMAL[i;j]←qual
[15] pulad:→(j=j←j+1)/t6
[16] ufa:→(i=i←i+1)/t5
[17] fim2:
------------------------------------------------------------
[ 0]  opesq vivo925b n;CORRECAO;EVENTO;ylu;guampa;relat;f;resp;xk;esse;dhx;resu;xa;xb;xc;r
      i;x;zzz;acuja;upag;lixonol;lixo1;aaa;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←2 ⋄ EVENTO←'PL925b  '
[ 5]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[ 8]  FOLHALA925b←ajusta80 FOLHALA925b
[ 9]  relat←((2+1↑ρylu),1 0+ρFOLHALA925b)ρ' '
[10]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[11]  xk←1 ⋄ resu←0 3ρ0
[12] testa:→(xk>1↑ρylu)/fim
[13]  esse←17 80ρ' '
[14]  f←FOLHALA925b
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍎VERSAOa←3.15
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[22]  esse[16;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[17;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25]  cand←geraimab
[26]  criaimas cand
[27]  esse[7+⍳8;]←8 80↑(16ρ1 0)⍀[2]IMAO
[28]  homoge 0
[29]  resp←resp,acharesposta IMAL
[30]  resu←resu,[1](1,3)ρresp
[31]  acuja←(f[;2]='#')/⍳1↑ρf
[32]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[33]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'⍀newpage'
[34]  ⍞←(⍎xk←xk+1),'-'
[35]  →testa
[36] fim:upag←(1 0+ρf)ρ' '
```

```
[37]  →(1=≡n)/elafa
[38]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[39]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[40]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0)⍕resu
[41]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[42]  →terminando
[43] elafa:aaa←(ylu,5 0⍕0 1↓resu)
[44]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[45]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[46] terminando:
[47]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[48]  relat[1↑⍴relat;;]←upag
[49]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.t
      ex'
[50]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[51]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo925f n;CORRECAO;EVENTO;ylu;guampa;relat;f;resp;xk;esse;dhx;resu;xa;xb;xc;r
      i;x;zzz;acuja;upag;lixonol;lixo1;aaa;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←2 ⋄ EVENTO←'PL925f  '
[ 5]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 8]  FOLHALA925f←ajusta80 FOLHALA925f
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA925f)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[11]  xk←1 ⋄ resu←0 3⍴0
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←18 80⍴' '
[14]  f←FOLHALA925f
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍕VERSAOa←3.15
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[22]  esse[17;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[18;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25]  cand←geraimab
[26]  criaimas cand
[27]  esse[7+⍳8;]←8 80↑(16⍴1 0)\[2]IMAO
[28]  homoge 0
[29]  esse[16;]←80↑'\includegraphics[scale=0.5]{c:/apl2/alla844',(1 0⍕1+7|xk),'.eps}'
[30]  resp←resp,acharesposta IMAL
[31]  resu←resu,[1](1,3)⍴resp
[32]  acuja←(f[;2]='#')/⍳1↑⍴f
[33]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[34]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[35]  ⍞←(⍕xk←xk+1),'-'
[36]  →testa
[37] fim:upag←(1 0+⍴f)⍴' '
[38]  →(1=≡n)/elafa
[39]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[40]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[41]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0)⍕resu
[42]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[43]  →terminando
```

```
[44] elafa:aaa←(ylu,5 0⍕0 1↓resu)
[45]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[46]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[47] terminando:
[48]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[49]  relat[1↑⍴relat;;]←upag
[50]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.t
      ex'
[51]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[52]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo926

```
[0]  r←mas afinamento ima;temp
[1]  temp←mas him ima
[2]  r←ima∧~temp
[3] ⍝affaz a retirada continuada de pixels ate que a imagem fique com largura = 1 pixel
[4] ⍝re=mascara e d=imagem
[5] ⍝da imagem esqueletizada
[6] ⍝ea construir
[7] ⍝o
------------------------------------------------------------
[ 0]  r←e erosao i;tame;ele1;li;co;esque;esq1;fundo
[ 1]  fundo←0
[ 2]  r←(⍴i)⍴0
[ 3]  i←fundo,i,fundo
[ 4]  i←fundo,[1]i,[1]fundo
[ 5]  tame←⍴e
[ 6]  ele1←,e
[ 7]  li←2
[ 8] t1:→(li>¯1+1↑⍴i)/fim
[ 9]  co←2
[10] t2:→(co>¯1+1↓⍴i)/f9
[11]  esque←(tame)↑((li-2),(co-2))↓i
[12]  esq1←,esque
[13]  →(0∈ele1/esq1)/poezero
[14]  r[li-1;co-1]←1
[15]  →pula
[16] poezero:r[li-1;co-1]←0
[17] pula:→(co=co←co+1)/t2
[18] f9:→(li=li←li+1)/t1
[19] fim:
------------------------------------------------------------
[ 0]  r←mas esquelet ima;ct;ct1;i1
[ 1] ⍝festa funcao recebe mascara formada por 0,1 e 2 (vide Facon, pag.72) e imagem e devo
      lve o esqueleto
[ 2] ⍝re=mascara, contendo 0,1,2
[ 3] ⍝rd=imagem contendo 0 (fundo) e 1 (frente)
[ 4] ⍝d o esqueleto da imagem
[ 5] ll:ct←+/,ima
[ 6]  i1←mas afinamento ima
[ 7]  ct1←+/,i1
[ 8]  →(ct=ct1)/fim
[ 9]  ima←i1
[10]  →ll
[11] fim:r←i1
------------------------------------------------------------
[0]  r←m gabarito i
[1]  r←MASCARAS[m;;]esquelet IMAGENS[i;;]
------------------------------------------------------------
[0]  r←mas him ima;mas1;mas2
```

```
[1]  mas1←mas=1
[2]  mas2←mas=2
[3]  r←(mas1 erosao ima)∧(mas2 erosao~ima)
------------------------------------------------------------
[ 0]  ref;i;j;k;candi;qt;zz;r
[ 1]  zz←ΔFM'f:/infoland/lixo1234'
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80ρ' '
[ 6] te:→(i≥⎕IO+1↑ρzz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>ρcandi)/eca
[ 9]  j←qt
[10]  →(0=' 'ϵj↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80ρ80↑j↑candi
[15]  candi←j↓candi
[16]  →((ρcandi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80ρ80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
[22]  y←r
------------------------------------------------------------
[ 0]  opesq vivo926a n;CORRECAO;EVENTO;ylu;guampa;relat;f;resp;xk;esse;dhx;resu;xa;xb;xc;r
      i;x;zzz;acuja;upag;lixonol;lixo1;aaa;q1;q2
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←2 ⋄ EVENTO←'PL926   '
[ 5]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎ιn
[ 8]  FOLHALA926←ajusta80 FOLHALA926
[ 9]  relat←((2+1↑ρylu),1 0+ρFOLHALA926)ρ' '
[10]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLOI'
[11]  xk←1 ⋄ resu←0 3ρ0
[12] testa:→(xk>1↑ρylu)/fim
[13]  esse←18 80ρ' '
[14]  f←FOLHALA926
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍎VERSAOa←3.05
[18]  esse[4;]←80↑ylu[xk;ι6]
[19]  esse[5;]←80↑ylu[xk;6+ι30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[22] inica:
[23]  esse[7+ι8;ι16]←2 0⍎IMAGENS[(q1←?3);;]
[24]  esse[15+ι3;ι6]←2 0⍎MASCARAS[(q2←?3);;]
[25] volta:
[26]  resu←resu,[1]1 3ρresp,q1,q2
[27]  acuja←(f[;2]='#')/ι1↑ρf
[28]  f[acuja;ι80]←esse[⍋,f[acuja;3 4],' ';]
[29]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\newpage'
[30]  ⍞←(⍎xk←xk+1),'-'
[31]  →testa
[32] fim:upag←(1 0+ρf)ρ' '
```

```
[33]  →(1=≡n)/elafa
[34]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[35]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[36]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0)⍪resu
[37]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[38]  →terminando
[39] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),5 0⍪0 1↓resu)
[40]  aaa[1;35 36]←2 0⍪CORRECAO
[41]  lixonol←aaa ⎕FM('c:\apl2\',((~⎕A∧\⎕EVENTO=' ')/EVENTO),'.gpa')
[42]  '!!!!!  Arquivo GPA com ',(⍪1↑⍴aaa),' linhas e ',(⍪1↓⍴aaa),' colunas'
[43] terminando:
[44]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[45]  relat[1↑⍴relat;;]←upag
[46]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)⎕FM'c:\apl2\',((~⎕A∧\⎕EVENTO=' ')/EVENTO),'.t
      ex'
[47]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[48]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo928

```
[ 0]  ref;i;j;k;candi;qt;zz;r
[ 1]  zz←⎕FM'f:/infoland/lixo1234'
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10]  →(0=' '∈j↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80⍴80↑j↑candi
[15]  candi←j↓candi
[16]  →((⍴candi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80⍴80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
[22]  y←r
------------------------------------------------------------
[ 0]  opesq vivo928a n;CORRECAO;EVENTO;ylu;guampa;relat;f;resp;xk;esse;dhx;resu;xa;xb;xc;r
      i;x;zzz;acuja;upag;lixonol;lixo1;aaa
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←0 ⋄ EVENTO←'PL928   '
[ 5]  dhx←2 10⍴('05/05/0005'⍪+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍪+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍪⍳n
[ 8]  FOLHALA928←ajusta80 FOLHALA928
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA928)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLOI'
[11]  xk←1 ⋄ resu←0 1⍴0
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←10 80⍴' '
[14]  f←FOLHALA928
```

```
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍕VERSAOa←3.04
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[22]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25]  esse[8;]←80↑'\includegraphics[scale=0.5]{c:/apl2/alla844',(1 0⍕1+7|xk),'.jpg}'
[26] volta:
[27]  resu←resu,[1]1 1⍴resp
[28]  acuja←(f[;2]='#')/⍳1↑⍴f
[29]  f[acuja;⍳80]←esse[⌸,f[acuja;3 4],' ';]
[30]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[31]  ⎕←(⍕xk←xk+1),'-'
[32]  →testa
[33] fim:upag←(1 0+⍴f)⍴' '
[34]  →(1=≡n)/elafa
[35]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[36]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[37]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0)⍕resu
[38]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[39]  →terminando
[40] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),5 0⍕0 1↓resu)
[41]  aaa[1;35 36]←2 0⍕CORRECAO
[42]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[43]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[44] terminando:
[45]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[46]  relat[1↑⍴relat;;]←upag
[47]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.t
      ex'
[48]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[49]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo930

```
[ 0]  r←nome fazlistan tam;els;i;r1;r2
[ 1]  r←2⍴0
[ 2]  r1←nome,'=['
[ 3]  els←tam?99
[ 4]  els←els[⍋els]
[ 5]  i←1
[ 6] t1:→(i>tam)/fim
[ 7]  r1←r1,(⍕els[i]),','
[ 8]  i←i+1
[ 9]  →t1
[10] fim:r1←(¯1↓r1),']'
[11]  r[1]←⊂r1
[12]  r[2]←⊂els
-------------------------------------------------------------
[ 0]  r←geracaso930;res;z;r1
[ 1]  r←2⍴0
[ 2]  r1←44 77⍴' '
[ 3]  res←⍳0
[ 4]  z←geraexer930 1
[ 5]  r1[⍳8;]←8 77↑⊃z[1]
[ 6]  res←res,⊃z[3]
[ 7]  z←geraexer930 2
```

```
[ 8]  r1[9+⍳8;]←8 77↑⊃z[1]
[ 9]  res←res,⊃z[3]
[10]  z←geraexer930 3
[11]  r1[18+⍳8;]←8 77↑⊃z[1]
[12]  res←res,⊃z[3]
[13]  z←geraexer930 4
[14]  r1[27+⍳8;]←8 77↑⊃z[1]
[15]  res←res,⊃z[3]
[16]  z←geraexer930 5
[17]  r1[36+⍳8;]←8 77↑⊃z[1]
[18]  res←res,⊃z[3]
[19]  r[1]←⊂r1
[20]  r[2]←⊂res
-------------------------------------------------------------
[ 0]  r←geraexer930 n;x;li;z;i;spar;nome
[ 1]  nome←'ABCDEFGHIJKLMNOPQRSTUVWXYZ'[2?26]
[ 2]  r←3⍴0
[ 3]  x←8 77⍴' '
[ 4]  spar←⍳0
[ 5]  li←(5+?3)?29
[ 6]  li←li[⍋li]
[ 7]  x[1;]←77↑(⍕n),'. Considere ',nome,'=',recheia li
[ 8]  x[2;]←77↑'Efetue todos os fatiamentos.'
[ 9]  x[3;]←77↑'Ao final, some todos os elementos.'
[10]  i←1
[11] t1:→(i>5)/fim
[12] mais:
[13]  z←gerafatia li
[14]  →(1000=⊃z[4])/mais
[15]  x[i+3;]←77↑' ',('abcdefg'[i]),') ',nome,⊃z[2]
[16]  spar←spar,+/⊃z[4]
[17]  i←i+1
[18]  →t1
[19] fim:r[1]←⊂x
[20]  r[2]←⊂spar
[21]  r[3]←⊂+/spar
-------------------------------------------------------------
[ 0]  r←gerafatia lis;c1;c2;d1;d2;d3;f1;f2;f3;i;xx;yy;zzz
[ 1]  r←4⍴0
[ 2]  d1←?4
[ 3]  →(1=d1)/negat1
[ 4]  →(2<d1)/ok1
[ 5] omite1:
[ 6]  f1←1000
[ 7]  →junta1
[ 8] ok1:
[ 9]  f1←?3
[10]  →junta1
[11] negat1:
[12]  f1←-(?3)+¯3+⍴lis
[13] junta1:
[14]  d2←?3
[15]  →((1=d2)∧(f1≠1000))/negat2
[16] posit2:
[17]  f2←(?3)+¯3+⍴lis
[18]  →junta2
[19] negat2:
[20]  f2←-?3
[21] junta2:
[22]  →(f2<990)/ufa
[23]  f2←1000
[24] ufa:
[25]  d3←?3
```

```
[26]  →(1=d3)/negat3
[27] posit3:
[28]  f3←(1 1 2 2 2 3)[?6]
[29]  →junta3
[30] negat3:
[31]  f3←-(1 1 2 2 2 3)[?6]
[32] junta3:
[33]  xx←'['
[34]  i←1
[35] t3:→(i>⍴lis)/oga
[36]  xx←xx,(⍕lis[i]),', '
[37]  i←i+1
[38]  →t3
[39] oga:xx←(¯2↓xx),']'
[40]  c1←⍕f1
[41]  →(f1≠1000)/po1
[42]  c1←''
[43] po1:
[44]  c2←⍕f2
[45]  →(f2≠1000)/po2
[46]  c2←''
[47] po2:
[48]  →(f3=1)/pulinho
[49]  yy←'[',c1,':',c2,':',(⍕f3),']'
[50]  →juntinho
[51] pulinho:
[52]  yy←'[',c1,':',c2,']'
[53] juntinho:
[54]  yy←'¯-'edit yy
[55]  r[1]←⊂xx
[56]  r[2]←⊂yy
[57] ⍝ r[2]←⊂lis interpretafatia f1,f2,f3
[58]  r[3]←⊂f1,f2,f3
[59]  zzz←lis interpretafatia f1,f2,f3
[60]  →(0=⍴zzz)/vazia
[61]  r[4]←⊂zzz
[62]  →0
[63] vazia:
[64]  r[4]←⊂1000
-------------------------------------------------------------
[ 0]  r←lis interpretafatia ff;inds;ll
[ 1]  r←⍳0 ⋄ ll←3⍴0
[ 2]  →(2≠⍴ff)/tres
[ 3]  ff←ff,1 ⋄ ll[3]←1
[ 4]  →beleza
[ 5] tres:
[ 6]  ll[3]←ff[3]
[ 7] beleza:
[ 8]  →(ff[1]≠1000)/foi1
[ 9]  →(ff[3]<0)/upl
[10]  ff[1]←0
[11]  →foi1
[12] upl:ff[1]←-1
[13] foi1:
[14]  →(ff[2]≠1000)/foi2
[15]  →(ff[3]<0)/upk
[16]  ff[2]←⍴lis
[17]  →foi2
[18] upk:ff[2]←0
[19] foi2:
[20] ok1:inds←(2,⍴lis)⍴(¯1+⍳⍴lis),-⌽⍳⍴lis
[21]  →(ll[3]<0)/stepnegativo
[22] steppositivo:
```

```
[23] ⍝ converte start e stop se negativos para positivos
[24]  →(ff[1]≥0)/ok1
[25]  ll[1]←inds[2;]⍳ff[1]
[26]  →(ll[1]≤⍴lis)/junta1
[27]  →vazio
[28] ok1:
[29]  ll[1]←inds[1;]⍳ff[1]
[30]  →(ll[1]≤⍴lis)/junta1
[31]  →vazio
[32] junta1:
[33]  →(ff[2]≥0)/ok2
[34]  ll[2]←inds[2;]⍳ff[2]
[35]  →(ll[2]≤⍴lis)/junta3
[36]  →vazio   ⍝⍝⍝ sera ????
[37] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝        ll[2]←1+⍴lis        ⍝:?????
[38] ok2:
[39]  ll[2]←inds[1;]⍳ff[2]
[40]  →(ll[2]≤⍴lis)/junta3
[41]  ll[2]←1+⍴lis
[42] junta3:
[43]  →(ll[1]≥ll[2])/acabou
[44]  r←r,lis[ll[1]]
[45]  ll[1]←ll[1]+ll[3]
[46]  →junta3
[47] acabou:
[48]  →0
[49] vazio:
[50]  r←''
[51]  →0
[52] stepnegativo:
[53]  →(ff[1]≥0)/ok11
[54]  ll[1]←inds[2;]⍳ff[1]
[55]  →(ll[1]≤⍴lis)/junta11
[56]  →vazio
[57] ok11:
[58]  ll[1]←inds[1;]⍳ff[1]
[59]  →(ll[1]≤⍴lis)/junta11
[60]  →vazio
[61] junta11:
[62]  →(ff[2]≥0)/ok21
[63]  ll[2]←inds[2;]⍳ff[2]
[64]  →(ll[2]≤⍴lis)/junta31
[65]  ll[2]←0
[66]  →junta31
[67] ok21:
[68]  ll[2]←inds[1;]⍳ff[2]
[69]  →(ll[2]≤⍴lis)/junta31
[70]  ll[2]←1+⍴lis
[71] junta31:
[72]  →(ll[1]≤ll[2])/acabou
[73]  r←r,lis[ll[1]]
[74]  ll[1]←ll[1]+ll[3]
[75]  →junta31
-----------------------------------------------------------------
[0]  r←recheia l
[1]  r←'['
[2]  i←1
[3] t1:→(i>⍴l)/fim
[4]  r←r,(⍕l[i]),', '
[5]  i←i+1
[6]  →t1
[7] fim:r←(¯2↓r),']'
-----------------------------------------------------------------
```

```
[ 0]  opesq vivo930a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL930   '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA930←ajusta80 FOLHALA930
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALA930)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 6ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←53 80ρ' '
[16]  f←FOLHALA930
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑ρf),4)ρ'\#05')/⍳1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[52;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[53;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracaso930
[35]  esse[7+⍳44;]←44 80↑⊃xx[1]
[36]  resp←resp,⊃xx[2]
[37]  resu←resu,[1]1 6ρresp
[38]  acuja←(f[;2]='#')/⍳1↑ρf
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\clearpage'
[41]  ⍞←(⍎xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+ρf)ρ' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[47]  upag[2+⍳1↑ρresu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0 5 0 5 0 5 0)⍎resu
[48]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],5 0⍎0 1↓resu)
[51]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍎1↑ρaaa),' linhas e ',(⍎1↓ρaaa),' colunas'
[53] terminando:
[54]  upag[1↑ρupag;]←(1↓ρupag)↑'\end{document}'
[55]  relat[1↑ρrelat;;]←upag
[56]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[57]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo931

```
[0]  Considere
------------------------------------------------------------
[ 0]  r←nome fazlistan tam;els;i;r1;r2
[ 1]  r←2⍴0
[ 2]  r1←nome,'=['
[ 3]  els←tam?99
[ 4]  els←els[⍋els]
[ 5]  i←1
[ 6] t1:→(i>tam)/fim
[ 7]  r1←r1,(⍕els[i]),','
[ 8]  i←i+1
[ 9]  →t1
[10] fim:r1←(¯1↓r1),']'
[11]  r[1]←⊂r1
[12]  r[2]←⊂els
------------------------------------------------------------
[ 0]  r←geracaso931;res;z;r1
[ 1]  r←2⍴0
[ 2]  r1←14 77⍴' '
[ 3]  res←⍳0
[ 4]  z←geraexer931 1
[ 5]  r1[⍳7;]←7 77↑⊃z[1]
[ 6]  res←res,25↑⊃z[2]
[ 7]  z←geraexer931 2
[ 8]  r1[7+⍳7;]←7 77↑⊃z[1]
[ 9]  res←res,25↑⊃z[2]
[10]  r[1]←⊂r1
[11]  r[2]←⊂res
------------------------------------------------------------
[ 0]  r←geraexer931 n;alfa;i;li;nome;spar;x;z;fa
[ 1]  alfa←'ABCDEFGHIJKLMNOPQRSTUVWXYZ'
[ 2]  nome←alfa[2?26]
[ 3]  r←2⍴0
[ 4]  x←7 77⍴' '
[ 5]  fa←alfa[(5+?4)?⍴alfa]
[ 6]  x[1;]←77↑(⍕n),'. Considere ',nome,'="',fa,'"'
[ 7]  x[2;]←77↑'Efetue todos os fatiamentos.'
[ 8] viva:
[ 9]  spar←⍳0
[10]  i←1
[11] t1:→(i>5)/fim
[12] mais:
[13]  z←gerafatia fa
[14]  →(1000=⊃z[4])/mais
[15]  x[i+2;]←77↑' ',('abcdefg'[i]),') ',nome,⊃z[2]
[16]  spar←spar,'/',⊃z[4]
[17]  i←i+1
[18]  →t1
[19] fim:
[20]  →(25>⍴spar)/blza
[21]  □←'O'
[22]  →viva
[23] blza:
[24]  r[1]←⊂x
[25]  r[2]←⊂1↓spar
------------------------------------------------------------
[ 0]  r←gerafatia lis;c1;c2;d1;d2;d3;f1;f2;f3;i;xx;yy;zzz
[ 1]  r←4⍴0
[ 2]  d1←?4
[ 3]  →(1=d1)/negat1
[ 4]  →(2<d1)/ok1
```

```
[ 5] omite1:
[ 6]  f1←1000
[ 7]  →junta1
[ 8] ok1:
[ 9]  f1←?3
[10]  →junta1
[11] negat1:
[12]  f1←-(?3)+¯3+⍴lis
[13] junta1:
[14]  d2←?3
[15]  →((1=d2)∧(f1≠1000))/negat2
[16] posit2:
[17]  f2←(?3)+¯3+⍴lis
[18]  →junta2
[19] negat2:
[20]  f2←-?3
[21] junta2:
[22]  →(f2<990)/ufa
[23]  f2←1000
[24] ufa:
[25]  d3←?3
[26]  →(1=d3)/negat3
[27] posit3:
[28]  f3←(1 1 2 2 2 3)[?6]
[29]  →junta3
[30] negat3:
[31]  f3←-(1 1 2 2 2 3)[?6]
[32] junta3:
[33]  xx←'['
[34]  i←1
[35] t3:→(i>⍴lis)/oga
[36]  xx←xx,(⍕lis[i]),', '
[37]  i←i+1
[38]  →t3
[39] oga:xx←(¯2↓xx),']'
[40]  c1←⍕f1
[41]  →(f1≠1000)/po1
[42]  c1←''
[43] po1:
[44]  c2←⍕f2
[45]  →(f2≠1000)/po2
[46]  c2←''
[47] po2:
[48]  →(f3=1)/pulinho
[49]  yy←'[',c1,':',c2,':',(⍕f3),']'
[50]  →juntinho
[51] pulinho:
[52]  yy←'[',c1,':',c2,']'
[53] juntinho:
[54]  yy←'¯-'edit yy
[55]  r[1]←⊂xx
[56]  r[2]←⊂yy
[57] ⍝ r[2]←⊂lis interpretafatia f1,f2,f3
[58]  r[3]←⊂f1,f2,f3
[59]  zzz←lis interpretafatia f1,f2,f3
[60]  →(0=⍴zzz)/vazia
[61]  r[4]←⊂zzz
[62]  →0
[63] vazia:
[64]  r[4]←⊂1000
-------------------------------------------------------------
[ 0]  r←lis interpretafatia ff;inds;ll
[ 1]  r←⍳0 ⋄ ll←3⍴0
```

```
[ 2]  →(2≠ρff)/tres
[ 3]  ff←ff,1 ⋄ ll[3]←1
[ 4]  →beleza
[ 5] tres:
[ 6]  ll[3]←ff[3]
[ 7] beleza:
[ 8]  →(ff[1]≠1000)/foi1
[ 9]  →(ff[3]<0)/upl
[10]  ff[1]←0
[11]  →foi1
[12] upl:ff[1]←-1
[13] foi1:
[14]  →(ff[2]≠1000)/foi2
[15]  →(ff[3]<0)/upk
[16]  ff[2]←ρlis
[17]  →foi2
[18] upk:ff[2]←0
[19] foi2:
[20] ok1:inds←(2,ρlis)ρ(¯1+ιρlis),-⊖ιρlis
[21]  →(ll[3]<0)/stepnegativo
[22] steppositivo:
[23] A converte start e stop se negativos para positivos
[24]  →(ff[1]≥0)/ok1
[25]  ll[1]←inds[2;]ιff[1]
[26]  →(ll[1]≤ρlis)/junta1
[27]  →vazio
[28] ok1:
[29]  ll[1]←inds[1;]ιff[1]
[30]  →(ll[1]≤ρlis)/junta1
[31]  →vazio
[32] junta1:
[33]  →(ff[2]≥0)/ok2
[34]  ll[2]←inds[2;]ιff[2]
[35]  →(ll[2]≤ρlis)/junta3
[36]  →vazio   AAA sera ????
[37] AAAAAAAAAA        ll[2]←1+ρlis        A:?????
[38] ok2:
[39]  ll[2]←inds[1;]ιff[2]
[40]  →(ll[2]≤ρlis)/junta3
[41]  ll[2]←1+ρlis
[42] junta3:
[43]  →(ll[1]≥ll[2])/acabou
[44]  r←r,lis[ll[1]]
[45]  ll[1]←ll[1]+ll[3]
[46]  →junta3
[47] acabou:
[48]  →0
[49] vazio:
[50]  r←''
[51]  →0
[52] stepnegativo:
[53]  →(ff[1]≥0)/ok11
[54]  ll[1]←inds[2;]ιff[1]
[55]  →(ll[1]≤ρlis)/junta11
[56]  →vazio
[57] ok11:
[58]  ll[1]←inds[1;]ιff[1]
[59]  →(ll[1]≤ρlis)/junta11
[60]  →vazio
[61] junta11:
[62]  →(ff[2]≥0)/ok21
[63]  ll[2]←inds[2;]ιff[2]
[64]  →(ll[2]≤ρlis)/junta31
```

```
[65]  ll[2]←0
[66]  →junta31
[67] ok21:
[68]  ll[2]←inds[1;]ιff[2]
[69]  →(ll[2]≤ρlis)/junta31
[70]  ll[2]←1+ρlis
[71] junta31:
[72]  →(ll[1]≤ll[2])/acabou
[73]  r←r,lis[ll[1]]
[74]  ll[1]←ll[1]+ll[3]
[75]  →junta31
-------------------------------------------------------------
[0]  r←recheia l
[1]  r←'['
[2]  i←1
[3] t1:→(i>ρl)/fim
[4]  r←r,(⍕l[i]),', '
[5]  i←i+1
[6]  →t1
[7] fim:r←(¯2↓r),']'
-------------------------------------------------------------
[ 0]  opesq vivo931a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL931   '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎ιn
[ 9]  ylu←n grupo ylu
[10]  FOLHALA931←ajusta80 FOLHALA931
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALA931)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 54ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←23 80ρ' '
[16]  f←FOLHALA931
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;ι6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;ι4]=((1↑ρf),4)ρ'\#05')/ι1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+ι30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[22;ι10]←'@',esse[6;5+ι3],esse[4;1+ι5],'@'
[32]  esse[23;]←80↑esse[6;5+ι3],'-',esse[4;1+ι5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  resp←(3 0⍎resp),' '
[35]  xx←geracaso931
[36]  esse[7+ι14;]←14 80↑⊃xx[1]
[37]  resp←resp,⊃xx[2]
[38]  resu←resu,[1]1 54ρresp
[39]  acuja←(f[;2]='#')/ι1↑ρf
```

```
[40]  f[acuja;⍳80]←esse[⍤,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[42]  ⍞←(⍕xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳54]←resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[52]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⍞EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo932

```
[ 0]  exemplos932;r;lixo
[ 1] ⍝ esta funcao imprime todos os exercicios do banco de dados
[ 2]  EXEMPLOS932←ajusta80 EXEMPLOS932
[ 3]  r←ajusta80 ⎕FM'c:\apl2\VIVOBLO1'
[ 4]  r←r,[1]1 80⍴80↑'\section*{Exemplos de 932}'
[ 5]  r←r,[1]EXEMPLOSt35
[ 6]  r←r,[1]1 80⍴80↑'\end{document}'
[ 7]  lixo←r ⎕FM'c:\apl2\exem932.tex'
[ 8]  'Salvo em c:\apl2\ com o nome de exem932.tex'
------------------------------------------------------------
[ 0]  r←gera932 n;x;quais;i;y;resps;defs
[ 1]  DEFI932←ajusta80 DEFI932
[ 2]  x←geradirt DEFI932
[ 3]  y←((1↑⍴x),4)⍴⍤,x,' '
[ 4]  quais←n?1↑⍴y
[ 5]  resps←''
[ 6]  defs←0 80⍴' '
[ 7]  i←1
[ 8] t1:→(i>n)/fim
[ 9]  defs←defs,[1]DEFI932[y[quais[i];2]+⍳y[quais[i];3];]
[10]  resps←resps,' | ',trim DEFI932[y[quais[i];4];]
[11]  i←i+1
[12]  →t1
[13] fim:r←2⍴0
[14]  r[1]←⊂defs
[15]  r[2]←⊂1↓resps
[16] ⍝'Tamanho ',⍕1↑⍴r
------------------------------------------------------------
[ 0]  r←geradirt x;lin;i;tam
[ 1]  r←(((+/(,x[;1])='%')÷3),20)⍴' '
[ 2]  tam←0
[ 3]  lin←1
[ 4]  i←1
[ 5] t1:→(i>1↑⍴x)/fim
[ 6]  →((x[i;1]='%')∧(x[i;2]='i'))/comeca
[ 7]  →((x[i;1]='%')∧(x[i;2]='f'))/termina
[ 8]  →((x[i;1]='%')∧(x[i;2]='r'))/resposta
```

```
[ 9]  tam←tam+1
[10]  i←i+1
[11]  →t1
[12] comeca:r[lin;⍳3]←x[i;3 4 5]
[13]  r[lin;5+⍳5]←5 0⍕i
[14]  tam←0
[15]  i←i+1
[16]  →t1
[17] resposta:r[lin;10+⍳5]←5 0⍕tam
[18]  i←i+1
[19]  →t1
[20] termina:r[lin;15+⍳5]←5 0⍕i-1
[21]  lin←lin+1
[22]  i←i+1
[23]  →t1
[24] fim:
------------------------------------------------------------
[ 0]  todos932;r;lixo
[ 1] ⍝ esta funcao imprime todos os exercicios do banco de dados
[ 2]  DEFI932←ajusta80 DEFI932
[ 3]  r←ajusta80 ⎕FM'c:⍀apl2⍀VIVOBLO1'
[ 4]  r←r,[1]1 80⍴80↑'⍀section*{Listagem de todos os problemas de 932}'
[ 5]  r←r,[1]1 80⍴80↑'⍀begin{enumerate}'
[ 6]  r←r,[1]DEFI932
[ 7]  r←r,[1]1 80⍴80↑'⍀end{enumerate}'
[ 8]  r←r,[1]1 80⍴80↑'⍀end{document}'
[ 9]  lixo←r ⎕FM'c:⍀apl2⍀todos932.tex'
[10]  'Salvo em c:⍀apl2⍀ com o nome de todos932.tex'
------------------------------------------------------------
[ 0]  opesq vivo932a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL932   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA932←ajusta80 FOLHALA932
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA932)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←59 80⍴' '
[16]  f←FOLHALA932
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[58;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
```

```
[32]  esse[59;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera932 10
[35]  →(50<1↑⍴⊃xx[1])/inica
[36]  esse[7+⍳50;]←50 80↑⊃xx[1]
[37]  resu←resu,[1]1 3⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⍞←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →terminando ⍝ nao ha GPA
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍕resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[52]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex)'
-------------------------------------------------------------
```

vivo933

```
[0]  AVISO
[1]  'demora'
-------------------------------------------------------------
[0]  criaarq933 n
-------------------------------------------------------------
[0]  r←geracaso933;r0;r1
[1]  r←2⍴0
[2]  r0←1000?2000
[3]  r0[5?1000]←r0[?1000]
[4]  r1←5 0⍕100 10⍴r0
[5]  r[1]←⊂r0
[6]  r[2]←⊂r1
-------------------------------------------------------------
[ 0]  r←resolve933 x;i;j;m;y;z
[ 1]  r←(⌈/x)-⌊/x
[ 2]  r←r,m←(+/x)÷⍴x
[ 3]  r←r,((+/(x-m)*2)÷⍴x)*0.5
[ 4]  z←x[⍋x]
[ 5]  r←r,(+/z[(⌊(⍴x)÷2),(1+⌊(⍴x)÷2)])÷2
[ 6]  z←((⍴x),2)⍴0
[ 7]  i←1
[ 8] t1:→(i>⍴x)/fim
[ 9]  j←1
[10] t2:→(z[j;1]=x[i])/achou
[11]  →(z[j;1]=0)/ezero
[12]  j←j+1
[13]  →t2
[14] achou:z[j;2]←z[j;2]+1
[15]  →somai
```

```
[16] ezero:z[j;1]←x[i]
[17]  z[j;2]←1
[18] somai:i←i+1
[19]  →t1
[20] fim:
[21]  y←⍒z[;2]
[22]  r←r,z[y[1];1]
-------------------------------------------------------------
[ 0]  opesq vivo933a n;CORRECAO;EVENTO;QUIPN;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39
      ;qlinha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3]  QUIPN←'00'
[ 4] qveio:
[ 5]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 6]  EVENTO←'PL933   '
[ 7]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ QUIPN←n[3 4]
[ 9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[10]  ylu←n grupo ylu
[11]  FOLHALA933←ajusta80 FOLHALA933
[12]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA933)⍴' '
[13]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[14]  xk←1 ⋄ resu←0 6⍴0
[15] testa:→(xk>1↑⍴ylu)/fim
[16]  esse←10 80⍴' '
[17]  f←FOLHALA933
[18]  esse[1;]←80↑dhx[1;]
[19]  esse[2;]←80↑dhx[2;]
[20]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[21]  esse[4;]←80↑ylu[xk;⍳6]
[22]  →(36=1↓⍴ylu)/zebra
[23]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[24]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[25]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[26]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[27]  →maiszebra
[28] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[32]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] inica:
[35]  xx←geracaso933
[36]  lixonol←(⊃xx[2])ΔFM'c:\apl2\F933',QUIPN,('00'⍕xk),'.myd'
[37]  esse[8;]←1 80⍴80↑'F933',QUIPN,('00'⍕xk),'.myd'
[38]  resp←resp,,resolve933⊃xx[1]
[39]  resu←resu,[1]1 6⍴resp
[40]  acuja←(f[;2]='#')/⍳1↑⍴f
[41]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[42]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[43]  ⍞←(⍕xk←xk+1),'-'
[44]  →testa
[45] fim:upag←(1 0+⍴f)⍴' '
[46]  →(1=≡n)/elafa
[47]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[48]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[49]  upag[2+⍳1↑⍴resu;⍳47]←(5 0 10 0 8 1 8 1 8 1 8 0)⍕resu
[50]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[51]  →terminando
[52] elafa:aaa←(ylu[;⍳36],10 0 8 1 8 1 8 1 8 0⍕0 1↓resu)
```

```
[53]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[54]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[55] terminando:
[56]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[57]  relat[1↑⍴relat;;]←upag
[58]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[59]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[60]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[61]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo934

```
[0]  r←botaecom x
[1]  r←x
[2]  r[;5+4×¯1+⍳7]←'&'
[3]  r←r,[2]3 9⍴'⍀⍀ ⍀hline'
-------------------------------------------------------------
[ 0]  res←geracaso1 alfa;a;b;c;m;n;p;q;r;s;t;u;v;w
[ 1]  a←⊃alfa[1]
[ 2]  b←⊃alfa[2]
[ 3]  c←⊃alfa[3]
[ 4]  m←,a inter b inter c
[ 5]  n←,(a inter b)menos c
[ 6]  p←,a menos b
[ 7]  q←,c menos(a uniao b)
[ 8]  r←,a inter(b uniao c)
[ 9]  s←,(b menos(a uniao c))uniao((a inter c)menos(a inter b inter c))
[10]  t←,a uniao b uniao c
[11]  u←,((a inter b)menos c)uniao((a inter c)menos b)uniao((b inter c)menos a)
[12]  v←,(a inter b)uniao(a inter c)uniao(b inter c)
[13]  w←,(a uniao b uniao c)menos v
[14]  res←4⍴0
[15]  res[1]←⊂a
[16]  res[2]←⊂b
[17]  res[3]←⊂c
[18]  res[4]←⊂(⍴m),(⍴n),(⍴p),(⍴q),(⍴r),(⍴s),(⍴t),(⍴u),(⍴v),(⍴w)
-------------------------------------------------------------
[0]  r←a inter b
[1]  r←(a∈b)/a
-------------------------------------------------------------
[0]  r←a menos b
[1]  r←(~a∈b)/a
-------------------------------------------------------------
[0]  r←tiradups v
[1]  r←((v⍳v)=⍳⍴v)/v
-------------------------------------------------------------
[0]  r←a uniao b
[1]  r←tiradups a,b
-------------------------------------------------------------
[ 0]  opesq vivo934a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL934   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
```

```
[10]  FOLHALA934←ajusta80 FOLHALA934
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA934)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 11⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←18 80⍴' '
[16]  f←FOLHALA934
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.06
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[17;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[18;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracaso1((8?15)(8?15)(8?15))
[35]  esse[8 9 10;]←3 80↑botaecom 4 0⍕3 8⍴(⊃xx[1]),(⊃xx[2]),⊃xx[3]
[36]  zz←⊃xx[4]
[37]  xx←geracaso1((8?15)(8?15)(8?15))
[38]  esse[11 12 13;]←3 80↑botaecom 4 0⍕3 8⍴(⊃xx[1]),(⊃xx[2]),⊃xx[3]
[39]  zz←zz+⊃xx[4]
[40]  xx←geracaso1((8?15)(8?15)(8?15))
[41]  esse[14 15 16;]←3 80↑botaecom 4 0⍕3 8⍴(⊃xx[1]),(⊃xx[2]),⊃xx[3]
[42]  zz←zz+⊃xx[4]
[43]  resu←resu,[1]1 11⍴resp,zz
[44]  acuja←(f[;2]='#')/⍳1↑⍴f
[45]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[46]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[47]  ⎕←(⍕xk←xk+1),'-'
[48]  →testa
[49] fim:upag←(1 0+⍴f)⍴' '
[50]  →(1=≡n)/elafa
[51]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[52]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[53] ⍝ upag[2+⍳1↑⍴presu;⍳+/lixo1]←(lixo1←5 0 10 0,18⍴4 0)⍕resu
[54]  upag[2+⍳1↑⍴presu;⍳+/lixo1]←(lixo1←5 0 10 0,(8⍴4 0),10 0,(8⍴4 0))⍕resu
[55]  upag[3+1↑⍴presu;]←(1↓⍴upag)↑'\end{verbatim}'
[56]  →terminando
[57] elafa:aaa←(ylu[;⍳36],10 0,(8⍴4 0),10 0,(8⍴4 0)⍕0 1↓resu)
[58]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[59]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[60] terminando:
[61]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[62]  relat[1↑⍴relat;;]←upag
[63]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[64]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[65]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[66]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo935

```
[ 0]  exemplos935;r;lixo
```

```
[ 1] ⍝ esta funcao imprime todos os exercicios do banco de dados
[ 2]  EXEMPLOS935←ajusta80 EXEMPLOS935
[ 3]  r←ajusta80 ⎕FM'c:\apl2\VIVOBLO1'
[ 4]  r←r,[1]1 80⍴80↑'\section*{Exemplos de 935}'
[ 5]  r←r,[1]EXEMPLOS935
[ 6]  r←r,[1]1 80⍴80↑'\end{document}'
[ 7]  lixo←r ⎕FM'c:\apl2\exem935.tex'
[ 8]  'Salvo em c:\apl2\ com o nome de exem935.tex'
-------------------------------------------------------------
[ 0]  r←gera935 n;x;quais;i;y;resps;defs
[ 1]  DEFI935←ajusta80 DEFI935
[ 2]  x←geradirt DEFI935
[ 3]  y←((1↑⍴x),4)⍴⍕,x,' '
[ 4]  quais←n?1↑⍴y
[ 5]  resps←''
[ 6]  defs←0 80⍴' '
[ 7]  i←1
[ 8] t1:→(i>n)/fim
[ 9]  defs←defs,[1]DEFI935[y[quais[i];2]+⍳y[quais[i];3];]
[10]  resps←resps,' | ',trim DEFI935[y[quais[i];4];]
[11]  i←i+1
[12]  →t1
[13] fim:r←2⍴0
[14]  r[1]←⊂defs
[15]  r[2]←⊂1↓resps
[16] ⍝'Tamanho ',⍕1↑⍴r
-------------------------------------------------------------
[ 0]  r←geradirt x;lin;i;tam
[ 1]  r←(((+/(,x[;1])='%')÷3),20)⍴' '
[ 2]  tam←0
[ 3]  lin←1
[ 4]  i←1
[ 5] t1:→(i>1↑⍴x)/fim
[ 6]  →((x[i;1]='%')∧(x[i;2]='i'))/comeca
[ 7]  →((x[i;1]='%')∧(x[i;2]='f'))/termina
[ 8]  →((x[i;1]='%')∧(x[i;2]='r'))/resposta
[ 9]  tam←tam+1
[10]  i←i+1
[11]  →t1
[12] comeca:r[lin;⍳3]←x[i;3 4 5]
[13]  r[lin;5+⍳5]←5 0⍕i
[14]  tam←0
[15]  i←i+1
[16]  →t1
[17] resposta:r[lin;10+⍳5]←5 0⍕tam
[18]  i←i+1
[19]  →t1
[20] termina:r[lin;15+⍳5]←5 0⍕i-1
[21]  lin←lin+1
[22]  i←i+1
[23]  →t1
[24] fim:
-------------------------------------------------------------
[ 0]  todos935;r;lixo
[ 1] ⍝ esta funcao imprime todos os exercicios do banco de dados
[ 2]  DEFI935←ajusta80 DEFI935
[ 3]  r←ajusta80 ⎕FM'c:\apl2\VIVOBLO1'
[ 4]  r←r,[1]1 80⍴80↑'\section*{Listagem de todos os problemas de 935}'
[ 5]  r←r,[1]1 80⍴80↑'\begin{enumerate}'
[ 6]  r←r,[1]DEFI935
[ 7]  r←r,[1]1 80⍴80↑'\end{enumerate}'
[ 8]  r←r,[1]1 80⍴80↑'\end{document}'
[ 9]  lixo←r ⎕FM'c:\apl2\todos935.tex'
```

```
[10]  'Salvo em c:\apl2\ com o nome de todos935.tex'
-------------------------------------------------------------
[ 0]  opesq vivo935a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL935   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⍙FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA935←ajusta80 FOLHALA935
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA935)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⍙FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←29 80⍴' '
[16]  f←FOLHALA935
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[28;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[29;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera935 2
[35]  →(20≥1↑⍴⊃xx[1])/blz1
[36]  ⍞←'*'
[37]  →inica
[38] blz1:
[39]  esse[7+⍳20;]←20 80↑⊃xx[1]
[40] ⍝ resp←resp,,xx[2 3;5]
[41]  resu←resu,[1]1 3⍴resp
[42]  acuja←(f[;2]='#')/⍳1↑⍴f
[43]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[44]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[45]  ⍞←(⍎xk←xk+1),'-'
[46]  →testa
[47] fim:
[48]  upag←(1 0+⍴f)⍴' '
[49]  →terminando ⍝ nao ha geracao de gpa
[50]  →(1=≡n)/elafa
[51]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[52]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[53]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍎resu
[54]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[55]  →terminando
[56] elafa:aaa←(ylu[;⍳36],9 0⍎0 1↓resu)
[57]  lixonol←aaa ⍙FM('c:\apl2\',((~⍬∧\⍬EVENTO=' ')/EVENTO),'.gpa')
[58]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
```

```
[59] terminando:
[60]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[61]  relat[1↑⍴relat;;]←upag
[62]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[63]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[64]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[65]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo936

```
[ 0]  r←achabaras x;f;i;m1;m2;m3;m4;m5;maos;q;s
[ 1] ⍝ x e uma matriz de 100 2 52 contendo baralhos de poker e deve devolver
[ 2] ⍝ das primeiras 500 maos quantas tem quadras, flush e sequencias
[ 3]  maos←100 2 25↑x
[ 4]  q←f←s←0
[ 5]  i←1
[ 6] t2:→(i>100)/fim
[ 7]  m1←maos[i;;⍳5] ⋄ m2←maos[i;;5+⍳5] ⋄ m3←maos[i;;10+⍳5] ⋄ m4←maos[i;;15+⍳5] ⋄ m5←maos[
      i;;20+⍳5]
[ 8]  q←q contaq m1
[ 9]  q←q contaq m2
[10]  q←q contaq m3
[11]  q←q contaq m4
[12]  q←q contaq m5
[13]  f←f contaf m1
[14]  f←f contaf m2
[15]  f←f contaf m3
[16]  f←f contaf m4
[17]  f←f contaf m5
[18]  s←s contas m1
[19]  s←s contas m2
[20]  s←s contas m3
[21]  s←s contas m4
[22]  s←s contas m5
[23]  i←i+1
[24]  →t2
[25] fim:r←q,f,s
------------------------------------------------------------
[0]  r←a contaf x;na;un
[1]  na←x[2;]
[2]  un←((na⍳na)=⍳⍴na)/na
[3]  →(1=⍴,un)/sim
[4] nao:r←a
[5]  →0
[6] sim:r←a+1
------------------------------------------------------------
[ 0]  r←a contaq x;x1;un
[ 1] ⍝ ----------------- calculo de quadras ----------------------
[ 2]  x1←x[1;]
[ 3]  x1←x1[⍋x1]
[ 4]  →(((x1[1]=x1[2])∧(x1[2]=x1[3])∧(x1[3]=x1[4]))∨((x1[2]=x1[3])∧(x1[3]=x1[4])∧(x1[4]=x1
      [5])))/sim
[ 5]  →(((x1[1]=x1[2])∧(x1[3]=x1[4])∧(x1[4]=x1[5]))∨((x1[1]=x1[2])∧(x1[2]=x1[3])∧(x1[4]=x1
      [5])))/sim
[ 6] nao:r←a
[ 7]  →0
[ 8] sim:r←a+1
------------------------------------------------------------
[ 0]  r←a contaqf x;x1;un
[ 1] ⍝ ----------------- calculo de quadras ----------------------
[ 2] ⍝ x1←x[1;]
```

```
[ 3] ⍝ x1←x1[⍋x1]
[ 4] ⍝ →(((x1[1]=x1[2])∧(x1[2]=x1[3])∧(x1[3]=x1[4]))∨((x1[2]=x1[3])∧(x1[3]=x1[4])∧(x1[4]=x
      1[5])))/sim
[ 5]  x1←x[2;] ⍝ naipes
[ 6] nao:r←a
[ 7]  →0
[ 8] sim:r←a+1
-------------------------------------------------------------
[0]  r←a contas x;x1
[1]  x1←x[1;]
[2]  x1←x1[⍋x1]
[3]  x1←x1-x1[1]-1
[4]  →(5=+/x1=⍳5)/sim
[5] nao:r←a
[6]  →0
[7] sim:r←a+1
-------------------------------------------------------------
[ 0]  r←determinante a;rr;i
[ 1]  →(4>1↑⍴a)/sarrus
[ 2]  i←1
[ 3]  rr←0
[ 4] t1:→(i>1↑⍴a)/fim
[ 5]  rr←rr+(a[i;1]×(-1)*1+i)×determinante(i≠⍳1↑⍴a)/[1]0 1↓a
[ 6]  i←i+1
[ 7]  →t1
[ 8] fim:r←rr
[ 9]  →0
[10] sarrus:
[11]  rr←(a[1;1]×a[2;2]×a[3;3])+(a[2;1]×a[3;2]×a[1;3])+(a[1;2]×a[2;3]×a[3;1])
[12]  r←rr-(a[3;1]×a[2;2]×a[1;3])+(a[2;1]×a[1;2]×a[3;3])+(a[1;1]×a[3;2]×a[2;3])
-------------------------------------------------------------
[0]  r←embaralha;x;y
[1] ⍝ devolve um baralho 2x52 embaralhado
[2]  x←52⍴⍳13
[3]  y←52⍴⍳4
[4]  x←x[52?52]
[5]  y←y[52?52]
[6]  r←2 52⍴x,y
-------------------------------------------------------------
[ 0]  r←geraa arq;a;b;ba;bl;c;co;dp;i;li;lixo;med;mm;onde;rr;x;SISTEMA
[ 1]  r←3⍴0
[ 2]  onde←0⍴0 ⍝ perguntinhas adicionais na folha
[ 3]  bl←1 156⍴'#-------ex1: media e dp------- ' ⍝ bloco a gravar
[ 4]  rr←0⍴0 ⍝ respostas
[ 5] ⍝ exercicio 1: media e dp ----------------------------
[ 6]  x←100 8⍴?800⍴10000
[ 7]  med←(+/,x)÷800
[ 8]  dp←((+/((,x)-med)*2)÷800)*0.5
[ 9]  bl←100 156↑10 0⍕x
[10]  rr←med,dp
[11] ⍝ exercicio 2: baralho
[12]  ba←100 2 52⍴0
[13]  i←1
[14] t1:→(i>100)/p3
[15]  ba[i;;]←embaralha
[16]  i←i+1
[17]  →t1
[18] p3:
[19]  bl←bl,[1]1 156⍴156↑'#--------- ex2: poker -------------'
[20]  bl←bl,[1]3 0⍕200 52⍴ba
[21]  rr←rr,achabaras ba
[22] ⍝ exercicio 3: multiplicacao matricial
[23]  a←20 5⍴100?999
```

```
[24]  b←5 20⍴100?999
[25]  bl←bl,[1]1 156⍴156↑'# ------------ ex3: multiplicacao matricial-----'
[26]  bl←bl,[1]20 156↑⍕a
[27]  bl←bl,[1]5 156↑⍕b
[28]  mm←a+.×b
[29]  li←?20 ⋄ co←?20
[30]  onde←onde,li,co
[31]  rr←rr,mm[li;co]
[32] ⍝ exercicio 4: inversa
[33]  a←80 80⍴?6400⍴1000
[34]  bl←bl,[1]1 156⍴156↑'#-----------ex 4: inversa (80 x 80)----------'
[35]  bl←bl,[1]320 156↑⍕320 20⍴a
[36]  b←⌹a
[37]  li←?80 ⋄ co←?80
[38]  onde←onde,li,co
[39]  rr←rr,b[li;co]×1000
[40] ⍝ exercicio 5: sen, cos, tg
[41]  a←2+⍳86
[42]  b←a[3?86]
[43]  onde←onde,b
[44]  rr←rr,SCT[b[1];2],SCT[b[2];3],SCT[b[3];4]
[45] ⍝ exerciico 6: sistema linear
[46]  a←gerasl
[47]  SISTEMA←⊃a[1]
[48]  b←⊃a[2]
[49]  bl←bl,[1]1 156⍴156↑'# ------ ex6: sistema linear-------'
[50]  bl←bl,[1]9 156↑⊃a[3]
[51]  rr←rr,b[1],b[9]
[52] ⍝ exercicio 7: determinante
[53]  a←5 5⍴¯10+?25⍴20
[54]  rr←rr,determinante a
[55]  bl←bl,[1]1 156⍴156↑'# ------ ex7: determinante -------'
[56]  bl←bl,[1]5 156↑'¯-'edit⍕a
[57]  lixo←bl ΔFM'c:⍀apl2⍀',arq
[58]  r[1]←⊂7 1 7 1 3 0 2 0 2 0 10 0 8 3 6 4 7 4 8 4 3 0 3 0 9 0⍕rr
[59]  r[2]←⊂SISTEMA
[60]  r[3]←⊂onde
------------------------------------------------------------
[ 0]  r←gerasl;i;j;l;t;ti;x;y
[ 1]  x←(-⍳7),0,⍳7
[ 2]  x←x[9?15]
[ 3]  y←9 9⍴¯40+?100⍴80
[ 4]  y←y+(y=1)×?3
[ 5]  ti←+/y×9 9⍴x
[ 6]  r←3⍴0
[ 7]  t←9 70⍴' '
[ 8]  i←1
[ 9] t1:→(i>9)/fim
[10]  l←''
[11]  j←1
[12] t2:→(j>9)/oba
[13]  →(y[i;j]<0)/neg
[14]  →(y[i;j]=0)/soma
[15] pos:l←l,('+',(⍕y[i;j]),'x_',(⍕j))
[16]  →soma
[17] neg:l←l,('-',(⍕|y[i;j]),'x_',(⍕j))
[18] soma:
[19]  j←j+1
[20]  →t2
[21] oba:l←l,'=','- '[1+ti[i]≥0],⍕|ti[i]
[22]  t[i;]←70↑l
[23]  i←i+1
[24]  →t1
```

```
[25] fim:
[26]  i←1
[27] t3:→(i>9)/ju
[28]  →(t[i;1]≠'+')/conta
[29]  t[i;]←70↑1↓t[i;]
[30] conta:i←i+1
[31]  →t3
[32] ju:
[33]  t←'$',t,9 4⍴'$⍀⍀*'
[34]  r[1]←⊂t
[35]  r[2]←⊂x
[36]  r[3]←⊂'¯-'edit⍕y,[2]9 1⍴ti
-------------------------------------------------------------
[ 0]  r←sct;x;xr
[ 1]  x←0,⍳90
[ 2]  xr←(○x)÷180
[ 3]  r←91 4⍴0
[ 4]  r[;1]←91 1⍴0,⍳90
[ 5]  r[;2]←1○xr
[ 6]  r[;3]←2○xr
[ 7]  r[;4]←3○xr
-------------------------------------------------------------
[ 0]  opesq vivo936a n;CORRECAO;EVENTO;S;aaa;acuja;dhx;esse;f;lixo1;lixonol;nome;nomes;ql3
      9;qlinha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL936   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ S←⍕n[5]
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n ⋄ S←'0'
[ 9]  ylu←n grupo ylu
[10]  FOLHALA936←ajusta80 FOLHALA936
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA936)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 80⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←26 80⍴' '
[16]  f←FOLHALA936
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[25;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[26;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  nome←('F936',S,'00'⍕xk),'.myd'
[35]  xx←geraa nome
[36]  esse[8;]←1 80⍴80↑nome
[37]  esse[8+⍳7;⍳10]←7 10⍴'¯-'edit 10 0⍕⊃xx[3]
[38]  esse[15+⍳9;]←9 80↑⊃xx[2]
```

```
[39]  resp←1 80ρ(4 0⍕xk),'=',⊃xx[1]
[40]  resu←resu,[1]1 80ρresp
[41]  acuja←(f[;2]='#')/⍳1↑⍴f
[42]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓⍴f)ρ200↑'\clearpage'
[44]  ⎕←(⍕xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+⍴f)⍴' '
[47]  →(1=≡n)/elafa
[48]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[49]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[50]  upag[2+⍳1↑⍴resu;]←'¯'-'edit resu
[51]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[52]  →terminando
[53] elafa:aaa←(ylu[;⍳36],0 5↓'¯'-'edit resu)
[54]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[55]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[56] terminando:
[57]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[58]  relat[1↑⍴relat;;]←upag
[59]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[60]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[61]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[62]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo937

```
[ 0]  r←geracaso937;curso
[ 1]  r←12 77⍴' '
[ 2]  curso←(⊃[2]'civil' 'elétrica' 'mecânica' 'estatística' 'matemática')[?5;]
[ 3]  r[1;]←77↑'1. Suponha uma distribuiç\~ao de alunos de ',(trim curso),' como segue:'
[ 4]  r[2;]←77↑' primeiro ano=',(⍕100+?200),', seg ano=',(⍕80+?100),', terc ano=',(⍕50+?50
      ),','
[ 5]  r[3;]←77↑' quarto ano=',(⍕30+?30),' e quinto ano=',(⍕20+?20),'.'
[ 6]  r[4;]←77↑' Escreva um gráfico simples mostrando essa distribuiç\~ao\\*'
[ 7]  r[5;]←77↑'2. Suponha um fenômeno urbano qualquer (pode batizar como quizer)'
[ 8]  r[6;]←77↑' que tenha tido a seguinte distribuiç\~ao mensal no ano que passou: '
[ 9]  r[7;]←77↑' ',(⍕(10×⍳12)+12?30),'.'
[10]  r[8;]←77↑' Invente um gráfico qualquer para descrever o fenômeno acima.\\*'
[11]  r[9;]←77↑'3. Desenhe um gráfico tipo pizza para descrever a distribuiç\~ao de'
[12]  r[10;]←77↑' peças de roupa e vestuário no seu armário. Seja criativo.\\*'
[13]  r[11;]←77↑'Importante: entregue junto com esta folha uma listagem dos comandos '
[14]  r[12;]←77↑' e dos gráficos gerados.'
------------------------------------------------------------
[ 0]  opesq vivo937a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL937   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA937←ajusta80 FOLHALA937
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA937)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[13]  xk←1
[14] testa:→(xk>1↑⍴ylu)/fim
```

```
[15]  esse←21 80ρ' '
[16]  f←FOLHALA937
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;ι6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;ι4]=((1↑ρf),4)ρ'⍀#05')/ι1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+ι30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[20;ι10]←'@',esse[6;5+ι3],esse[4;1+ι5],'@'
[32]  esse[11;]←80↑esse[6;5+ι3],'-',esse[4;1+ι5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracaso937
[35]  esse[7+ι12;]←12 80↑xx
[36]  acuja←(f[;2]='#')/ι1↑ρf
[37]  f[acuja;ι80]←esse[⍋,f[acuja;3 4],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'⍀clearpage'
[39]  ⍞←(⍕xk←xk+1),'-'
[40]  →testa
[41] fim:upag←(1 0+ρf)ρ' '
[42]  'nao ha arquivo gpa'
[43] terminando:
[44]  upag[1↑ρupag;]←(1↓ρupag)↑'⍀end{document}'
[45]  relat[1↑ρrelat;;]←upag
[46]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[47]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[48]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[49]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex)'
-------------------------------------------------------------
```

vivo938

```
[0]  r←fo x
[1]  →(x=1)/bra
[2]  r←⍕x
[3]  →0
[4] bra:
[5]  r←''
-------------------------------------------------------------
[ 0]  r←geraa;aa;bb;co;expo;limite;x;xx
[ 1]  x←¯5+ι12
[ 2]  x←x[?ρx]
[ 3]  limite←3+?2
[ 4]  expo←1+(limite-1)?6
[ 5]  co←limite?8
[ 6]  expo←expo[⍒expo]
[ 7]  r←2ρ0
[ 8]  →(limite=5)/coroa
[ 9]  xx←co[4]++/co[ι3]×x*expo
[10]  bb←'$$',(fo co[1]),'x^{',(⍕expo[1]),'}+',(fo co[2]),'x^{',(⍕expo[2])
[11]  bb←bb,'}+',(fo co[3]),'x^{',(⍕expo[3]),'}+',(fo co[4]),'='
[12]  r[1]←⊂bb,(16 0⍕xx),'$$'
[13]  →junta2
[14] coroa:
[15]  xx←co[5]++/co[ι4]×x*expo
```

```
[16]  bb←'$$',(fo co[1]),'x^{',(⍕expo[1]),'}+',(fo co[2]),'x^{',(⍕expo[2])
[17]  bb←bb,'}+',(fo co[3]),'x^{',(⍕expo[3]),'}+',(fo co[4]),'x^{',(⍕expo[4])
[18]  bb←bb,'}+',(⍕co[5]),'='
[19]  r[1]←⊂bb,(16 0⍕xx),'$$'
[20] junta2:
[21]  r[2]←⊂x
-------------------------------------------------------------
[ 0]  r←gerac;aa;co;ti;x
[ 1]  x←(-2 3 5 6 7 8 9),2 3 5 7 9 11 13
[ 2]  x←x[4?14]
[ 3]  co←4 4⍴?16⍴20
[ 4]  ti←+/co×4 4⍴x
[ 5]  aa←4 75⍴' '
[ 6]  aa[1;]←75↑'$',(fo co[1;1]),'x+',(fo co[1;2]),'y+',(fo co[1;3]),'z+',(fo co[1;4]),'w=
      ',(⍕ti[1]),'$⍝⍝*'
[ 7]  aa[2;]←75↑'$',(fo co[2;1]),'x+',(fo co[2;2]),'y+',(fo co[2;3]),'z+',(fo co[2;4]),'w=
      ',(⍕ti[2]),'$⍝⍝*'
[ 8]  aa[3;]←75↑'$',(fo co[3;1]),'x+',(fo co[3;2]),'y+',(fo co[3;3]),'z+',(fo co[3;4]),'w=
      ',(⍕ti[3]),'$⍝⍝*'
[ 9]  aa[4;]←75↑'$',(fo co[4;1]),'x+',(fo co[4;2]),'y+',(fo co[4;3]),'z+',(fo co[4;4]),'w=
      ',(⍕ti[4]),'$⍝⍝*'
[10]  r←2⍴0
[11]  r[1]←⊂aa
[12]  r[2]←⊂x
-------------------------------------------------------------
[ 0]  r←gerad;aa;co;ex;i;j;li;re;ti;x;va
[ 1]  va←'xyzw'
[ 2] ⍝ x←(-2 3 5 6 7 8 9),2 3 5 7 9 11 13
[ 3]  x←¯9+⍳20
[ 4]  x←x[4?14]
[ 5]  co←4 4⍴?16⍴20
[ 6]  ex←4 4⍴1
[ 7]  i←1
[ 8] t1:→(i>4)/oba
[ 9]  ex[i;?4]←1+?2
[10]  i←i+1
[11]  →t1
[12] oba:re←4⍴0
[13]  re←+/co×(4 4⍴x)*ex
[14]  aa←4 75⍴' '
[15]  i←1
[16] t4:→(i>4)/fj1
[17]  li←'$'
[18]  j←1
[19] t5:→(j>4)/fj2
[20]  →(ex[i;j]=1)/orra
[21]  li←li,(fo co[i;j]),va[j],'^',(⍕ex[i;j]),'+'
[22]  j←j+1
[23]  →t5
[24] orra:
[25]  li←li,(fo co[i;j]),va[j],'+'
[26]  j←j+1
[27]  →t5
[28] fj2:
[29]  aa[i;]←75↑(¯1↓trim li),'=',(⍕re[i]),'$⍝⍝*'
[30]  i←i+1
[31]  →t4
[32] fj1:
[33]  r←2⍴0
[34]  r[1]←⊂aa
[35]  r[2]←⊂x
-------------------------------------------------------------
[ 0]  r←integraf1 abn;a;area;h;i
```

```
[ 1] ⍝ calcula a integral de 1/x . dx
[ 2]  h←(abn[2]-abn[1])÷abn[3]
[ 3]  a←abn[1]
[ 4]  area←1÷a
[ 5]  i←1
[ 6] t1:→(i≥abn[3])/fim
[ 7]  a←a+h
[ 8]  area←area+2×1÷a
[ 9]  i←i+1
[10]  →t1
[11] fim:area←area+1÷a
[12]  r←area×h÷2
-------------------------------------------------------------
[ 0]  r←KM integraf2 abn;a;area;h;i
[ 1] ⍝ calcula a integral de x**2 + Kx - M
[ 2]  h←(abn[2]-abn[1])÷abn[3]
[ 3]  a←abn[1]
[ 4]  area←(a*2)+(KM[1]×a)-KM[2]
[ 5]  i←1
[ 6] t1:→(i≥abn[3])/fim
[ 7]  a←a+h
[ 8]  area←area+2×(a*2)+(KM[1]×a)-KM[2]
[ 9]  i←i+1
[10]  →t1
[11] fim:area←area+(a*2)+(KM[1]×a)-KM[2]
[12]  r←area×h÷2
-------------------------------------------------------------
[ 0]  r←KL integraf3 abn;a;area;h;i
[ 1] ⍝ calcula a integral de K / x**2+L
[ 2]  h←(abn[2]-abn[1])÷abn[3]
[ 3]  a←abn[1]
[ 4]  area←KL[1]÷(a*2)+KL[2]
[ 5]  i←1
[ 6] t1:→(i≥abn[3])/fim
[ 7]  a←a+h
[ 8]  area←area+2×KL[1]÷(a*2)+KL[2]
[ 9]  i←i+1
[10]  →t1
[11] fim:area←area+KL[1]÷(a*2)+KL[2]
[12]  r←area×h÷2
-------------------------------------------------------------
[ 0]  r←NK integraf4 abn;a;area;h;i
[ 1] ⍝ calcula a integral de K / x**2+L
[ 2]  h←(abn[2]-abn[1])÷abn[3]
[ 3]  a←abn[1]
[ 4]  area←(*NK[1]×a)÷NK[2]
[ 5]  i←1
[ 6] t1:→(i≥abn[3])/fim
[ 7]  a←a+h
[ 8]  area←area+2×(*NK[1]×a)÷NK[2]
[ 9]  i←i+1
[10]  →t1
[11] fim:area←area+(*NK[1]×a)÷NK[2]
[12]  r←area×h÷2
-------------------------------------------------------------
[ 0]  r←integraf5 abn;a;area;h;i
[ 1] ⍝ calcula a integral de tan x
[ 2]  h←(abn[2]-abn[1])÷abn[3]
[ 3]  a←abn[1]
[ 4]  area←3○a
[ 5]  i←1
[ 6] t1:→(i≥abn[3])/fim
[ 7]  a←a+h
```

```
[ 8]  area←area+2×3○a
[ 9]  i←i+1
[10]  →t1
[11] fim:area←area+3○a
[12]  r←area×h÷2
-------------------------------------------------------------
[ 0]  r←integraf6 abn;a;area;h;i
[ 1] ⍝ calcula a integral de tan x
[ 2]  h←(abn[2]-abn[1])÷abn[3]
[ 3]  a←abn[1]
[ 4]  area←⊛a*2
[ 5]  i←1
[ 6] t1:→(i≥abn[3])/fim
[ 7]  a←a+h
[ 8]  area←area+2×⊛a*2
[ 9]  i←i+1
[10]  →t1
[11] fim:area←area+⊛a*2
[12]  r←area×h÷2
-------------------------------------------------------------
[ 0]  r←juntaa;z;i;rr;cc
[ 1]  z←6 75⍴' '
[ 2]  i←1
[ 3]  rr←0
[ 4] t1:→(i>6)/fim
[ 5]  cc←geraa
[ 6]  z[i;]←75↑⊃cc[1]
[ 7]  rr←rr+⊃cc[2]
[ 8]  i←i+1
[ 9]  →t1
[10] fim:r←2⍴0
[11]  r[1]←⊂z
[12]  r[2]←⊂rr
-------------------------------------------------------------
[ 0]  r←juntab;K;L;M;N;a;b;cc;i;rr;z
[ 1]  z←6 75⍴' '
[ 2]  rr←0
[ 3]  a←1+(?10)÷10 ⋄ b←a+(?10)÷10
[ 4]  z[1;]←75↑'$$\int_{',(⍕a),'}^{',(⍕b),'} \frac{1}{x}.dx$$\\*'
[ 5]  rr←integraf1 a,b,100
[ 6]  a←1+(?10) ⋄ b←a+(?10) ⋄ K←1+?8 ⋄ M←1+?8
[ 7]  z[2;]←75↑'$$\int_{',(⍕a),'}^{',(⍕b),'} x^2 + ',(⍕K),'.x-',(⍕M),'.dx$$\\*'
[ 8]  rr←rr,(K,M)integraf2 a,b,100
[ 9]  a←1+(?10) ⋄ b←a+(?10) ⋄ K←1+?8 ⋄ L←1+?8
[10]  z[3;]←75↑'$$\int_{',(⍕a),'}^{',(⍕b),'} \frac{',(⍕K),'}{x^2 + ',(⍕L),'}.dx$$\\*'
[11]  rr←rr,(K,L)integraf3 a,b,100
[12]  a←1+(?10)÷10 ⋄ b←a+(?10)÷10 ⋄ N←1+?4 ⋄ K←N+?10
[13]  z[4;]←75↑'$$\int_{',(⍕a),'}^{',(⍕b),'} e^{(\frac{',(⍕N),'.x}{',(⍕K),'})}.dx$$\\*'
[14]  rr←rr,(N,K)integraf4 a,b,100
[15] oba:
[16]  a←2+?9 ⋄ b←2+?9
[17]  →(a≤b)/oba
[18]  z[5;]←75↑'$$\int_{\pi/',(⍕a),'}^{\pi/',(⍕b),'} tan(x).dx$$\\*'
[19]  rr←rr,integraf5(○÷a),(○÷b),100
[20]  a←1+(?10)÷10 ⋄ b←a+(?10)÷10
[21]  z[6;]←75↑'$$\int_{',(⍕a),'}^{',(⍕b),'} log_{2.71828}(x^2).dx$$\\*'
[22]  rr←rr,integraf6 a,b,100
[23] fim:r←2⍴0
[24]  r[1]←⊂z
[25]  r[2]←⊂+/rr
-------------------------------------------------------------
[ 0]  r←juntac;aa;rz;z
[ 1]  z←16 75⍴' '
```

```
[ 2]  rz←4ρ0
[ 3]  aa←gerac
[ 4]  z[ι4;]←4 75↑⊃aa[1]
[ 5]  rz←rz+⊃aa[2]
[ 6]  aa←gerac
[ 7]  z[4+ι4;]←4 75↑⊃aa[1]
[ 8]  rz←rz+⊃aa[2]
[ 9]  aa←gerac
[10]  z[8+ι4;]←4 75↑⊃aa[1]
[11]  rz←rz+⊃aa[2]
[12]  aa←gerac
[13]  z[12+ι4;]←4 75↑⊃aa[1]
[14]  rz←rz+⊃aa[2]
[15]  r←2ρ0
[16]  r[1]←⊂z
[17]  r[2]←⊂rz
------------------------------------------------------------
[ 0]  r←juntad;aa;rz;z
[ 1]  z←16 75ρ' '
[ 2]  rz←4ρ0
[ 3]  aa←gerad
[ 4]  z[ι4;]←4 75↑⊃aa[1]
[ 5]  rz←rz+⊃aa[2]
[ 6]  aa←gerad
[ 7]  z[4+ι4;]←4 75↑⊃aa[1]
[ 8]  rz←rz+⊃aa[2]
[ 9]  aa←gerad
[10]  z[8+ι4;]←4 75↑⊃aa[1]
[11]  rz←rz+⊃aa[2]
[12]  aa←gerad
[13]  z[12+ι4;]←4 75↑⊃aa[1]
[14]  rz←rz+⊃aa[2]
[15]  r←2ρ0
[16]  r[1]←⊂z
[17]  r[2]←⊂rz
------------------------------------------------------------
[ 0]  opesq vivo938a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL938   '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎ιn
[ 9]  ylu←n grupo ylu
[10]  FOLHALA938←ajusta80 FOLHALA938
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALA938)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 11ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←53 80ρ' '
[16]  f←FOLHALA938
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;ι6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;ι4]=((1↑ρf),4)ρ'⍀#05')/ι1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
```

```
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[52;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[53;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←juntaa
[35]  esse[7+⍳6;]←6 80↑'¯-'edit⊃xx[1]
[36]  resp←resp,,⊃xx[2]
[37]  xx←juntab
[38]  esse[13+⍳6;]←6 80↑⊃xx[1]
[39]  resp←resp,,⊃xx[2]
[40]  xx←juntac
[41]  esse[19+⍳16;]←16 80↑'¯-'edit⊃xx[1]
[42]  resp←resp,,⊃xx[2]
[43]  xx←juntad
[44]  esse[35+⍳16;]←16 80↑'¯-'edit⊃xx[1]
[45]  resp←resp,,⊃xx[2]
[46]  resu←resu,[1]1 11⍴resp
[47]  acuja←(f[;2]='#')/⍳1↑⍴f
[48]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[49]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[50]  ⍞←(⍕xk←xk+1),'-'
[51]  →testa
[52] fim:upag←(1 0+⍴f)⍴' '
[53]  →(1=≡n)/elafa
[54]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[55]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[56]  upag[2+⍳1↑⍴resu;⍳¯2++/lixo1]←'¯-'edit(lixo1←5 0 10 0 10 2 8 0 4 0 4 0 4 0 8 0 4 0 4
      0 4 0)⍕resu
[57]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[58]  →terminando
[59] elafa:aaa←(ylu[;⍳36],10 0 10 2 8 0 4 0 4 0 4 0 8 0 4 0 4 0 4 0⍕0 1↓resu)
[60]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[61]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[62] terminando:
[63]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[64]  relat[1↑⍴relat;;]←upag
[65]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[66]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[67]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[68]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo942

```
[0]  r←vet achasel val
[1]  r←vet⍳1↑(vet≥val)/vet
-------------------------------------------------------------
[ 0]  gabarito
[ 1]  'para rodar este gabarito, comente as linhas 9 e 47 do resolvegaa'
[ 2]  'informe 30 valores 0 e 1(individuos)'
[ 3]  individuo←(1 6 5⍴⎕),[1]2 6 5⍴0
[ 4]  ' informe 6 crossover'
[ 5]  crossover←2 3⍴⎕
[ 6]  'informe 60 valores mutacao (00-100), depois ele divide por 100'
[ 7]  mutacao←2 6 5⍴⎕
[ 8]  'informe 60 novos bits'
[ 9]  novobit←2 6 5⍴⎕
```

```
[10]  'informe 12 selecoes'
[11]  selecao←2 6ρ⍬
------------------------------------------------------------
[0]  geracaso
[1]  individuo←3 6 5ρ(0 1)[?90ρ2]
[2]  crossover←2 3ρ?6ρ4
[3]  mutacao←2 6 5ρ¯1+?60ρ100
[4]  novobit←2 6 5ρ(0 1)[?60ρ2]
[5]  selecao←2 6ρ0
------------------------------------------------------------
[ 0]  ref;i;j;k;candi;qt;zz;r
[ 1]  zz←ΔFM'f:/infoland/lixo1234'
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80ρ' '
[ 6] te:→(i≥⍬IO+1↑ρzz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>ρcandi)/eca
[ 9]  j←qt
[10]  →(0=' 'єj↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⍬IO]1 80ρ80↑j↑candi
[15]  candi←j↓candi
[16]  →((ρcandi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⍬IO]1 80ρ80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
[22]  y←r
------------------------------------------------------------
[ 0]  r←resolvegaa;i;f1;f2;i1;i2;x2;x2s;aa;lin;col
[ 1]  x←3 6ρ0
[ 2]  i←1
[ 3] t1:→(i>6)/fim1
[ 4]  x[1;i]←2⊥individuo[1;i;]
[ 5]  →(i=i←i+1)/t1
[ 6] fim1:
[ 7]  x2←x[1;]*2
[ 8]  x2s←+⍀x2
[ 9]  selecao[1;]←?6ρ+/x2
[10]  f1←i1←,individuo[1;x2s achasel selecao[1;1];]
[11]  f2←i2←,individuo[1;x2s achasel selecao[1;2];]
[12]  f1[aa+ι5-aa]←i2[aa+ι5-aa←crossover[1;1]]
[13]  f2[aa+ι5-aa]←i1[aa+ι5-aa]
[14]  individuo[2;1;]←f1
[15]  individuo[2;2;]←f2
[16]  f1←i1←,individuo[1;x2s achasel selecao[1;3];]
[17]  f2←i2←,individuo[1;x2s achasel selecao[1;4];]
[18]  f1[aa+ι5-aa]←i2[aa+ι5-aa←crossover[1;2]]
[19]  f2[aa+ι5-aa]←i1[aa+ι5-aa]
[20]  individuo[2;3;]←f1
[21]  individuo[2;4;]←f2
[22]  f1←i1←,individuo[1;x2s achasel selecao[1;5];]
[23]  f2←i2←,individuo[1;x2s achasel selecao[1;6];]
[24]  f1[aa+ι5-aa]←i2[aa+ι5-aa←crossover[1;3]]
[25]  f2[aa+ι5-aa]←i1[aa+ι5-aa]
[26]  individuo[2;5;]←f1
[27]  individuo[2;6;]←f2
[28]  lin←1
```

```
[29] d01:→(lin>6)/zzlin
[30]  col←1
[31] d02:→(col>5)/zzcol
[32]  →(mutacao[1;lin;col]>10)/pula
[33]  individuo[2;lin;col]←novobit[1;lin;col]
[34] pula:→(col=col←col+1)/d02
[35] zzcol:→(lin=lin←lin+1)/d01
[36] zzlin:
[37] ⍝ ===================== g2 ================
[38]  i←1
[39] t1a:→(i>6)/fim1a
[40]  x[2;i]←2⊥individuo[2;i;]
[41]  →(i=i←i+1)/t1a
[42] fim1a:
[43]  x2←x[2;]*2
[44]  x2s←+⌿x2
[45]  selecao[2;]←?6⍴+/x2
[46]  f1←i1←,individuo[2;x2s achasel selecao[2;1];]
[47]  f2←i2←,individuo[2;x2s achasel selecao[2;2];]
[48]  f1[aa+⍳5-aa]←i2[aa+⍳5-aa←crossover[2;1]]
[49]  f2[aa+⍳5-aa]←i1[aa+⍳5-aa]
[50]  individuo[3;1;]←f1
[51]  individuo[3;2;]←f2
[52]  f1←i1←,individuo[2;x2s achasel selecao[2;3];]
[53]  f2←i2←,individuo[2;x2s achasel selecao[2;4];]
[54]  f1[aa+⍳5-aa]←i2[aa+⍳5-aa←crossover[2;2]]
[55]  f2[aa+⍳5-aa]←i1[aa+⍳5-aa]
[56]  individuo[3;3;]←f1
[57]  individuo[3;4;]←f2
[58]  f1←i1←,individuo[2;x2s achasel selecao[2;5];]
[59]  f2←i2←,individuo[2;x2s achasel selecao[2;6];]
[60]  f1[aa+⍳5-aa]←i2[aa+⍳5-aa←crossover[2;3]]
[61]  f2[aa+⍳5-aa]←i1[aa+⍳5-aa]
[62]  individuo[3;5;]←f1
[63]  individuo[3;6;]←f2
[64]  lin←1
[65] d01a:→(lin>6)/zzlina
[66]  col←1
[67] d02a:→(col>5)/zzcola
[68]  →(mutacao[2;lin;col]>10)/pulaa
[69]  individuo[3;lin;col]←novobit[2;lin;col]
[70] pulaa:→(col=col←col+1)/d02a
[71] zzcola:→(lin=lin←lin+1)/d01a
[72] zzlina:
[73] ⍝ ============================ g3 ============================
[74]  i←1
[75] t1b:→(i>6)/fim1b
[76]  x[3;i]←2⊥individuo[3;i;]
[77]  →(i=i←i+1)/t1b
[78] fim1b:x
[79]  x2←x[3;]*2
[80]  x2s←+⌿x2
[81]  x←x*2
[82]  r←(((+/x[2;]),(+/x[3;]))÷6),(⌈/x[2;]),⌈/x[3;]
-------------------------------------------------------------
[ 0]  opesq vivo942a n;CORRECAO;EVENTO;respyes;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upa
      g;lixonol;xixo;aaa;lixo1;aab
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  'PARA IMPRIMIR DIFERENTES, FACA DIFERENTE  ←1. POR ORA, DIFERENTES  ←0'
[ 5]  →(2=⎕NC'DIFERENTES')/existe
[ 6]  DIFERENTES←0
```

```
[ 7]  →puladif
[ 8] existe:→(DIFERENTES=0)/puladif
[ 9]  DIFERENTES←1
[10] puladif:
[11]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[12]  CORRECAO←4 ⋄ EVENTO←'PL942   '
[13]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[14]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[15]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[16]  FOLHALA942←ajusta80 FOLHALA942
[17]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA942)⍴' '
[18]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[19]  xk←1 ⋄ resu←0 5⍴0
[20] testa:→(xk>1↑⍴ylu)/fim
[21]  esse←31 80⍴' '
[22]  f←FOLHALA942
[23]  esse[1;]←80↑dhx[1;]
[24]  esse[2;]←80↑dhx[2;]
[25]  esse[3;]←80↑4 2⍎VERSAOa←3.45
[26]  esse[4;]←80↑ylu[xk;⍳6]
[27]  esse[5;]←80↑ylu[xk;6+⍳30]
[28]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[29]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[30]  esse[30;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[31]  esse[31;⍳17]←esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[32] inica:
[33]  →((xk>1)∧(DIFERENTES≠1))/obah
[34]  geracaso
[35]  respyes←resolvegaa
[36] obah:
[37]  resp←resp,respyes
[38]  esse[7+⍳6;]←6 80↑2 0⍎individuo[1;;]
[39]  esse[7+⍳6;3 5 7 9]←'&'
[40]  esse[14 22;]←2 80↑5 0⍎selecao
[41]  esse[14 22;6 11 16 21 26]←'&'
[42]  esse[15 23;]←2 80↑(2 2⍴2 0⍎crossover[;1]),'&',(2 2⍴2 0⍎crossover[;2]),'&',2 2⍴2 0⍎cr
      ossover[;3]
[43]  juca←12 41⍴' '
[44]  juca[⍳6;⍳40]←8 6⍎mutacao[1;;]÷100
[45]  juca[6+⍳6;⍳40]←8 6⍎mutacao[2;;]÷100
[46]  juca[;1 9 17 25 33]←'0'
[47]  juca[;5 13 21 29 37]←'('
[48]  juca[⍳6;6 14 22 30 38]←1 0⍎novobit[1;;]
[49]  juca[6+⍳6;6 14 22 30 38]←1 0⍎novobit[2;;]
[50]  juca[;7 15 23 31 39]←')'
[51]  juca[;8 16 24 32]←'&'
[52]  juca[;40 41]←'\'
[53]  esse[15+⍳6;]←6 80↑juca[⍳6;]
[54]  esse[23+⍳6;]←6 80↑juca[6+⍳6;]
[55] ⍝   →((xk>1)  ∧(DIFERENTES  ≠1))/pula6
[56]  resu←resu,[1]1 5⍴resp
[57] pula6:
[58]  acuja←(f[;2]='#')/⍳1↑⍴f
[59]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[60]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[61]  ⍞←(⍎xk←xk+1),'-'
[62]  →testa
[63] fim:upag←(1 0+⍴f)⍴' '
[64]  →(1=≡n)/elafa
[65]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[66]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[67]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0 10 0 8 0)⍎resu
```

```
[68]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[69]  →terminando
[70] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),10 0 8 0 10 0 8 0⍕0 1↓resu)
[71]  aaa[1;35 36]←2 0⍕CORRECAO
[72]  lixonol←aaa ⎕FM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[73]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[74] terminando:
[75]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[76]  relat[1↑⍴relat;;]←upag
[77]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)⎕FM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.t
      ex'
[78]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[79]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
[80]  INSTRUC942
[81]  (4 0⍕(⍉xhh)),(6 10⍴' '),4 0⍕⍉xhh*0.5
[82]  aab←4 0⍕18 5⍴individuo
[83]  aab[⍳6;],[1](1 20⍴'-'),[1]aab[6+⍳6;],[1](1 20⍴'-'),[1]aab[12+⍳6;]
-------------------------------------------------------------
```

vivo943

```
[0]  AVISO
[1]  'A funcao fitness, calcula o proprio'
-------------------------------------------------------------
[ 0]  r←fitness x;pena;fit;lucro;p1;p2;p3;p4;p5;p6;p7;p8
[ 1]  lucro←(10×x[1])+(8×x[2])+(9×x[3])+7×x[4]
[ 2]  pena←0
[ 3]  'lucro original (10A + 8B + 9C + 7D) = ',⍕lucro
[ 4]  →(x[1]≤70)/blz1
[ 5]  p1←x[1]-70
[ 6]  '   penalidade de A ≤ 70 = ',(8 2⍕p1),'      ^2= ',18 2⍕p1*2
[ 7]  pena←pena+p1*2
[ 8] blz1:
[ 9]  →(x[2]≤60)/blz2
[10]  p2←x[2]-60
[11]  '   penalidade de B ≤ 60 = ',(8 2⍕p2),'      ^2= ',18 2⍕p2*2
[12]  pena←pena+p2*2
[13] blz2:
[14]  →(x[3]≤40)/blz3
[15]  p3←x[3]-40
[16]  '   penalidade de C ≤ 40 = ',(8 2⍕p3),'      ^2= ',18 2⍕p3*2
[17]  pena←pena+p3*2
[18] blz3:
[19]  →(x[4]≤20)/blz4
[20]  p4←x[4]-20
[21]  '   penalidade de D ≤ 20 = ',(8 2⍕p4),'      ^2= ',18 2⍕p4*2
[22]  pena←pena+p4*2
[23] blz4:
[24]  →(((5×x[1])+(4×x[2])+(8×x[3])+(9×x[4]))≤80)/blz5
[25]  p5←(5×x[1])+(4×x[2])+(8×x[3])+(9×x[4])
[26]  '   5A + 4B + 8C + 9D    = ',(8 2⍕p5)
[27]  '   penalidade eq↑ ≤ 80  = ',(8 2⍕p5-80),'       ^2= ',18 2⍕(p5-80)*2
[28]  pena←pena+(p5-80)*2
[29] blz5:
[30]  →(((2×x[1])+(6×x[2])+(8×x[4]))≤20)/blz6
[31]  p6←(2×x[1])+(6×x[2])+(8×x[4])
[32]  '   2A + 6B + 8D         = ',(8 2⍕p6)
[33]  '   penalidade eq↑ ≤ 20  = ',(8 2⍕p6-20),'       ^2= ',18 2⍕(p6-20)*2
[34]  pena←pena+(p6-20)*2
[35] blz6:
[36]  →(((2×x[1])+(4×x[2])+(2×x[3])+(8×x[4]))≤120)/blz7
[37]  p7←(2×x[1])+(4×x[2])+(2×x[3])+(8×x[4])
```

```
[38]  '   2A + 4B + 2C + 8D    = ',(8 2⍕p7)
[39]  '   penalidade eq↑ ≤ 120 = ',(8 2⍕p7-120),'       ^2= ',18 2⍕(p7-120)*2
[40]  pena←pena+(p7-120)*2
[41] blz7:
[42]  →(((7×x[1])+(3×x[2])+(7×x[4]))≤160)/blz8
[43]  p8←(7×x[1])+(3×x[2])+(7×x[4])
[44]  '   7A + 3B + 7D         = ',(8 2⍕p8)
[45]  '   penalidade eq↑ ≤ 160 = ',(8 2⍕p8-160),'       ^2= ',18 2⍕(p8-160)*2
[46]  pena←pena+(p8-160)*2
[47] blz8:'penalidade total    = ',⍕pena
[48]  fit←lucro-pena
[49]  →(fit≥0)/pos
[50]  fit←0
[51] pos:'fitness = ',⍕fit
-------------------------------------------------------------
[ 0]  r←qua fobj abcd;pena1;pena2;pena3;pena4;pena5;pena6;pena7;pena8;pena;lucro
[ 1]  lucro←(10×abcd[1])+(8×abcd[2])+(9×abcd[3])+7×abcd[4]
[ 2]  →(abcd[1]≤70)/bl1
[ 3]  pena1←(abcd[1]-70)*qua
[ 4]  →pu1
[ 5] bl1:pena1←0
[ 6] pu1:
[ 7]  →(abcd[2]≤60)/bl2
[ 8]  pena2←(abcd[2]-60)*qua
[ 9]  →pu2
[10] bl2:pena2←0
[11] pu2:
[12]  →(abcd[3]≤40)/bl3
[13]  pena3←(abcd[3]-40)*qua
[14]  →pu3
[15] bl3:pena3←0
[16] pu3:
[17]  →(abcd[4]≤20)/bl4
[18]  pena4←(abcd[4]-20)*qua
[19]  →pu4
[20] bl4:pena4←0
[21] pu4:
[22]  →(((5×abcd[1])+(4×abcd[2])+(8×abcd[3])+(9×abcd[4]))≤80)/bl5
[23]  pena5←(((5×abcd[1])+(4×abcd[2])+(8×abcd[3])+(9×abcd[4]))-80)*qua
[24]  →pu5
[25] bl5:pena5←0
[26] pu5:
[27]  →(((2×abcd[1])+(6×abcd[2])+(8×abcd[4]))≤20)/bl6
[28]  pena6←(((2×abcd[1])+(6×abcd[2])+(8×abcd[4]))-20)*qua
[29]  →pu6
[30] bl6:pena6←0
[31] pu6:
[32]  →(((2×abcd[1])+(4×abcd[2])+(2×abcd[3])+(8×abcd[4]))≤120)/bl7
[33]  pena7←(((2×abcd[1])+(4×abcd[2])+(2×abcd[3])+(8×abcd[4]))-120)*qua
[34]  →pu7
[35] bl7:pena7←0
[36] pu7:
[37]  →(((7×abcd[1])+(3×abcd[2])+(7×abcd[4]))≤160)/bl8
[38]  pena8←(((7×abcd[1])+(3×abcd[2])+(7×abcd[4]))-160)*qua
[39]  →pu8
[40] bl8:pena8←0
[41] pu8:
[42]  pena←pena1+pena2+pena3+pena4+pena5+pena6+pena7+pena8
[43]  →(pena>lucro)/zero
[44]  r←lucro-pena
[45]  →0
[46] zero:r←0
-------------------------------------------------------------
```

```
[0]  r←ftab tab;lin;col;eca;c5
[1]  lin←1↑⍴tab
[2]  col←1↓⍴tab
[3]  r←'5555 5555550.0 5555550.0 5555550.0 5555550.0 5555550.0'⍪tab
[4] ⍝r←4 0 10 1 10 1 10 1 10 1 10 1⍪tab
[5]  r[;5 15 25 35 45]←'&'
[6]  r←r,(lin,20)⍴20↑'⍀⍀ ⍀cline{2-6}'
-------------------------------------------------------------
[ 0]  r←geracaso;i;j;v1;v2;a1;a2;d1;d2
[ 1]  r←39 8⍴0
[ 2]  r[⍳30;⍳5]←60 instancia 30   ⍝ populacao inicial (n=30)
[ 3]  r[31;1]←5+?3   ⍝ tamanho do torneio
[ 4]  r[32;⍳r[31;1]]←ordena r[31;1]?30   ⍝ candidatos do torneio de A1
[ 5]  r[33;⍳r[31;1]]←ordena r[31;1]?30   ⍝ candidatos do torneio de A2
[ 6]  r[34;⍳4]←¯1+?4⍴2   ⍝ recombinacao uniforme
[ 7]  r[35;⍳4]←4?100   ⍝ mutacao gaussiana de D1
[ 8]  r[36;⍳4]←4?100   ⍝ mutacao gaussiana de D2
[ 9]  i←1
[10] t1:→(i>4)/ufa
[11]  →(r[35;i]>11)/pula
[12]  r[37;i]←?r[35;i]
[13] pula:→(i=i←i+1)/t1
[14] ufa:i←1
[15] t11:→(i>4)/fim
[16]  →(r[36;i]>11)/pula22
[17]  r[38;i]←?r[36;i]
[18] pula22:→(i=i←i+1)/t11
[19] fim:v1←(,r[⍳30;5])⍳⌈/r[(r[31;1]↑r[32;]);5]
[20]  v2←(,r[⍳30;5])⍳⌈/r[(r[31;1]↑r[33;]);5]
[21]  a1←r[v1;⍳4] ⋄ a2←r[v2;⍳4]
[22]  d1←(a1×~r[34;⍳4])+a2×r[34;⍳4]
[23]  d2←(a1×r[34;⍳4])+a2×~r[34;⍳4]
[24]  i←1
[25] t3:→(i>4)/afa
[26]  →(r[35;i]>11)/p1
[27]  d1[i]←d1[i]+(r[37;i]-⌈r[35;i]÷2)÷10
[28] p1:→(i=i←i+1)/t3
[29] afa:i←1
[30] t4:→(i>4)/afb
[31]  →(r[36;i]>11)/p2
[32]  d2[i]←d2[i]+(r[38;i]-⌈r[36;i]÷2)÷10
[33] p2:→(i=i←i+1)/t4
[34] afb:r[39;1]←2 fobj d1
[35]  r[39;2]←2 fobj d2
[36] ⍝ nas posicoes 7 e 8 de r[39] estao os numeros dos cvencedores
[37]  r[39;7 8]←v1,v2
-------------------------------------------------------------
[0]  r←tt geratorneio tam;i;zz
[1]  r←(tam,tt)⍴0
[2]  i←1
[3] vorta:→(i>tam)/fim
[4]  zz←tt?tam
[5]  zz←zz[⍋zz]
[6]  r[i;]←¯3+4×zz
[7]  →(i=i←i+1)/vorta
[8] fim:
-------------------------------------------------------------
[ 0]  r←qtos instancia t;i;igs;aa
[ 1] denovo:r←100 4⍴200
[ 2]  r[⍳qtos;2 4]←10
[ 3]  r[⍳qtos;3]←50
[ 4]  r[⍳qtos;1]←150
[ 5]  r←?r
```

```
[ 6]  r←r[t?100;]
[ 7]  r←r,0
[ 8]  r←r÷10
[ 9]  i←1
[10] t1:→(i>1↑⍴r)/fim
[11]  aa←2 fobj r[i;⍳4]
[12]  →((aa=0)∧1=?4)/orra ⍝ em 25% dos zeros, recalcula...
[13] ⍝ o objetivo e dar uma diminuida nos zeros
[14]  →conta
[15] orra:⎕←'o'
[16]  r[i;⍳4]←(?150 10 50 10)÷10
[17]  →t1
[18] conta:
[19]  r[i;5]←aa
[20]  →(i=i←i+1)/t1
[21] fim:igs←(r[;5]≠0)/r[;5]
[22]  i←1
[23] t2:→(i>⍴igs)/acab
[24]  →(1=+/igs[i]=igs)/blz
[25]  ⎕←'*'
[26]  →denovo
[27] blz:→(i=i←i+1)/t2
[28] acab:
------------------------------------------------------------
[0]  r←ordena x
[1]  r←x[⍋x]
------------------------------------------------------------
[ 0]  ref;i;j;k;candi;qt;zz;r
[ 1]  zz←⎕FM'f:/infoland/lixo1234'
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10]  →(0=' 'ϵj↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80⍴80↑j↑candi
[15]  candi←j↓candi
[16]  →((⍴candi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80⍴80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
[22]  y←r
------------------------------------------------------------
[ 0]  opesq vivo943a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;xq
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←0 ⋄ EVENTO←'PL943   '
[ 5]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 8]  FOLHALA943←ajusta80 FOLHALA943
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA943)⍴' '
```

```
[10]  relat[1;;]←(1↓⍴relat)↑⍪FM'c:\apl2\VIVOBLOI'
[11]  xk←1 ⋄ resu←0 3⍴0
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←47 80⍴' '
[14]  f←FOLHALA943
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍕VERSAOa←3.09
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[22]  esse[46;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[47;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25]  xq←geracaso
[26]  esse[7+⍳30;]←30 80↑⍪ftab((30,1)⍴⍳30),xq[⍳30;⍳5]
[27]  esse[38;]←80↑4 0⍕xq[31;1]
[28]  esse[39;]←80↑5 0⍕xq[31;1]↑xq[32;]
[29]  esse[40;]←80↑5 0⍕xq[31;1]↑xq[33;]
[30]  esse[41;]←80↑4 0⍕xq[34;⍳4]
[31]  esse[42;]←80↑4 0⍕xq[35;⍳4] ⋄ esse[43;]←80↑4 0⍕xq[36;⍳4]
[32]  esse[44;]←80↑'¯-'edit 5 0⍕xq[37;⍳4]
[33]  esse[45;]←80↑'¯-'edit 5 0⍕xq[38;⍳4]
[34]  resp←resp,xq[39;1 2]
[35] continua:
[36]  resu←resu,[1](1,3)⍴resp
[37]  acuja←(f[;2]='#')/⍳1↑⍴f
[38]  f[acuja;⍳80]←esse[±,f[acuja;3 4],' ';]
[39]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[40]  ⍞←(⍕xk←xk+1),'-'
[41]  →testa
[42] fim:upag←(1 0+⍴f)⍴' '
[43]  →(1=≡n)/elafa
[44]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[45]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[46]  upag[2+⍳1↑⍴presu;⍳¯2++/lixo1]←(lixo1←5 0 10 1 8 1)⍕resu
[47]  upag[3+1↑⍴presu;]←(1↓⍴upag)↑'\end{verbatim}'
[48]  →terminando
[49] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),8 1⍕0 1↓resu)
[50]  aaa[1;35 36]←2 0⍕CORRECAO
[51]  lixonol←aaa ⍪FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54] ⍝ upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat),[1]INSTRUC943
[57]  lixonol←lixonol ⍪FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo945

```
[0]  r←AND a
[1]  →(a[1]=0)/v0
[2]  r←a[2]
[3]  →0
[4] v0:r←0
-------------------------------------------------------------
[ 0]  D←S DISPLAY A;⎕IO;R;C;HL;HC;HT;HB;VL;VB;V;W;N;B
[ 1] ⍝ Display a general array in pictorial form
```

```
[ 2] ⍝  Normal call is monadic.  Dyadic call used only in
[ 3] ⍝    recursion to specify display rank, shape, and depth.
[ 4]  ⎕IO←0
[ 5]  ⍎(0=⎕NC'S')/'S←⍴A'
[ 6]  R←↑⍴,S                    ⍝ Pseudo rank
[ 7]  C←'┐┌└┘'                  ⍝ UR, UL, LL, and LR corners
[ 8]  HL←'─'                    ⍝ Horizontal line
[ 9]  HC←HL,'⊖→',HL,'~+∊'       ⍝ Horizontal borders
[10]  HT←HC[(0<R)×1+0<↑¯1↑,S]
[11] ⍝W←,0≡¨↑0⍴⊂(1⌈⍴A)↑A
[12]  HB←HC[3+3⌊('2×~A≡⍕A'⎕EA'1+↑∊0×(1⌈×/⍴A)↑,A')+3×1<⍴⍴S]
[13]  VL←'│'                    ⍝ Vertical line
[14]  VB←VL,'ϕ↓'                ⍝ Vertical border
[15]  V←VB[(1<R)×1+0<¯1↑¯1↓,S]
[16]  ⍎(0∊⍴A)/'A←(1⌈⍴A)⍴⊂↑A'   ⍝ Show prototype of empties
[17]  →(1<≡A)/GEN
[18]  →(2<⍴⍴A)/D3
[19]  D←⍕A                      ⍝ Simple arrays
[20]  W←1↑⍴D←(¯2↑1 1,⍴D)⍴D
[21]  N←¯1+1↓⍴D
[22]  →(0=⍴⍴A)/SS
[23]  D←(C[1],V,((W-1)⍴VL),C[2]),((HT,N⍴HL),[0]D,[0]HB,N⍴HL),C[0],(W⍴VL),C[3]
[24]  →0
[25] SS:HB←((0 ' ')=↑0⍴⊂A)/' -'
[26]  D←' ',(' ',[0]D,[0]HB,N⍴' '),' '
[27]  →0
[28] GEN:D←⍕⎕DISPLAY¨A          ⍝ Enclosed arrays
[29]  N←D∨.≠' '
[30]  D←(N∨~1ϕN)⌿D
[31]  D←(∨⌿~'  '⍷D)/D
[32]  D←((1,⍴S)⍴S)⎕DISPLAY D
[33]  →(2≥⍴,S)↓D3E,0
[34] D3:D←0 ¯1↓0 1↓⍕⊂A          ⍝ Multi-dimensional arrays
[35]  W←1↑⍴D
[36]  N←¯1+1↓⍴D
[37]  D←(C[1],V,((W-1)⍴VL),C[2]),((HT,N⍴HL),[0]D,[0]HB,N⍴HL),C[0],(W⍴VL),C[3]
[38] D3E:N←¯2+⍴,S
[39]  V←C[N⍴1],[0]VB[1+0<¯2↓,S],[0](((¯3+↑⍴D),N)⍴VL),[0]C[N⍴2]
[40]  D←V,D
[41] ⍝¶⍝ APL2/6000 FKEY verification tag - DO NOT REMOVE, MUST BE LAST LINE
-------------------------------------------------------------
[0]  r←IF a
[1]  →(a[1]=1)/ey
[2]  r←a[3]
[3]  →0
[4] ey:r←a[2]
-------------------------------------------------------------
[0]  r←NOT a
[1]  r←~a
-------------------------------------------------------------
[0]  r←OR a
[1]  →(a[1]=1)/eu
[2]  r←a[2]
[3]  →0
[4] eu:r←1
-------------------------------------------------------------
[0]  r←b achavals xy;l;c;b1
[1]  b1←0,[1](0,b,0),[1]0
[2]  l←1+xy[1] ⋄ c←1+xy[2]
[3]  r←b1[l-1;c],b1[l-1;c+1],b1[l;c+1],b1[l+1;c+1],b1[l+1;c],b1[l+1;c-1],b1[l;c-1],b1[l-1
      ;c-1]
[4]  →0
-------------------------------------------------------------
```

```
[ 0]  r←anda a;labe;l;c;ic;lixo;fi
[ 1] ⍝ a resposta e um vetor de 3 numeros: fitness parcial, xf e yf
[ 2]  labe←⊃a[1] ⋄ l←⊃a[2] ⋄ c←⊃a[3] ⋄ ic←⊃a[4]
[ 3]  (n ne e se s sw w nw)←labe achavals l,c
[ 4]  VIV←1 ⋄ ANDA←' '
[ 5]  lixo←⍬,⊃ic
[ 6]  CAMINHO←CAMINHO,ANDA
[ 7]  →(ANDA='↑')/cima
[ 8]  →(ANDA='→')/dire
[ 9]  →(ANDA='↓')/baix
[10]  →(ANDA='←')/esqu
[11] namesma:r←0,l,c
[12]  →fim
[13] cima:
[14]  →(l≤1)/namesma
[15]  →(labe[l-1;c]=0)/namesma
[16]  fi←(0,[1](0,labe,0),[1]0)calcfi(l,c,(l-1),c)
[17]  r←fi,(l-1),c
[18]  →fim
[19] dire:
[20]  →(c≥8)/namesma
[21]  →(labe[l;c+1]=0)/namesma
[22]  fi←(0,[1](0,labe,0),[1]0)calcfi(l,c,l,(c+1))
[23]  r←fi,l,c+1
[24]  →fim
[25] baix:
[26]  →(l≥8)/namesma
[27]  →(labe[l+1;c]=0)/namesma
[28]  fi←(0,[1](0,labe,0),[1]0)calcfi(l,c,(l+1),c)
[29]  r←fi,(l+1),c
[30]  →fim
[31] esqu:
[32]  →(c≤1)/namesma
[33]  →(labe[l;c-1]=0)/namesma
[34]  fi←(0,[1](0,labe,0),[1]0)calcfi(l,c,l,c-1)
[35]  r←fi,l,c-1
[36]  →fim
[37] fim:
------------------------------------------------------------
[ 0]  r←labe avalia indi;fit;cont;lf;cf;li;ci;fpar
[ 1]  fit←0 ⋄ CAMINHO←''
[ 2]  cont←0
[ 3] d1:→(cont≥10)/fim
[ 4]  (lf cf)←poerobot labe
[ 5]  →pula
[ 6] u1:→(2=+/(li ci)=(lf cf))/naomex
[ 7] pula:(li ci)←(lf cf)
[ 8]  (fpar lf cf)←anda(labe li ci indi)
[ 9]  fit←fit+fpar
[10]  →u1
[11] naomex:cont←cont+1
[12]  CAMINHO←CAMINHO,'∘'
[13]  →d1
[14] fim:r←fit
------------------------------------------------------------
[0]  r←lab calcfi l
[1]  (li ci lf cf)←l+1
[2]  →(((lab[li-1;ci]=0)∨(lab[li;ci+1]=0)∨(lab[li+1;ci]=0)∨(lab[li;ci-1]=0))∧((lab[lf-1;c
      f]=0)∨(lab[lf;cf+1]=0)∨(lab[lf+1;cf]=0)∨(lab[lf;cf-1]=0)))/um
[3]  r←0
[4]  →0
[5] um:r←1
------------------------------------------------------------
```

```
[ 0]  r←caso1;c1;fit;labe;li;ci;lback;cback;fp;lf;cf
[ 1] volta:c1←geracoma
[ 2]  →(58≥ρc1)/blzv
[ 3]  ⍞←'*'
[ 4]  →volta
[ 5] blzv:fit←0 ⋄ r←4 79ρ' '
[ 6]  labe←geralabe
[ 7]  (li ci)←poerobot labe
[ 8]  (lback cback)←(li ci)
[ 9] andar:(fp lf cf)←anda(labe li ci c1)
[10]  fit←fit+fp
[11] teste:→((lf=li)∧(cf=ci))/acabou
[12]  li←lf ⋄ ci←cf
[13]  →andar
[14] acabou:→(2>fit)/volta
[15]  r[1;]←79↑3 0⍕fit
[16]  r[2;]←79↑1 0⍕lback
[17]  r[3;]←79↑1 0⍕cback
[18]  →(79<ρc1)/volta
[19]  r[4;]←79↑c1
------------------------------------------------------------
[ 0]  r←caso2;c1;c2;c3
[ 1]  r←3 79ρ' '
[ 2] ufa:c1←geracoma
[ 3]  c2←geracoma
[ 4]  c3←c1 crossover c2
[ 5]  →((58≥ρc1)∧(58≥ρc2))/blfufa
[ 6]  ⍞←'o'
[ 7]  →ufa
[ 8] blfufa:r[1;]←79↑c1
[ 9]  r[2;]←79↑c2
[10]  r[3;]←79↑3 0⍕1↑ρZZ
------------------------------------------------------------
[ 0]  r←p1 crossover p2;r1;r2;i;zz;ix;j;k1;k2;tam1;tam2;tx1;tx2;e1;e2;f;d1;d2;q1;q2;q3;q4;
      q5;q6
[ 1]  r1←genoma p1
[ 2]  r2←genoma p2
[ 3]  zz←0 4ρ0
[ 4]  tam1←ρp1 ⋄ tam2←ρp2
[ 5]  →(0=1↑ρr1)/sai
[ 6]  →(0=1↑ρr2)/sai
[ 7]  i←1
[ 8] t1:→(i>1↑ρr1)/fim
[ 9]  j←1
[10] t2:→(j>1↑ρr2)/aca
[11]  →(r1[i;3]≠r2[j;3])/soma
[12]  zz←zz,[1]1 4ρr1[i;1 2],r2[j;1 2]
[13] soma:→(j=j←j+1)/t2
[14] aca:→(i=i←i+1)/t1
[15] fim:→(0=1↑ρzz)/sai
[16]  ZZ←zz
[17]  ix←?1↑ρzz ⋄ d1←(ρp1)ρ'1' ⋄ d2←(ρp2)ρ'2'
[18]  q1←(zz[ix;3]↑p2)
[19]  q2←p1[zz[ix;1]+ιzz[ix;2]]
[20]  q3←(tam2-tx1)↑(tx1←+/zz[ix;3 4])↓p2
[21] ⍝ 'q1=',q1
[22] ⍝ 'q2=',q2
[23] ⍝ 'q3=',q3
[24]  k1←q1,q2,q3
[25]  e1←(zz[ix;3]↑d2),d1[zz[ix;1]+ιzz[ix;2]],(tam2-tx1)↑(tx1←+/zz[ix;3 4])↓d2
[26]  q4←(zz[ix;1]↑p1)
[27]  q5←p2[zz[ix;3]+ιzz[ix;4]]
[28]  q6←(tam1-tx2)↑(tx2←+/zz[ix;1 2])↓p1
```

```
[29] ⍝ 'q4=',q4
[30] ⍝ 'q5=',q5
[31] ⍝ 'q6=',q6
[32]  k2←q4,q5,q6
[33]  e2←(zz[ix;1]↑d1),d2[zz[ix;3]+⍳zz[ix;4]],(tam2-tx1)↑(tx1←+/zz[ix;1 2])↓d1
[34]  f←r←(2,((⍴k1)⌈⍴k2))⍴' '
[35]  r[1;]←(1↓⍴r)↑k1
[36]  r[2;]←(1↓⍴r)↑k2
[37]  f[1;]←(1↓⍴f)↑e1
[38]  f[2;]←(1↓⍴f)↑e2
[39]  DOCU←f
[40] ⍝ix
[41] ⍝ zz
[42] ⍝ p1
[43] ⍝ p2
[44] ⍝ k1
[45] ⍝ k2
[46] ⍝ e1
[47] ⍝ e2
[48]  →0
[49] sai:r←(p1 p2)
[50]  →0
------------------------------------------------------------
[0]  r←east
[1]  →(VIV≠1)/fui
[2] ⍝ 'anda a direita'
[3]  VIV←0 ⋄ ANDA←'→'
[4] fui:r←0
------------------------------------------------------------
[0]  r←estat pop
[1]  r←(+/pop[;2])÷1↑⍴pop
------------------------------------------------------------
[ 0]  r←genoma c;pilha;topo;i;qtos
[ 1] ⍝ c←(c≠' ')/c←,⊃c
[ 2]  pilha←100⍴0 ⋄ r←0 3⍴0 ⋄ qtos←0
[ 3]  topo←0
[ 4]  i←1
[ 5] t1:→(i>⍴c)/fim
[ 6]  →(c[i]='(')/empilha
[ 7]  →(c[i]=')')/desempi
[ 8] volta:→(i=i←i+1)/t1
[ 9] empilha:topo←topo+1 ⋄ qtos←qtos+1
[10]  pilha[topo]←i
[11]  →volta
[12] desempi:r←r,[1]1 3⍴⍴pilha[topo],(1+i-pilha[topo]),0
[13]  topo←topo-1
[14]  →volta
[15] fim:i←1
[16] t2:→(i>qtos)/fmes
[17]  →(~c[r[i;1]+1]='I')/⎕LC+1 ⋄ r[i;3]←3
[18]  →(~c[r[i;1]+1]='O')/⎕LC+1 ⋄ r[i;3]←2
[19]  →(~c[r[i;1]+1]='A')/⎕LC+1 ⋄ r[i;3]←2
[20]  →(~c[r[i;1]+1]='N')/⎕LC+1 ⋄ r[i;3]←1
[21]  →(i=i←i+1)/t2
[22] fmes:r[;1]←r[;1]-1
------------------------------------------------------------
[0]  r←geracoma;xx;xy
[1] denovo:xx←'⍝ 'edit(xx≠' ')/xx←,⊃geraind
[2]  xy←+/xx='('
[3]  →((xy>5)∨(xy<4))/denovo
[4]  r←xx
------------------------------------------------------------
[ 0]  r←geraind;tabcom;inds;i1;aa
```

```
[ 1]  aa←'IF' 3 'AND' 2 'OR' 2 'NOT' 1 'north' 0 'south' 0 'east' 0 'west' 0
[ 2]  aa←aa,'n' 0 'ne' 0 'e' 0 'se' 0 's' 0 'sw' 0 'w' 0 'nw' 0 ' 0' 0 ' 1' 0
[ 3]  tabcom←18 2⍴aa
[ 4]  inds←(⍳18),(⍳8),(⍳8) ⍝ tamanho total 18+8+8=34
[ 5]  r←'' ⋄ i1←inds[?⍴inds]
[ 6] vamosla:
[ 7]  →(tabcom[i1;2]≠0)/naoe
[ 8]  r←tabcom[i1;1]
[ 9]  →fim
[10] naoe:→(tabcom[i1;2]=1)/eum
[11]  →(tabcom[i1;2]=2)/edois
[12] etres:r←'(',tabcom[i1;1],'∘',geraind,',',geraind,',',geraind,')'
[13]  →fim
[14] edois:r←'(',tabcom[i1;1],'∘',geraind,',',geraind,')'
[15]  →fim
[16] eum:r←'(',tabcom[i1;1],'∘',geraind,')'
[17] fim:⍝r←'∘ ' edit r←(r≠' ')/r←,⍕r
------------------------------------------------------------
[0]  r←geralabe
[1]  r←8 8⍴1
[2]  r[4 5 6 7 8;4]←0
------------------------------------------------------------
[0]  POP←gerapop cc;ii;aa
[1]  POP←(cc,2)⍴0
[2]  ii←1
[3] come:→(ii>cc)/0
[4]  POP[ii;1]←⊂aa←'∘ 'edit(aa≠' ')/aa←,⍕geraind
[5]  POP[ii;2]←geralabe avalia aa
[6] ⍝ →(0≠10|ii)/soma
[7] ⍝⎕←⎕TC[2]
[8] soma:→(ii=ii←ii+1)/come
------------------------------------------------------------
[ 0]  r←mapaaninhamentos a;i;ct;x
[ 1]  a←,⍕a
[ 2]  r←(⍴a)⍴' ' ⋄ ct←0
[ 3]  i←1 ⋄ x←'0123456789ABCDEFGHIJKLMNOPQRSTUVWXYZabcdefghijklmnopqrstuvwxyz'
[ 4] olha:→(i>⍴a)/fim
[ 5]  →(~a[i]='(')/⎕LC+1 ⋄ ct←ct+1
[ 6]  →(~a[i]=')')/⎕LC+1 ⋄ ct←ct-1
[ 7]  r[i]←x[ct+1]
[ 8]  →(i=i←i+1)/olha
[ 9] fim:
------------------------------------------------------------
[0]  r←north
[1]  →(VIV≠1)/fui
[2] ⍝ 'anda acima'
[3]  VIV←0 ⋄ ANDA←'↑'
[4] fui:r←0
------------------------------------------------------------
[ 0]  np←t novapop vp;ind1;ind2;s1;s2;sa;i
[ 1] ⍝ t[1] e a % de escolhas individuais (100-t[1] e via crossover. t[2]=tamanho torneio
[ 2]  i←1 ⋄ np←(⍴vp)⍴0
[ 3] g1:→(i>t[1]×1↑⍴vp)/aca1
[ 4]  ind1←t[2]?1↑⍴vp
[ 5]  np[i;]←vp[(↑(vp[ind1;2]=⌈/vp[ind1;2])/ind1);]
[ 6]  →(i=i←i+1)/g1
[ 7] aca1:→(i>1↑⍴vp)/fim1
[ 8]  ind1←t[2]?1↑⍴vp
[ 9]  ind2←t[2]?1↑⍴vp
[10]  s1←vp[(↑(vp[ind1;2]=⌈/vp[ind1;2])/ind1);1]
[11]  s2←vp[(↑(vp[ind2;2]=⌈/vp[ind2;2])/ind2);1]
[12]  sa←(,⍕s1)crossover,⍕s2
[13]  np[i;1]←⊂(⍕sa)[1;]
```

```
[14]  np[i+1;1]←⊂(⊃sa)[2;]
[15] ⍝ρsa
[16]  np[i;2]←geralabe avalia,⊃np[i;1]
[17]  np[i+1;2]←geralabe avalia,⊃np[i+1;1]
[18]  →(i=i←i+2)/aca1
[19] fim1:
------------------------------------------------------------
[0]  r←poerobot g;l;c
[1] ⍝ recebe a instancia do laberinto e devolve uma posicao valida do robot
[2] denovo:l←?8 ⋄ c←?8
[3]  →(g[l;c]=0)/denovo
[4]  r←l,c
------------------------------------------------------------
[ 0]  ref;i;j;k;candi;qt;zz;r
[ 1]  zz←ΔFM'f:/infoland/lixo1234'
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80⍴' '
[ 6] te:→(i≥⎕IO+1↑⍴zz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>⍴candi)/eca
[ 9]  j←qt
[10]  →(0=' '∈j↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80⍴80↑j↑candi
[15]  candi←j↓candi
[16]  →((⍴candi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80⍴80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
[22]  y←r
------------------------------------------------------------
[0]  r←south
[1]  →(VIV≠1)/fui
[2] ⍝ 'anda para baixo'
[3]  VIV←0 ⋄ ANDA←'↓'
[4] fui:r←0
------------------------------------------------------------
[ 0]  opesq vivo945a gn;CORRECAO;EVENTO;f;acuja;ylu;relat;dhx;resu;xk;lixo1;upag;esse;resp
      ;a1;a2;lixonol;aaa
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4] ⍝ ---------------- inicializacao ----------------------
[ 5]  FOLHALA945←ajusta80 FOLHALA945
[ 6]  FOLHALA945←((1↑⍴FOLHALA945),79)↑FOLHALA945
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.76543232
[ 8]  CORRECAO←2 ⋄ EVENTO←'PL945   '
[ 9]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10] ⍝ ------------- processamento de alunos ----------------
[11]  →(isnum gn)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑gn),'.alu' ⋄ EVENTO←gn
[12]  →(~isnum gn)/1+⎕LC ⋄ ylu←(gn,36)↑(gn,4)⍴4 0⍎⍕gn
[13] ⍝ modelo de IF: →(~condicao)/1+⎕LC ⋄ fazer se condicao verdadeira
[14]  relat←((2+1↑⍴ylu),(1 0+⍴FOLHALA945))⍴' '
[15]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[16] ⍝ ------------- comeco do processamento ----------------
[17]  xk←1 ⋄ resu←0 3⍴0
```

```
[18] testa:→(xk>1↑⍴ylu)/fim
[19]  f←FOLHALA945
[20]  esse←14 79⍴' '
[21]  esse[1;]←79↑dhx[1;]
[22]  esse[2;]←79↑dhx[2;]
[23]  esse[3;]←79↑4 2⍕VERSAOa←1.04
[24]  esse[4;]←79↑ylu[xk;⍳6]
[25]  esse[5;]←79↑ylu[xk;6+⍳30]
[26] ⍝ →(~isnum gn)/1+⎕LC⋄esse[6;]←79↑EVENTO[⍳4],'{\large{',EVENTO[4+⍳4],'}}'
[27]  →(~1=≡gn)/1+⎕LC ⋄ esse[6;]←79↑EVENTO
[28]  esse[7;]←79↑(3 0⍕resp←xk),' ',opesq
[29]  esse[13;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[30]  esse[14;]←79↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[31] inica:
[32] ⍝ ---------------------- loop -------------------------
[33]  a1←caso1 ⋄ a2←caso2
[34]  esse[8;]←79↑a1[2;] ⋄ esse[9;]←79↑a1[3;] ⋄ esse[10;]←79↑a1[4;]
[35]  esse[11;]←79↑a2[1;] ⋄ esse[12;]←79↑a2[2;]
[36] ⍝ ------------------- monta o resultado -----------------
[37]  resu←resu,[1](1,3)⍴resp,(⍪a1[1;]),⍪a2[3;]
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;]←esse[⍪,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[41]  ⎕←(⍕¯1+xk←xk+1),'-'
[42]  →testa
[43] ⍝ -------------------- fim de tudo ---------------------
[44] fim:upag←(1 0+⍴f)⍴' '
[45]  →(~isnum gn)/elafa1
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0)⍕resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa1:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),5 0⍕0 1↓resu)
[52]  aaa[1;35 36]←2 0⍕CORRECAO
[53]  lixonol←aaa ⍙FM('c:\apl2\',((~⍝∧\⍝EVENTO=' ')/EVENTO),'.gpa')
[54]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'.gpa'
[55]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[56] terminando:
[57]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[58]  relat[1↑⍴relat;;]←upag
[59]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)⍙FM'c:\apl2\',((~⍝∧\⍝EVENTO=' ')/EVENTO),'.t
      ex'
[60]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[61]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'.tex'
-------------------------------------------------------------
[0]  r←west
[1]  →(VIV≠1)/fui
[2] ⍝ 'anda a esquerda'
[3]  VIV←0 ⋄ ANDA←'←'
[4] fui:r←1
-------------------------------------------------------------
```

vivo947

```
[0]  r←analisa x;x1;x2;x11;x21
[1]  x1←22↑x
[2]  x2←22↓x
[3]  x11←¯100+0.00004768372718899899×(22⍴2)⊥x1
[4]  x21←¯100+0.00004768372718899899×(22⍴2)⊥x2
[5]  r←x11,x21
-------------------------------------------------------------
```

```
[ 0]  cabfast v;aa;y
[ 1]  y←6 136ρ' '
[ 2]  aa←'Universidade Federal de Santa Catarina   /   '
[ 3]  aa←aa,'Curso de Pos Graduacao em Eng. Eletrica  /  '
[ 4]  aa←aa,'Disciplina de Algoritmos Geneticos  '
[ 5]  y[1;]←136↑aa
[ 6]  y[1;126+ι10]←(2 0⍕□TS[3]),'/',(2 0⍕□TS[2]),'/',4 0⍕□TS[1]
[ 7]  aa←'TUDEL v.1.0   -   TUring + menDEL = ambiente de desenvolvimento '
[ 8]  aa←aa,'de algoritmos geneticos      -       Autor P. Kantek'
[ 9]  y[2;]←136↑aa
[10]  y[2;128+ι8]←(2 0⍕□TS[4]),':',(2 0⍕□TS[5]),':',2 0⍕□TS[6]
[11]  aa←'Listagem resumida (apenas os parametros e os resultados finais)'
[12]  y[3;]←136↑aa
[13]  y[3;128+ι8]←'Pag. ',3 0⍕ΔPAGINA
[14]  aa←'Semente = ',(15 0⍕v[15]),'   Individuos = ',(3 0⍕v[1])
[15]  aa←aa,'   Num. bits = ',(3 0⍕v[2]),'   Num. geracs = ',(3 0⍕v[3])
[16]  aa←aa,'   Tipo sel = ',(1 0⍕v[4]),'    Tipo norm = ',(1 0⍕v[5])
[17]  aa←aa,'   V1 = ',(7 3⍕v[6]),'   V2 = ',(7 3⍕v[7])
[18]  y[5;]←136↑aa
[19]  aa←'   Elitismo = ',(2 0⍕v[8])
[20]  aa←aa,'  Tx mutacao = ',(7 4⍕v[9]),'   Tx Cross = ',(7 4⍕v[10])
[21]  aa←aa,'   Tipo cross = ',(1 0⍕v[11]),'   Pontos = ',(3 0⍕v[12])
[22]  aa←aa,'   Modo de inicializacao = ',(1 0⍕v[13])
[23]  y[6;]←136↑aa
[24] ⍝ ΔNOMERO gravapag y
[25]  RELA←y
------------------------------------------------------------
[0]  r←cara prob;t
[1]  t←100↑((⌊prob×100)ρ1),100ρ0
[2]  r←t[?100]
------------------------------------------------------------
[0]  r←dec decrenor x
[1]  r←dec[2]+dec[1]-(dec[2]×ιρx)
[2]  r[(r<0)/ιρr]←0
------------------------------------------------------------
[0]  r←dp xxx;yyy
[1]  yyy←(+/xxx)÷ρxxx
[2]  r←((+/(xxx-yyy)*2)÷ρxxx)*0.5
------------------------------------------------------------
[ 0]  geracao0;i;x;xu;xa;r;zz
[ 1]  ΔVALATU←(ΔNUMIND,3)ρ0
[ 2]  i←1
[ 3] testa7:→(i>ΔNUMIND)/finzao9
[ 4]  ΔVALATU[i;1]←1↑ΔFUNOBJ ΔNUMBIT↑,ΔBITATU[i;]
[ 5]  →(i=i←i+1)/testa7
[ 6] finzao9:
[ 7]  ΔVALATU←ΔVALATU[zz←⍒ΔVALATU[;1];]
[ 8]  ΔBITATU←ΔBITATU[zz;]
[ 9]  →(ΔTIPNOR=2)/janelamento
[10]  →(ΔTIPNOR=3)/decremento
[11] nenhum:
[12]  ΔVALATU[;2]←ΔVALATU[;1]
[13]  →conta33
[14] janelamento:ΔVALATU[;2]←(ΔJANMIN,ΔDECMIN)janelanor ΔVALATU[;1]
[15]  →conta33
[16] decremento:ΔVALATU[;2]←(ΔJANMIN,ΔDECMIN)decrenor ΔVALATU[;1]
[17] conta33:
[18]  objmedia←(+/ΔVALATU[;1])÷1↑ρΔVALATU
[19]  objmelhor←ΔVALATU[1;1]
[20]  objpior←ΔVALATU[1↑ρΔVALATU;1]
------------------------------------------------------------
[ 0]  geracao1;x;xa;xu;so;qtdfil;sint;pint;pfr;sfra;pfra;bolinha;pai;zzz;xx;j;i
[ 1]  ΔPOOLPA←(0,ΔNUMBIT+1)ρ0
```

```
[ 2]  so←ΔVALATU[;2]÷(+/ΔVALATU[;2])   ⍝ so e' a probabilidade de select
[ 3]  qtdfil←0 ⋄ sint←+/⌊so×ΔNUMIND ⋄ pint←⌊so×ΔNUMIND
[ 4]  pfr←(so×ΔNUMIND)-pint ⋄ sfra←+/pfr
[ 5]  pfra←pfr[⍒pfr],[1.5](⍳⍴pfr)[⍒pfr]
[ 6]  →(ΔTIPSEL=2)/edois
[ 7]  →(ΔTIPSEL=3)/etres
[ 8]  →(ΔTIPSEL=4)/equatro
[ 9] eum:→(qtdfil≥ΔNUMIND)/finzao
[10]  bolinha←(?10000)÷10000
[11]  pai←bolinha rr so
[12]  ΔPOOLPA←ΔPOOLPA,[1](ΔNUMBIT↑,ΔBITATU[pai;]),pai
[13]  ΔVALATU[pai;3]←ΔVALATU[pai;3]+1
[14]  →(qtdfil=qtdfil←qtdfil+1)/eum
[15] edois:
[16]  →(qtdfil≥ΔNUMIND)/finzao
[17]  →(qtdfil≥sint)/acabouint
[18]  bolinha←?sint
[19]  pai←bolinha rr pint
[20]  ΔPOOLPA←ΔPOOLPA,[1](ΔNUMBIT↑,ΔBITATU[pai;]),pai
[21]  ΔVALATU[pai;3]←ΔVALATU[pai;3]+1
[22]  →(qtdfil=qtdfil←qtdfil+1)/edois
[23] acabouint:i←1
[24] testa25:→((qtdfil+i)>ΔNUMIND)/finzao
[25]  zzz←pfra[i;2]
[26]  ΔPOOLPA←ΔPOOLPA,[1](ΔNUMBIT↑,ΔBITATU[zzz;]),zzz
[27]  ΔVALATU[zzz;3]←ΔVALATU[zzz;3]+1
[28]  →(i=i←i+1)/testa25
[29] etres:
[30]  →(qtdfil≥ΔNUMIND)/finzao
[31]  →(qtdfil≥sint)/acabouint33
[32]  bolinha←?sint
[33]  pai←bolinha rr pint
[34]  ΔPOOLPA←ΔPOOLPA,[1](ΔNUMBIT↑,ΔBITATU[pai;]),pai
[35]  ΔVALATU[pai;3]←ΔVALATU[pai;3]+1
[36]  →(qtdfil=qtdfil←qtdfil+1)/etres
[37] acabouint33:i←1
[38] testa33:→((qtdfil+i)>ΔNUMIND)/finzao
[39]  bolinha←((?10000)×sfra)÷10000
[40]  pai←bolinha rr pfra[;1]
[41]  ΔPOOLPA←ΔPOOLPA,[1](ΔNUMBIT↑,ΔBITATU[pai;]),pai
[42]  ΔVALATU[pai;3]←ΔVALATU[pai;3]+1
[43]  →(i=i←i+1)/testa33
[44] equatro:
[45]  →(qtdfil≥ΔNUMIND)/finzao
[46]  →(qtdfil≥sint)/acabouint44
[47]  bolinha←?sint
[48]  pai←bolinha rr pint
[49]  ΔPOOLPA←ΔPOOLPA,[1](ΔNUMBIT↑,ΔBITATU[pai;]),pai
[50]  ΔVALATU[pai;3]←ΔVALATU[pai;3]+1
[51]  →(qtdfil=qtdfil←qtdfil+1)/equatro
[52] acabouint44:i←1 ⋄ j←1
[53] testa44:→((qtdfil+j)≥ΔNUMIND)/finzao
[54]  →(i≤1↑⍴pfra)/okok
[55]  →(1=i←1)/testa44
[56] okok:xx←cara pfra[i;1]
[57]  →(xx=0)/vai   ⍝ deu coroa, logo salta
[58]  j←j+1
[59]  ΔPOOLPA←ΔPOOLPA,[1](ΔNUMBIT↑,ΔBITATU[pfra[i;2];]),pfra[i;2]
[60]  ΔVALATU[pfra[i;2];3]←ΔVALATU[pfra[i;2];3]+1
[61] vai:→(i=i←i+1)/testa44
[62] finzao:
-------------------------------------------------------------
[ 0]  geracao2;x;xu;xap;xaa;xua;quantos;kk
```

```
[ 1]  ΔBITPRO←(ΔNUMIND,ΔNUMBIT+2)⍴0
[ 2]  quantos←0   ⍝ contador de quantos filhos ja foram gerados
[ 3]  →(ΔELITIS=0)/naotemel
[ 4]  ΔELITIS←ΔELITIS+2|ΔELITIS   ⍝ ELITIS tem que ser par.
[ 5]  ΔBITPRO[⍳ΔELITIS;]←ΔBITATU[⍳ΔELITIS;⍳ΔNUMBIT],[2]((ΔELITIS,2)⍴0)
[ 6]  quantos←ΔELITIS
[ 7] naotemel:
[ 8]  →(quantos≥ΔNUMIND)/terminou
[ 9]  ΔBITPRO[quantos+⍳2;]←gerafilho
[10]  →(quantos=quantos←quantos+2)/naotemel
[11] terminou:
[12]  ΔGERATU←ΔGERATU+1
-------------------------------------------------------------
[ 0]  r←gerafilho;pai1;pai2;filho1;filho2;i;j;qtosmuta;qtoscros;onde;manda
[ 1]  pai1←?1↑⍴ΔPOOLPA ⋄ pai2←?1↑⍴ΔPOOLPA
[ 2]  filho1←filho2←(1+1↓⍴ΔPOOLPA)⍴0 ⋄ qtosmuta←0
[ 3] ⍝ havera crossover ?
[ 4]  →(~cara ΔTAXCRO)/naohavera
[ 5]  →(ΔTIPCRO=2)/crossunif
[ 6] crosscomum:onde←ΔPONCRO?ΔNUMBIT
[ 7]  onde←onde[⍋onde] ⋄ i←0
[ 8] testa:→(i≥ΔNUMBIT)/fim87
[ 9]  →(i=1↑onde)/swap
[10]  filho1[i+1]←ΔPOOLPA[pai1;i+1]
[11]  filho2[i+1]←ΔPOOLPA[pai2;i+1]
[12]  →(i=i←i+1)/testa
[13] swap:onde←1↓onde
[14] testa2:→(i≥ΔNUMBIT)/fim87
[15]  →(i≠1↑onde)/vaimesmo
[16]  onde←1↓onde
[17]  →testa
[18] vaimesmo:filho1[i+1]←ΔPOOLPA[pai2;i+1]
[19]  filho2[i+1]←ΔPOOLPA[pai1;i+1]
[20]  →(i=i←i+1)/testa2
[21] fim87:
[22]  qtoscros←ΔPONCRO
[23]  →arr
[24] crossunif:
[25]  manda←¯1+?ΔNUMBIT⍴2
[26]  filho1[manda/⍳ΔNUMBIT]←ΔPOOLPA[pai1;manda/⍳ΔNUMBIT]
[27]  filho1[(~manda)/⍳ΔNUMBIT]←ΔPOOLPA[pai2;(~manda)/⍳ΔNUMBIT]
[28]  filho2[manda/⍳ΔNUMBIT]←ΔPOOLPA[pai2;manda/⍳ΔNUMBIT]
[29]  filho2[(~manda)/⍳ΔNUMBIT]←ΔPOOLPA[pai1;(~manda)/⍳ΔNUMBIT]
[30]  qtoscros←ΔNUMBIT
[31]  →arr
[32] naohavera:qtoscros←0
[33]  filho1[⍳ΔNUMBIT]←ΔNUMBIT↑,ΔPOOLPA[pai1;]
[34]  filho2[⍳ΔNUMBIT]←ΔNUMBIT↑,ΔPOOLPA[pai2;]
[35] arr:filho1[ΔNUMBIT+⍳2]←filho2[ΔNUMBIT+⍳2]←ΔPOOLPA[pai1,pai2;1↓⍴ΔPOOLPA]
[36]  j←1
[37] testa90:→(j>ΔNUMBIT)/mesmo90
[38]  →(cara ΔTAXMUT)/troca
[39]  →(j=j←j+1)/testa90
[40] troca:filho1[j]←¯1+?2
[41]  qtosmuta←qtosmuta+1
[42]  →(j=j←j+1)/testa90
[43] mesmo90:
[44]  j←1
[45] testa91:→(j>ΔNUMBIT)/mesmo91
[46]  →(cara ΔTAXMUT)/troca
[47]  →(j=j←j+1)/testa91
[48] troca:filho2[j]←¯1+?2
[49]  qtosmuta←qtosmuta+1
```

```
[50]  →(j=j←j+1)/testa91
[51] mesmo91:
[52]  r←filho1,[0.5]filho2
[53]  ΔQTOCRO←ΔQTOCRO+qtoscros
[54]  ΔQTOMUT←ΔQTOMUT+qtosmuta
-------------------------------------------------------------
[0]  r←jan janelanor x;y;z
[1]  y←⌊/x
[2]  z←x-y
[3]  z[(z<jan[2])/⍳⍴x]←jan[2]
[4]  r←z
-------------------------------------------------------------
[0]  limpavars;r
[1]  r←⎕EX'Δ'⎕NL 2
[2]  r←⎕EX'Δ'⎕NL 3
[3]  r←⎕EX'RESU'
-------------------------------------------------------------
[ 0]  modelo
[ 1]  ⎕PW←137
[ 2]  'TUDEL 2.03 - Pacote de GA - (c) 1996, P.Kantek - UFSC/CPGEEL/LCMI'
[ 3]  'Para usar este programa, chame a funcao "tudel" com os seguintes parâmetros'
[ 4]  ' A tudel B C D E F G H I J K L M N O P Q, onde:'
[ 5]  ''
[ 6]  '  A = variável que contém a representaçao da funcao objetivo'
[ 7]  '  B = quantidade de individuos'
[ 8]  '  C = número de bits que compoe 1 indivíduo'
[ 9]  '  D = número de geraçoes a serem processadas'
[10]  '  E = tipo de seleçao, com as alternativas: 1=roda roleta convencional,'
[11]  '        2=amost. determ. 3=amostr. remanesc. estoc. c/s    4= idem, s/s'
[12]  '  F = tipo de normalizaçao: 1=fitness igual fo, 2=janelamento 3=norm. linear'
[13]  '  G = valor inicial da normalizaçao linear (usado apenas se F=3, senao 0)'
[14]  '  H = Se F=1, vale 0. Se F=2, minimo do janelamento. Se F=3 decremento'
[15]  '  I = número de individuos que sofrem elitismo 0..n (deve ser par)'
[16]  '  J = Taxa de mutaçao (varia entre 0.000 e 1.000)'
[17]  '  K = Taxa de crossover (varia entre 0.000 e 1.000)'
[18]  '  L = tipo de crossover. Pode ser 1=n cortes ou 2=uniforme'
[19]  '  M = número de pontos (usado apenas se L = 1)'
[20]  '  N = modo de inicializaçao. Se 0=aleatório, se 1=busca em ΔCOMECO'
[21]  '  O = número de indivíduos (os melhores) a mostrar na listagem'
[22]  '  P = semente aleatória (entre 1 e 100000000)'
[23]  '  Q = numero da rodada'
[24]  'fun   tudel ind bit ger sel nor v1 v2 eli txm  txc tipc ptcr inic mostra s.al.  nrd
      '
[25]  'fun00 tudel 100 44  40  1   1   0  0  2   0.01 0.9 1    3    0    4      999999 123
      '
-------------------------------------------------------------
[ 0]  relfast;y;aa;bb;cc;numind;numbit;valatu;bitpro;bitatu;xxx;kk
[ 1]  y←((4+ΔNUMCRO),136)⍴' '
[ 2]  y[1;]←1 136⍴'-'
[ 3]  y[1;5+⍳⍴xxx]←xxx←' Geracao numero ',(⍕ΔGERATU-1),' '
[ 4]  aa←'Med fo = ',(10 5⍕(+/bb←,ΔVALATU[;1])÷1↑⍴ΔVALATU),' | '
[ 5]  aa←aa,'Max fo = ',(10 5⍕⌈/ΔVALATU[;1]),' | '
[ 6]  aa←aa,'Med ap = ',(10 5⍕(+/cc←,ΔVALATU[;2])÷1↑⍴ΔVALATU),' | '
[ 7]  aa←aa,'Max ap = ',(10 5⍕⌈/ΔVALATU[;2]),' | '
[ 8]  aa←aa,'DP  fo = ',(10 5⍕dp bb),' | '
[ 9]  aa←aa,'DP  ap = ',(10 5⍕dp cc)
[10]  y[2;]←136↑aa
[11]  aa←'Quantidade de Crossovers = ',(5 0⍕ΔQTOCRO),' |        '
[12]  aa←aa,'Quantidade de Mutacoes   = ',(5 0⍕ΔQTOMUT)
[13]  y[3;]←136↑aa
[14]  numbit←ΔNUMBIT+2
[15]  →(ΔNUMBIT<48)/ok2
[16]  numbit←48
```

```
[17] ok2:
[18]  bitatu←(ΔNUMCRO,numbit)↑ΔBITATU
[19]  valatu←(ΔNUMCRO,3)↑ΔVALATU
[20]  bitpro←(ΔNUMCRO,numbit)↑ΔBITPRO
[21]  y[4;⍳4]←'Num-'
[22]  y[4;4+⍳kk←6+numbit]←(numbit↑'Melhores cromossomos ',50⍴'-'),'P1 P2 '
[23]  y[4;kk+6+⍳21]←'----F.Obj','----Aptid',' Qt'
[24]  y[4;kk+30+⍳6+numbit]←(numbit↑'Melhores prox. geracao ',50⍴'-'),'P1 P2 '
[25]  y[4+⍳ΔNUMCRO;⍳4]←(((ΔNUMCRO,2)⍴2 0⍕⍳ΔNUMCRO),[2]')'),[2]' '
[26]  y[4+⍳ΔNUMCRO;4+⍳4+numbit]←(((2×¯2+numbit)⍴1 0),3 0 3 0)⍕bitatu
[27]  y[4+⍳ΔNUMCRO;(12+numbit)+⍳21]←9 5 9 5 3 0⍕valatu
[28]  y[4+⍳ΔNUMCRO;(36+numbit)+⍳4+numbit]←(((2×¯2+numbit)⍴1 0),3 0 3 0)⍕bitpro
[29] ⍝ ΔNOMERO gravapag y
[30]  RELA←RELA,[1]y
-------------------------------------------------------------
[0]  r←y rr x
[1]  r←1↑(y≤+⍀x)/⍳⍴x
-------------------------------------------------------------
[ 0]  teste22
[ 1]  'fun  toudel ind bit ger sel nor v1 v2 eli txm  txc tipc ptcr 0 0 4 numr'
[ 2]  'fun00'tudel 100 44 40 2 3 100 1 2 0.05 0.9 1 3 0 0 4 195
[ 3]  'fun00'tudel 100 44 40 3 3 100 1 2 0.05 0.8 1 1 0 0 4 16
[ 4]  'fun00'tudel 100 44 40 3 3 100 1 2 0.1 0.8 1 1 0 0 4 17
[ 5]  'fun00'tudel 100 44 40 3 3 100 1 2 0.15 0.8 1 1 0 0 4 18
[ 6]  'fun00'tudel 100 44 40 3 3 100 1 2 0.2 0.8 1 1 0 0 4 20
[ 7]  'fun00'tudel 100 44 40 3 3 100 1 2 0.25 0.8 1 1 0 0 4 21
[ 8]  'fun00'tudel 100 44 40 3 3 100 1 2 0.05 0.9 1 1 0 0 4 22
[ 9]  'fun00'tudel 100 44 40 3 3 100 1 2 0.1 0.9 1 1 0 0 4 23
[10]  'fun00'tudel 100 44 40 3 3 100 1 2 0.15 0.9 1 1 0 0 4 24
[11]  'fun00'tudel 100 44 40 3 3 100 1 2 0.2 0.9 1 1 0 0 4 26
[12]  'fun00'tudel 100 44 40 3 3 100 1 2 0.25 0.9 1 1 0 0 4 27
[13]  'fun00'tudel 100 44 40 3 3 100 1 2 0.05 1 1 1 0 0 4 28
[14]  'fun00'tudel 100 44 40 3 3 100 1 2 0.1 1 1 1 0 0 4 29
[15]  'fun00'tudel 100 44 40 3 3 100 1 2 0.15 1 1 1 0 0 4 30
[16]  'fun00'tudel 100 44 40 3 3 100 1 2 0.2 1 1 1 0 0 4 32
[17]  'fun00'tudel 100 44 40 3 3 100 1 2 0.25 1 1 1 0 0 4 33
[18]  'fun00'tudel 70 44 40 3 3 100 1 2 0.1 0.9 1 1 0 0 4 40
[19]  'fun00'tudel 80 44 40 3 3 100 1 2 0.1 0.9 1 1 0 0 4 41
[20]  'fun00'tudel 90 44 40 3 3 100 1 2 0.1 0.9 1 1 0 0 4 42
[21]  'fun00'tudel 110 44 40 3 3 100 1 2 0.1 0.9 1 1 0 0 4 43
[22]  'fun00'tudel 120 44 40 3 3 100 1 2 0.1 0.9 1 1 0 0 4 44
[23]  'fun00'tudel 80 44 35 3 3 100 1 2 0.1 0.9 1 1 0 0 4 45
[24]  'fun00'tudel 80 44 45 3 3 100 1 2 0.1 0.9 1 1 0 0 4 46
[25]  'fun00'tudel 100 44 40 3 3 100 1 2 0.1 0.9 1 1 0 0 4 50
[26]  'fun00'tudel 100 44 40 3 3 100 1 2 0.1 0.9 1 1 0 0 4 51
[27]  'fun00'tudel 100 44 40 3 3 100 1 2 0.1 0.9 1 1 0 0 4 52
[28]  'fun00'tudel 100 44 40 3 3 100 1 2 0.1 0.9 1 1 0 0 4 53
[29]  'fun00'tudel 100 44 40 3 3 100 1 2 0.1 0.9 1 1 0 0 4 54
[30]  'fun00'tudel 100 44 40 3 3 100 1 2 0.1 0.9 1 1 0 0 4 55
[31]  'fun00'tudel 100 44 40 3 3 100 1 2 0.1 0.9 1 1 0 0 4 56
[32]  'fun00'tudel 100 44 40 3 3 100 1 2 0.1 0.9 1 1 0 0 4 57
[33]  'fun00'tudel 100 44 40 3 3 100 1 2 0.1 0.9 1 1 0 0 4 58
[34]  'fun00'tudel 100 44 40 3 3 100 1 2 0.1 0.9 1 1 0 0 4 60
-------------------------------------------------------------
[0]  testes
[1]  'fun  tudel ind bit ger sel nor v1 v2 eli txm  txc tipc ptcr 0 0 4 numr'
[2]  'fun00'tudel 10 44 10 2 3 100 1 2 0.15 0.7 1 3 0 0 2 161
[3]  'fun00'tudel 10 44 10 3 3 100 1 2 0.15 0.7 1 3 0 0 2 162
[4]  'fun00'tudel 10 44 10 4 3 100 1 2 0.15 0.7 1 3 0 0 2 163
-------------------------------------------------------------
[ 0]  fun tudel v;x;z;comeco;demora;fimtem;xx;lin;aca
[ 1] ⍝ v[1]: individuos; v[2]: numero bits/individuo; v[3]: numero geracoes
[ 2] ⍝ v[4]: tipo de selecao; v[5]: tipo de normalizacao;
```

```
[ 3] ⍝ v[6]: //val inicial; v[7]: /janela/decremento; v[8]:elitismo
[ 4] ⍝ v[9]: tax mutacao; v[10]: tax cross; v[11]: tipo cross;
[ 5] ⍝ v[12]: ptos cross; v[13]: modo inicializacao;
[ 6] ⍝ v[14]: numero de cromossomos na listagem v[15]sem. aleatoria
[ 7] ⍝ fun: nome da funcao objetivo
[ 8]  ΔNUMIND←v[1] ⋄ ΔNUMBIT←v[2] ⋄ ΔNUMGER←v[3] ⋄ ΔTIPSEL←v[4]
[ 9]  ΔTIPNOR←v[5] ⋄ ΔJANMIN←v[6] ⋄ ΔDECMIN←v[7] ⋄ ΔELITIS←v[8]
[10]  ΔTAXMUT←v[9] ⋄ ΔTAXCRO←v[10] ⋄ ΔTIPCRO←v[11] ⋄ ΔPONCRO←v[12]
[11]  ΔINICIA←v[13] ⋄ ΔNUMCRO←v[14] ⋄ ΔSEMALE←v[15]
[12]  →(0≠⎕NC'RESU')/ujo
[13]  RESU←0 20⍴0
[14] ujo:
[15]  z←⎕EX'ΔFUNOBJ'
[16]  xx←ΔNOMEFU←fun
[17]  z←⎕FX xx
[18]  ΔPAGINA←1 ⋄ ΔGERATU←0
[19]  cabfast v
[20] continua:
[21]  ⎕RL←ΔSEMALE ⍝ zoneia com a semente aleatoria
[22]  →(0=ΔINICIA)/aleato
[23]  ΔBITATU←ΔCOMECO,[2](ΔNUMIND,2)⍴0
[24]  →conta50
[25] aleato:ΔBITATU←(¯1+?(ΔNUMIND,ΔNUMBIT)⍴2),[2](ΔNUMIND,2)⍴0
[26] conta50:
[27] vamosver:comeco←24 60 60 1000⊥⎕TS[4 5 6 7]
[28]  →(ΔGERATU≥ΔNUMGER)/acabou
[29]  ΔQTOCRO←ΔQTOMUT←0
[30]  geracao0
[31]  geracao1
[32]  geracao2
[33]  ΔPAGINA←ΔPAGINA+1
[34] fast22:relfast
[35]  ΔBITATU←ΔBITPRO
[36]  fimtem←24 60 60 1000⊥⎕TS[4 5 6 7]
[37]  demora←24 60 60 1000⊤fimtem-comeco
[38]  lin←'G=',(3 0⍕ΔGERATU),'/',(3 0⍕ΔNUMGER),' Med O=',(10 5⍕objmedia),' Max O=',(10 5⍕o
      bjmelhor)
[39]  lin←lin,' fenotipo=',(0 4⍕aca←1↓ΔFUNOBJ ΔNUMBIT↑,ΔBITATU[1;])
[40] ⍝,' T=',(⍕demora)
[41]  lin
[42]  →vamosver
[43] acabou:
[44]  RESU←RESU,[1](1,(18+⍴aca))⍴v,objmedia,objmelhor,aca
[45]  'fim...   Geracao em ordem descendente em ΔBITATU'
[46]  z←⎕EX'objmedia'
[47]  z←⎕EX'objmelhor'
[48]  z←⎕EX'objpior'
[49] ⍝ ⎕NUNTIE ¯2
------------------------------------------------------------
[ 0]  opesq vivo947a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;lixo1;xx;aaa
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL947   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA947←ajusta80 FOLHALA947
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA947)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLOA'
```

```
[12]  xk←1 ⋄ resu←0 6⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←7 80⍴' '
[15]  f←FOLHALA947
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←1.04
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23] inica:
[24]  acuja←(f[;2]='#')/⍳1↑⍴f
[25]  f[acuja;]←esse[⍬,f[acuja;3 4 5],' ';]
[26]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[27]  ⎕←(⍕xk←xk+1),'-'
[28]  →testa
[29] fim:upag←(1 0+⍴f)⍴' '
[30]  →(1=≡n)/elafa
[31] ⍝ upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[32] ⍝ upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[33] ⍝ upag[2+⍳1↑⍴resu;⍳+/lixo1]⍀← (lixo1←4 0 10 0 4 0)⍕resu
[34] ⍝ upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[35]  →terminando
[36] elafa:
[37]  →terminando
[38]  aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 3↓resu)
[39]  aaa[1;35 36]←2 0⍕CORRECAO
[40]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[41]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[42] terminando:
[43]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[44]  relat[1↑⍴relat;;]←upag
[45]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[46] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[47]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[48]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex)'
------------------------------------------------------------
[0]  r←⎕FUNOBJ x;x1;x2;x11;x21;x3
[1]  x1←22↑x
[2]  x2←22↓x
[3]  x11←¯100+0.0000476837271889899×(22⍴2)⊥x1
[4]  x21←¯100+0.0000476837271889899×(22⍴2)⊥x2
[5]  x3←(x11*2)+x21*2
[6]  r←(0.5-(((1○x3*0.5)*2)-0.5)÷(1+0.001×x3)*2),x11,x21
------------------------------------------------------------
```

vivo950

```
[ 0]  opesq vivo950a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;caso;oba2
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PL950   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA950←ajusta80 FOLHALA950
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA950)⍴' '
```

```
[11]  relat[1;;]←(1↓⍴relat)↑⍬FM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 0⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←7 80⍴' '
[15]  f←FOLHALA950
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.02
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23] inica:
[24]  acuja←(f[;2]='#')/⍳1↑⍴f
[25]  f[acuja;⍳80]←esse[⌽,f[acuja;3 4],' ';]
[26]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[27]  ⎕←(⍕xk←xk+1),'-'
[28]  →testa
[29] fim:
[30] terminando:
[31] ⍝ relat[1↑⍴relat;1↑1↓⍴relat;]←80↑'\end{document}'
[32]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[33]  lixonol←lixonol,[1]ajusta80 preparacao
[34]  lixonol←lixonol,[1]1 80⍴80↑'\end{document}'
[35] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[36]  lixonol←lixonol ⍬FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[37]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[38]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo952

```
[0]  COMO
[1]  'Para aplicar a transformada de Hough:'
[2]  'crie uma imagem quadrada contendo zeros e coloque 1 onde houver pontos'
[3]  'Rode delta-angulo aplhough imagem'
[4]  'onde delta-angulo pode muito bem ser 5: de 5 em 5 graus...'
[5]  'Depois peca 1-ou-0 mostraac AC (AC e global criada pela aplhough)'
[6]  '1 mostra a matriz numerica com cabecalhos auto-explicativos'
[7]  '0 mostra a matriz alfanumerica boa para ver as senoides. A quantidade e '
[8]  '     convertida a letra (A=10, B=11, e assim por diante)'
------------------------------------------------------------
[ 0]  achamaior x;ma;i;j
[ 1]  ma←⌈/,x
[ 2]  i←1
[ 3] t1:→(i>1↑⍴x)/f1
[ 4]  j←1
[ 5] t2:→(j>1↓⍴x)/f2
[ 6]  →(x[i;j]<ma)/soma
[ 7]  i,j
[ 8] soma:
[ 9]  j←j+1
[10]  →t2
[11] f2:
[12]  i←i+1
[13]  →t1
[14] f1:
------------------------------------------------------------
[ 0]  r←d aplhough x;i;j;teta;rr;ra;quo;col;cabv;cabh;lim;⎕IO
[ 1]  ⎕IO←1
[ 2]  ra←⌈(2×1↑⍴x)*0.5
[ 3]  AC←((1+2×ra),(1+⌊180÷d))⍴0
```

```
[ 4]  cabv←cabh←⍳0
[ 5] t1:i←1
[ 6] t2:→(i>1↑⍴x)/f1
[ 7]  j←1
[ 8] t3:→(j>1↓⍴x)/f2
[ 9]  →(x[i;j]≠0)/achei
[10] tx:
[11]  j←j+1
[12]  →t3
[13] f2:i←i+1
[14]  →t2
[15] achei:
[16]  teta←-90
[17] t4:→(teta>90)/f3
[18]  rr←(j×2○(○teta)÷180)+i×1○(○teta)÷180
[19]  rr←(×rr)×⌊(|rr×2)*0.5
[20]  col←1+(1↓⍴AC)-⌈(91-teta)÷d
[21]  AC[ra+rr;col]←AC[ra+rr;col]+1 ⍝ era 1+ra+rr
[22] f4:teta←teta+d
[23]  →t4
[24] f3:
[25]  →tx
[26] f1:
[27]  teta←-90
[28] k1:→(teta>90)/f7
[29]  cabh←cabh,teta
[30]  teta←teta+d
[31]  →k1
[32] f7:
[33]  lim←-ra
[34] k2:→(lim>ra)/f8
[35]  cabv←cabv,(×lim)×⌊(lim*2)÷2
[36]  lim←lim+1
[37]  →k2
[38] f8:
[39]  AC←0,[1]0,AC
[40]  AC[1;]←0,cabh
[41]  AC[;1]←0,cabv
[42]  r←AC
-------------------------------------------------------------
[ 0]  r←d aplhough2 x;i;j;teta;rr;ra;quo;col;cabv;cabh;lim;⎕IO
[ 1]  ⎕IO←0
[ 2]  ra←⌈(2×1↑⍴x)*0.5
[ 3]  AC←((2+2×ra),(2+⌊180÷d))⍴0
[ 4]  cabv←cabh←⍳0
[ 5] t1:i←0
[ 6] t2:→(i≥1↑⍴x)/f1
[ 7]  j←0
[ 8] t3:→(j≥1↓⍴x)/f2
[ 9]  →(x[i;j]≠0)/achei
[10] tx:
[11]  j←j+1
[12]  →t3
[13] f2:i←i+1
[14]  →t2
[15] achei:
[16]  teta←-90
[17] t4:→(teta>90)/f3
[18]  rr←((j+1)×2○(○teta)÷180)+(i+1)×1○(○teta)÷180
[19]  rr←(×rr)×⌊(|rr×2)*0.5
[20]  col←(1↓⍴AC)-⌈(91-teta)÷d
[21]  AC[ra+rr;col]←AC[ra+rr;col]+1
[22] f4:teta←teta+d
```

```
[23]  →t4
[24] f3:
[25]  →tx
[26] f1:
[27]  teta←-90
[28] k1:→(teta>90)/f7
[29]  cabh←cabh,teta
[30]  teta←teta+d
[31]  →k1
[32] f7:
[33]  lim←-ra
[34] k2:→(lim>ra)/f8
[35]  cabv←cabv,(×lim)×⌊(lim*2)÷2
[36]  lim←lim+1
[37]  →k2
[38] f8:
[39]  AC[0;]←0,cabh
[40]  AC[;0]←0,cabv
[41]  r←AC
-------------------------------------------------------------
[0]  r←arred x
[1]  →((x-⌊x)≥0.5)/sobe
[2]  r←⌊x
[3]  →0
[4] sobe:r←⌈x
-------------------------------------------------------------
[0]  r←arruma952 mat
[1]  r←(⍕mat[1;1 2]),'&',(⍕mat[2;1 2]),'&',(⍕mat[3;1 2]),'&',(⍕mat[4;1 2]),'⍀⍀'
-------------------------------------------------------------
[ 0]  r←gera952;ima;inds;i;resu;lin;col;lixo
[ 1]  ima←10 10⍴0
[ 2]  inds←⍉2 4⍴(4?10),(4?10)
[ 3]  i←1
[ 4] t1:→(i>4)/oba
[ 5]  ima[inds[i;1];inds[i;2]]←1
[ 6]  i←i+1
[ 7]  →t1
[ 8] oba:lixo←5 aplhough2 ima
[ 9]  i←1
[10]  resu←4 3⍴0
[11] t2:→(i>4)/oba2
[12]  lin←1+?11
[13]  col←1+?37
[14]  →(lixo[lin;col]=0)/t2
[15]  resu[i;1]←lin-1
[16]  resu[i;2]←col-1
[17]  resu[i;3]←lixo[lin;col]
[18]  i←i+1
[19]  →t2
[20] oba2:
[21]  r←3⍴0
[22]  r[1]←⊂ima
[23]  r[2]←⊂lixo
[24]  r[3]←⊂resu
-------------------------------------------------------------
[ 0]  r←tipo mostraac x;i;j;indice;ind
[ 1]  →(tipo=1)/tipo1
[ 2]  x←0 1↓1 0↓x
[ 3]  i←1
[ 4]  R←r←(⍴x)⍴' '
[ 5]  ind←'123456789ABCDEFGHIJKLMNOPQRSTUVWXYZ*'
[ 6] t1:→(i>1↑⍴x)/f1
[ 7]  j←1
```

```
[ 8] t2:→(j>1↓⍴x)/f2
[ 9]  →(x[i;j]=0)/soma
[10]  indice←x[i;j]⌊37
[11]  R[i;j]←r[i;j]←ind[indice]
[12] soma:
[13]  j←j+1
[14]  →t2
[15] f2:i←i+1
[16]  →t1
[17] f1:
[18]  →0
[19] tipo1:
[20]  r←'¯-'edit 4 0⍕x
-------------------------------------------------------------
[ 0]  opesq vivo952a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL952   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA952←ajusta80 FOLHALA952
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA952)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 5⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←20 80⍴' '
[16]  f←FOLHALA952
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[19;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[20;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera952
[35]  esse[7+⍳10;]←10 80↑⍎⊃xx[1]
[36]  esse[18;]←80↑arruma952(⊃xx[3])
[37]  resp←resp,,(⊃xx[3])[;3]
[38]  resu←resu,[1]1 5⍴resp
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[42]  ⍞←(⍕xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
```

```
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 3 0 3 0 3 0)⍉resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],9 0⍉0 1↓resu)
[52]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⌽⍵EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⌽⍵EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo953

```
[0]  r←DFT_slow x;N;n;M;k;⎕IO
[1]  ⎕IO←0
[2]  N←1↑⍴x
[3]  n←⍳N
[4]  k←(N,1)⍴n
[5]  M←*○(0J¯2×(k∘.×n))÷N
[6]  r←,M+.×(N,1)⍴x
-------------------------------------------------------------
[ 0]  r←FFT x;⎕IO;N;X_even;X_odd;factor;metade
[ 1]  ⎕IO←0
[ 2]  N←1↑⍴x
[ 3]  →(0<2|N)/erro
[ 4]  →(N>4)/fast
[ 5]  r←DFT_slow x
[ 6]  →0
[ 7] fast:X_even←,FFT x[2×⍳0.5×N]
[ 8]  X_odd←,FFT x[1+2×⍳0.5×N]
[ 9]  factor←*○(0J¯2×⍳N)÷N
[10]  metade←N÷2
[11]  r←,(X_even+factor[⍳metade]×X_odd),(X_even+factor[metade+⍳metade]×X_odd)
[12]  →0
[13] erro:'tamanho deve ser potencia de 2'
-------------------------------------------------------------
[0]  fns
-------------------------------------------------------------
[ 0]  r←formata953 x;i
[ 1]  →(1=⍴⍴x)/eum
[ 2] edois:
[ 3]  r←((1↑⍴x),40)⍴' '
[ 4]  i←1
[ 5] t1:→(i>1↑⍴x)/acabou
[ 6]  r[i;]←(6 0⍉x[i;1]),'    ',(15↑⍉x[i;2]),15↑⍉x[i;3]
[ 7]  i←i+1
[ 8]  →t1
[ 9] acabou:→ufa
[10] eum:r←(6 0⍉x[1]),'    ',(15↑⍉x[2]),15↑⍉x[3]
[11] ufa:r←'¯-'edit r
-------------------------------------------------------------
[ 0]  r←geracaso953;x;y;f;z
[ 1]  x←3 15⍴0
[ 2]  x[1;]←15?99
[ 3]  x[2;]←15?99
[ 4]  x[3;]←15?99
[ 5]  y←(,x),19⍴0
```

```
[ 6]  f←FFT y
[ 7]  z←10+2?32
[ 8]  z←z[⍋z]
[ 9]  r←3⍴0
[10]  r[1]←⊂x
[11]  r[2]←⊂z
[12]  r[3]←⊂⌊f[z]
------------------------------------------------------------
[ 0]  opesq vivo953a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL953   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA953←ajusta80 FOLHALA953
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA953)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 40⍴' '
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←14 80⍴' '
[16]  f←FOLHALA953
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[13;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[14;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracaso953
[35]  esse[7+⍳3;]←3 80↑⍎⊃xx[1]
[36]  esse[11;]←80↑⍎(⊃xx[2])[1]
[37]  esse[12;]←80↑⍎(⊃xx[2])[2]
[38]  resp←formata953 resp,,⊃xx[3]
[39]  resu←resu,[1]1 40⍴resp
[40]  acuja←(f[;2]='#')/⍳1↑⍴f
[41]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[42]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[43]  ⍞←(⍎xk←xk+1),'-'
[44]  →testa
[45] fim:upag←(1 0+⍴f)⍴' '
[46]  →(1=≡n)/elafa
[47]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[48]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[49]  upag[2+⍳1↑⍴resu;⍳40]←resu
[50]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[51]  →terminando
[52] elafa:aaa←(ylu[;⍳36],'¯-'edit 15 0⍎0 1↓resu)
```

```
[53]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[54]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[55] terminando:
[56]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[57]  relat[1↑⍴relat;;]←upag
[58]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[59]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[60]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[61]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo954

```
[0]  r←c2r cmyk;rl;gl;bl
[1]  rl←(1-cmyk[1]÷255)×(1-cmyk[4]÷255)
[2]  gl←(1-cmyk[2]÷255)×(1-cmyk[4]÷255)
[3]  bl←(1-cmyk[3]÷255)×(1-cmyk[4]÷255)
[4]  r←⌈(rl,gl,bl)×255
-------------------------------------------------------------
[0]  r←geracaso954
[1]  r←3 3⍴0
[2]  r[1;]←?3⍴255
[3]  r[2;]←?3⍴255
[4]  r[3;]←(¯1+?360),(0.001×¯1+?1001),0.001×¯1+?1001
-------------------------------------------------------------
[ 0]  r←h2r hsv;c;x;m;rgbl
[ 1]  c←hsv[3]×hsv[2]  ⍝ v×s
[ 2]  x←c×1-|¯1+2|hsv[1]÷60
[ 3]  m←hsv[3]-c
[ 4]  →(hsv[1]≥60)/vai1
[ 5]  rgbl←c,x,0
[ 6]  →junta
[ 7] vai1:→(hsv[1]≥120)/vai2
[ 8]  rgbl←x,c,0
[ 9]  →junta
[10] vai2:→(hsv[1]≥180)/vai3
[11]  rgbl←0,c,x
[12]  →junta
[13] vai3:→(hsv[1]≥240)/vai4
[14]  rgbl←0,x,c
[15]  →junta
[16] vai4:→(hsv[1]≥300)/vai5
[17]  rgbl←x,0,c
[18]  →junta
[19] vai5:rgbl←c,0,x
[20] junta:
[21]  r←⌊0.5+(255×rgbl[1]+m),(255×rgbl[2]+m),255×rgbl[3]+m
-------------------------------------------------------------
[0]  r←r2c rgb;rl;gl;bl;k;c;m;y
[1]  rl←rgb[1]÷255 ⋄ gl←rgb[2]÷255 ⋄ bl←rgb[3]÷255
[2]  k←1-⌈/rl,gl,bl
[3]  c←((1-rl)-k)÷1-k
[4]  m←((1-gl)-k)÷1-k
[5]  y←((1-bl)-k)÷1-k
[6]  r←⌊0.5+100×⍉,8 3⍕c,m,y,k
-------------------------------------------------------------
[ 0]  r←r2h rgb;rl;bl;gl;v;cmax;cmin;delta;h;s
[ 1]  rl←rgb[1]÷255 ⋄ gl←rgb[2]÷255 ⋄ bl←rgb[3]÷255
[ 2]  v←cmax←⌈/rl,gl,bl ⋄ cmin←⌊/rl,gl,bl
[ 3]  delta←cmax-cmin
[ 4]  s←0
[ 5]  →(cmax=0)/foi
```

```
[ 6]  s←delta÷cmax
[ 7] foi:
[ 8]  →(delta≠0)/vai1
[ 9]  h←0
[10]  →junta
[11] vai1:→(cmax≠rl)/vai2
[12]  h←60×6|((gl-bl)÷delta)
[13]  →junta
[14] vai2:→(cmax≠gl)/vai3
[15]  h←60×2+(bl-rl)÷delta
[16]  →junta
[17] vai3:
[18]  h←60×4+(rl-gl)÷delta
[19] junta:
[20]  h←⌊0.5+h
[21]  r←h,s,v
-------------------------------------------------------------
[0]  r←resolve954 a
[1]  r←⍪((10⍴4 0),6 3 6 3,(6⍴4 0))⍪(r2c a[1;]),(r2h a[2;]),h2r a[3;]
-------------------------------------------------------------
[ 0]  opesq vivo954a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL954   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA954←ajusta80 FOLHALA954
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA954)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 11⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALA954
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracaso954
[35]  esse[8;]←80↑5 0⍎xx[1;]
[36]  esse[9;]←80↑5 0⍎xx[2;]
[37]  esse[10;]←80↑5 0 8 3 8 3⍎xx[3;]
[38]  resu←resu,[1]1 11⍴resp,,resolve954 xx
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;⍳80]←esse[⍪,f[acuja;3 4],' ';]
```

```
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[42]  ⍞←(⍕xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳¯6++/lixo1]←(lixo1←5 0 10 0 5 0 5 0 5 0 10 0 7 3 7 3 10 0 5 0 5 0)⍪
      resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],5 0 5 0 5 0 5 0 10 0 7 3 7 3 10 0 5 0 5 0⍪0 1↓resu)
[52]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivo965

```
[ 0]  r←xx bior dma;M;a;altu;d;dias;em;fi;he;hf;hi;hoje;i;in;k;m;me;mec;qtdh;qtdn;saldo;ve
      ;vf;vi;xu;⎕PW
[ 1]  dias←xx[1] ⋄ altu←xx[2]
[ 2] ⍝ modo de chamar 40 20 bior 1 1 1970 (40=dias), (20=metade da altura) (1 1 1970=data)
[ 3]  ⎕PW←(3×dias)⌈⎕PW ⋄ d←dma[1] ⋄ m←dma[2] ⋄ a←dma[3]-1900
[ 4]  me←31 28 31 30 31 30 31 31 30 31 30 31
[ 5]  →(0≠4|a)/ok1
[ 6]  me[2]←29
[ 7] ok1:
[ 8]  mec←0,11↑+\me
[ 9]  qtdn←(⌊a×365.25)+mec[m]+d ⋄ hoje←⎕TS[3 2 1]-0 0 1900
[10]  qtdh←(⌊hoje[3]×365.25)+mec[hoje[2]]+hoje[1]
[11]  saldo←qtdh-qtdn ⋄ fi←23|saldo ⋄ em←28|saldo ⋄ in←33|saldo
[12]  M←((1+2×altu),(dias×3))⍴' '
[13]  xu←⌊(dias×3)÷2
[14]  vf←((altu+1)+⌊altu×1○(○0.333×15.6521×0,⍳439)÷180)  ⍝ 360÷23=15.6521
[15]  hf←(23×6)-fi×3
[16]  ve←((altu+1)+⌊altu×1○(○0.333×12.8571×0,⍳439)÷180)  ⍝ 360÷28=12.8571
[17]  he←(28×6)-em×3
[18]  vi←((altu+1)+⌊altu×1○(○0.333×10.909×0,⍳439)÷180)  ⍝ 360÷33=10.9090
[19]  hi←(33×6)-in×3
[20]  k←xu ⋄ M[;xu+1]←'|' ⋄ M[altu+1;]←(dias×3)⍴'+--'
[21]  i←1
[22] t1:→(i≥xu)/ufa1
[23]  M[vf[hf+i];k]←'F*'[1+M[vf[hf+i];k]≠' ']
[24]  M[ve[he+i];k]←'E*'[1+M[ve[he+i];k]≠' ']
[25]  M[vi[hi+i];k]←'I*'[1+M[vi[hi+i];k]≠' ']
[26]  k←k+1 ⋄ i←i+1
[27]  →t1
[28] ufa1:
[29]  k←xu ⋄ i←0
[30] t2:→(i≥xu-1)/ufa2
[31]  M[vf[hf-i];k]←'F*'[1+M[vf[hf-i];k]≠' ']
[32]  M[ve[he-i];k]←'E*'[1+M[ve[he-i];k]≠' ']
[33]  M[vi[hi-i];k]←'I*'[1+M[vi[hi-i];k]≠' ']
[34]  k←k-1 ⋄ i←i+1
[35]  →t2
```

```
[36] ufa2:r←ϕ[2]M
------------------------------------------------------------
[ 0]  cavaleiro965a n;acuja;b;esse;f;kk;lixo1;relat;resp;xk;ylu;zzz;x
[ 1]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 2]  FOLHALA965←120 ajusta FOLHALA965
[ 3]  relat←ΔFM'c:\apl2\VIVOBLO1'
[ 4]  xk←1
[ 5] testa:→(xk>n)/fim
[ 6]  esse←42 120⍴' '
[ 7]  f←FOLHALA965
[ 8]  esse[1;⍳⍴x]←x←' ----- Cavaleiros da Tavola Redonda ---'
[ 9]  esse[3;]←120↑4 2⍕1.01
[10]  esse[41;⍳8]←'@OOOOOO@'
[11] ini1:
[12]  x←40 14 bior ⎕TS[3 2 1]
[13]  esse[7+⍳29;]←x
[14]  esse[38;]←120↑3 0⍕?28
[15]  esse[39;]←120↑'00'⍕?12
[16]  esse[40;]←120↑4 0⍕1960+?40
[17]  resp←' sem resposta'
[18]  'sem resposta'
[19]  acuja←(f[;2]='#')/⍳1↑⍴f
[20]  f[acuja;]←esse[⍤,f[acuja;3 4],' ';]
[21]  ⍞←(⍕xk←xk+1),'-'
[22]  f←(((1↑⍴relat),1↓⍴f)↑relat),[1]f
[23]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'\end{document}'
[24]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'%',⍕resp
[25]  lixo1←f ΔFM'c:\apl2\CA965a',('00'⍕xk-1),'.tex'
[26]  →testa
[27] fim:
------------------------------------------------------------
[ 0]  opesq vivo965a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;nomes;num
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu;zzz;x
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL965   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA965←120 ajusta FOLHALA965
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA965)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 2⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←42 120⍴' '
[16]  f←FOLHALA965
[17]  esse[1;]←120↑dhx[1;]
[18]  esse[2;]←120↑dhx[2;]
[19]  esse[3;]←120↑4 2⍕VERSAOa←1.01
[20]  esse[4;]←120↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,120)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),120)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:
[28]  esse[5;]←120↑ylu[xk;6+⍳30]
[29] maiszebra:
```

```
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←120↑EVENTO
[31]  esse[7;]←120↑(3 0⍕resp←xk),' ',opesq
[32]  x←40 14 bior ⎕TS[3 2 1]
[33]  esse[7+ι29;]←x
[34]  esse[41;ι10]←'@',esse[6;5+ι3],esse[4;1+ι5],'@'
[35]  esse[42;]←120↑esse[6;5+ι3],'-',esse[4;1+ι5],' - ',opesq[6 7],'/',opesq[9 10]
[36] ini1:
[37]  esse[38;]←120↑3 0⍕?28
[38]  esse[39;]←120↑'00'⍕?12
[39]  esse[40;]←120↑4 0⍕1960+?40
[40]  resu←resu,[1]1 2⍴resp←1
[41]  acuja←(f[;2]='#')/ι1↑⍴f
[42]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[44]  ⎕←(⍕xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+⍴f)⍴' '
[47]  →terminando
[48]  →(1=≡n)/elafa
[49]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[50]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[51]  upag[2+ι1↑⍴resu;ι+/lixo1]←(lixo1←4 0 8 0)⍕resu
[52]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[53]  →terminando
[54] elafa:aaa←(ylu[;ι36],4 0⍕0 1↓resu)
[55]  lixonol←aaa ⍙FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[56]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[57] terminando:
[58]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[59]  relat[1↑⍴relat;;]←upag
[60]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[61] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[62]  lixonol←lixonol ⍙FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[63]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex)'
-------------------------------------------------------------
```

vivo975

```
[0]  r←anarecdece ce;x;lixo
[1] ⍝ analise recursiva descendente
[2] denovo:x←geras
[3]  →(ce≠⍋1↑x)/denovo
[4]  r←(¯1↓1↓x),'.'
[5]  lixo←⎕EX 2 5⍴'SNULTSVULT'
-------------------------------------------------------------
[  0]  criamats
[  1]  artigo←8 15⍴' '
[  2]  artigo[1;]←15↑'os'
[  3]  artigo[2;]←15↑'o'
[  4]  artigo[3;]←15↑'um'
[  5]  artigo[4;]←15↑'uns'
[  6]  artigo[5;]←15↑'o'
[  7]  artigo[6;]←15↑'o'
[  8]  artigo[7;]←15↑'o'
[  9]  artigo[8;]←15↑'o'
[ 10]  nome←29 15⍴' '
[ 11]  nome[1;]←15↑'menino'
[ 12]  nome[2;]←15↑'alberto'
[ 13]  nome[3;]←15↑'rapaz'
[ 14]  nome[4;]←15↑'avestruz'
[ 15]  nome[5;]←15↑'apartamento'
[ 16]  nome[6;]←15↑'portal'
```

```
[ 17]  nome[7;]←15↑'elevador'
[ 18]  nome[8;]←15↑'desvio'
[ 19]  nome[9;]←15↑'caminho'
[ 20]  nome[10;]←15↑'jarro'
[ 21]  nome[11;]←15↑'sanduiche'
[ 22]  nome[12;]←15↑'livro'
[ 23]  nome[13;]←15↑'caderno'
[ 24]  nome[14;]←15↑'garraf↖  ~ao'
[ 25]  nome[15;]←15↑'prato'
[ 26]  nome[16;]←15↑'morango'
[ 27]  nome[17;]←15↑'milho'
[ 28]  nome[18;]←15↑'caneco'
[ 29]  nome[19;]←15↑'alcool'
[ 30]  nome[20;]←15↑'rum'
[ 31]  nome[21;]←15↑'la5pis'
[ 32]  nome[22;]←15↑'pincel'
[ 33]  nome[23;]←15↑'gato'
[ 34]  nome[24;]←15↑'cachorro'
[ 35]  nome[25;]←15↑'arbusto'
[ 36]  nome[26;]←15↑'galho'
[ 37]  nome[27;]←15↑'pa5ssaro'
[ 38]  nome[28;]←15↑'carro'
[ 39]  nome[29;]←15↑'reboque'
[ 40]  verbo←29 15⍴' '
[ 41]  verbo[1;]←15↑'entra'
[ 42]  verbo[2;]←15↑'sai'
[ 43]  verbo[3;]←15↑'sobe'
[ 44]  verbo[4;]←15↑'desce'
[ 45]  verbo[5;]←15↑'esquenta'
[ 46]  verbo[6;]←15↑'esfria'
[ 47]  verbo[7;]←15↑'voa'
[ 48]  verbo[8;]←15↑'anda'
[ 49]  verbo[9;]←15↑'corre'
[ 50]  verbo[10;]←15↑'ve'
[ 51]  verbo[11;]←15↑'enxerga'
[ 52]  verbo[12;]←15↑'sente'
[ 53]  verbo[13;]←15↑'come'
[ 54]  verbo[14;]←15↑'bebe'
[ 55]  verbo[15;]←15↑'decide'
[ 56]  verbo[16;]←15↑'cai'
[ 57]  verbo[17;]←15↑'carrega'
[ 58]  verbo[18;]←15↑'puxa'
[ 59]  verbo[19;]←15↑'empurra'
[ 60]  verbo[20;]←15↑'pensa'
[ 61]  verbo[21;]←15↑'constro5i'
[ 62]  verbo[22;]←15↑'destro5i'
[ 63]  verbo[23;]←15↑'avanc6a'
[ 64]  verbo[24;]←15↑'recua'
[ 65]  verbo[25;]←15↑'imagina'
[ 66]  verbo[26;]←15↑'senta'
[ 67]  verbo[27;]←15↑'anseia'
[ 68]  verbo[28;]←15↑'cheira'
[ 69]  verbo[29;]←15↑'solta'
[ 70]  adjetivo←24 15⍴' '
[ 71]  adjetivo[1;]←15↑'bonito'
[ 72]  adjetivo[2;]←15↑'feio'
[ 73]  adjetivo[3;]←15↑'quente'
[ 74]  adjetivo[4;]←15↑'frio'
[ 75]  adjetivo[5;]←15↑'grande'
[ 76]  adjetivo[6;]←15↑'pequeno'
[ 77]  adjetivo[7;]←15↑'imenso'
[ 78]  adjetivo[8;]←15↑'enorme'
[ 79]  adjetivo[9;]←15↑'gostoso'
```

```
[ 80]  adjetivo[10;]←15↑'cheiroso'
[ 81]  adjetivo[11;]←15↑'ruim'
[ 82]  adjetivo[12;]←15↑'bom'
[ 83]  adjetivo[13;]←15↑'mau'
[ 84]  adjetivo[14;]←15↑'suave'
[ 85]  adjetivo[15;]←15↑'rude'
[ 86]  adjetivo[16;]←15↑'fa5cil'
[ 87]  adjetivo[17;]←15↑'difi5cil'
[ 88]  adjetivo[18;]←15↑'ra5pido'
[ 89]  adjetivo[19;]←15↑'demorado'
[ 90]  adjetivo[20;]←15↑'lerdo'
[ 91]  adjetivo[21;]←15↑'inteligente'
[ 92]  adjetivo[22;]←15↑'aparvalhado'
[ 93]  adjetivo[23;]←15↑'esperto'
[ 94]  adjetivo[24;]←15↑'agrada5vel'
[ 95]  prepos←16 15⍴' '
[ 96]  prepos[1;]←15↑'sobre'
[ 97]  prepos[2;]←15↑'ante'
[ 98]  prepos[3;]←15↑'com'
[ 99]  prepos[4;]←15↑'sobre'
[100]  prepos[5;]←15↑'apo5s'
[101]  prepos[6;]←15↑'ate5'
[102]  prepos[7;]←15↑'contra'
[103]  prepos[8;]←15↑'de'
[104]  prepos[9;]←15↑'desde'
[105]  prepos[10;]←15↑'em'
[106]  prepos[11;]←15↑'entre'
[107]  prepos[12;]←15↑'para'
[108]  prepos[13;]←15↑'perante'
[109]  prepos[14;]←15↑'por'
[110]  prepos[15;]←15↑'sem'
[111]  prepos[16;]←15↑'sob'
[112]  adverb←27 15⍴' '
[113]  adverb[1;]←15↑'aqui'
[114]  adverb[2;]←15↑'ali'
[115]  adverb[3;]←15↑'la5'
[116]  adverb[4;]←15↑'bem'
[117]  adverb[5;]←15↑'mal'
[118]  adverb[6;]←15↑'n⍀  ~ao'
[119]  adverb[7;]←15↑'talvez'
[120]  adverb[8;]←15↑'quic6a'
[121]  adverb[9;]←15↑'sim'
[122]  adverb[10;]←15↑'so5'
[123]  adverb[11;]←15↑'somente'
[124]  adverb[12;]←15↑'aonde'
[125]  adverb[13;]←15↑'quanto'
[126]  adverb[14;]←15↑'como'
[127]  adverb[15;]←15↑'porque'
[128]  adverb[16;]←15↑'muito'
[129]  adverb[17;]←15↑'demais'
[130]  adverb[18;]←15↑'pouco'
[131]  adverb[19;]←15↑'tanto'
[132]  adverb[20;]←15↑'apenas'
[133]  adverb[21;]←15↑'hoje'
[134]  adverb[22;]←15↑'ja5'
[135]  adverb[23;]←15↑'agora'
[136]  adverb[24;]←15↑'quando'
[137]  adverb[25;]←15↑'quanta'
[138]  adverb[26;]←15↑'nunca'
[139]  adverb[27;]←15↑'sempre'
-------------------------------------------------------------
[ 0]  r←geracasoard;SOMA
[ 1]  r←6 75⍴' '
```

```
[ 2]  SOMA←0
[ 3]  →(2=?2)/e1
[ 4]  SOMA←1
[ 5]  r[2;]←75↑anarecdece 0
[ 6]  →v1
[ 7] e1:r[2;]←75↑anarecdece 1
[ 8] v1:→(2=?2)/e2
[ 9]  SOMA←SOMA+2
[10]  r[3;]←75↑anarecdece 0
[11]  →v2
[12] e2:r[3;]←75↑anarecdece 1
[13] v2:→(2=?2)/e3
[14]  SOMA←SOMA+4
[15]  r[4;]←75↑anarecdece 0
[16]  →v3
[17] e3:r[4;]←75↑anarecdece 1
[18] v3:→(2=?2)/e4
[19]  SOMA←SOMA+8
[20]  r[5;]←75↑anarecdece 0
[21]  →v4
[22] e4:r[5;]←75↑anarecdece 1
[23] v4:→(2=?2)/e5
[24]  SOMA←SOMA+16
[25]  r[6;]←75↑anarecdece 0
[26]  →v5
[27] e5:r[6;]←75↑anarecdece 1
[28] v5:r[1;⍳2]←2 0⍕SOMA
------------------------------------------------------------
[ 0]  r←geracasomaq;SOMA
[ 1]  r←6 75⍴' '
[ 2]  SOMA←0
[ 3]  →(2=?2)/e1
[ 4]  SOMA←1
[ 5]  r[2;]←75↑maquinace 0
[ 6]  →v1
[ 7] e1:r[2;]←75↑maquinace 1
[ 8] v1:→(2=?2)/e2
[ 9]  SOMA←SOMA+2
[10]  r[3;]←75↑maquinace 0
[11]  →v2
[12] e2:r[3;]←75↑maquinace 1
[13] v2:→(2=?2)/e3
[14]  SOMA←SOMA+4
[15]  r[4;]←75↑maquinace 0
[16]  →v3
[17] e3:r[4;]←75↑maquinace 1
[18] v3:→(2=?2)/e4
[19]  SOMA←SOMA+8
[20]  r[5;]←75↑maquinace 0
[21]  →v4
[22] e4:r[5;]←75↑maquinace 1
[23] v4:→(2=?2)/e5
[24]  SOMA←SOMA+16
[25]  r[6;]←75↑maquinace 0
[26]  →v5
[27] e5:r[6;]←75↑maquinace 1
[28] v5:r[1;⍳2]←2 0⍕SOMA
------------------------------------------------------------
[0]  r←geras;lixo
[1] denovo:
[2]  lixo←⎕EX 2 5⍴'SNULTSVULT'
[3]  r←gerasn,gerasv
[4]  →(14>⍴r)/denovo
```

```
[5]  →(75<⍴r)/denovo
[6]  r←(1 0⍕SVULT∨SNULT),r
-------------------------------------------------------------
[ 0]  r←gerasn
[ 1]  →((⍳5)=?5)/um,dois,tres,quatro,cinco
[ 2] um:r←(geraum artigo),geraum nome
[ 3]  SNULT←0
[ 4]  →fim
[ 5] dois:r←(geraum artigo),(geraum adjetivo),geraum nome
[ 6]  SNULT←0
[ 7]  →fim
[ 8] tres:r←(geraum prepos),gerasn
[ 9]  →(2=□NC'SNULT')/jatem
[10]  SNULT←0
[11]  →fim
[12] jatem:SNULT←SNULT∨0
[13]  →fim
[14] quatro:r←geraum nome
[15]  SNULT←1
[16]  →fim
[17] cinco:r←(geraum artigo),geraum adjetivo
[18]  SNULT←1
[19] fim:
-------------------------------------------------------------
[ 0]  r←gerasv
[ 1]  →((⍳6)=?6)/um,dois,tres,quatro,cinco,seis
[ 2] um:r←(geraum verbo),gerasn
[ 3]  →(2=□NC'SNULT')/jatem
[ 4]  SVULT←0
[ 5]  →fim
[ 6] jatem:SVULT←SNULT∨0
[ 7]  →fim
[ 8] dois:r←(geraum verbo),(geraum adverb),gerasn
[ 9]  →(2=□NC'SNULT')/jatem2
[10]  SVULT←0
[11]  →fim
[12] jatem2:SVULT←SNULT∨0
[13]  →fim
[14] tres:r←(geraum verbo),geraum adverb
[15]  SVULT←0
[16]  →fim
[17] quatro:r←geraum verbo
[18]  SVULT←0
[19]  →fim
[20] cinco:r←(geraum verbo),geraum verbo
[21]  SVULT←1
[22]  →fim
[23] seis:r←(geraum adverb),geraum verbo
[24]  SVULT←1
[25] fim:
-------------------------------------------------------------
[0]  r←geraum x;y
[1]  y←,x[?1↑⍴x;]
[2]  r←((~ϕ∧≠ϕy=' ')/y),' '
-------------------------------------------------------------
[ 0]  r←maquinace ceer;s;ce;qt
[ 1] ⍝ ce=0:CERTO,    ce=1:ERRADO
[ 2] denovo:ce←0
[ 3]  qt←1
[ 4]  r←geraum artigo
[ 5] no:r←r,geraum nome
[ 6]  qt←qt+1
[ 7]  →(75<⍴r)/denovo
```

```
[ 8]  s←?10
[ 9]  ce←cevs>7
[10]  →(s=ι10)/verb,verb,verb,prep,fim1,fim1,fim1,adve,no,adje
[11] verb:r←r,geraum verbo
[12]  qt←qt+1
[13]  →(75<ρr)/denovo
[14]  s←?10
[15]  →(s=ι10)/no,no,no,no,no,adje,adje,prep,adve,adve
[16] prep:r←r,geraum prepos
[17]  qt←qt+1
[18]  →(75<ρr)/denovo
[19]  s←?10
[20]  ce←cevs>7
[21]  →(s=ι10)/no,no,no,no,adje,adje,adje,verb,adve,prep
[22] adje:r←r,geraum adjetivo
[23]  qt←qt+1
[24]  →(75<ρr)/denovo
[25]  s←?10
[26]  ce←cevs>7
[27]  →(s=ι10)/no,no,no,no,no,no,no,verb,adve,prep
[28] adve:r←r,geraum adverb
[29]  qt←qt+1
[30]  →(75<ρr)/denovo
[31]  s←?10
[32]  ce←cevs>7
[33]  →(s=ι10)/no,no,no,no,no,prep,prep,adje,adve,adje
[34] fim1:→(qt<3)/denovo
[35]  →(ceer≠ce)/denovo
[36]  r←(¯1↓r),'.'
-------------------------------------------------------------
[ 0]  ref;i;j;k;candi;qt;zz;r
[ 1]  zz←ΔFM'f:/infoland/lixo1234'
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80ρ' '
[ 6] te:→(i≥⎕IO+1↑ρzz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>ρcandi)/eca
[ 9]  j←qt
[10]  →(0=' 'єj↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80ρ80↑j↑candi
[15]  candi←j↓candi
[16]  →((ρcandi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80ρ80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
[22]  y←r
-------------------------------------------------------------
[ 0]  opesq vivo975a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;flm;yyy
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←2 ◇ EVENTO←'PL975   '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
```

```
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALA975←ajusta80 FOLHALA975
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA975)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[12]  xk←1 ⋄ resu←0 3⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←19 80⍴' '
[15]  f←FOLHALA975
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.04
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[18;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[19;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  yyy←geracasomaq
[27]  resp←resp,⍪yyy[1;⍳2]
[28]  esse[7+⍳5;⍳75]←yyy[1+⍳5;]
[29]  yyy←geracasoard
[30]  resp←resp,⍪yyy[1;⍳2]
[31]  esse[12+⍳5;⍳75]←yyy[1+⍳5;]
[32] continua:
[33]  resu←resu,[1](1,3)⍴resp
[34]  acuja←(f[;2]='#')/⍳1↑⍴f
[35]  f[acuja;⍳80]←esse[⍪,f[acuja;3 4],' ';]
[36]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[37]  ⎕←(⍕xk←xk+1),'-'
[38]  →testa
[39] fim:upag←(1 0+⍴f)⍴' '
[40]  →(1=≡n)/elafa
[41]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[42]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[43]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0)⍕resu
[44]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[45]  →terminando
[46] elafa:aaa←(ylu,5 0⍕0 1↓resu)
[47]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[48]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[49] terminando:
[50]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[51]  relat[1↑⍴relat;;]←upag
[52]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[53] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[54]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[55]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[56]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo980

```
[0]  AVISO
[1]  'Leia a variavel "preparacao"'
[2]  ' Depois de gerar as folhas, compile e pdfize o arquivo c:\apl2\lista980.tex'
[3]  '   ele contem a distribuicao de alunos por cores, ideal para organizar o'
[4]  '   layout da sala ANTES de comecar'
-------------------------------------------------------------
[ 0]  opesq vivo980a n;CORRECAO;EVENTO;aaa;acuja;caso;cores;dhx;esse;f;fol;j;k;lixo;lixo1;
      lixonol;oba2;quens;relat;resp;resu;upag;xixo;xk;ylu
```

```
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:
[ 4]  cores←6 12⍴(12↑'azul'),(12↑'vermelha'),(12↑'verde'),(12↑'amarela'),(12↑'cinza'),12↑'
      laranja'
[ 5]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 6]  CORRECAO←0 ⋄ EVENTO←'PL980   '
[ 7]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←⍙FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 9]  →(~isnum n)/1+⎕LC ⋄ n←6⌈n ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[10]  ylu←((⌈6×(1↑⍴ylu)÷6),36)↑ylu
[11]  FOLHALA980←ajusta80 FOLHALA980
[12]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA980)⍴' '
[13]  relat[1;;]←(1↓⍴relat)↑⍙FM'c:\apl2\VIVOBLOI'
[14]  xk←1 ⋄ resu←0 0⍴0
[15]  quens←6 10 30⍴' '
[16] testa:→(xk>6)/fim
[17]  esse←18 80⍴' '
[18]  f←FOLHALA980
[19]  esse[1;]←80↑dhx[1;]
[20]  esse[2;]←80↑dhx[2;]
[21]  esse[3;]←80↑4 2⍎VERSAOa←1.04
[22] ⍝ esse[4;]←80↑ylu[xk;⍳6]     mudado para deixar de imprimir o
[23] ⍝ esse[5;]←80↑ylu[xk;6+⍳30]  "antigo" dono desta folha.
[24]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[25]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[26]  esse[8;]←80↑cores[xk;]
[27]  j←xk
[28]  k←1
[29] t1:→(j>1↑⍴ylu)/inica
[30]  esse[8+k;]←80↑ylu[j;]
[31]  quens[1+6|j-1;k;]←30↑' ',6↓ylu[j;]
[32]  j←j+6
[33]  k←k+1
[34]  →t1
[35] inica:
[36]  acuja←(f[;2]='#')/⍳1↑⍴f
[37]  f[acuja;⍳80]←esse[⍤,f[acuja;3 4],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[39]  ⍞←(⍎xk←xk+1),'-'
[40]  →testa
[41] fim:
[42] terminando:
[43]  relat[1↑⍴relat;1↑1↓⍴relat;]←80↑'\end{document}'
[44]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[45] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[46]  lixonol←lixonol ⍙FM'c:\apl2\',((~⍬∧\⍬EVENTO=' ')/EVENTO),'.tex'
[47]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[48]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
[49]  quens←6 ¯11 30↑quens
[50]  quens[1;1;]←30↑'AZUL' ⋄ quens[2;1;]←30↑'VERMELHO' ⋄ quens[3;1;]←30↑'VERDE'
[51]  quens[4;1;]←30↑'AMARELO' ⋄ quens[5;1;]←30↑'CINZA' ⋄ quens[6;1;]←30↑'LARANJA'
[52]  CABE1←ajusta80 CABE1
[53]  fol←0 80⍴' '
[54]  fol←fol,[1]CABE1
[55]  fol←fol,[1]66 80↑66 30⍴quens
[56]  fol←fol,[1]1 80⍴80↑'\end{verbatim}'
[57]  fol←fol,[1]1 80⍴80↑'\end{document}'
[58]  lixo←fol ⍙FM'c:\apl2\lista980.tex'
[59]  'gerada a lista de alunos em c:\apl2\lista980.tex'
-------------------------------------------------------------
```

vivo985

```
[ 0]  exemplos985;r;lixo
[ 1] ⍝ esta funcao imprime todos os exercicios do banco de dados
[ 2]  EXEMPLOS985←ajusta80 EXEMPLOS985
[ 3]  r←ajusta80 ⎕FM'c:\apl2\VIVOBLO1'
[ 4]  r←r,[1]1 80⍴80↑'\section*{Exemplos de 985}'
[ 5]  r←r,[1]EXEMPLOS985
[ 6]  r←r,[1]1 80⍴80↑'\end{document}'
[ 7]  lixo←r ⎕FM'c:\apl2\exem985.tex'
[ 8]  'Salvo em c:\apl2\ com o nome de exem985.tex'
-------------------------------------------------------------
[ 0]  r←gera985 n;x;quais;i;y;resps;defs
[ 1]  DEFI985←ajusta80 DEFI985
[ 2]  x←geradirt DEFI985
[ 3]  y←((1↑⍴x),4)⍴⍬,x,' '
[ 4]  quais←n?1↑⍴y
[ 5]  resps←''
[ 6]  defs←0 80⍴' '
[ 7]  i←1
[ 8] t1:→(i>n)/fim
[ 9]  defs←defs,[1]DEFI985[y[quais[i];2]+⍳y[quais[i];3];]
[10]  resps←resps,' | ',trim DEFI985[y[quais[i];4];]
[11]  i←i+1
[12]  →t1
[13] fim:r←2⍴0
[14]  r[1]←⊂defs
[15]  r[2]←⊂1↓resps
[16] ⍝'Tamanho ',⍕1↑⍴r
-------------------------------------------------------------
[ 0]  r←geradirt x;lin;i;tam
[ 1]  r←(((+/(,x[;1])='%')÷3),20)⍴' '
[ 2]  tam←0
[ 3]  lin←1
[ 4]  i←1
[ 5] t1:→(i>1↑⍴x)/fim
[ 6]  →((x[i;1]='%')∧(x[i;2]='i'))/comeca
[ 7]  →((x[i;1]='%')∧(x[i;2]='f'))/termina
[ 8]  →((x[i;1]='%')∧(x[i;2]='r'))/resposta
[ 9]  tam←tam+1
[10]  i←i+1
[11]  →t1
[12] comeca:r[lin;⍳3]←x[i;3 4 5]
[13]  r[lin;5+⍳5]←5 0⍕i
[14]  tam←0
[15]  i←i+1
[16]  →t1
[17] resposta:r[lin;10+⍳5]←5 0⍕tam
[18]  i←i+1
[19]  →t1
[20] termina:r[lin;15+⍳5]←5 0⍕i-1
[21]  lin←lin+1
[22]  i←i+1
[23]  →t1
[24] fim:
-------------------------------------------------------------
[ 0]  todos985;r;lixo
[ 1] ⍝ esta funcao imprime todos os exercicios do banco de dados
[ 2]  DEFI985←ajusta80 DEFI985
[ 3]  r←ajusta80 ⎕FM'c:\apl2\VIVOBLO1'
[ 4]  r←r,[1]1 80⍴80↑'\section*{Listagem de todos os problemas de 985}'
[ 5]  r←r,[1]1 80⍴80↑'\begin{enumerate}'
[ 6]  r←r,[1]DEFI985
```

```
[ 7]  r←r,[1]1 80ρ80↑'\end{enumerate}'
[ 8]  r←r,[1]1 80ρ80↑'\end{document}'
[ 9]  lixo←r ΔFM'c:\apl2\todos985.tex'
[10]  'Salvo em c:\apl2\ com o nome de todos985.tex'
------------------------------------------------------------
[ 0]  opesq vivo985a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL985   '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA985←ajusta80 FOLHALA985
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALA985)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 74ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←49 80ρ' '
[16]  f←FOLHALA985
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑ρf),4)ρ'\#05')/⍳1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[48;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[49;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera985 1
[35]  esse[7+⍳40;]←40 80↑⊃xx[1]
[36]  resp←(3 0⍎resp),' ',,70↑⊃xx[2]
[37]  resu←resu,[1]1 74ρresp
[38]  acuja←(f[;2]='#')/⍳1↑ρf
[39]  f[acuja;⍳80]←esse[±,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\clearpage'
[41]  ⍞←(⍎xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+ρf)ρ' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[47]  upag[2+⍳1↑ρresu;⍳74]←resu
[48]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[51]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍎1↑ρaaa),' linhas e ',(⍎1↓ρaaa),' colunas'
[53] terminando:
[54]  upag[1↑ρupag;]←(1↓ρupag)↑'\end{document}'
[55]  relat[1↑ρrelat;;]←upag
```

```
[56]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[57]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍬∧⍀⍬EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivo998

```
[ 0]  COMOFAZERCRIPT;aspa
[ 1]  aspa←''''
[ 2]  'gere uma instancia qualquer, por exemplo x←geramais 6 - 6 eh o comprimento dos numn
      ros'
[ 3]  'coloque o x[1], devidamente desempacotado na variavel conta (conta←⊃x[1])'
[ 4]  'zere a variavel RESPOSTA (RESPOSTA←0 30ρ0)'
[ 5]  'chame sol com esquerdo=vetor vazio e direita=lista de letras que ele deve testar'
[ 6]  'a qualquer momento em RESPOSTA ha o que ele ja achou'
[ 7]  ''
[ 8]  'se quiser ver ele achando (com interrupcao a cada vez) descomente a ultima linha'
[ 9]  '    da funcao sol'
[10]  'por exemplo = ',aspa,aspa,' sol ',aspa,'MHBGTR',aspa
-------------------------------------------------------------
[0]  r←aa ajustata bb;xx
[1]  bb←(bb≠' ')/bb
[2]  aa←tiraduplo aa
[3]  bb←tiraduplo bb
[4]  bb←bb[xx←⎕AV⍋bb]
[5]  aa←aa[xx]
[6]  r←,(((ρaa),1)ρaa),'=',(((ρaa),1)ρbb),' '
-------------------------------------------------------------
[0]  aviso
[1]  'Este WS congrega os exercicios VIVO que sao feitos mediante a '
[2]  'emissao de uma unica folha com os dados para todos os alunos.'
[3]  ' Eh um exercicio ecologico (economiza papel)'
[4]  DEMONSTRACAO
-------------------------------------------------------------
[ 0]  comeca;pa1;pa2;res;con;aspa
[ 1]  aspa←''''
[ 2]  'Informe a primeira parcela '
[ 3]  pa1←⍞
[ 4]  'Informe a segunda parcela '
[ 5]  pa2←⍞
[ 6]  'Informe o resultado '
[ 7]  res←⍞
[ 8]  'Informe + ou - '
[ 9]  con←⍞
[10]  RESPOSTA←0 30ρ' '
[11]  CONTA←3 10ρ(10↑pa1),(10↑pa2),10↑res
[12]  SINAL←con
[13]  ' Agora chame ',aspa,aspa,' solx ',aspa,'(letras)',aspa
-------------------------------------------------------------
[ 0]  r←geracaso998b;x;men;lim;i;j;is;js;h;dif
[ 1]  ⎕PP←14
[ 2] outro:
[ 3]  x←⍪(1 0⍕?3),'.',1 0⍕¯1+?14ρ10
[ 4]  men←1
[ 5]  lim←100
[ 6]  i←1
[ 7] t1:→(i>lim)/fim1
[ 8]  j←1
[ 9] t2:→(j>i)/fim2
[10]  h←i÷j
[11]  dif←|h-x
```

```
[12]  →(dif≥men)/fim3
[13]  is←i
[14]  js←j
[15]  men←dif
[16] fim3:
[17]  j←j+1
[18]  →t2
[19] fim2:
[20]  i←i+1
[21]  →t1
[22] fim1:r←x,is,js
[23]  men←1
[24]  lim←1000
[25]  i←1
[26] t3:→(i>lim)/fim4
[27]  j←1
[28] t4:→(j>i)/fim5
[29]  h←i÷j
[30]  dif←|h-x
[31]  →(dif≥men)/fim6
[32]  is←i
[33]  js←j
[34]  men←dif
[35] fim6:
[36]  j←j+1
[37]  →t4
[38] fim5:
[39]  i←i+1
[40]  →t3
[41] fim4:→((r[2]≠is)∧(r[3]≠js))/blz
[42] ops:□←'*'
[43]  →outro
[44] blz:
[45]  r←r,is,js
-------------------------------------------------------------
[ 0]  r←alfa geramais n;□PP;ica;z;x1;x2;y1;y2;y3
[ 1]  →(n>15)/erro
[ 2]  □PP←20
[ 3]  →(0≠□NC'alfa')/qveio
[ 4]  alfa←'ABCDEFGHJKLMNPQRSTUVWXYZ'
[ 5] qveio:
[ 6]  alfa←(alfa≠' ')/alfa
[ 7]  alfa←((alfa⍳alfa)=⍳ρalfa)/alfa
[ 8]  →(10>ρalfa)/erro
[ 9]  alfa←alfa[(ρalfa)?ρalfa]
[10]  x1←((10*n-1)+?(-10*n-1)+10*n),(10*n-1)+?(-10*n-1)+10*n
[11]  x2←+/x1
[12]  y1←alfa[1+(nρ10)⊤x1[1]]
[13]  y2←alfa[1+(nρ10)⊤x1[2]]
[14]  y3←alfa[1+((z←⌈10⊛x2)ρ10)⊤x2]
[15]  r←3ρ0
[16]  r[3]←⊂(y1,y2,y3)ajustata⍕x1,x2
[17]  →(z≠n)/vaium
[18]  ica←(3,n+2)ρ('  ',y1),('  ',y2),'  ',y3
[19]  ica[2;1]←'+'
[20]  r[1]←⊂ica
[21]  r[2]←⊂(3,n)ρ⍕(⍕x1[1]),(⍕x1[2]),⍕x2
[22]  →0
[23] erro:'so funciona ate tam=15'
[24]  →0
[25] vaium:
[26]  ica←(3,z+1)ρ('  ',y1),('  ',y2),' ',y3
[27]  ica[2;1]←'+'
```

```
[28]  r[1]←⊂ica
[29]  r[2]←⊂(3,z)ρ(' ',⍕x1[1]),(' ',⍕x1[2]),⍕x2
[30]  →0
[31] erro:'alfa fornecido nao tem 10 caracteres distintos'
-------------------------------------------------------------
[ 0]  r←alfa geramenos n;x1;x2;y1;y2;y3;z;⎕PP;aux;ica
[ 1]  ⎕PP←20
[ 2]  →(n>15)/erro2
[ 3]  →(0≠⎕NC'alfa')/qveio
[ 4]  alfa←'ABCDEFGHJKLMNPQRSTUVWXYZ'
[ 5] qveio:
[ 6]  alfa←(alfa≠' ')/alfa
[ 7]  alfa←((alfa⍳alfa)=⍳ρalfa)/alfa
[ 8]  →(10>ρalfa)/erro
[ 9]  alfa←alfa[(ρalfa)?ρalfa]
[10]  x1←((10*n-1)+?(-10*n-1)+10*n),(10*n-1)+?(-10*n-1)+10*n
[11]  →(x1[1]>x1[2])/ok
[12]  aux←x1[1]
[13]  x1[1]←x1[2]
[14]  x1[2]←aux
[15] ok:
[16]  x2←x1[1]-x1[2]
[17]  y1←alfa[1+(nρ10)⊤x1[1]]
[18]  y2←alfa[1+(nρ10)⊤x1[2]]
[19]  y3←alfa[1+(nρ10)⊤x2]
[20]  r←3ρ0
[21]  r[3]←⊂(y1,y2,y3)ajustata⍕x1,x2
[22]  ica←(3,n+2)ρ('  ',y1),('--',y2),'  ',y3
[23]  ica[2;1]←'-'
[24]  r[1]←⊂ica
[25]  r[2]←⊂(3,n)ρ⍕(⍕x1[1]),(⍕x1[2]),(nρ'0')⍕x2
[26]  →0
[27] erro:'alfa fornecido nao tem 10 caracteres distintos'
[28]  →0
[29] erro2:'nao pode tam>15, resultados imprevisiveis'
-------------------------------------------------------------
[0]  r←geratroco;v;m;x;res
[1] t0:x←2 3 5 6 7 9 10 11 13 15 18 20 21 25 33 35 40 45 50 66 71 98
[2]  v←(50+?49)
[3]  m←x[4?ρx],1
[4]  res←m troco v
[5]  →(10>ρres)/ok
[6]  ⎕←'*'
[7]  →t0
[8] ok:r←v,m,(ρres),10↑res
-------------------------------------------------------------
[0]  r←a menos b;i
[1]  i←1
[2] t1:→(i>ρb)/fim
[3]  a←(b[i]≠a)/a
[4]  i←i+1
[5]  →t1
[6] fim:r←a
-------------------------------------------------------------
[ 0]  ja sol aindn;quais;i;y;zz
[ 1]  'chamando com ',(21↑ja),'      ainda=',aindn
[ 2] ⍝ coloque em conta a
[ 3]  →(0=ρ,aindn)/casobas
[ 4]  quais←'0123456789'menos ja
[ 5]  i←1
[ 6] t1:→(i>ρquais)/aca
[ 7]  (ja,(1↑aindn),(quais[i]))sol 1↓aindn
[ 8]  i←i+1
```

```
[ 9]  →t1
[10] aca:
[11]  →0
[12] casobas:y←ja troca conta
[13]  →(conta[2;1]='-')/mennos
[14]  →((⍋y[3;])=(⍋y[1;])+(⍋y[2;]))/sim
[15]  →0
[16] mennos:
[17]  →((⍋y[3;])=(⍋y[1;])-(⍋y[2;]))/sim
[18]  →0
[19] sim:'achamos uma resposta = ',ja
[20]  RESPOSTA←RESPOSTA,[1]1 30⍴30↑ja
[21]  zz←⍞ ⍝ comente este comando se nao quiser interromper
[22] ⍝ RESPOSTA deve ser inicializado com 0 30⍴' ' POR FORA
------------------------------------------------------------
[ 0]  ja solx aindn;quais;i;y;zz;a
[ 1]  'chamando com ',(21↑ja),'      ainda=',aindn
[ 2] ⍝ coloque em conta a
[ 3]  →(0=⍴,aindn)/casobas
[ 4]  quais←((1+⍴ja)=ja⍳'0123456789')/'0123456789'
[ 5]  i←1
[ 6] t1:→(i>⍴quais)/aca
[ 7]  (ja,(1↑aindn),(quais[i]))solx 1↓aindn
[ 8]  i←i+1
[ 9]  →t1
[10] aca:
[11]  →0
[12] casobas:
[13]  a←,CONTA
[14]  a←(ja[2×⍳0.5×⍴ja],' ')[ja[¯1+2×⍳0.5×⍴ja]⍳a]
[15]  y←(⍴CONTA)⍴a
[16]  →((⍋y[3;])=⍋y[1;],SINAL,y[2;])/sim
[17]  →0
[18] sim:'achamos uma resposta = ',ja
[19]  RESPOSTA←RESPOSTA,[1]1 30⍴30↑ja
[20]  zz←⍞ ⍝ comente este comando se nao quiser interromper
[21] ⍝ RESPOSTA deve ser inicializado com 0 30⍴' ' POR FORA
------------------------------------------------------------
[0]  r←tiraduplo z;i;⎕IO
[1]  i←1 ⋄ r←'' ⋄ ⎕IO←1
[2] volta:→(i>⍴z)/fim
[3]  →(z[i]∈r)/tem
[4]  r←r,z[i]
[5] tem:→(i=i←i+1)/volta
[6] fim:
------------------------------------------------------------
[ 0]  r←depara troca x;indsde;indspa;i;y;inds
[ 1]  inds←(((⍴depara)÷2),2)⍴⍳⍴depara
[ 2]  indsde←,inds[;1]
[ 3]  indspa←,inds[;2]
[ 4]  i←1
[ 5]  y←,x
[ 6] t1:→(i>⍴indsde)/acabou
[ 7]  y[(y=depara[indsde[i]])/⍳⍴y]←depara[indspa[i]]
[ 8]  i←i+1
[ 9]  →t1
[10] acabou:r←(⍴x)⍴y
------------------------------------------------------------
[ 0]  r←moe troco val;i
[ 1]  moe←moe[⍒moe]
[ 2]  r←⍳0
[ 3] t0:→(val≤0)/fim
[ 4]  i←1
```

```
[ 5] t1:→(i>ρmoe)/g0
[ 6] t2:→(moe[i]>val)/g1
[ 7]  val←val-moe[i]
[ 8]  r←r,moe[i]
[ 9]  →t2
[10] g1:i←i+1
[11]  →t1
[12] g0:→t0
[13] fim:
------------------------------------------------------------
[ 0]  opesq vivo998b n;CORRECAO;EVENTO;aaa;acuja;b;dhx;esse;f;ii;kk;lixo1;lixonol;num;rela
      t;resp;resu;upag;xixo;xk;ylu;zz;zzz
[ 1]  'demora... e esta limitado a 73 exercicios'
[ 2]  →(0≠⎕NC'opesq')/qveio
[ 3]  opesq←10ρ' '
[ 4] qveio:
[ 5]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 6]  CORRECAO←8 ⋄ EVENTO←'PL998b  '
[ 7]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[10]  FOLHALA998b←ajusta80 FOLHALA998b
[11]  relat←(3,1 0+ρFOLHALA998b)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 5ρ0
[14] testa:
[15]  esse←80 80ρ80ρ'&&',78ρ' '
[16]  f←FOLHALA998b
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.01
[20]  esse[4;]←80↑' '
[21]  esse[5;]←80↑' '
[22]  esse[6;]←80↑EVENTO
[23]  esse[7;]←80↑opesq
[24]  ii←1
[25] ini1:
[26]  →((ii>1↑ρylu)∨(ii>73))/printa
[27]  zz←geracaso998b
[28]  esse[7+ii;]←80↑ylu[ii;6+⍳30],'&',ylu[ii;⍳6],'&',17 14⍎zz[1]
[29]  resu←resu,[1]1 5ρii,zz[1+⍳4]
[30]  ii←ii+1
[31]  ⍞←⍎ii
[32]  →ini1
[33] printa:
[34]  acuja←(f[;2]='#')/⍳1↑ρf
[35]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[36]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\newpage'
[37] fim:upag←(1 0+ρf)ρ' '
[38]  →(1=≡n)/elafa
[39]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[40]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[41]  upag[2+⍳1↑ρresu;⍳+/lixo1]←(lixo1←4 0 6 0 6 0 6 0 6 0)⍎resu
[42]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[43]  →terminando
[44] elafa:aaa←(ylu,(((1↑ρylu),4)ρ' 0.0'),6 0⍎0 1↓resu)
[45]  aaa[1;35 36]←2 0⍎CORRECAO
[46]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[47]  '!!!!!  Arquivo GPA com ',(⍎1↑ρaaa),' linhas e ',(⍎1↓ρaaa),' colunas'
[48] terminando:
[49]  upag[1↑ρupag;]←(1↓ρupag)↑'\end{document}'
[50]  relat[1↑ρrelat;;]←upag
```

```
[51]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[52] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[53]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[54]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivo998c n;CORRECAO;EVENTO;aaa;acuja;b;dhx;esse;f;ii;kk;lixo1;lixonol;num;rela
      t;resp;resu;upag;xixo;xk;ylu;zz;zzz
[ 1]  'esta limitado a 73 exercicios'
[ 2]  →(0≠⎕NC'opesq')/qveio
[ 3]  opesq←10⍴' '
[ 4] qveio:
[ 5]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 6]  CORRECAO←8 ⋄ EVENTO←'PL998c  '
[ 7]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[10]  FOLHALA998c←ajusta80 FOLHALA998c
[11]  relat←(3,1 0+⍴FOLHALA998c)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 12⍴0
[14] testa:
[15]  esse←80 80⍴' '
[16]  f←FOLHALA998c
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.01
[20]  esse[4;]←80↑' '
[21]  esse[5;]←80↑' '
[22]  esse[6;]←80↑EVENTO
[23]  esse[7;]←80↑opesq
[24]  ii←1
[25] ini1:
[26]  →((ii>1↑⍴ylu)∨(ii>73))/printa
[27]  zz←geratroco
[28]  esse[7+ii;]←80↑ylu[ii;6+⍳30],'&',ylu[ii;⍳6],'&',(⍎zz[2 3 4 5 6]),'&',(⍎zz[1]),'&\\ \
      hline'
[29]  resu←resu,[1]1 12⍴ii,zz[6+⍳11]
[30]  ii←ii+1
[31]  ⍞←⍎ii
[32]  →ini1
[33] printa:
[34]  acuja←(f[;2]='#')/⍳1↑⍴f
[35]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[36]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[37] fim:upag←(1 0+⍴f)⍴' '
[38]  →(1=≡n)/elafa
[39]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[40]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[41]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←24⍴3 0)⍎resu
[42]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[43]  →terminando
[44] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),4 0⍎0 1↓resu)
[45]  aaa[1;35 36]←2 0⍎CORRECAO
[46]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[47]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[48] terminando:
[49]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[50]  relat[1↑⍴relat;;]←upag
[51]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[52] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[53]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[54]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
```

```
------------------------------------------------------------
[ 0]  opesq vivo998d n;CORRECAO;EVENTO;aaa;acuja;b;dhx;esse;f;ii;kk;lixo1;lixonol;num;rela
      t;resp;resu;upag;xixo;xk;ylu;zz;zzz;aqa
[ 1]  'limitado a 63 exemplares'
[ 2]  →(0≠⎕NC'opesq')/qveio
[ 3]  opesq←10⍴' '
[ 4] qveio:
[ 5]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 6]  EVENTO←'PL998d  '
[ 7]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[10]  FOLHALA998d←124 ajusta FOLHALA998d
[11]  relat←(3,1 0+⍴FOLHALA998d)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 45⍴' '
[14] testa:
[15]  esse←70 124⍴' '
[16]  f←FOLHALA998d
[17]  esse[1;]←124↑dhx[1;]
[18]  esse[2;]←124↑dhx[2;]
[19]  esse[3;]←124↑4 2⍎VERSAOa←1.01
[20]  esse[4;]←124↑' '
[21]  esse[5;]←124↑' '
[22]  esse[6;]←124↑EVENTO
[23]  esse[7;]←124↑opesq
[24]  ii←1
[25] ini1:
[26]  →((ii>1↑⍴ylu)∨(ii>63))/printa
[27]  →(2=?2)/menos
[28]  zz←geramais 15
[29]  →junta
[30] menos:
[31]  zz←geramenos 15
[32] junta:
[33]  aqa←⊃zz[1]
[34]  aqa←¯8↓,aqa,[2]3 8⍴'\newline'
[35]  esse[ii+7;]←ylu[ii;⍳6],'&',ylu[ii;6+⍳30],'&',aqa,'&&&&&&&&&&\\ \hline'
[36]  resu←resu,[1]1 45⍴45↑(4 0⍎ii),'-',,⊃zz[3]
[37]  ii←ii+1
[38]  ⍎⍕⍎ii
[39]  →ini1
[40] printa:
[41]  acuja←(f[;2]='#')/⍳1↑⍴f
[42]  f[acuja;]←esse[⍤1,f[acuja;3 4],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[44] fim:upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳45]←resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu,0 5↓resu)
[52]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
```

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------------------------------------------------------------
```

vivoa01

```
[0]  AVISO
[1]  'Leia a variavel "preparacao"'
[2]  ' Depois de gerar as folhas, compile e pdfize o arquivo c:\apl2\lista876.tex'
[3]  '   ele contem a distribuicao de alunos por cores, ideal para organizar o'
[4]  '   layout da sala ANTES de comecar'
------------------------------------------------------------
[0]  r←anarecdece ce;x;lixo
[1] ⍝ analise recursiva descendente
[2] denovo:x←geras
[3]  →(ce≠≢1↑x)/denovo
[4]  r←(¯1↓1↓x),'.'
[5]  lixo←⎕EX 2 5⍴'SNULTSVULT'
------------------------------------------------------------
[  0]  criamats
[  1]  artigo←8 15⍴' '
[  2]  artigo[1;]←15↑'os'
[  3]  artigo[2;]←15↑'o'
[  4]  artigo[3;]←15↑'um'
[  5]  artigo[4;]←15↑'uns'
[  6]  artigo[5;]←15↑'o'
[  7]  artigo[6;]←15↑'o'
[  8]  artigo[7;]←15↑'o'
[  9]  artigo[8;]←15↑'o'
[ 10]  nome←29 15⍴' '
[ 11]  nome[1;]←15↑'menino'
[ 12]  nome[2;]←15↑'alberto'
[ 13]  nome[3;]←15↑'rapaz'
[ 14]  nome[4;]←15↑'avestruz'
[ 15]  nome[5;]←15↑'apartamento'
[ 16]  nome[6;]←15↑'portal'
[ 17]  nome[7;]←15↑'elevador'
[ 18]  nome[8;]←15↑'desvio'
[ 19]  nome[9;]←15↑'caminho'
[ 20]  nome[10;]←15↑'jarro'
[ 21]  nome[11;]←15↑'sanduiche'
[ 22]  nome[12;]←15↑'livro'
[ 23]  nome[13;]←15↑'caderno'
[ 24]  nome[14;]←15↑'garraf\  ~ao'
[ 25]  nome[15;]←15↑'prato'
[ 26]  nome[16;]←15↑'morango'
[ 27]  nome[17;]←15↑'milho'
[ 28]  nome[18;]←15↑'caneco'
[ 29]  nome[19;]←15↑'alcool'
[ 30]  nome[20;]←15↑'rum'
[ 31]  nome[21;]←15↑'la5pis'
[ 32]  nome[22;]←15↑'pincel'
[ 33]  nome[23;]←15↑'gato'
[ 34]  nome[24;]←15↑'cachorro'
[ 35]  nome[25;]←15↑'arbusto'
[ 36]  nome[26;]←15↑'galho'
[ 37]  nome[27;]←15↑'pa5ssaro'
[ 38]  nome[28;]←15↑'carro'
[ 39]  nome[29;]←15↑'reboque'
[ 40]  verbo←29 15⍴' '
[ 41]  verbo[1;]←15↑'entra'
[ 42]  verbo[2;]←15↑'sai'
[ 43]  verbo[3;]←15↑'sobe'
[ 44]  verbo[4;]←15↑'desce'
```

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[ 45]  verbo[5;]←15↑'esquenta'
[ 46]  verbo[6;]←15↑'esfria'
[ 47]  verbo[7;]←15↑'voa'
[ 48]  verbo[8;]←15↑'anda'
[ 49]  verbo[9;]←15↑'corre'
[ 50]  verbo[10;]←15↑'ve'
[ 51]  verbo[11;]←15↑'enxerga'
[ 52]  verbo[12;]←15↑'sente'
[ 53]  verbo[13;]←15↑'come'
[ 54]  verbo[14;]←15↑'bebe'
[ 55]  verbo[15;]←15↑'decide'
[ 56]  verbo[16;]←15↑'cai'
[ 57]  verbo[17;]←15↑'carrega'
[ 58]  verbo[18;]←15↑'puxa'
[ 59]  verbo[19;]←15↑'empurra'
[ 60]  verbo[20;]←15↑'pensa'
[ 61]  verbo[21;]←15↑'constro5i'
[ 62]  verbo[22;]←15↑'destro5i'
[ 63]  verbo[23;]←15↑'avanc6a'
[ 64]  verbo[24;]←15↑'recua'
[ 65]  verbo[25;]←15↑'imagina'
[ 66]  verbo[26;]←15↑'senta'
[ 67]  verbo[27;]←15↑'anseia'
[ 68]  verbo[28;]←15↑'cheira'
[ 69]  verbo[29;]←15↑'solta'
[ 70]  adjetivo←24 15⍴' '
[ 71]  adjetivo[1;]←15↑'bonito'
[ 72]  adjetivo[2;]←15↑'feio'
[ 73]  adjetivo[3;]←15↑'quente'
[ 74]  adjetivo[4;]←15↑'frio'
[ 75]  adjetivo[5;]←15↑'grande'
[ 76]  adjetivo[6;]←15↑'pequeno'
[ 77]  adjetivo[7;]←15↑'imenso'
[ 78]  adjetivo[8;]←15↑'enorme'
[ 79]  adjetivo[9;]←15↑'gostoso'
[ 80]  adjetivo[10;]←15↑'cheiroso'
[ 81]  adjetivo[11;]←15↑'ruim'
[ 82]  adjetivo[12;]←15↑'bom'
[ 83]  adjetivo[13;]←15↑'mau'
[ 84]  adjetivo[14;]←15↑'suave'
[ 85]  adjetivo[15;]←15↑'rude'
[ 86]  adjetivo[16;]←15↑'fa5cil'
[ 87]  adjetivo[17;]←15↑'difi5cil'
[ 88]  adjetivo[18;]←15↑'ra5pido'
[ 89]  adjetivo[19;]←15↑'demorado'
[ 90]  adjetivo[20;]←15↑'lerdo'
[ 91]  adjetivo[21;]←15↑'inteligente'
[ 92]  adjetivo[22;]←15↑'aparvalhado'
[ 93]  adjetivo[23;]←15↑'esperto'
[ 94]  adjetivo[24;]←15↑'agrada5vel'
[ 95]  prepos←16 15⍴' '
[ 96]  prepos[1;]←15↑'sobre'
[ 97]  prepos[2;]←15↑'ante'
[ 98]  prepos[3;]←15↑'com'
[ 99]  prepos[4;]←15↑'sobre'
[100]  prepos[5;]←15↑'apo5s'
[101]  prepos[6;]←15↑'ate5'
[102]  prepos[7;]←15↑'contra'
[103]  prepos[8;]←15↑'de'
[104]  prepos[9;]←15↑'desde'
[105]  prepos[10;]←15↑'em'
[106]  prepos[11;]←15↑'entre'
[107]  prepos[12;]←15↑'para'
```

```
[108]  prepos[13;]←15↑'perante'
[109]  prepos[14;]←15↑'por'
[110]  prepos[15;]←15↑'sem'
[111]  prepos[16;]←15↑'sob'
[112]  adverb←27 15⍴' '
[113]  adverb[1;]←15↑'aqui'
[114]  adverb[2;]←15↑'ali'
[115]  adverb[3;]←15↑'la5'
[116]  adverb[4;]←15↑'bem'
[117]  adverb[5;]←15↑'mal'
[118]  adverb[6;]←15↑'n⍀  ~ao'
[119]  adverb[7;]←15↑'talvez'
[120]  adverb[8;]←15↑'quic6a'
[121]  adverb[9;]←15↑'sim'
[122]  adverb[10;]←15↑'so5'
[123]  adverb[11;]←15↑'somente'
[124]  adverb[12;]←15↑'aonde'
[125]  adverb[13;]←15↑'quanto'
[126]  adverb[14;]←15↑'como'
[127]  adverb[15;]←15↑'porque'
[128]  adverb[16;]←15↑'muito'
[129]  adverb[17;]←15↑'demais'
[130]  adverb[18;]←15↑'pouco'
[131]  adverb[19;]←15↑'tanto'
[132]  adverb[20;]←15↑'apenas'
[133]  adverb[21;]←15↑'hoje'
[134]  adverb[22;]←15↑'ja5'
[135]  adverb[23;]←15↑'agora'
[136]  adverb[24;]←15↑'quando'
[137]  adverb[25;]←15↑'quanta'
[138]  adverb[26;]←15↑'nunca'
[139]  adverb[27;]←15↑'sempre'
-------------------------------------------------------------
[ 0]  r←geracasoard;SOMA
[ 1]  r←6 75⍴' '
[ 2]  SOMA←0
[ 3]  →(2=?2)/e1
[ 4]  SOMA←1
[ 5]  r[2;]←75↑anarecdece 0
[ 6]  →v1
[ 7] e1:r[2;]←75↑anarecdece 1
[ 8] v1:→(2=?2)/e2
[ 9]  SOMA←SOMA+2
[10]  r[3;]←75↑anarecdece 0
[11]  →v2
[12] e2:r[3;]←75↑anarecdece 1
[13] v2:→(2=?2)/e3
[14]  SOMA←SOMA+4
[15]  r[4;]←75↑anarecdece 0
[16]  →v3
[17] e3:r[4;]←75↑anarecdece 1
[18] v3:→(2=?2)/e4
[19]  SOMA←SOMA+8
[20]  r[5;]←75↑anarecdece 0
[21]  →v4
[22] e4:r[5;]←75↑anarecdece 1
[23] v4:→(2=?2)/e5
[24]  SOMA←SOMA+16
[25]  r[6;]←75↑anarecdece 0
[26]  →v5
[27] e5:r[6;]←75↑anarecdece 1
[28] v5:r[1;⍳2]←2 0⍕SOMA
-------------------------------------------------------------
```

```
[ 0]  r←geracasomaq;SOMA
[ 1]  r←6 75⍴' '
[ 2]  SOMA←0
[ 3]  →(2=?2)/e1
[ 4]  SOMA←1
[ 5]  r[2;]←75↑maquinace 0
[ 6]  →v1
[ 7] e1:r[2;]←75↑maquinace 1
[ 8] v1:→(2=?2)/e2
[ 9]  SOMA←SOMA+2
[10]  r[3;]←75↑maquinace 0
[11]  →v2
[12] e2:r[3;]←75↑maquinace 1
[13] v2:→(2=?2)/e3
[14]  SOMA←SOMA+4
[15]  r[4;]←75↑maquinace 0
[16]  →v3
[17] e3:r[4;]←75↑maquinace 1
[18] v3:→(2=?2)/e4
[19]  SOMA←SOMA+8
[20]  r[5;]←75↑maquinace 0
[21]  →v4
[22] e4:r[5;]←75↑maquinace 1
[23] v4:→(2=?2)/e5
[24]  SOMA←SOMA+16
[25]  r[6;]←75↑maquinace 0
[26]  →v5
[27] e5:r[6;]←75↑maquinace 1
[28] v5:r[1;⍳2]←2 0⍕SOMA
-------------------------------------------------------------
[0]  r←geras;lixo
[1] denovo:
[2]  lixo←⎕EX 2 5⍴'SNULTSVULT'
[3]  r←gerasn,gerasv
[4]  →(14>⍴r)/denovo
[5]  →(75<⍴r)/denovo
[6]  r←(1 0⍕SVULT∨SNULT),r
-------------------------------------------------------------
[ 0]  r←gerasn
[ 1]  →((⍳5)=?5)/um,dois,tres,quatro,cinco
[ 2] um:r←(geraum artigo),geraum nome
[ 3]  SNULT←0
[ 4]  →fim
[ 5] dois:r←(geraum artigo),(geraum adjetivo),geraum nome
[ 6]  SNULT←0
[ 7]  →fim
[ 8] tres:r←(geraum prepos),gerasn
[ 9]  →(2=⎕NC'SNULT')/jatem
[10]  SNULT←0
[11]  →fim
[12] jatem:SNULT←SNULT∨0
[13]  →fim
[14] quatro:r←geraum nome
[15]  SNULT←1
[16]  →fim
[17] cinco:r←(geraum artigo),geraum adjetivo
[18]  SNULT←1
[19] fim:
-------------------------------------------------------------
[ 0]  r←gerasv
[ 1]  →((⍳6)=?6)/um,dois,tres,quatro,cinco,seis
[ 2] um:r←(geraum verbo),gerasn
[ 3]  →(2=⎕NC'SNULT')/jatem
```

```
[ 4]  SVULT←0
[ 5]  →fim
[ 6] jatem:SVULT←SNULT∨0
[ 7]  →fim
[ 8] dois:r←(geraum verbo),(geraum adverb),gerasn
[ 9]  →(2=⎕NC'SNULT')/jatem2
[10]  SVULT←0
[11]  →fim
[12] jatem2:SVULT←SNULT∨0
[13]  →fim
[14] tres:r←(geraum verbo),geraum adverb
[15]  SVULT←0
[16]  →fim
[17] quatro:r←geraum verbo
[18]  SVULT←0
[19]  →fim
[20] cinco:r←(geraum verbo),geraum verbo
[21]  SVULT←1
[22]  →fim
[23] seis:r←(geraum adverb),geraum verbo
[24]  SVULT←1
[25] fim:
------------------------------------------------------------
[0]  r←geraum x;y
[1]  y←,x[?1↑⍴x;]
[2]  r←((~⍵∧⌽⍵y=' ')/y),' '
------------------------------------------------------------
[ 0]  r←maquinace ceer;s;ce;qt
[ 1] ⍝ ce=0:CERTO,    ce=1:ERRADO
[ 2] denovo:ce←0
[ 3]  qt←1
[ 4]  r←geraum artigo
[ 5] no:r←r,geraum nome
[ 6]  qt←qt+1
[ 7]  →(75<⍴r)/denovo
[ 8]  s←?10
[ 9]  ce←ce∨s>7
[10]  →(s=⍳10)/verb,verb,verb,prep,fim1,fim1,fim1,adve,no,adje
[11] verb:r←r,geraum verbo
[12]  qt←qt+1
[13]  →(75<⍴r)/denovo
[14]  s←?10
[15]  →(s=⍳10)/no,no,no,no,no,adje,adje,prep,adve,adve
[16] prep:r←r,geraum prepos
[17]  qt←qt+1
[18]  →(75<⍴r)/denovo
[19]  s←?10
[20]  ce←ce∨s>7
[21]  →(s=⍳10)/no,no,no,no,adje,adje,adje,verb,adve,prep
[22] adje:r←r,geraum adjetivo
[23]  qt←qt+1
[24]  →(75<⍴r)/denovo
[25]  s←?10
[26]  ce←ce∨s>7
[27]  →(s=⍳10)/no,no,no,no,no,no,no,verb,adve,prep
[28] adve:r←r,geraum adverb
[29]  qt←qt+1
[30]  →(75<⍴r)/denovo
[31]  s←?10
[32]  ce←ce∨s>7
[33]  →(s=⍳10)/no,no,no,no,no,prep,prep,adje,adve,adje
[34] fim1:→(qt<3)/denovo
[35]  →(ceer≠ce)/denovo
```

```
[36]  r←(¯1↓r),'.'
-------------------------------------------------------------
[ 0]  ref;i;j;k;candi;qt;zz;r
[ 1]  zz←ΔFM'f:/infoland/lixo1234'
[ 2]  qt←78
[ 3] luga:
[ 4]  i←1
[ 5]  r←0 80ρ' '
[ 6] te:→(i≥⎕IO+1↑ρzz)/fim
[ 7]  candi←,zz[i;]
[ 8] te2:→(80>ρcandi)/eca
[ 9]  j←qt
[10]  →(0=' 'є j↑candi)/ufa
[11] te3:→(candi[j]=' ')/ufa
[12]  j←j-1
[13]  →te3
[14] ufa:r←r,[⎕IO]1 80ρ80↑j↑candi
[15]  candi←j↓candi
[16]  →((ρcandi)=+/candi=' ')/som
[17]  →te2
[18] eca:r←r,[⎕IO]1 80ρ80↑candi
[19] som:i←i+1
[20]  →te
[21] fim:'acabou'
[22]  y←r
-------------------------------------------------------------
[ 0]  opesq vivo975a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aaa;lixo1;flm;yyy
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←2 ⋄ EVENTO←'PL975   '
[ 6]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕⍳n
[ 9]  FOLHALA975←ajusta80 FOLHALA975
[10]  relat←((2+1↑ρylu),1 0+ρFOLHALA975)ρ' '
[11]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLO1'
[12]  xk←1 ⋄ resu←0 3ρ0
[13] testa:→(xk>1↑ρylu)/fim
[14]  esse←19 80ρ' '
[15]  f←FOLHALA975
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.04
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[18;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[19;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  yyy←geracasomaq
[27]  resp←resp,⍪yyy[1;⍳2]
[28]  esse[7+⍳5;⍳75]←yyy[1+⍳5;]
[29]  yyy←geracasoard
[30]  resp←resp,⍪yyy[1;⍳2]
[31]  esse[12+⍳5;⍳75]←yyy[1+⍳5;]
[32] continua:
[33]  resu←resu,[1](1,3)ρresp
[34]  acuja←(f[;2]='#')/⍳1↑ρf
```

```
[35]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[36]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[37]  ⍞←(⍕xk←xk+1),'-'
[38]  →testa
[39] fim:upag←(1 0+⍴f)⍴' '
[40]  →(1=≡n)/elafa
[41]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[42]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[43]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 5 0)⍕resu
[44]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[45]  →terminando
[46] elafa:aaa←(ylu,5 0⍕0 1↓resu)
[47]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[48]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[49] terminando:
[50]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[51]  relat[1↑⍴relat;;]←upag
[52]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[53] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[54]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[55]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[56]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivoa01a n;CORRECAO;EVENTO;aaa;acuja;caso;cores;dhx;esse;f;fol;j;k;lixo;lixo1;
      lixonol;oba2;quens;relat;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:
[ 4]  cores←6 12⍴(12↑'azul'),(12↑'vermelha'),(12↑'verde'),(12↑'amarela'),(12↑'cinza'),12↑'
      laranja'
[ 5]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 6]  CORRECAO←0 ⋄ EVENTO←'PLa01   '
[ 7]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 9]  →(~isnum n)/1+⎕LC ⋄ n←6⌈n ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[10] ⍝ ylu←((⌈6×(1↑⍴ylu)÷6),36)↑ylu
[11]  ylu←((⌈6×(1↑⍴ylu)÷6),36)↑ylu←ylu[zzz?zzz←1↑⍴ylu;]
[12]  FOLHALAa01←ajusta80 FOLHALAa01
[13]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAa01)⍴' '
[14]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[15]  xk←1 ⋄ resu←0 0⍴0
[16]  quens←6 10 30⍴' '
[17] testa:→(xk>6)/fim
[18]  esse←18 80⍴' '
[19]  f←FOLHALAa01
[20]  esse[1;]←80↑dhx[1;]
[21]  esse[2;]←80↑dhx[2;]
[22]  esse[3;]←80↑4 2⍕VERSAOa←1.04
[23] ⍝ esse[4;]←80↑ylu[xk;⍳6]     mudado para deixar de imprimir o
[24] ⍝ esse[5;]←80↑ylu[xk;6+⍳30]  "antigo" dono desta folha.
[25]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[26]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[27]  esse[8;]←80↑cores[xk;]
[28]  j←xk
[29]  k←1
[30] t1:→(j>1↑⍴ylu)/inica
[31]  esse[8+k;]←80↑ylu[j;]
[32]  quens[1+6|j-1;k;]←30↑' ',6↓ylu[j;]
[33]  j←j+6
[34]  k←k+1
[35]  →t1
[36] inica:
```

```
[37]  acuja←(f[;2]='#')/⍳1↑⍴f
[38]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[39]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[40]  ⍞←(⍕xk←xk+1),'-'
[41]  →testa
[42] fim:
[43] terminando:
[44]  relat[1↑⍴relat;1↑1↓⍴relat;]←80↑'\end{document}'
[45]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[46] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[47]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[48]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[49]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
[50]  quens←6 ¯11 30↑quens
[51]  quens[1;1;]←30↑'AZUL' ⋄ quens[2;1;]←30↑'VERMELHO' ⋄ quens[3;1;]←30↑'VERDE'
[52]  quens[4;1;]←30↑'AMARELO' ⋄ quens[5;1;]←30↑'CINZA' ⋄ quens[6;1;]←30↑'LARANJA'
[53]  CABE1←ajusta80 CABE1
[54]  fol←0 80⍴' '
[55]  fol←fol,[1]CABE1
[56]  fol←fol,[1]66 80↑66 30⍴quens
[57]  fol←fol,[1]1 80⍴80↑'\end{verbatim}'
[58]  fol←fol,[1]1 80⍴80↑'\end{document}'
[59]  lixo←fol ⎕FM'c:\apl2\listaa01.tex'
[60]  'gerada a lista de alunos em c:\apl2\listaa01.tex'
-------------------------------------------------------------
```

vivoa05

```
[0]  AVISO
[1]  'Leia a variavel "preparacao"'
[2]  ' Depois de gerar as folhas, compile e pdfize o arquivo c:\apl2\lista876.tex'
[3]  '   ele contem a distribuicao de alunos por cores, ideal para organizar o'
[4]  '   layout da sala ANTES de comecar'
-------------------------------------------------------------
[ 0]  opesq vivoa05a n;CORRECAO;EVENTO;aaa;acuja;caso;cores;dhx;esse;f;fol;j;k;lixo;lixo1;
      lixonol;oba2;quens;relat;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:
[ 4]  cores←6 12⍴(12↑'azul'),(12↑'vermelha'),(12↑'verde'),(12↑'amarela'),(12↑'cinza'),12↑'
      laranja'
[ 5]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 6]  CORRECAO←0 ⋄ EVENTO←'PLa05   '
[ 7]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 9]  →(~isnum n)/1+⎕LC ⋄ n←6⌈n ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[10] ⍝ ylu←((⌈6×(1↑⍴ylu)÷6),36)↑ylu
[11]  ylu←((⌈6×(1↑⍴ylu)÷6),36)↑ylu←ylu[zzz?zzz←1↑⍴ylu;]
[12]  FOLHALAa05←ajusta80 FOLHALAa05
[13]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAa05)⍴' '
[14]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLOI'
[15]  xk←1 ⋄ resu←0 0⍴0
[16]  quens←6 10 30⍴' '
[17] testa:→(xk>6)/fim
[18]  esse←18 80⍴' '
[19]  f←FOLHALAa05
[20]  esse[1;]←80↑dhx[1;]
[21]  esse[2;]←80↑dhx[2;]
[22]  esse[3;]←80↑4 2⍕VERSAOa←1.04
[23] ⍝ esse[4;]←80↑ylu[xk;⍳6]     mudado para deixar de imprimir o
[24] ⍝ esse[5;]←80↑ylu[xk;6+⍳30]  "antigo" dono desta folha.
```

```
[25]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[26]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[27]  esse[8;]←80↑cores[xk;]
[28]  j←xk
[29]  k←1
[30] t1:→(j>1↑⍴ylu)/inica
[31]  esse[8+k;]←80↑ylu[j;]
[32]  quens[1+6|j-1;k;]←30↑' ',6↓ylu[j;]
[33]  j←j+6
[34]  k←k+1
[35]  →t1
[36] inica:
[37]  acuja←(f[;2]='#')/⍳1↑⍴f
[38]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[39]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[40]  ⎕←(⍕xk←xk+1),'-'
[41]  →testa
[42] fim:
[43] terminando:
[44]  relat[1↑⍴relat;1↑1↓⍴relat;]←80↑'\end{document}'
[45]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[46] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[47]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[48]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[49]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
[50]  quens←6 ¯11 30↑quens
[51]  quens[1;1;]←30↑'AZUL' ⋄ quens[2;1;]←30↑'VERMELHO' ⋄ quens[3;1;]←30↑'VERDE'
[52]  quens[4;1;]←30↑'AMARELO' ⋄ quens[5;1;]←30↑'CINZA' ⋄ quens[6;1;]←30↑'LARANJA'
[53]  CABE1←ajusta80 CABE1
[54]  fol←0 80⍴' '
[55]  fol←fol,[1]CABE1
[56]  fol←fol,[1]66 80↑66 30⍴quens
[57]  fol←fol,[1]1 80⍴80↑'\end{verbatim}'
[58]  fol←fol,[1]1 80⍴80↑'\end{document}'
[59]  lixo←fol ⎕FM'c:\apl2\listaa05.tex'
[60]  'gerada a lista de alunos em c:\apl2\listaa05.tex'
------------------------------------------------------------
```

vivob02

```
[0]  AVISO
[1]  'Leia a variavel "preparacao"'
[2]  ' Depois de gerar as folhas, compile e pdfize o arquivo c:\apl2\lista876.tex'
[3]  '   ele contem a distribuicao de alunos por cores, ideal para organizar o'
[4]  '   layout da sala ANTES de comecar'
------------------------------------------------------------
[ 0]  opesq vivob02a n;CORRECAO;EVENTO;aaa;acuja;caso;cores;dhx;esse;f;fol;j;k;lixo;lixo1;
      lixonol;oba2;quens;relat;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:
[ 4]  cores←6 12⍴(12↑'azul'),(12↑'vermelha'),(12↑'verde'),(12↑'amarela'),(12↑'cinza'),12↑'
      laranja'
[ 5]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 6]  CORRECAO←0 ⋄ EVENTO←'PLb02   '
[ 7]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 9]  →(~isnum n)/1+⎕LC ⋄ n←6⌈n ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[10] ⍝ ylu←(⌈6×(1↑⍴ylu)÷6),36)↑ylu
[11]  ylu←(⌈6×(1↑⍴ylu)÷6),36)↑ylu←ylu[zzz?zzz←1↑⍴ylu;]
[12]  FOLHALAb02←ajusta80 FOLHALAb02
```

```
[13]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAb02)⍴' '
[14]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLOI'
[15]  xk←1 ⋄ resu←0 0⍴0
[16]  quens←6 10 30⍴' '
[17] testa:→(xk>6)/fim
[18]  esse←18 80⍴' '
[19]  f←FOLHALAb02
[20]  esse[1;]←80↑dhx[1;]
[21]  esse[2;]←80↑dhx[2;]
[22]  esse[3;]←80↑4 2⍕VERSAOa←1.04
[23] ⍝ esse[4;]←80↑ylu[xk;⍳6]     mudado para deixar de imprimir o
[24] ⍝ esse[5;]←80↑ylu[xk;6+⍳30]  "antigo" dono desta folha.
[25]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[26]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[27]  esse[8;]←80↑cores[xk;]
[28]  j←xk
[29]  k←1
[30] t1:→(j>1↑⍴ylu)/inica
[31]  esse[8+k;]←80↑ylu[j;]
[32]  quens[1+6|j-1;k;]←30↑' ',6↓ylu[j;]
[33]  j←j+6
[34]  k←k+1
[35]  →t1
[36] inica:
[37]  acuja←(f[;2]='#')/⍳1↑⍴f
[38]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[39]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[40]  ⍞←(⍕xk←xk+1),'-'
[41]  →testa
[42] fim:
[43] terminando:
[44]  relat[1↑⍴relat;1↑1↓⍴relat;]←80↑'\end{document}'
[45]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[46] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[47]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[48]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[49]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
[50]  quens←6 ¯11 30↑quens
[51]  quens[1;1;]←30↑'AZUL' ⋄ quens[2;1;]←30↑'VERMELHO' ⋄ quens[3;1;]←30↑'VERDE'
[52]  quens[4;1;]←30↑'AMARELO' ⋄ quens[5;1;]←30↑'CINZA' ⋄ quens[6;1;]←30↑'LARANJA'
[53]  CABE1←ajusta80 CABE1
[54]  fol←0 80⍴' '
[55]  fol←fol,[1]CABE1
[56]  fol←fol,[1]66 80↑66 30⍴quens
[57]  fol←fol,[1]1 80⍴80↑'\end{verbatim}'
[58]  fol←fol,[1]1 80⍴80↑'\end{document}'
[59]  lixo←fol ⎕FM'c:\apl2\listab02.tex'
[60]  'gerada a lista de alunos em c:\apl2\listab02.tex'
------------------------------------------------------------
```

vivob20

```
[ 0]  opesq vivob20a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;nomes;num
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLb20   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
```

```
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAb20←ajusta80 FOLHALAb20
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAb20)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 2⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←20 80⍴' '
[16]  f←FOLHALAb20
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:
[28]  esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[32]  esse[19;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[20;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] ini1:
[35]  resu←resu,[1]1 2⍴resp
[36]  acuja←(f[;2]='#')/⍳1↑⍴f
[37]  f[acuja;]←esse[±,f[acuja;3 4],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[39]  ⍞←(⍕xk←xk+1),'-'
[40]  →testa
[41] fim:upag←(1 0+⍴f)⍴' '
[42]  →(1=≡n)/elafa
[43] ⍝ upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[44] ⍝ upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[45] ⍝ upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←4 0 8 0)⍕resu
[46] ⍝ upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[47]  →terminando
[48] elafa:⍝aaa←(ylu[;⍳36],4 0⍕0 1↓resu)
[49] ⍝ lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[50] ⍝ '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[51] terminando:
[52]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[53]  relat[1↑⍴relat;;]←upag
[54]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[55] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[56]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[57]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'.tex (nao ha .gpa)'
-------------------------------------------------------------
```

vivob27

```
[ 0]  opesq vivob27a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;nomes;num
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLb27   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
```

```
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAb27←ajusta80 FOLHALAb27
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAb27)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 2⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←20 80⍴' '
[16]  f←FOLHALAb27
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:
[28]  esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[32]  esse[19;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[20;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] ini1:
[35]  esse[8;]←80↑'1'
[36]  esse[9;]←80↑'1'
[37]  esse[10;]←80↑'1'
[38]  esse[11;]←80↑'1'
[39]  esse[12;]←80↑'1'
[40]  resu←resu,[1]1 2⍴resp
[41]  acuja←(f[;2]='#')/⍳1↑⍴f
[42]  f[acuja;]←esse[⍤,f[acuja;3 4],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[44]  ⍞←(⍕xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+⍴f)⍴' '
[47]  →terminando  ⍝ pula todo o GPA
[48]  →(1=≡n)/elafa
[49]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[50]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[51]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←4 0 8 0)⍕resu
[52]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[53]  →terminando
[54] elafa:aaa←(ylu[;⍳36],4 0⍕0 1↓resu)
[55]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[56]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[57] terminando:
[58]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[59]  relat[1↑⍴relat;;]←upag
[60]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[61] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[62]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[63]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivob30

```
[0]  AVISO
[1]  'Este exercicio foi proposto originalmente para uma turma de Sistemas Distribuidos'
[2]  'dai a razao da enfase sobre a arquitetura planejada'
[3]  'Depois ele foi adaptado para ser usado em Banco de Dados (enfase no MER)'
[4]  'Entao, a formulacao original foi salva em FOLHALA888SD'
[5]  'E a folha originalmente criada foi modificada para BD.'
-------------------------------------------------------------
[ 0]  opesq vivob30a n;CORRECAO;EVENTO;aaa;acuja;caso;dhx;esse;f;fol;j;k;lixo;lixo1;lixono
      l;nomes;oba2;ql39;qlinha;quens;relat;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLb30   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAb30←ajusta80 FOLHALAb30
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAb30)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[13]  xk←1 ⋄ resu←0 0⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←20 80⍴' '
[16]  f←FOLHALAb30
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:
[28]  esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[32]  esse[19;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[20;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] inica:
[35]  acuja←(f[;2]='#')/⍳1↑⍴f
[36]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[37]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[38]  ⍞←(⍎xk←xk+1),'-'
[39]  →testa
[40] fim:
[41] terminando:
[42]  relat[1↑⍴relat;1↑1↓⍴relat;]←80↑'\end{document}'
[43]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[44] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[45]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[46]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[47]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'    (.tex)'
-------------------------------------------------------------
```

vivob40

```
[ 0]  opesq vivob40a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;nomes;num
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLb40   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAb40←ajusta80 FOLHALAb40
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAb40)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 2⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←20 80⍴' '
[16]  f←FOLHALAb40
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.01
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:
[28]  esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[32]  esse[19;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[20;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] ini1:
[35]  esse[8;]←80↑'1'
[36]  esse[9;]←80↑'1'
[37]  esse[10;]←80↑'1'
[38]  esse[11;]←80↑'1'
[39]  esse[12;]←80↑'1'
[40]  resu←resu,[1]1 2⍴resp
[41]  acuja←(f[;2]='#')/⍳1↑⍴f
[42]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[44]  ⍞←(⍎xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+⍴f)⍴' '
[47]  →terminando ⍝ pulando a geracao do arquivo GPA
[48]  →(1=≡n)/elafa
[49]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[50]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[51]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←4 0 8 0)⍎resu
[52]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[53]  →terminando
[54] elafa:aaa←(ylu[;⍳36],4 0⍎0 1↓resu)
[55]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[56]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[57] terminando:
[58]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
```

```
[59]  relat[1↑⍴relat;;]←upag
[60]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[61] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[62]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∘'\'EVENTO=' ')/EVENTO),'.tex'
[63]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivob45

```
[ 0]  opesq vivo890a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;nomes;num
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL890   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA890←ajusta80 FOLHALA890
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA890)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 2⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←20 80⍴' '
[16]  f←FOLHALA890
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.01
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:
[28]  esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[32]  esse[19;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[20;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] ini1:
[35]  esse[8;]←80↑'1'
[36]  esse[9;]←80↑'1'
[37]  esse[10;]←80↑'1'
[38]  esse[11;]←80↑'1'
[39]  esse[12;]←80↑'1'
[40]  resu←resu,[1]1 2⍴resp
[41]  acuja←(f[;2]='#')/⍳1↑⍴f
[42]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[44]  ⍞←(⍎xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+⍴f)⍴' '
[47]  →terminando ⍝ pulando a geracao do arquivo GPA
[48]  →(1=≡n)/elafa
[49]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[50]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
```

```
[51]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←4 0 8 0)⍕resu
[52]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[53]  →terminando
[54] elafa:aaa←(ylu[;⍳36],4 0⍕0 1↓resu)
[55]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[56]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[57] terminando:
[58]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[59]  relat[1↑⍴relat;;]←upag
[60]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[61] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[62]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[63]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivob45a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;nomes;num
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLb45   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAb45←ajusta80 FOLHALAb45
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAb45)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 2⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←20 80⍴' '
[16]  f←FOLHALAb45
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:
[28]  esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[32]  esse[19;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[20;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] ini1:
[35]  esse[8;]←80↑'1'
[36]  esse[9;]←80↑'1'
[37]  esse[10;]←80↑'1'
[38]  esse[11;]←80↑'1'
[39]  esse[12;]←80↑'1'
[40]  resu←resu,[1]1 2⍴resp
[41]  acuja←(f[;2]='#')/⍳1↑⍴f
[42]  f[acuja;]←esse[⌽,f[acuja;3 4],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[44]  ⍞←(⍕xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+⍴f)⍴' '
```

```
[47]  →terminando ⍝ pulando a geracao do arquivo GPA
[48]  →(1=≡n)/elafa
[49]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[50]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[51]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←4 0 8 0)⍉resu
[52]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[53]  →terminando
[54] elafa:aaa←(ylu[;⍳36],4 0⍴0 1↓resu)
[55]  lixonol←aaa ⎕FM('c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.gpa')
[56]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[57] terminando:
[58]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[59]  relat[1↑⍴relat;;]←upag
[60]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[61] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[62]  lixonol←lixonol ⎕FM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.tex'
[63]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivob50

```
[ 0]  opesq vivob50a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;nomes;num
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLb50   '
[ 6]  dhx←2 10⍴('05/05/0005'⍉+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍉+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍉⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAb50←ajusta80 FOLHALAb50
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAb50)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 2⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←20 80⍴' '
[16]  f←FOLHALAb50
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍉VERSAOa←1.01
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:
[28]  esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍉resp←xk),' ',opesq
[32]  esse[19;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[20;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] ini1:
[35]  esse[8;]←80↑'1'
[36]  esse[9;]←80↑'1'
[37]  esse[10;]←80↑'1'
[38]  esse[11;]←80↑'1'
```

```
[39]  esse[12;]←80↑'1'
[40]  resu←resu,[1]1 2ρresp
[41]  acuja←(f[;2]='#')/⍳1↑ρf
[42]  f[acuja;]←esse[⍤,f[acuja;3 4],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\newpage'
[44]  ⍞←(⍕xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+ρf)ρ' '
[47]  →terminando ⍝ pulando a geracao do arquivo GPA
[48]  →(1=≡n)/elafa
[49]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[50]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[51]  upag[2+⍳1↑ρresu;⍳+/lixo1]←(lixo1←4 0 8 0)⍕resu
[52]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[53]  →terminando
[54] elafa:aaa←(ylu[;⍳36],4 0⍕0 1↓resu)
[55]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[56]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[57] terminando:
[58]  upag[1↑ρupag;]←(1↓ρupag)↑'\end{document}'
[59]  relat[1↑ρrelat;;]←upag
[60]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[61] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[62]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[63]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivob55

```
[ 0]  opesq vivob55a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;nomes;num
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLb55   '
[ 6]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAb55←ajusta80 FOLHALAb55
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALAb55)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑⎕FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 2ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←20 80ρ' '
[16]  f←FOLHALAb55
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑ρf),4)ρ'\#05')/⍳1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:
[28]  esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
```

```
[31]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[32]  esse[19;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[20;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] ini1:
[35]  esse[8;]←80↑'1'
[36]  esse[9;]←80↑'1'
[37]  esse[10;]←80↑'1'
[38]  esse[11;]←80↑'1'
[39]  esse[12;]←80↑'1'
[40]  resu←resu,[1]1 2⍴resp
[41]  acuja←(f[;2]='#')/⍳1↑⍴f
[42]  f[acuja;]←esse[⌽,f[acuja;3 4],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[44]  ⎕←(⍕xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+⍴f)⍴' '
[47]  →terminando ⍝ pulando a parte do arquivo GPA
[48]  →(1=≡n)/elafa
[49]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[50]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[51]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←4 0 8 0)⍕resu
[52]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[53]  →terminando
[54] elafa:aaa←(ylu[;⍳36],4 0⍕0 1↓resu)
[55]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[56]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[57] terminando:
[58]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[59]  relat[1↑⍴relat;;]←upag
[60]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[61] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[62]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[63]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivob59

```
[ 0]  opesq vivob59a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;nomes;num
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLb59   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAb59←ajusta80 FOLHALAb59
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAb59)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 2⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←20 80⍴' '
[16]  f←FOLHALAb59
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
```

```
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:
[28]  esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[32]  esse[19;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[20;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] ini1:
[35]  esse[8;]←80↑'1'
[36]  esse[9;]←80↑'1'
[37]  esse[10;]←80↑'1'
[38]  esse[11;]←80↑'1'
[39]  esse[12;]←80↑'1'
[40]  resu←resu,[1]1 2⍴resp
[41]  acuja←(f[;2]='#')/⍳1↑⍴f
[42]  f[acuja;]←esse[≜,f[acuja;3 4],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[44]  ⎕←(⍕xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+⍴f)⍴' '
[47]  →terminando
[48]  →(1=≡n)/elafa
[49]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[50]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[51]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←4 0 8 0)⍕resu
[52]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[53]  →terminando
[54] elafa:aaa←(ylu[;⍳36],4 0⍕0 1↓resu)
[55]  lixonol←aaa ⍙FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[56]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[57] terminando:
[58]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[59]  relat[1↑⍴relat;;]←upag
[60]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[61] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[62]  lixonol←lixonol ⍙FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[63]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'    (.tex)'
-------------------------------------------------------------
```

vivob60

```
[ 0]  opesq vivob60a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;nomes;num
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLb60   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⍙FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAb60←ajusta80 FOLHALAb60
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAb60)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⍙FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 2⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
```

```
[15]  esse←20 80ρ' '
[16]  f←FOLHALAb60
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[20]  esse[4;]←80↑ylu[xk;ι6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[□IO+1]f[;ι4]=((1↑ρf),4)ρ'↓#05')/ι1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[□IO]nomes,[□IO](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:
[28]  esse[5;]←80↑ylu[xk;6+ι30]
[29] maiszebra:
[30]  →(~1=≡n)/1+□LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[32]  esse[19;ι10]←'@',esse[6;5+ι3],esse[4;1+ι5],'@'
[33]  esse[20;]←80↑esse[6;5+ι3],'-',esse[4;1+ι5],' - ',opesq[6 7],'/',opesq[9 10]
[34] ini1:
[35]  resu←resu,[1]1 2ρresp
[36]  acuja←(f[;2]='#')/ι1↑ρf
[37]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'↓newpage'
[39]  □←(⍕xk←xk+1),'-'
[40]  →testa
[41] fim:upag←(1 0+ρf)ρ' '
[42]  →(1=≡n)/elafa
[43] ⍝ upag[1;]←(1↓ρupag)↑'↓begin{verbatim}'
[44] ⍝ upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[45] ⍝ upag[2+ι1↑ρresu;ι+/lixo1]←(lixo1←4 0 8 0)⍕resu
[46] ⍝ upag[3+1↑ρresu;]←(1↓ρupag)↑'↓end{verbatim}'
[47]  →terminando
[48] elafa:
[49] ⍝aaa←(ylu[;ι36],4 0⍕0 1↓resu)
[50] ⍝ lixonol←aaa ΔFM('c:↓apl2↓',((~⍵∧↓⍵EVENTO=' ')/EVENTO),'.gpa')
[51] ⍝ '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[52] terminando:
[53]  upag[1↑ρupag;]←(1↓ρupag)↑'↓end{document}'
[54]  relat[1↑ρrelat;;]←upag
[55]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[56] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[57]  lixonol←lixonol ΔFM'c:↓apl2↓',((~⍵∧↓⍵EVENTO=' ')/EVENTO),'.tex'
[58]  'Arquivo criado com o nome de c:↓apl2↓',EVENTO,'.tex (nao ha .gpa)'
-------------------------------------------------------------
```

vivob63

```
[ 0]  opesq vivob63a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;nomes;num
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠□NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  □RL←⌊(□TS[7]+□TS[6]+□TS[5])*2.7364736473
[ 5]  EVENTO←'PLb63   '
[ 6]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×□TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×□TS[
      4 5],□TS[6]+□TS[7]÷1000
[ 7]  →(isnum n)/1+□LC ⋄ ylu←ΔFM'c:↓apl2↓',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+□LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕ιn
[ 9]  ylu←n grupo ylu
[10]  FOLHALAb63←ajusta80 FOLHALAb63
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALAb63)ρ' '
```

```
[12]  relat[1;;]←(1↓⍴relat)↑⍪FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 2⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←20 80⍴' '
[16]  f←FOLHALAb63
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑'4 2⍕VERSAOa←1.01
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:
[28]  esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[32]  esse[19;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[20;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] ini1:
[35]  esse[8;]←80↑'1'
[36]  esse[9;]←80↑'1'
[37]  esse[10;]←80↑'1'
[38]  esse[11;]←80↑'1'
[39]  esse[12;]←80↑'1'
[40]  resu←resu,[1]1 2⍴resp
[41]  acuja←(f[;2]='#')/⍳1↑⍴f
[42]  f[acuja;]←esse[⍤,f[acuja;3 4],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[44]  ⍞←(⍕xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+⍴f)⍴' '
[47]  →terminando ⍝ salta a geracao de GPA
[48]  →(1=≡n)/elafa
[49]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[50]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[51]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←4 0 8 0)⍕resu
[52]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[53]  →terminando
[54] elafa:aaa←(ylu[;⍳36],4 0⍕0 1↓resu)
[55]  lixonol←aaa ⍪FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[56]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[57] terminando:
[58]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[59]  relat[1↑⍴relat;;]←upag
[60]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[61] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[62]  lixonol←lixonol ⍪FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[63]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivod05

```
[ 0]  opesq vivod05a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;nomes;num
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
```

```
[ 5]  EVENTO←'PLd05   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAd05←ajusta80 FOLHALAd05
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAd05)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 2⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←20 80⍴' '
[16]  f←FOLHALAd05
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:
[28]  esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[32]  esse[19;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[20;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] ini1:
[35]  esse[8;]←80↑'1'
[36]  esse[9;]←80↑'1'
[37]  esse[10;]←80↑'1'
[38]  esse[11;]←80↑'1'
[39]  esse[12;]←80↑'1'
[40]  resu←resu,[1]1 2⍴resp
[41]  acuja←(f[;2]='#')/⍳1↑⍴f
[42]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[44]  ⍞←(⍕xk←xk+1),'-'
[45]  →testa
[46] fim:
[47]  upag←(1 0+⍴f)⍴' '
[48]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[49]  relat[1↑⍴relat;;]←upag
[50]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[51] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[52]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[53]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'    .tex'
-------------------------------------------------------------
```

vivod10

```
[0]  r←gerad10;x;in;y;z
[1]  x←geradirt TEXTD10
[2]  y←((1↑⍴x),4)⍴⍋,x,' '
[3]  in←?1↑⍴x
[4]  z←TEXTD10[y[in;2]+⍳y[in;3];]
[5]  →(23<1↑⍴z)/erro
[6]  r←z
[7]  →0
```

```
[8] erro:'Tem uma definicao maior do que 22. Corrija...'
------------------------------------------------------------
[ 0]  r←geradirt x;lin;i;tam
[ 1]  r←(((+/(,x[;1])='%')÷3),20)⍴' '
[ 2]  tam←0
[ 3]  lin←1
[ 4]  i←1
[ 5] t1:→(i>1↑⍴x)/fim
[ 6]  →((x[i;1]='%')∧(x[i;2]='i'))/comeca
[ 7]  →((x[i;1]='%')∧(x[i;2]='f'))/termina
[ 8]  →((x[i;1]='%')∧(x[i;2]='r'))/resposta
[ 9]  tam←tam+1
[10]  i←i+1
[11]  →t1
[12] comeca:r[lin;⍳3]←x[i;3 4 5]
[13]  r[lin;5+⍳5]←5 0⍕i
[14]  tam←0
[15]  i←i+1
[16]  →t1
[17] resposta:r[lin;10+⍳5]←5 0⍕tam
[18]  i←i+1
[19]  →t1
[20] termina:r[lin;15+⍳5]←5 0⍕i-1
[21]  lin←lin+1
[22]  i←i+1
[23]  →t1
[24] fim:
------------------------------------------------------------
[ 0]  opesq vivod10a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;nomes;num
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLd10   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAd10←ajusta80 FOLHALAd10
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAd10)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  relat[1;10;35+⍳30]←30↑'\usepackage{tikz-er2}'
[14]  xk←1 ⋄ resu←0 2⍴0
[15] testa:→(xk>1↑⍴ylu)/fim
[16]  esse←32 80⍴' '
[17]  f←FOLHALAd10
[18]  esse[1;]←80↑dhx[1;]
[19]  esse[2;]←80↑dhx[2;]
[20]  esse[3;]←80↑4 2⍕VERSAOa←1.03
[21]  esse[4;]←80↑ylu[xk;⍳6]
[22]  →(36=1↓⍴ylu)/zebra
[23]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[24]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[25]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[26]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[27]  →maiszebra
[28] zebra:
[29]  esse[5;]←80↑ylu[xk;6+⍳30]
[30] maiszebra:
[31]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[32]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
```

```
[33]  esse[31;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[34]  esse[32;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[35] ini1:
[36]  zz←gerad10
[37]  esse[8;]←80↑zz[1;]
[38]  esse[8+⍳22;]←22 80↑1 0↓zz
[39]  resu←resu,[1]1 2⍴resp
[40]  acuja←(f[;2]='#')/⍳1↑⍴f
[41]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[42]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[43]  ⎕←(⍕xk←xk+1),'-'
[44]  →testa
[45] fim:
[46]  upag←(1 0+⍴f)⍴' '
[47]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[48]  relat[1↑⍴relat;;]←upag
[49]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[50] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[51]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[52]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'    .tex'
-------------------------------------------------------------
```

vivod12

```
[0]  VEJA
[1]  'Veja a pag 54 do Elmasri. La tem um exemplo parecido'
-------------------------------------------------------------
[ 0]  r←a ondeta b;i;j;k;⎕PW;⎕IO
[ 1]  ⎕IO←1
[ 2]  ⎕PW←120
[ 3]  b←,b
[ 4]  i←1
[ 5] t1:→(i>1↑⍴a)/fim
[ 6]  j←1
[ 7] t2:→(j>1↓⍴a)/upa
[ 8]  →(a[i;j]≠b[1])/soma
[ 9]  k←1
[10] t3:→(k>⍴b)/achou
[11]  →(a[i;j+k-1]=b[k])/ainda
[12]  →soma
[13] ainda:k←k+1
[14]  →t3
[15] achou:'=',(⍕i),' ',(⍕j),a[i;]
[16]  j←j+⍴b
[17]  →t2
[18] soma:j←j+1
[19]  →t2
[20] upa:i←i+1
[21]  →t1
[22] fim:
-------------------------------------------------------------
[ 0]  opesq vivo003a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo003 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PL003   '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
```

```
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[ 0]  opesq vivod12a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivod12 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PLd12   '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[61] elafa:aaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[62] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[63]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[64]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[65] terminando:
[66]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[67]  relat[1↑⍴relat;;]←upag
[68]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[69] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[70]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[71]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[72]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivod14

```
[ 0]  r←a ondeta b;i;j;k;⎕PW;⎕IO
[ 1]  ⎕IO←1
[ 2]  ⎕PW←120
[ 3]  b←,b
[ 4]  i←1
[ 5] t1:→(i>1↑⍴a)/fim
[ 6]  j←1
[ 7] t2:→(j>1↓⍴a)/upa
[ 8]  →(a[i;j]≠b[1])/soma
[ 9]  k←1
[10] t3:→(k>⍴b)/achou
[11]  →(a[i;j+k-1]=b[k])/ainda
[12]  →soma
[13] ainda:k←k+1
[14]  →t3
[15] achou:'=',(⍕i),' ',(⍕j),a[i;]
[16]  j←j+⍴b
[17]  →t2
[18] soma:j←j+1
[19]  →t2
[20] upa:i←i+1
[21]  →t1
[22] fim:
------------------------------------------------------------
[ 0]  opesq vivod14a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;nomes;num
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLd14   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAd14←ajusta80 FOLHALAd14
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAd14)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 2⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←20 80⍴' '
[16]  f←FOLHALAd14
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.02
```

```
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:
[28]  esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[32]  esse[19;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[20;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] ini1:
[35]  esse[8;]←80↑'1'
[36]  esse[9;]←80↑'1'
[37]  esse[10;]←80↑'1'
[38]  esse[11;]←80↑'1'
[39]  esse[12;]←80↑'1'
[40]  resu←resu,[1]1 2⍴resp
[41]  acuja←(f[;2]='#')/⍳1↑⍴f
[42]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[44]  ⍞←(⍕xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+⍴f)⍴' '
[47]  →terminando ⍝ pula a geracao do arquivo GPA, por desnecessario
[48]  →(1=≡n)/elafa
[49]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[50]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[51]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←4 0 8 0)⍕resu
[52]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[53]  →terminando
[54] elafa:aaa←(ylu[;⍳36],4 0⍕0 1↓resu)
[55]  lixonol←aaa ⎕FM('c:⍀apl2⍀',((~⍝∧⍀⍝EVENTO=' ')/EVENTO),'.gpa')
[56]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[57] terminando:
[58]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[59]  relat[1↑⍴relat;;]←upag
[60]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[61] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[62]  lixonol←lixonol ⎕FM'c:⍀apl2⍀',((~⍝∧⍀⍝EVENTO=' ')/EVENTO),'.tex'
[63]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivod30

```
[0]  r←geracasod30b i
[1]  r←'⍀includegraphics[scale=1]{c:/apl2/doc',('00'⍕1+10|i-1),'.jpg}'
------------------------------------------------------------
[0]  r←geracasod30c i
[1]  r←'⍀includegraphics[scale=1]{c:/apl2/doc',('00'⍕10+1+10|i-1),'.jpg}'
------------------------------------------------------------
[ 0]  r←a ondeta b;i;j;k;⎕PW;⎕IO
[ 1]  ⎕IO←1
[ 2]  ⎕PW←120
[ 3]  b←,b
[ 4]  i←1
[ 5] t1:→(i>1↑⍴a)/fim
[ 6]  j←1
[ 7] t2:→(j>1↓⍴a)/upa
```

```
[ 8]  →(a[i;j]≠b[1])/soma
[ 9]  k←1
[10] t3:→(k>ρb)/achou
[11]  →(a[i;j+k-1]=b[k])/ainda
[12]  →soma
[13] ainda:k←k+1
[14]  →t3
[15] achou:'=',(⍕i),' ',(⍕j),a[i;]
[16]  j←j+ρb
[17]  →t2
[18] soma:j←j+1
[19]  →t2
[20] upa:i←i+1
[21]  →t1
[22] fim:
------------------------------------------------------------
[ 0]  opesq vivod30b n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLd30b  '
[ 6]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAd30b←ajusta80 FOLHALAd30b
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALAd30b)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←10 80ρ' '
[16]  f←FOLHALAd30b
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑ρf),4)ρ'⍀#05')/⍳1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracasod30b xk
[35]  esse[8;]←1 80ρ80↑xx
[36] ⍝ resp←resp,,xx[2 3;5]
[37]  resu←resu,[1]1 3ρresp
[38]  acuja←(f[;2]='#')/⍳1↑ρf
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'⍀clearpage'
[41]  ⍞←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:
[44] ⍝ nao ha gpa
```

```
[45]  upag←(1 0+⍴f)⍴' '
[46]  →terminando
[47] ⍝ nao ha gpa
[48]  →(1=≡n)/elafa
[49]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[50]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[51]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍉resu
[52]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[53]  →terminando
[54] elafa:aaa←(ylu[;⍳36],9 0⍉0 1↓resu)
[55]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[56]  '!!!!!  Arquivo GPA com ',(⍉1↑⍴aaa),' linhas e ',(⍉1↓⍴aaa),' colunas'
[57] terminando:
[58]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[59]  relat[1↑⍴relat;;]←upag
[60]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[61]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[62]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[63]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivod30c n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLd30c  '
[ 6]  dhx←2 10⍴('05/05/0005'⍉+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍉+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍉⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAd30c←ajusta80 FOLHALAd30c
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAd30c)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALAd30c
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍉VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍉resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracasod30c xk
[35]  esse[8;]←1 80⍴80↑xx
[36] ⍝ resp←resp,,xx[2 3;5]
[37]  resu←resu,[1]1 3⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
```

```
[41]  ⍞←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:
[44] ⍝ nao ha gpa
[45]  upag←(1 0+⍴f)⍴' '
[46]  →terminando
[47] ⍝ nao ha gpa
[48]  →(1=≡n)/elafa
[49]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[50]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[51]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍕resu
[52]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[53]  →terminando
[54] elafa:aaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[55]  lixonol←aaa ⎕FM('c:\apl2\',((~⍝∧\⍝EVENTO=' ')/EVENTO),'.gpa')
[56]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[57] terminando:
[58]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[59]  relat[1↑⍴relat;;]←upag
[60]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[61]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍝∧\⍝EVENTO=' ')/EVENTO),'.tex'
[62]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[63]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivod32

```
[ 0]  opesq vivod32a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;nomes;num
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLd32   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAd32←ajusta80 FOLHALAd32
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAd32)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 2⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←9 80⍴' '
[16]  f←FOLHALAd32
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:
[28]  esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[32]  esse[8;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
```

```
[33]  esse[9;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] ini1:
[35]  acuja←(f[;2]='#')/⍳1↑⍴f
[36]  f[acuja;]←esse[⍬,f[acuja;3 4],' ';]
[37]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[38]  ⎕←(⍕xk←xk+1),'-'
[39]  →testa
[40] fim:upag←(1 0+⍴f)⍴' '
[41]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[42]  relat[1↑⍴relat;;]←upag
[43]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[44]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[45]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'    .tex  (nao ha GPA)'
------------------------------------------------------------
```

vivod35

```
[ 0]  r←gerad35b n;x;uni;i;f;nome;lixo;q;in;quais
[ 1] ⍝ n = numero da folha
[ 2]  uni←'ABCDEFGHIJK'
[ 3]  in←1000⍴⍴uni
[ 4]  f←uni[?in]
[ 5]  quais←uni[4?8]
[ 6]  f[399 400]←'JK'
[ 7]  r←0⍴''
[ 8]  r←r,8 0⍕200+2×+/f[⍳200]=quais[1]
[ 9]  i←201
[10]  q←0
[11] t1:→(i>400)/fim
[12]  →((f[i]≠quais[2])∨(f[i+1]≠quais[3]))/soma
[13]  q←q+1
[14] soma:i←i+1
[15]  →t1
[16] fim:r←r,8 0⍕200-q
[17]  i←401
[18] t2:→(f[i]=quais[4])/achou
[19]  i←i+1
[20]  →t2
[21] achou:r←r,8 0⍕i
[22]  r←r,'   ',f[100],f[200],f[300],f[400],f[500]
[23]  r←r,'    ',soundex f[116],f[115],f[114],f[113],f[112],f[111],f[110]
[24]  r←quais,'=',r
[25]  nome←'c:\apl2\D35-',('000'⍕n),'.myd'
[26] ⍝'Arquivo criado em c:\apl2\',nome
[27]  lixo←f ΔFM nome
------------------------------------------------------------
[ 0]  r←gerad35c;ai;df;di;hf;hi;i;k;mf;mi;p;preco;qth;qtseg;re;rs;tf;ti;vh
[ 1]  r←2⍴0
[ 2]  re←7 80⍴' '
[ 3]  rs←0⍴' '
[ 4]  i←?3000
[ 5]  re[1;]←80↑'99/99/9999'⍕DTS1[i]
[ 6]  rs←rs,'99/99/9999'⍕DTS1[i+6000]
[ 7]  i←1000+?5000
[ 8]  p←500+?499
[ 9]  re[2;]←80↑'99/99/9999'⍕DTS1[i]
[10]  re[3;]←80↑'99/99/9999'⍕DTS1[i+p]
[11]  rs←rs,' ','000'⍕p
[12] denovo:
[13]  i←4000+?3000
[14]  df←di←⍬2↑'99/99/9999'⍕DTS1[i]
[15]  →(di>25)/denovo
```

```
[16]  mi←⍎2↑3↓'99/99/9999'⍕DTS1[i]
[17]  ai←⍎¯4↑'99/99/9999'⍕DTS1[i]
[18]  qth←30+?30
[19]  hf←hi←20+?3
[20]  tf←ti←30+?29
[21]  k←qth
[22] oba:→(k≤0)/fim
[23]  tf←tf+15
[24]  k←k-1
[25]  →(tf<60)/ok1
[26]  tf←tf-60
[27]  hf←hf+1
[28] ok1:→(hf<24)/ok2
[29]  hf←hf-24
[30]  df←df+1
[31] ok2:→oba
[32] fim:preco←1+(?90)÷100
[33]  re[4;]←80↑('99/99/9999'⍕DTS1[i]),' ',('99'⍕hi),'h',('00'⍕ti),'m00'
[34]  →(di≠df)/pulou
[35]  re[5;]←80↑('99/99/9999'⍕DTS1[i]),' ',('99'⍕hf),'h',('00'⍕tf),'m00'
[36]  →junta
[37] pulou:
[38]  re[5;]←80↑('99/99/9999'⍕DTS1[i+1]),' ',('99'⍕hf),'h',('00'⍕tf),'m00'
[39] junta:
[40]  re[6;]←80↑'55.99'⍕preco
[41]  rs←rs,' ','5555.99'⍕preco×qth
[42]  qtseg←100000+?100000
[43]  re[7;]←80↑8 0⍕qtseg
[44]  vh←0
[45] t3:→(qtseg<3600)/ufa
[46]  vh←vh+1
[47]  qtseg←qtseg-3600
[48]  →t3
[49] ufa:rs←rs,' ','5555'⍕vh
[50]  r[1]←⊂re
[51]  r[2]←⊂rs
-------------------------------------------------------------
[ 0]  r←soundex nome;qt;i
[ 1]  QT←qt←⍉2 26⍴'AEIOUHWYBFPVCGJKQSXZDTLMNR00000000111122222222334556'
[ 2]  →(' '∈nome)/erro
[ 3]  r←40⍴' '
[ 4]  →(0=⍴nome)/f3
[ 5]  r[1]←nome[1]
[ 6]  i←2
[ 7] t1:→(i>⍴nome)/f1
[ 8]  r[i]←qt[qt[;1]⍳nome[i];2]
[ 9]  →(i=i←i+1)/t1
[10] f1:
[11]  i←2
[12] t2:→(i>⍴r)/f2
[13]  →(r[i-1]=r[i])/iguais
[14]  i←i+1
[15]  →t2
[16] iguais:r←((i-1)↑r),i↓r
[17]  i←i+1
[18]  →t2
[19] f2:r←(r≠' ')/r
[20]  r←4↑((r≠'0')/r),'000'
[21]  →0
[22] erro:'Existe espaco no nome, reentre'
[23]  →0
[24] f3:r←''
[25]  →0
```

```
------------------------------------------------------------
[ 0]  opesq vivod35b n;CORRECAO;EVENTO;aaa;acuja;aspa;dhx;esse;f;lixo1;lixonol;nomes;ql39;
      qlinha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLd35b  '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAd35b←ajusta80 FOLHALAd35b
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAd35b)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 45⍴' '
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←13 80⍴' '
[16]  f←FOLHALAd35b
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOb←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[12;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[13;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  aspa←''''
[35]  xx←gerad35b xk
[36]  esse[8;]←80↑'d35-',('000'⍎xk),'.myd'
[37]  esse[9;⍳3]←aspa,xx[1],aspa
[38]  esse[10;⍳4]←aspa,xx[2 3],aspa
[39]  esse[11;⍳3]←aspa,xx[4],aspa
[40]  resp←(3 0⍎resp),,xx[4+⍳41]
[41]  resu←resu,[1]1 45⍴resp
[42]  acuja←(f[;2]='#')/⍳1↑⍴f
[43]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[44]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[45]  ⍞←(⍎xk←xk+1),'-'
[46]  →testa
[47] fim:upag←(1 0+⍴f)⍴' '
[48]  →(1=≡n)/elafa
[49]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[50]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[51]  upag[2+⍳1↑⍴resu;⍳45]←resu
[52]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[53]  →terminando
[54] elafa:aaa←(ylu[;⍳36],0 5↓resu)
[55]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[56]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[57] terminando:
[58]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[59]  relat[1↑⍴relat;;]←upag
```

```
[60]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[61]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[62]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[63]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[ 0]  opesq vivod35c n;CORRECAO;EVENTO;aaa;acuja;aspa;dhx;esse;f;lixo1;lixonol;nomes;ql39;
      qlinha;relat;resp;resu;upag;x1;x2;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLd35c  '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAd35c←ajusta80 FOLHALAd35c
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAd35c)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 31⍴' '
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←16 80⍴' '
[16]  f←FOLHALAd35c
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOc←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[15;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[16;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  aspa←''''
[35]  xx←gerad35c
[36]  x1←⊃xx[1]
[37]  x2←⊃xx[2]
[38]  esse[7+⍳7;]←7 80↑x1
[39]  resp←(3 0⍎resp),'=',x2
[40]  resu←resu,[1]1 31⍴resp
[41]  acuja←(f[;2]='#')/⍳1↑⍴f
[42]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[44]  ⍞←(⍎xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+⍴f)⍴' '
[47]  →(1=≡n)/elafa
[48]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[49]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[50]  upag[2+⍳1↑⍴resu;⍳31]←resu
[51]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[52]  →terminando
[53] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[54]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[55]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
```

```
[56] terminando:
[57]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[58]  relat[1↑⍴relat;;]←upag
[59]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[60]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[61]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[62]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[ 0]  opesq vivod35d n;CORRECAO;EVENTO;aaa;acuja;aspa;dhx;esse;f;lixo1;lixonol;nomes;ql39;
      qlinha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLd35d  '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAd35d←ajusta80 FOLHALAd35d
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAd35d)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 45⍴' '
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←13 80⍴' '
[16]  f←FOLHALAd35d
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOb←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[12;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[13;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  aspa←''''
[35] ⍝ xx←gerad35d xk
[36] ⍝ esse[8;]←80↑'d35-',('000'⍎xk),'.myd'
[37] ⍝ esse[9;⍳3]←aspa,xx[1],aspa
[38] ⍝ esse[10;⍳4]←aspa,xx[2 3],aspa
[39] ⍝ esse[11;⍳3]←aspa,xx[4],aspa
[40] ⍝ resp←(3 0⍎resp),,xx[4+⍳41]
[41] ⍝ resu←resu,[1]1 45⍴resp
[42]  acuja←(f[;2]='#')/⍳1↑⍴f
[43]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[44]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[45]  ⍞←(⍎xk←xk+1),'-'
[46]  →testa
[47] fim:upag←(1 0+⍴f)⍴' '
[48]  →(1=≡n)/elafa
[49]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[50]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[51]  upag[2+⍳1↑⍴resu;⍳45]←resu
[52]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
```

```
[53]  →terminando
[54] elafa:aaa←(ylu[;⍳36],0 5↓resu)
[55]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[56]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[57] terminando:
[58]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[59]  relat[1↑⍴relat;;]←upag
[60]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[61]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[62]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[63]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivod60

```
[0]  r←a ajustatab b;ra;rb
[1]  ra←(((1↑⍴a)⌈1↑⍴b),1↓⍴a)↑a
[2]  rb←(((1↑⍴a)⌈1↑⍴b),1↓⍴b)↑b
[3]  r←((((ra,' '),' '),' '),' '),rb
-------------------------------------------------------------
[  0]  ru←geradbs1;depto;colunas;dados;proj;carg;aa;sta;r;gaba;lim
[  1]  colunas←7 7⍴'CODIFU ','NOMEFU ','DEPTFU ','SALAFU ','IDADFU ','PROJFU ','CARGFU '
[  2]  dados←12 49⍴' '
[  3]  dados[;⍳7]←(6 0⍕12 1⍴100+12?300),' '
[  4]  dados[;7+⍳7]←(12 6↑NOMES[12?1↑⍴NOMES;]),' '
[  5]  depto←5 2⍴'DI','MK','PR','TI','FZ'
[  6]  dados[;14+⍳7]←(12 6↑depto[?12⍴5;]),' '
[  7]  dados[;21+⍳7]←(6 0⍕12 1⍴1000+?12⍴1000),' '
[  8]  dados[;28+⍳7]←(6 0⍕12 1⍴12↑18+?100⍴30),' '
[  9]  proj←10 2⍴'P1P2P5F1F3F9H6JUK1K2'
[ 10]  dados[;35+⍳7]←(12 6↑proj[?12⍴10;]),' '
[ 11]  carg←8 6⍴'ANALIS','VENDED','GERENT','ASSIST','ASSESS','MOTORI','CHEFE ','OPERAD'
[ 12]  dados[;42+⍳7]←(12 6⍴carg[12↑?100⍴8;]),' '
[ 13]  dados←dados[10?12;]
[ 14]  dados←dados[(⍋⍤⊢,dados[;⍳6]);]
[ 15]  FUNCIO←(1 49⍴,colunas),[1]dados
[ 16]  colunas←4 7⍴'CODIDE ','NOMEDE ','ORCADE ','NUFNDE '
[ 17]  dados←5 28⍴' '
[ 18]  dados[;⍳7]←5 7⍴'DI     ','FZ     ','MK     ','PR     ','TI     '
[ 19]  dados[;7+⍳7]←(5 6⍴'DIRETO','FAZEND','MKTING','PRESID','TECINF'),' '
[ 20]  dados[;14+⍳7]←(6 0⍕5 1⍴10000+1000×?12⍴10),' '
[ 21]  dados[;21+⍳7]←(6 0⍕5 1⍴5↑?100⍴30),' '
[ 22]  DEPART←(1 28⍴colunas),[1]dados
[ 23]  colunas←4 7⍴'CODIPR ','NOMEPR ','PRAZPR ','STATPR '
[ 24]  dados←10 28⍴' '
[ 25]  dados[;⍳7]←10 7↑10 2⍴'F1F3F9H6JUK1K2P1P2P5'
[ 26]  aa←'ESCOLA','AGUADA','ESTRAD','CASAS ','EXPANS'
[ 27]  aa←aa,'HORTA ','CRECHE','SONORI','CASAFO','VAREJO'
[ 28]  dados[;7+⍳7]←(10 6⍴aa),' '
[ 29]  dados[;14+⍳7]←(6 0⍕10 1⍴10?30),' '
[ 30]  sta←'ATRASA','ADIANT','NOPRAZ','NOPRAZ','NOPRAZ','CANCEL','IGNORA','ATRASA'
[ 31]  sta←8 6⍴sta
[ 32]  dados[;21+⍳7]←(sta[?10⍴8;]),' '
[ 33]  PROJET←(1 28⍴colunas),[1]dados
[ 34]  r←1 80⍴80↑'A seguir sto apresentadas algumas tabelas, a saber:'
[ 35]  r←r,[1]1 80⍴80↑'\begin{verbatim}'
[ 36]  r←r,[1]1 80⍴80↑'Tabela FUNCIO'
[ 37]  r←r,[1]((1↑⍴FUNCIO),80)↑FUNCIO
[ 38]  r←r,[1]1 80⍴80↑' '
[ 39]  r←r,[1]1 80⍴80↑'Tabela DEPART'
[ 40]  r←r,[1]((1↑⍴DEPART),80)↑DEPART
[ 41]  r←r,[1]1 80⍴80↑' '
```

```
[ 42]  r←r,[1]1 80ρ80↑'Tabela PROJET'
[ 43]  r←r,[1]((1↑ρPROJET),80)↑PROJET
[ 44]  r←r,[1]1 80ρ80↑'\end{verbatim}'
[ 45]  r←r,[1]1 80ρ80↑' '
[ 46]  r←r,[1]1 80ρ80↑'Procure simular operaçAes de restriçto, projeçto'
[ 47]  r←r,[1]1 80ρ80↑'e junçto, conforme solicitado. Lembre que a cada operaçto, uma'
[ 48]  r←r,[1]1 80ρ80↑'nova tabela (com o nome fornecido) é criada.'
[ 49]  r←r,[1]1 80ρ80↑'\\* '
[ 50]  lim←1200+100×?3
[ 51]  aa←'1. Calcule: M1 $\gets$ restriçto FUNCIO onde SALAFU $>$',(⍕lim),'\\*'
[ 52]  r←r,[1]1 80ρ80↑aa
[ 53]  →(lim=1300)/e1300
[ 54]  →(lim=1400)/e1400
[ 55]  →(lim=1500)/e1500
[ 56] e1300:
[ 57]  M1←FUNCIO restricao'(⍋SALAFU) > 1300'
[ 58]  →junc
[ 59] e1400:
[ 60]  M1←FUNCIO restricao'(⍋SALAFU) > 1400'
[ 61]  →junc
[ 62] e1500:
[ 63]  M1←FUNCIO restricao'(⍋SALAFU) > 1500'
[ 64]  →junc
[ 65] junc:
[ 66]  r←r,[1]1 80ρ80↑'M2 $\gets$ projeçto M1 sobre NOMEFU,DEPTFU,PROJFU,IDADFU\\*'
[ 67]  M2←M1 projecao'NOMEFU,DEPTFU,PROJFU,IDADFU'
[ 68]  r←r,[1]1 80ρ80↑'M3 $\gets$ junçto M2 e DEPART sobre DEPTFU e CODIDE\\*'
[ 69]  COMANDO←2 20ρ(20↑'7+ι7'),20↑'ι7'
[ 70]  M3←M2 juncao DEPART
[ 71]  r←r,[1]1 80ρ80↑'Executando os 3 exercícios acima, a ultima linha e última'
[ 72]  r←r,[1]1 80ρ80↑'coluna de M3 é:'  ⍝42
[ 73]  gaba←ultlincol M3
[ 74]  r←r,[1]1 80ρ80↑'\begin{tabular}{||p{4cm}||} \hline \hline' ⍝43
[ 75]  r←r,[1]1 80ρ80↑'\\ \\ \hline \hline'                      ⍝44
[ 76]  r←r,[1]1 80ρ80↑'\end{tabular} \\*'                              ⍝51
[ 77] ⍝--------------------------------
[ 78]  r←r,[1]1 80ρ80↑'2. Calcule M4 $\gets$ junçto PROJET e FUNCIO sobre CODIPR e'
[ 79]  r←r,[1]1 80ρ80↑'PROJFU\\*'
[ 80]  COMANDO←2 20ρ(20↑'ι7'),20↑'35+ι7'
[ 81]  M4←PROJET juncao FUNCIO
[ 82]  r←r,[1]1 80ρ80↑'Agora, faça M5 $\gets$ projeçto M4 sobre NOMEPR,STATPR.'
[ 83]  M5←M4 projecao'NOMEPR,STATPR'
[ 84]  r←r,[1]1 80ρ80↑'A última linha e última coluna de M5 é:\\*'
[ 85]  gaba←gaba,ultlincol M5
[ 86]  r←r,[1]1 80ρ80↑'\begin{tabular}{||p{4cm}||} \hline \hline'
[ 87]  r←r,[1]1 80ρ80↑'\\ \\ \hline \hline'
[ 88]  r←r,[1]1 80ρ80↑'\end{tabular}\\*'
[ 89]  ru←2ρ0
[ 90]  ru[1]←⊂r
[ 91]  ru[2]←⊂gaba
------------------------------------------------------------
[ 0]  ru←geradbs2;aa;carg;colunas;dados;depto;gaba;proj;r;sta;turmas;meses;za
[ 1]  ALUNOX←10 21ρ' '
[ 2]  ALUNOX[1;]←'CODALU NOMALU TURALU '
[ 3]  aa←50000+?11ρ20000
[ 4]  aa←aa[⍋aa]
[ 5]  ALUNOX[1+ι9;ι6]←6 0⍕9 1ρaa
[ 6]  ALUNOX[1+ι9;7+ι6]←NOMES[9?1↑ρNOMES;]
[ 7]  turmas←6 6ρ'16BMC 16BBO 16EPC 15TSO 16BBO 16BBO '
[ 8]  ALUNOX[1+ι9;14+ι6]←turmas[?9ρ6;]
[ 9]  TURMAX←5 21ρ' '
[10]  TURMAX[1;]←'CODTUR DISTUR SEDTUR '
[11]  TURMAX[1+ι4;ι6]←4 6ρ'16BBO 16BMC 16EPC 15TSO '
```

```
[12]  TURMAX[1+⍳4;7+⍳6]←4 6⍴'BDADOSMATEMAPROGRATOPICO'
[13]  TURMAX[1+⍳4;14+⍳6]←4 6⍴'OSORIOECOVILBOSQUEECOVIL'
[14]  EVENTX←12 28⍴' '
[15]  EVENTX[1;]←'CODEVE CODEVT MESEVE MEDEVE '
[16]  EVENTX[1+⍳11;7+⍳6]←turmas[?11⍴6;]
[17]  EVENTX[1+⍳11;⍳6]←EVENTX[1+⍳11;9+⍳3],3 0⍤11 1⍴100+?11⍴200
[18]  meses←6 6⍴'MARCO ABRIL MAIO  JUNHO AGOSTOSETEMB'
[19]  EVENTX[1+⍳11;14+⍳6]←meses[?11⍴6;]
[20]  EVENTX[1+⍳11;21+⍳6]←6 2⍤11 1⍴0.1×30+?20⍴70
[21]  za←(20<?11⍴100)/[1]EVENTX[1+⍳11;]
[22]  EVENTX←EVENTX[1;],[1]za
[23]  r←1 80⍴80↑'A seguir sto apresentadas outras tabelas, a saber:'
[24]  r←r,[1]1 80⍴80↑'\begin{verbatim} '
[25]  r←r,[1]1 80⍴80↑(23↑'Tabela ALUNOX'),'Tabela EVENTX'
[26]  aa←ALUNOX ajustatab EVENTX
[27]  r←r,[1]((1↑⍴aa),80)↑aa
[28]  r←r,[1]1 80⍴80↑' '
[29]  r←r,[1]1 80⍴80↑'Tabela TURMAX'
[30]  r←r,[1]((1↑⍴TURMAX),80)↑TURMAX
[31]  r←r,[1]1 80⍴80↑'\end{verbatim} '
[32]  r←r,[1]1 80⍴80↑'Procure simular operaçAes de restriçto, projeçto'
[33]  r←r,[1]1 80⍴80↑'e junçto, conforme solicitado. Lembre que a cada operaçto, uma'
[34]  r←r,[1]1 80⍴80↑'nova tabela (com o nome fornecido) é criada.'
[35]  r←r,[1]1 80⍴80↑'\\* '
[36]  r←r,[1]1 80⍴80↑'3. Calcule: M6 $\gets$ ALUNOX restriçto TURALU $\neq$ 16BBO'
[37]  M6←ALUNOX restridif'TURALU="16BBO "'
[38]  r←r,[1]1 80⍴80↑'Executando os exercícios acima, a ultima linha e última'
[39]  r←r,[1]1 80⍴80↑'coluna de M6 é:'
[40]  gaba←ultlincol M6
[41]  r←r,[1]1 80⍴80↑'\begin{tabular}{||p{4cm}||} \hline \hline'
[42]  r←r,[1]1 80⍴80↑'\\ \\ \hline \hline'
[43]  r←r,[1]1 80⍴80↑'\end{tabular} \\*'
[44]  r←r,[1]1 80⍴80↑'4. Calcule M7 $\gets$ projeçto M6 sobre NOMALU,CODALU\\*'
[45]  r←r,[1]1 80⍴80↑'A última linha e última coluna de M7 é:\\*'
[46]  M7←M6 projecao'NOMALU,CODALU'
[47]  gaba←gaba,ultlincol M7
[48]  r←r,[1]1 80⍴80↑'\begin{tabular}{||p{4cm}||} \hline \hline'
[49]  r←r,[1]1 80⍴80↑'\\ \\ \hline \hline'
[50]  r←r,[1]1 80⍴80↑'\end{tabular}\\*'
[51]  COMANDO←2 20⍴(20↑'14+⍳7'),20↑'7+⍳7'
[52]  aa←'5. Calcule M8 $\gets$ junçto ALUNOX, EVENTX sobre TURALU,CODEVT\\*'
[53]  r←r,[1]1 80⍴80↑aa
[54]  r←r,[1]1 80⍴80↑'A última linha e última coluna de M8 é:\\*'
[55]  M8←ALUNOX juncao EVENTX
[56]  gaba←gaba,ultlincol M8
[57]  r←r,[1]1 80⍴80↑'\begin{tabular}{||p{4cm}||} \hline \hline'
[58]  r←r,[1]1 80⍴80↑'\\ \\ \hline \hline'
[59]  r←r,[1]1 80⍴80↑'\end{tabular}\\*'
[60]  ru←2⍴0
[61]  ru[1]←⊂r
[62]  ru[2]←⊂gaba
-------------------------------------------------------------
[ 0]  r←tab1 juncao tab2;i;j;lixo;aspa;exp;lin2;mask;k;l;coma;coma1;coma2
[ 1] A forneca em COMANDO←2 20⍴especificacao da coluna da 1 tabela e especificacao da tab
      2
[ 2]  aspa←''''
[ 3]  mask←(1↓⍴tab2)⍴1 ⋄ lin2←tab2[1;]
[ 4]  ⍎'mask[',COMANDO[2;],']←0'
[ 5]  r←(1,(¯7+(1↓⍴tab1)+1↓⍴tab2))⍴tab1[1;],(mask/tab2[1;])
[ 6]  coma1←⍎'tab1[1;',COMANDO[1;],']'
[ 7]  coma2←⍎'tab2[1;',COMANDO[2;],']'
[ 8]  coma←coma1,'=',coma2
[ 9]  i←2
```

```
[10] t1:→(i>1↑⍴tab1)/fim
[11]  j←0
[12] t2:→(j≥1↓⍴tab1)/oba
[13]  ⍞←tab1[1;j+⍳7],'←',aspa,tab1[i;j+⍳7],aspa
[14]  j←j+7
[15]  →t2
[16] oba:
[17]  k←2
[18] t3:→(k>1↑⍴tab2)/ufa
[19]  l←0
[20] t4:→(l≥1↓⍴tab2)/zica
[21]  ⍞←tab2[1;l+⍳7],'←',aspa,tab2[k;l+⍳7],aspa
[22]  l←l+7
[23]  →t4
[24] zica:
[25]  →(7=+/⍞←coma)/sim
[26] nao:k←k+1
[27]  →t3
[28] sim:
[29]  r←r,[1]⍞¯1↓' ,'edit r[1;]
[30]  →nao
[31] ufa:i←i+1
[32]  →t1
[33] fim:
[34]  lixo←⎕EX(((⍴r[1;])÷7),7)⍴r[1;]
[35]  lixo←⎕EX(~mask)/tab2[1;]
------------------------------------------------------------
[0]  limpa
[1]  ⎕EX 8 2⍴'M1M2M3M4M5M6M7M8'
[2]  ⎕EX'ALUNOX'
[3]  ⎕EX'TURMAX'
[4]  ⎕EX'EVENTX'
[5]  ⎕EX'DEPART'
[6]  ⎕EX'FUNCIO'
[7]  ⎕EX'PROJET'
------------------------------------------------------------
[ 0]  r←tabela projecao expressao;i;j;lixo;aspa;ta;linha
[ 1]  aspa←''''
[ 2]  r←(1,ta)⍴(ta←7×⌈(⍴expressao)÷7)↑', 'edit expressao
[ 3]  i←2
[ 4] t1:→(i>1↑⍴tabela)/fim
[ 5]  j←0
[ 6] t2:→(j≥1↓⍴tabela)/oba
[ 7]  ⍞←tabela[1;j+⍳7],'←',aspa,tabela[i;j+⍳7],aspa
[ 8]  j←j+7
[ 9]  →t2
[10] oba:
[11]  linha←⍞←expressao
[12]  r←r,[1](1,ta)⍴ta↑linha
[13] nao:i←i+1
[14]  →t1
[15] fim:
[16]  lixo←⎕EX(((1↓⍴tabela)÷7),7)⍴tabela[1;]
------------------------------------------------------------
[ 0]  r←tabela restricao expressao;i;j;lixo;aspa;exp
[ 1]  aspa←''''
[ 2]  r←(1,1↓⍴tabela)⍴tabela[1;]
[ 3]  i←2
[ 4] t1:→(i>1↑⍴tabela)/fim
[ 5]  j←0
[ 6] t2:→(j≥1↓⍴tabela)/oba
[ 7]  ⍞←tabela[1;j+⍳6],'←',aspa,tabela[i;j+⍳6],aspa
[ 8]  j←j+7
```

```
[ 9]  →t2
[10] oba:
[11]  →('"'∈expressao)/alfa
[12] num:
[13]  →(1=⍎expressao)/sim
[14]  →nao
[15] alfa:exp←('"',aspa)edit expressao
[16]  →(6=+/⍎exp)/sim
[17]  →nao
[18] nao:i←i+1
[19]  →t1
[20] sim:
[21]  r←r,[1]tabela[i;]
[22]  →nao
[23] fim:
[24]  lixo←⎕EX(((1↓⍴tabela)÷7),7)⍴tabela[1;]
-------------------------------------------------------------
[ 0]  r←tabela restridif expressao;i;j;lixo;aspa;exp
[ 1]  aspa←''''
[ 2]  r←(1,1↓⍴tabela)⍴tabela[1;]
[ 3]  i←2
[ 4] t1:→(i>1↑⍴tabela)/fim
[ 5]  j←0
[ 6] t2:→(j≥1↓⍴tabela)/oba
[ 7]  ⍎tabela[1;j+⍳6],'←',aspa,tabela[i;j+⍳6],aspa
[ 8]  j←j+7
[ 9]  →t2
[10] oba:
[11]  →('"'∈expressao)/alfa
[12] num:
[13]  →(1=⍎expressao)/sim
[14]  →nao
[15] alfa:exp←('"',aspa)edit expressao
[16]  →(6=+/⍎exp)/nao
[17]  →sim
[18] nao:i←i+1
[19]  →t1
[20] sim:
[21]  r←r,[1]tabela[i;]
[22]  →nao
[23] fim:
[24]  lixo←⎕EX(((1↓⍴tabela)÷7),7)⍴tabela[1;]
-------------------------------------------------------------
[0]  r←ultlincol x;zz
[1]  →(1=1↑⍴x)/vazio
[2]  zz←x[1↑⍴x;]
[3]  r←¯7↑,zz
[4]  →0
[5] vazio:r←7↑'vazio'
-------------------------------------------------------------
[ 0]  opesq vivod60a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLd60   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAd60←ajusta80 FOLHALAd60
```

```
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAd60)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 64⍴' '
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←209 80⍴' '
[16]  f←FOLHALAd60
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[208;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[209;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geradbs1
[35]  esse[7+⍳58;]←58 80↑⊃xx[1]
[36]  resp←(3 0⍕resp),' ',⊃xx[2]
[37]  xx←geradbs2
[38]  esse[65+⍳1↑⍴⊃xx[1];]←⊃xx[1]
[39]  resp←resp,⊃xx[2]
[40]  resu←resu,[1]1 64⍴64↑resp
[41]  acuja←(f[;2]='#')/⍳1↑⍴f
[42]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4 5],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[44]  ⎕←(⍕xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+⍴f)⍴' '
[47]  →(1=≡n)/elafa
[48]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[49]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[50]  upag[2+⍳1↑⍴resu;⍳64]←resu
[51]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[52]  →terminando
[53] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[54]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[55]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[56] terminando:
[57]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[58]  relat[1↑⍴relat;;]←upag
[59]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[60]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[61]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivod62

```
[ 0]  r←gera1fn;a;alfa;b;c;ca;d;da;db;dc;dd;de;e;i;ma;mat;r1;r2;sa;sb;sc;sd;se;sr1;zz1;zz2
[ 1]  r←7⍴0
[ 2] novo:
[ 3]  mat←1,((1,?3)[?2]),((1,?3)[?2]),((1,?3)[?2]),((0 2)[?2])
[ 4]  →(4=+/mat)/novo
[ 5]  →(~1∈1↓mat)/novo
[ 6]  ca←99?99
```

```
[ 7]  a←4 1ρ4↑ca
[ 8]  ca←4↓ca
[ 9]  b←(4,mat[2])ρ(mat[2]×4)↑ca
[10]  ca←(mat[2]×4)↓ca
[11]  c←(4,mat[3])ρ(mat[3]×4)↑ca
[12]  ca←(mat[3]×4)↓ca
[13]  d←(4,mat[4])ρ(mat[4]×4)↑ca
[14]  ca←(mat[4]×4)↓ca
[15]  e←(4,mat[5])ρ(mat[5]×4)↑ca
[16]  ca←(mat[5]×4)↓ca
[17]  →(0≠mat[5])/ci
[18]  r[1]←⊂'{A} -> {B,C,D}'
[19]  →ju
[20] ci:
[21]  r[1]←⊂'{A} -> {B,C,D,E}'
[22] ju:
[23]  sa←+/,a
[24]  da←a
[25]  b←zeraba b
[26]  sb←+/,b
[27]  c←zeraba c
[28]  sc←+/,c
[29]  d←zeraba d
[30]  sd←+/,d
[31]  e←zeraba e
[32]  se←+/,e
[33]  a←'55'⍪a
[34]  b←(¯1↓(mat[2]×3)ρ'55 ')⍪db←b
[35]  c←(¯1↓(mat[3]×3)ρ'55 ')⍪dc←c
[36]  d←(¯1↓(mat[4]×3)ρ'55 ')⍪dd←d
[37]  e←(¯1↓(mat[5]×3)ρ'55 ')⍪de←e
[38]  a←(1 2ρ'A '),[1](1 2ρ'=='),[1]a
[39]  b←((1,1↓ρb)ρ'B            '),[1]((1,1↓ρb)ρ'-'),[1]b
[40]  c←((1,1↓ρc)ρ'C            '),[1]((1,1↓ρc)ρ'-'),[1]c
[41]  d←((1,1↓ρd)ρ'D            '),[1]((1,1↓ρd)ρ'-'),[1]d
[42]  e←((1,1↓ρe)ρ'E            '),[1]((1,1↓ρe)ρ'-'),[1]e
[43]  alfa←a,(6 3ρ' | '),b,(6 3ρ' | '),c,(6 3ρ' | '),d
[44]  →(mat[5]=0)/ub
[45]  alfa←alfa,(6 3ρ' | '),e
[46] ub:
[47]  r[2]←⊂alfa
[48]  r[3]←⊂1++/(mat≠1)∧(mat≠0)
[49]  sr1←sa
[50]  r1←a,(6 3ρ' | ')
[51]  →(mat[2]≠1)/p22
[52]  r1←r1,b,(6 3ρ' | ')
[53]  sr1←sr1+sb
[54] p22:
[55]  →(mat[3]≠1)/p23
[56]  r1←r1,c,(6 3ρ' | ')
[57]  sr1←sr1+sc
[58] p23:
[59]  →(mat[4]≠1)/p24
[60]  sr1←sr1+sd
[61]  r1←r1,d,(6 3ρ' | ')
[62] p24:
[63]  r1←0 ¯3↓r1
[64]  r[4]←⊂sr1
[65]  r[5]←⊂r1
[66] ⍝ qual e a ultima coluna multivalorada ?
[67]  i←5
[68] t1w:
[69]  ma←'abcde'[i]
```

```
[70]  →(mat[i]>1)/achei
[71]  i←i-1
[72]  →t1w
[73] achei:zz1←⍪',4 ',(⍕mat[i]),'⍴da'
[74]  zz2←⍪',⍉d',ma
[75]  zz1←(zz2≠0)/zz1
[76]  zz2←(zz2≠0)/zz2
[77]  r[6]←⊂(+/zz2)++/zz1
[78]  r[7]←⊂((1 5⍴'A  ',ma,' '),[1]1 5⍴'== --'),[1]'55 55'⍕(((⍴zz1),1)⍴zz1),((⍴zz2),1)⍴zz2
-------------------------------------------------------------
[ 0]  r←gera2fn op2;x;d0;d1;df1;ma1;ind;prims;seco1;seco2
[ 1]  d0←op2[1]
[ 2]  d1←op2[2]
[ 3]  r←7⍴0
[ 4]  →(d0=2)/com6cols
[ 5] com5cols:
[ 6]  x←4 5⍴10+40?40
[ 7]  →(d1=1)/dado1
[ 8]  →(d1=2)/dado2
[ 9] dado3:
[10]  df1←3 20⍴(20↑'{A,B} -> {E}'),(20↑'{A} -> {D}'),20↑'{B} -> {C}'
[11]  ma1←((1 15⍴'A  B  C  D  E  '),[1]1 15⍴'== == -- -- -- '),[1]'55 55 55 55 55 '⍕x
[12]  ma1←ma1[;⍳2],(6 3⍴' | '),ma1[;3+⍳2],(6 3⍴' | '),ma1[;6+⍳2],(6 3⍴' | '),ma1[;9+⍳2],(6
       3⍴' | '),ma1[;12+⍳2]
[13]  r[1]←⊂df1
[14]  r[2]←⊂ma1
[15]  r[3]←⊂3
[16]  r[4]←+/,x[;1 2 5]
[17]  r[6]←+/,x[;2 3]
[18]  →0
[19] dado1:
[20]  df1←3 20⍴(20↑'{A,B} -> {C}'),(20↑'{A} -> {D}'),20↑'{B} -> {E}'
[21]  ma1←((1 15⍴'A  B  C  D  E  '),[1]1 15⍴'== == -- -- -- '),[1]'55 55 55 55 55 '⍕x
[22]  ma1←ma1[;⍳2],(6 3⍴' | '),ma1[;3+⍳2],(6 3⍴' | '),ma1[;6+⍳2],(6 3⍴' | '),ma1[;9+⍳2],(6
       3⍴' | '),ma1[;12+⍳2]
[23]  r[1]←⊂df1
[24]  r[2]←⊂ma1
[25]  r[3]←⊂3
[26]  r[4]←+/,x[;1 2 3]
[27]  r[6]←+/,x[;2 5]
[28]  →0
[29] dado2:
[30]  df1←3 20⍴(20↑'{A,B} -> {D}'),(20↑'{A} -> {C}'),20↑'{B} -> {E}'
[31]  ma1←((1 15⍴'A  B  C  D  E  '),[1]1 15⍴'== == -- -- -- '),[1]'55 55 55 55 55 '⍕x
[32]  ma1←ma1[;⍳2],(6 3⍴' | '),ma1[;3+⍳2],(6 3⍴' | '),ma1[;6+⍳2],(6 3⍴' | '),ma1[;9+⍳2],(6
       3⍴' | '),ma1[;12+⍳2]
[33]  r[1]←⊂df1
[34]  r[2]←⊂ma1
[35]  r[3]←⊂3
[36]  r[4]←+/,x[;1 2 4]
[37]  r[6]←+/,x[;2 5]
[38]  →0
[39] com6cols:
[40]  x←4 6⍴10+40?40
[41]  →(d1=1)/dado61
[42] dado62:
[43]  prims←'CDEF'[2↑ind←4?4]
[44]  seco1←'CDEF'[ind[3]]
[45]  seco2←'CDEF'[ind[4]]
[46]  df1←3 20⍴(20↑'{A,B} -> {',prims[1],',',prims[2],'}'),(20↑'{A} -> {',seco1,'}'),20↑'{
      B} -> {',seco2,'}'
[47]  ma1←((1 18⍴'A  B  C  D  E  F  '),[1]1 18⍴'== == -- -- -- -- '),[1]'55 55 55 55 55 55
       '⍕x
```

```
[48]  ma1←ma1[;⍳2],(6 3⍴' | '),ma1[;3+⍳2],(6 3⍴' | '),ma1[;6+⍳2],(6 3⍴' | '),ma1[;9+⍳2],(6
       3⍴' | '),ma1[;12+⍳2],(6 3⍴' | '),ma1[;15+⍳2]
[49]  r[1]←⊂df1
[50]  r[2]←⊂ma1
[51]  r[3]←⊂3
[52]  r[4]←+/,x[;1 2,2+ind[⍳2]]
[53]  r[6]←+/,x[;2,2+ind[4]]
[54]  →0
[55] dado61:
[56]  prims←'CDEF'[2↑ind←4?4]
[57]  seco1←'CDEF'[ind[4]]
[58]  seco2←'CDEF'[ind[3]]
[59]  df1←3 20⍴(20↑'{A,B} -> {',prims[1],',',prims[2],'}'),(20↑'{A} -> {',seco1,'}'),20↑'{
      B} -> {',seco2,'}'
[60]  ma1←((1 18⍴'A  B  C  D  E  F  '),[1]1 18⍴'== == -- -- -- -- '),[1]'55 55 55 55 55 55
       '⍎x
[61]  ma1←ma1[;⍳2],(6 3⍴' | '),ma1[;3+⍳2],(6 3⍴' | '),ma1[;6+⍳2],(6 3⍴' | '),ma1[;9+⍳2],(6
       3⍴' | '),ma1[;12+⍳2],(6 3⍴' | '),ma1[;15+⍳2]
[62]  r[1]←⊂df1
[63]  r[2]←⊂ma1
[64]  r[3]←⊂3
[65]  r[4]←+/,x[;1 2,2+ind[⍳2]]
[66]  r[6]←+/,x[;2,2+ind[3]]
[67]  →0
------------------------------------------------------------
[ 0]  r←gera3fn op2;x;ze
[ 1]  r←7⍴0
[ 2]  ze←((1 15⍴'A  B  C  D  E  '),[1](1 15⍴'== -- -- -- -- ')),[1]'55 55 55 55 55 '⍎x←4 5
      ⍴10+40?40
[ 3]  r[2]←⊂ze[;1 2],(6 3⍴' | '),ze[;3+⍳2],(6 3⍴' | '),ze[;6+⍳2],(6 3⍴' | '),ze[;9+⍳2],(6
      3⍴' | '),ze[;12+⍳2]
[ 4]  →(op2=2)/e2
[ 5]  →(op2=3)/e3
[ 6] e1:
[ 7]  r[1]←⊂2 20⍴(20↑'{A} -> {B,C,E}'),20↑'{C} -> {D}'
[ 8]  r[4]←⊂+/,x[;1 2 3 5]
[ 9]  r[6]←⊂+/,x[;3 4]
[10]  →fim
[11] e2:
[12]  r[1]←⊂2 20⍴(20↑'{A} -> {B,D,E}'),20↑'{D} -> {C}'
[13]  r[4]←⊂+/,x[;1 2 4 5]
[14]  r[6]←⊂+/,x[;4 3]
[15]  →fim
[16] e3:
[17]  r[1]←⊂2 20⍴(20↑'{A} -> {B,C,E}'),20↑'{B} -> {D}'
[18]  r[4]←⊂+/,x[;1 2 3 5]
[19]  r[6]←⊂+/,x[;2 4]
[20]  →fim
[21] fim:
------------------------------------------------------------
[ 0]  opesq vivod62a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLd62   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAd62←ajusta80 FOLHALAd62
```

```
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAd62)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 13⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←58 80⍴' '
[16]  f←FOLHALAd62
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[57;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[58;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera1fn
[35]  esse[8;]←1 80⍴80↑⊃xx[1]
[36]  esse[8+⍳6;]←6 80↑⊃xx[2]
[37]  resp←resp,,(⊃xx[4]),⊃xx[6]
[38]  xx←gera2fn(?2),?3
[39]  esse[14+⍳3;]←3 80↑⊃xx[1]
[40]  esse[17+⍳6;]←6 80↑⊃xx[2]
[41]  resp←resp,,(⊃xx[4]),⊃xx[6]
[42]  xx←gera3fn?3
[43]  esse[23+⍳2;]←2 80↑⊃xx[1]
[44]  esse[25+⍳6;]←6 80↑⊃xx[2]
[45]  resp←resp,,(⊃xx[4]),⊃xx[6]
[46]  xx←gera1fn
[47]  esse[33;]←1 80⍴80↑⊃xx[1]
[48]  esse[33+⍳6;]←6 80↑⊃xx[2]
[49]  resp←resp,,(⊃xx[4]),⊃xx[6]
[50]  xx←gera2fn(?2),?3
[51]  esse[39+⍳3;]←3 80↑⊃xx[1]
[52]  esse[42+⍳6;]←6 80↑⊃xx[2]
[53]  resp←resp,,(⊃xx[4]),⊃xx[6]
[54]  xx←gera3fn?3
[55]  esse[48+⍳2;]←2 80↑⊃xx[1]
[56]  esse[50+⍳6;]←6 80↑⊃xx[2]
[57]  resp←resp,,(⊃xx[4]),⊃xx[6]
[58]  resu←resu,[1]1 13⍴resp
[59]  acuja←(f[;2]='#')/⍳1↑⍴f
[60]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[61]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[62]  ⍞←(⍕xk←xk+1),'-'
[63]  →testa
[64] fim:upag←(1 0+⍴f)⍴' '
[65]  →(1=≡n)/elafa
[66]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[67]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[68]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 5 0 5 0 5 0 5 0 5 0 5 0 6 0 5 0 5 0 5 0 5 0 5 0
      )⍕resu
[69]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[70]  →terminando
[71] elafa:aaa←(ylu[;⍳36],5 0⍕0 1↓resu)
[72]  lixonol←aaa ⎕FM('c:\apl2\',((~⍬∧\⍬EVENTO=' ')/EVENTO),'.gpa')
```

```
[73]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[74] terminando:
[75]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[76]  relat[1↑⍴relat;;]←upag
[77]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[78]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[79]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[80]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  r←zeraba x;i;j;t
[ 1]  r←x
[ 2]  i←2
[ 3] t1:→(i>1↑⍴x)/fim
[ 4]  j←2
[ 5] t2:→(j>1↓⍴x)/soma
[ 6]  r[i;j]←(0,0,0,0,x[i;j])[?5]
[ 7]  j←j+1
[ 8]  →t2
[ 9] soma:
[10]  i←i+1
[11]  →t1
[12] fim:
[13]  t←1↑⍴x
[14]  r←r[t?t;]
------------------------------------------------------------
```

vivod63

```
[ 0]  r←geraBAGE
[ 1] ⍝⍝⍝⍝⍝⍝⍝'123 2345678901234567890 23456789'
[ 2]  r←25 31⍴' '
[ 3]  r[1;]←'CWB ',(19↑'CURITIBA'),'555-5555'⍕1000000+?8000000
[ 4]  r[2;]←'BSB ',(19↑'BRASILIA'),'555-5555'⍕1000000+?8000000
[ 5]  r[3;]←'CGH ',(19↑'SAO PAULO'),'555-5555'⍕1000000+?8000000
[ 6]  r[4;]←'FLN ',(19↑'FLORIANOPOLIS'),'555-5555'⍕1000000+?8000000
[ 7]  r[5;]←'VCP ',(19↑'CAMPINAS'),'555-5555'⍕1000000+?8000000
[ 8]  r[6;]←'CGB ',(19↑'CUIABA'),'555-5555'⍕1000000+?8000000
[ 9]  r[7;]←'MGF ',(19↑'MARINGA'),'555-5555'⍕1000000+?8000000
[10]  r[8;]←'GYN ',(19↑'GOIANIA'),'555-5555'⍕1000000+?8000000
[11]  r[9;]←'NVT ',(19↑'NAVEGANTES'),'555-5555'⍕1000000+?8000000
[12]  r[10;]←'PVH ',(19↑'PORTO VELHO'),'555-5555'⍕1000000+?8000000
[13]  r[11;]←'GRU ',(19↑'GUARULHOS'),'555-5555'⍕1000000+?8000000
[14]  r[12;]←'JOI ',(19↑'JOINVILLE'),'555-5555'⍕1000000+?8000000
[15]  r[13;]←'CXJ ',(19↑'CAXIAS DO SUL'),'555-5555'⍕1000000+?8000000
[16]  r[14;]←'IGU ',(19↑'FOZ DO IGUACU'),'555-5555'⍕1000000+?8000000
[17]  r[15;]←'CNF ',(19↑'BELO HORIZONTE'),'555-5555'⍕1000000+?8000000
[18]  r[16;]←'XAP ',(19↑'XAPECO'),'555-5555'⍕1000000+?8000000
[19]  r[17;]←'JTC ',(19↑'BAURU'),'555-5555'⍕1000000+?8000000
[20]  r[18;]←'CFB ',(19↑'CABO FRIO'),'555-5555'⍕1000000+?8000000
[21]  r[19;]←'LDB ',(19↑'LONDRINA'),'555-5555'⍕1000000+?8000000
[22]  r[20;]←'CGR ',(19↑'CAMPO GRANDE'),'555-5555'⍕1000000+?8000000
[23]  r[21;]←'GIG ',(19↑'RIO JANEIRO'),'555-5555'⍕1000000+?8000000
[24]  r[22;]←'VIX ',(19↑'VITORIA'),'555-5555'⍕1000000+?8000000
[25]  r[23;]←'CXJ ',(19↑'CAXIAS DO SUL'),'555-5555'⍕1000000+?8000000
[26]  r[24;]←'SSA ',(19↑'SALVADOR'),'555-5555'⍕1000000+?8000000
[27]  r[25;]←'REC ',(19↑'RECIFE'),'555-5555'⍕1000000+?8000000
[28]  r←r[25?25;]
[29]  r[⍳15;]←r[⎕AV⍋r[⍳15;⍳3];]
------------------------------------------------------------
[ 0]  r←geraCLIE;i;xixa
[ 1]  NOMC←((1↑⍴NOMC),20)↑NOMC
[ 2]  xixa←1000+25?8000
```

```
[ 3]  r←25 25⍴' '
[ 4]  i←1
[ 5] t1:→(i>25)/fim
[ 6]  r[i;]←('5555'⍕xixa[i]),,NOMC[?1↑⍴NOMC;],'AAAAASS'[?7]
[ 7]  i←i+1
[ 8]  →t1
[ 9] fim:r[⍳15;]←r[⍋AV⍋r[⍳15;⍳4];]
------------------------------------------------------------
[ 0]  r←geraLOCA;locin;vein;i;hoje;lin;dtin;dura;kmin;kmloca;jj;kk;vlloca;dest
[ 1]  r←30 62⍴' '
[ 2]  locin←1000+?1000 ⍝ valor inicial da locacao
[ 3]  vein←?3 ⍝ veiculo para o qual estou fazendo a locacao
[ 4]  i←1 ⍝ indice da locacao (abaixo de 30, OK - entre 30 e 40: escondido)
[ 5]  hoje←(DTS=⌊('00'⍕⍪TS[3]),('00'⍕⍪TS[2]),⍕⍪TS[1])/⍳⍴DTS ⍝indice de hoje em DTS
[ 6] t1:→(i>30)/conta
[ 7]  lin←('0000'⍕locin),' ',VEIC[vein;⍳8],' ',CLIE[?20;⍳4],' '
[ 8]  lin←lin,('00000000'⍕DTS[dtin←hoje-100+?300]),' ',VEIC[vein;26+⍳3],' '
[ 9]  dura←6+?10 ⍝ duracao da locacao
[10]  kmin←⌊VEIC[vein;20+⍳6]
[11]  kmloca←1000+?2000
[12]  jj←VEIC[vein;14+⍳4]
[13]  kk←(4=+/[2]PREC[;⍳4]=5 4⍴jj)/⍳5 ⍝ indice em PREC
[14]  vlloca←(dura×⌊,PREC[kk;5+⍳7])+(kmloca×⌊,PREC[kk;13+⍳7])
[15]  lin←lin,('00000000'⍕DTS[dtin+dura]),' ',BAGE[dest←?15;⍳3],' '
[16]  lin←lin,('0000000'⍕kmin+kmloca),' ',('000000000'⍕vlloca)
[17]  r[i;]←lin
[18]  vein←vein+1
[19]  →(vein<15)/oba
[20]  vein←?3
[21] oba:
[22]  i←i+1
[23]  →(i>30)/conta
[24]  →(1=?2)/t1
[25]  locin←locin+1
[26]  lin←('0000'⍕locin),' ',VEIC[vein;⍳8],' ',CLIE[?20;⍳4],' '
[27]  lin←lin,('00000000'⍕DTS[dtin+?4]),' ',BAGE[dest;⍳3],' '
[28]  dura←6+?10 ⍝ duracao da locacao
[29]  kmin←⌊VEIC[vein;20+⍳6]
[30]  kmloca←1000+?2000
[31]  jj←VEIC[vein;14+⍳4]
[32]  kk←(4=+/[2]PREC[;⍳4]=5 4⍴jj)/⍳5 ⍝ indice em PREC
[33]  vlloca←(dura×⌊,PREC[kk;5+⍳7])+(kmloca×⌊,PREC[kk;13+⍳7])
[34]  lin←lin,('00000000'⍕DTS[dtin+dura]),' ',BAGE[dest←?15;⍳3],' '
[35]  lin←lin,('0000000'⍕kmin+kmloca),' ',('000000000'⍕vlloca)
[36]  r[i;]←lin
[37]  i←i+1
[38]  locin←locin+1
[39]  →t1
[40] conta:⍝ →(r[30;5+⍳8]
------------------------------------------------------------
[0]  r←geraPREC
[1]  r←5 20⍴' '
[2]  r[1;]←'STD  ',('0000000'⍕1000+?10000),' ',('0000000'⍕10+?80)
[3]  r[2;]←'LUXO ',('0000000'⍕3000+?40000),' ',('0000000'⍕30+?300)
[4]  r[3;]←'GLUX ',('0000000'⍕5000+?50000),' ',('0000000'⍕50+?500)
[5]  r[4;]←'4x4  ',('0000000'⍕5000+?50000),' ',('0000000'⍕50+?500)
[6]  r[5;]←'6POR ',('0000000'⍕5000+?50000),' ',('0000000'⍕40+?500)
------------------------------------------------------------
[ 0]  r←geraSEGU;aaa;cia;i
[ 1]  r←25 40⍴' '
[ 2]  cia←10 5⍴'PSEG MARITTOKYOLIBERGENERHDI  ITAU MAPFRSULAM'
[ 3]  r[;⍳8]←VEIC[;⍳8]
[ 4]  i←1
```

```
[ 5] t1:→(i>25)/fim
[ 6]  aaa←cia[?10;],' ',('00'⍕?27),'/',('00'⍕?12),'/',('00'⍕□TS[1]-2001),' '
[ 7]  aaa←aaa,('00'⍕?27),'/',('00'⍕?12),'/',('00'⍕□TS[1]-1999),' ','0000000'⍕50000+?100000
[ 8]  r[i;9+⍳31]←aaa
[ 9]  i←i+1
[10]  →t1
[11] fim:⍝ r[⍳20;]←r[20?20;]
------------------------------------------------------------
[ 0]  r←geraVEIC;aaa;alfa;base;i;marcas;modelo;nump
[ 1]  alfa←'ABCDEFGHJKLMNPQRSTUVXYZ'
[ 2]  nump←1000+25?8000
[ 3]  marcas←10 4⍴'FIATGM  VOLKMERCRENAPEUGFORDHYUNJEEPMITS'
[ 4]  modelo←10 4⍴'STD LUXOGLUX6POR4x4 STD STD LUXOGLUXSTD '
[ 5]  base←BAGE[⍳15;⍳3]
[ 6]  r←25 24⍴' '
[ 7]  i←1
[ 8] t1:→(i>25)/fim
[ 9]  aaa←(,alfa[?3⍴⍴alfa]),(4 0⍕nump[i]),(,marcas[?10;]),(,modelo[?10;])
[10]  r[i;]←aaa,(6 0⍕1000+?10000),,base[?15;]
[11]  i←i+1
[12]  →t1
[13] fim:r[⍳15;]←r[□AV⍋r[⍳15;⍳7];]
[14]  r←1 1 1 0 1 1 1 1 0 1 1 1 1 0 1 1 1 1 0 1 1 1 1 1 1 0 1 1 1⍉[2]r
[15]  r[;4]←'-'
------------------------------------------------------------
[ 0]  r←geracasod63 sem;zzclie;zzbage;zzveic;zzsegu;zzprec;zzloca
[ 1] ⍝ semente deve ser um ¯1+?7⍴2
[ 2]  r←85 80⍴' '
[ 3]  CLIE←zzclie←geraCLIE
[ 4]  r[⍳15;]←15 80↑zzclie
[ 5]  BAGE←zzbage←geraBAGE
[ 6]  r[15+⍳15;]←15 80↑zzbage
[ 7]  VEIC←zzveic←geraVEIC
[ 8]  r[30+⍳15;]←15 80↑zzveic
[ 9]  SEGU←zzsegu←geraSEGU
[10]  r[45+⍳15;]←15 80↑zzsegu
[11]  PREC←zzprec←geraPREC
[12]  r[60+⍳5;]←5 80↑zzprec
[13]  LOCA←zzloca←geraLOCA
[14]  r[65+⍳20;]←20 80↑zzloca
[15]  →(sem[1]=1)/segue2
[16]  r[50+?8;]←1 80⍴80↑zzsegu[25;]
[17] segue2:
[18]  →(sem[2]=1)/segue3
[19]  r[30+?8;14+⍳4]←(4 4⍴'SPORJOVE8PORGLS ')[?4;]
[20] segue3:
[21]  →(sem[3]=1)/segue4
[22]  r[38+?7;26+⍳3]←zzbage[24;⍳3]
[23] segue4:
[24]  →(sem[4]=1)/segue5
[25]  r[68+?3;41+⍳3]←zzbage[23;⍳3]
[26] segue5:
[27]  →(sem[5]=1)/segue6
[28]  r[71+?7;15+⍳4]←zzclie[23;⍳4]
[29] segue6:
[30]  →(sem[6]=1)/segue7
[31]  r[78+?6;5+⍳8]←zzveic[23;⍳8]
[32] segue7:
[33]  →(sem[7]=1)/segue8
[34]  r[85;53+⍳9]←'000000000'⍕0.7×⌷r[85;53+⍳9]
[35] segue8:
------------------------------------------------------------
[ 0]  opesq vivod63a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
```

```
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLd63   '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAd63←ajusta80 FOLHALAd63
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALAd63)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 8ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←94 80ρ' '
[16]  f←FOLHALAd63
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.06
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑ρf),4)ρ'\#05')/⍳1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[93;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[94;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  zz←¯1+?7ρ2
[35]  xx←geracasod63 zz
[36]  esse[7+⍳85;]←85 80↑xx
[37]  resp←resp,zz
[38]  resu←resu,[1]1 8ρresp
[39]  acuja←(f[;2]='#')/⍳1↑ρf
[40]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\clearpage'
[42]  ⍞←(⍎xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+ρf)ρ' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[48]  upag[2+⍳1↑ρresu;⍳+/lixo1]←(lixo1←5 0 5 0 2 0 2 0 2 0 2 0 2 0 2 0)⍎resu
[49]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],3 0⍎0 1↓resu)
[52]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍎1↑ρaaa),' linhas e ',(⍎1↓ρaaa),' colunas'
[54] terminando:
[55]  upag[1↑ρupag;]←(1↓ρupag)↑'\end{document}'
[56]  relat[1↑ρrelat;;]←upag
[57]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[58]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivod64

```
[0]  r←achemedruim;z
[1] mais:
[2]  z←?99
[3]  →(z∈⍋,MEDI[;⍳2],' ')/mais
[4]  r←'OO'⍪z
[5]  →0
------------------------------------------------------------
[0]  r←embaralha c
[1]  r←c[(⍴c)?⍴c]
------------------------------------------------------------
[ 0]  r←geraabcd mask;a;b;c;d;z
[ 1] ⍝ mask indica se a restricao ┤e ou nao ┤e obdeceida
[ 2]  r←4 6 3⍴0
[ 3]  a←1
[ 4]  b←2
[ 5]  c←3
[ 6]  d←4
[ 7]  z←100?1000
[ 8]  r[a;;1]←6↑z
[ 9]  z←6↓z
[10]  r[b;;3]←6↑z
[11]  z←6↓z
[12]  r[c;;2]←6↑z
[13]  z←6↓z
[14]  r[b;;1]←embaralha r[a;;2]←6↑z
[15]  z←6↓z
[16]  r[c;;1]←embaralha r[a;;3]←embaralha r[d;;3]←6↑z
[17]  z←6↓z
[18]  r[d;;2]←embaralha r[b;;2]←6↑z
[19]  z←6↓z
[20]  r[d;;1]←embaralha r[c;;3]←6↑z
[21]  z←6↓z
[22] ⍝ vamos montar a resposta
[23]  →(mask[1]=1)/pula2
[24]  r[a;?6;2]←z[2]
[25] pula2:
[26]  →(mask[2]=1)/pula3
[27]  r[a;?6;3]←z[4]
[28] pula3:
[29]  →(mask[3]=1)/pula4
[30]  r[c;?6;3]←z[6]
[31] pula4:
[32]  →(mask[4]=1)/pula5
[33]  r[d;?6;3]←z[7]
[34] pula5:
[35]  →(mask[5]=1)/pula6
[36]  r[b;?6;2]←z[9]
[37] pula6:
------------------------------------------------------------
[  0]  r←geracasod64 mask;aa;anes;bb;gine;idci;ousa;outr;pedi;sala;vv
[  1]  MEDI←geramedi 12
[  2]  PACI←gerapaci 30
[  3]  ESPE←geraespe
[  4]  EQUI←geraequi
[  5]  CIEQ←28 6⍴' '
[  6]  CIRU←20 47⍴' '
[  7]  DATAS←miniDTS[(((⍋hoje)=miniDTS)/⍳⍴miniDTS)+⍳10] ⍝ 7 dias a partir de hoje
[  8]  DATAS←DATAS[10?10] ⍝ devidamente embaralhado
[  9]  anes←qualanest ⍝ o indice do anestesista na tabela ESPE
[ 10]  pedi←qualpedia ⍝ indice do pediatra na tabela ESPE
[ 11]  gine←qualginec ⍝ indice do gineco/obstetr na tabela ESPE
```

```
[ 12]  outr←(~(anes=⍳12)+(pedi=⍳12)+(gine=⍳12))/⍳12 ⍝ os outros medicos
[ 13]  sala←qualsalas ⍝ endereco em EQUI das 3 salas de cirurgia
[ 14]  ousa←(~(⍳10)∈sala)/⍳10 ⍝ outros equipamentos que nao as salas
[ 15]  idci←1000+30?1000 ⍝ codigos para as cirurgias (ainda desordenado)
[ 16] ⍝ vou gerar a 1. certa
[ 17]  CIEQ[2;⍳4]←CIEQ[1;⍳4]←CIRU[1;⍳4]←'0000'⍕idci[1]
[ 18]  CIRU[1;4+⍳12]←('00000000'⍕DATAS[1]),('00'⍕7+?3),'00'⍕(0 30)[?2]
[ 19]  CIRU[1;16+⍳4]←('00'⍕?3),'00'
[ 20]  aa←⍎ESPE[outr[1];⍳2]
[ 21]  bb←1⍳(aa=⍎,MEDI[;22+⍳2],' ')/⍳1↑⍴MEDI
[ 22]  CIRU[1;20+⍳2]←MEDI[bb;⍳2]
[ 23]  aa←⍎ESPE[anes;⍳2]
[ 24]  bb←1⍳(aa=⍎,MEDI[;22+⍳2],' ')/⍳1↑⍴MEDI
[ 25]  CIRU[1;22+⍳2]←MEDI[bb;⍳2]
[ 26]  CIRU[1;24+⍳3]←PACI[1;⍳3]
[ 27]  CIRU[1;27+⍳20]←20↑,NOCIR[?1↑⍴NOCIR;]
[ 28]  CIEQ[1;4+⍳2]←EQUI[sala[1];⍳2]
[ 29]  CIEQ[2;4+⍳2]←EQUI[ousa[?7];⍳2]
[ 30] ⍝ geracao da segunda certa
[ 31]  CIEQ[4;⍳4]←CIEQ[3;⍳4]←CIRU[2;⍳4]←'0000'⍕idci[2]
[ 32]  CIRU[2;4+⍳12]←('00000000'⍕DATAS[1]),('00'⍕12+?3),'00'⍕(0 15 30 45)[?4]
[ 33]  CIRU[2;16+⍳4]←('00'⍕?3),'00'
[ 34]  aa←⍎ESPE[outr[2];⍳2]
[ 35]  bb←1⍳(aa=⍎,MEDI[;22+⍳2],' ')/⍳1↑⍴MEDI
[ 36]  CIRU[2;20+⍳2]←MEDI[bb;⍳2]
[ 37]  aa←⍎ESPE[anes;⍳2]
[ 38]  bb←1⍳(aa=⍎,MEDI[;22+⍳2],' ')/⍳1↑⍴MEDI
[ 39]  CIRU[2;22+⍳2]←MEDI[bb;⍳2]
[ 40]  CIRU[2;24+⍳3]←PACI[2;⍳3]
[ 41]  CIRU[2;27+⍳20]←20↑,NOCIR[?1↑⍴NOCIR;]
[ 42]  CIEQ[3;4+⍳2]←EQUI[sala[2];⍳2]
[ 43]  CIEQ[4;4+⍳2]←EQUI[ousa[?7];⍳2]
[ 44] ⍝ terceira certa
[ 45]  CIEQ[5;⍳4]←CIRU[3;⍳4]←'0000'⍕idci[3]
[ 46]  CIRU[3;4+⍳12]←('00000000'⍕DATAS[2]),('00'⍕12+?3),'00'⍕(0 15 30 45)[?4]
[ 47]  CIRU[3;16+⍳4]←('00'⍕?4),'00'
[ 48]  aa←⍎ESPE[outr[3];⍳2]
[ 49]  bb←1⍳(aa=⍎,MEDI[;22+⍳2],' ')/⍳1↑⍴MEDI
[ 50]  CIRU[3;20+⍳2]←MEDI[bb;⍳2]
[ 51]  aa←⍎ESPE[anes;⍳2]
[ 52]  bb←1⍳(aa=⍎,MEDI[;22+⍳2],' ')/⍳1↑⍴MEDI
[ 53]  CIRU[3;22+⍳2]←MEDI[bb;⍳2]
[ 54]  CIRU[3;24+⍳3]←PACI[3;⍳3]
[ 55]  CIRU[3;27+⍳20]←20↑,NOCIR[?1↑⍴NOCIR;]
[ 56]  CIEQ[5;4+⍳2]←EQUI[sala[2];⍳2]
[ 57] ⍝ quarta certa
[ 58]  CIEQ[6;⍳4]←CIEQ[7;⍳4]←CIEQ[8;⍳4]←CIRU[4;⍳4]←'0000'⍕idci[4]
[ 59]  CIRU[4;4+⍳12]←('00000000'⍕DATAS[2]),('00'⍕7+?3),'00'⍕(0 15 30)[?3]
[ 60]  CIRU[4;16+⍳4]←('00'⍕?3),'00'⍕(0 30)[?2]
[ 61]  aa←⍎ESPE[outr[1];⍳2]
[ 62]  bb←1⍳(aa=⍎,MEDI[;22+⍳2],' ')/⍳1↑⍴MEDI
[ 63]  CIRU[4;20+⍳2]←MEDI[bb;⍳2]
[ 64]  aa←⍎ESPE[anes;⍳2]
[ 65]  bb←1⍳(aa=⍎,MEDI[;22+⍳2],' ')/⍳1↑⍴MEDI
[ 66]  CIRU[4;22+⍳2]←MEDI[bb;⍳2]
[ 67]  CIRU[4;24+⍳3]←PACI[4;⍳3]
[ 68]  CIRU[4;27+⍳20]←20↑,NOCIR[?1↑⍴NOCIR;]
[ 69]  CIEQ[6;4+⍳2]←EQUI[sala[1];⍳2]
[ 70]  CIEQ[7;4+⍳2]←EQUI[ousa[4];⍳2]
[ 71]  CIEQ[8;4+⍳2]←EQUI[ousa[6];⍳2]
[ 72] ⍝ quinta certa
[ 73]  CIEQ[9;⍳4]←CIRU[5;⍳4]←'0000'⍕idci[5]
[ 74]  CIRU[5;4+⍳12]←('00000000'⍕DATAS[3]),('00'⍕12+?3),'00'⍕(0 15 30 45)[?4]
```

```
[ 75]  CIRU[5;16+⍳4]←('00'⍕?4),'00'
[ 76]  aa←⍷ESPE[outr[4];⍳2]
[ 77]  bb←1⍋(aa=⍷,MEDI[;22+⍳2],' ')/⍳1⍋⍴MEDI
[ 78]  CIRU[5;20+⍳2]←MEDI[bb;⍳2]
[ 79]  aa←⍷ESPE[anes;⍳2]
[ 80]  bb←1⍋(aa=⍷,MEDI[;22+⍳2],' ')/⍳1⍋⍴MEDI
[ 81]  CIRU[5;22+⍳2]←MEDI[bb;⍳2]
[ 82]  CIRU[5;24+⍳3]←PACI[5;⍳3]
[ 83]  CIRU[5;27+⍳20]←20⍋,NOCIR[?1⍋⍴NOCIR;]
[ 84]  CIEQ[9;4+⍳2]←EQUI[sala[2];⍳2]
[ 85] ⍝ sexta certa
[ 86]  CIEQ[10;⍳4]←CIRU[6;⍳4]←'0000'⍕idci[6]
[ 87]  CIRU[6;4+⍳12]←('00000000'⍕DATAS[3]),('00'⍕7+?3),'00'⍕(0 15 30 45)[?4]
[ 88]  CIRU[6;16+⍳4]←('00'⍕?4),'00'⍕(0 15 30)[?3]
[ 89]  aa←⍷ESPE[outr[5];⍳2]
[ 90]  bb←1⍋(aa=⍷,MEDI[;22+⍳2],' ')/⍳1⍋⍴MEDI
[ 91]  CIRU[6;20+⍳2]←MEDI[bb;⍳2]
[ 92]  aa←⍷ESPE[anes;⍳2]
[ 93]  bb←1⍋(aa=⍷,MEDI[;22+⍳2],' ')/⍳1⍋⍴MEDI
[ 94]  CIRU[6;22+⍳2]←MEDI[bb;⍳2]
[ 95]  CIRU[6;24+⍳3]←PACI[6;⍳3]
[ 96]  CIRU[6;27+⍳20]←20⍋,NOCIR[?1⍋⍴NOCIR;]
[ 97]  CIEQ[10;4+⍳2]←EQUI[sala[3];⍳2]
[ 98] ⍝ setima certa
[ 99]  CIEQ[11;⍳4]←CIEQ[12;⍳4]←CIRU[7;⍳4]←'0000'⍕idci[7]
[100]  CIRU[7;4+⍳12]←('00000000'⍕DATAS[4]),('00'⍕7+?3),'00'⍕(0 15 30 45)[?4]
[101]  CIRU[7;16+⍳4]←('00'⍕?3),'00'
[102]  aa←⍷ESPE[outr[1];⍳2]
[103]  bb←1⍋(aa=⍷,MEDI[;22+⍳2],' ')/⍳1⍋⍴MEDI
[104]  CIRU[7;20+⍳2]←MEDI[bb;⍳2]
[105]  aa←⍷ESPE[anes;⍳2]
[106]  bb←1⍋(aa=⍷,MEDI[;22+⍳2],' ')/⍳1⍋⍴MEDI
[107]  CIRU[7;22+⍳2]←MEDI[bb;⍳2]
[108]  CIRU[7;24+⍳3]←PACI[7;⍳3]
[109]  CIRU[7;27+⍳20]←20⍋,NOCIR[?1⍋⍴NOCIR;]
[110]  CIEQ[11;4+⍳2]←EQUI[sala[2];⍳2]
[111]  CIEQ[12;4+⍳2]←EQUI[ousa[?7];⍳2]
[112] ⍝ oitava certa
[113]  CIEQ[13;⍳4]←CIRU[8;⍳4]←'0000'⍕idci[8]
[114]  CIRU[8;4+⍳12]←('00000000'⍕DATAS[4]),('00'⍕13+?3),'00'⍕(0 15 30 45)[?4]
[115]  CIRU[8;16+⍳4]←('00'⍕?3),'00'
[116]  aa←⍷ESPE[outr[5];⍳2]
[117]  bb←1⍋(aa=⍷,MEDI[;22+⍳2],' ')/⍳1⍋⍴MEDI
[118]  CIRU[8;20+⍳2]←MEDI[bb;⍳2]
[119]  aa←⍷ESPE[anes;⍳2]
[120]  bb←1⍋(aa=⍷,MEDI[;22+⍳2],' ')/⍳1⍋⍴MEDI
[121]  CIRU[8;22+⍳2]←MEDI[bb;⍳2]
[122]  CIRU[8;24+⍳3]←PACI[8;⍳3]
[123]  CIRU[8;27+⍳20]←20⍋,NOCIR[?1⍋⍴NOCIR;]
[124]  CIEQ[13;4+⍳2]←EQUI[sala[1];⍳2]
[125] ⍝ nona certa
[126]  CIEQ[14;⍳4]←CIRU[9;⍳4]←'0000'⍕idci[9]
[127]  CIRU[9;4+⍳12]←('00000000'⍕DATAS[5]),('00'⍕8+?3),'00'⍕(0 15 30 45)[?4]
[128]  CIRU[9;16+⍳4]←('00'⍕?3),'00'
[129]  aa←⍷ESPE[outr[2];⍳2]
[130]  bb←1⍋(aa=⍷,MEDI[;22+⍳2],' ')/⍳1⍋⍴MEDI
[131]  CIRU[9;20+⍳2]←MEDI[bb;⍳2]
[132]  aa←⍷ESPE[anes;⍳2]
[133]  bb←1⍋(aa=⍷,MEDI[;22+⍳2],' ')/⍳1⍋⍴MEDI
[134]  CIRU[9;22+⍳2]←MEDI[bb;⍳2]
[135]  CIRU[9;24+⍳3]←PACI[1;⍳3]
[136]  CIRU[9;27+⍳20]←20⍋,NOCIR[?1⍋⍴NOCIR;]
[137]  CIEQ[14;4+⍳2]←EQUI[sala[1];⍳2]
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[138] ⍝ decima certa
[139]  CIEQ[15;⍳4]←CIRU[10;⍳4]←'0000'⍕idci[10]
[140]  CIRU[10;4+⍳12]←('00000000'⍕DATAS[5]),('00'⍕13+?3),'00'⍕(0 15 30 45)[?4]
[141]  CIRU[10;16+⍳4]←('00'⍕?3),'00'
[142]  aa←⍷ESPE[outr[3];⍳2]
[143]  bb←1⍋(aa=⍷,MEDI[;22+⍳2],' ')/⍳1↑⍴MEDI
[144]  CIRU[10;20+⍳2]←MEDI[bb;⍳2]
[145]  aa←⍷ESPE[anes;⍳2]
[146]  bb←1⍋(aa=⍷,MEDI[;22+⍳2],' ')/⍳1↑⍴MEDI
[147]  CIRU[10;22+⍳2]←MEDI[bb;⍳2]
[148]  CIRU[10;24+⍳3]←PACI[10;⍳3]
[149]  CIRU[10;27+⍳20]←20↑,NOCIR[?1↑⍴NOCIR;]
[150]  CIEQ[15;4+⍳2]←EQUI[sala[2];⍳2]
[151] ⍝ decima primeira
[152]  →(mask[1]=0)/errado11
[153] certo11:
[154]  CIEQ[16;⍳4]←CIRU[11;⍳4]←'0000'⍕idci[11]
[155]  CIRU[11;4+⍳12]←('00000000'⍕DATAS[6]),('00'⍕7+?3),'00'⍕(0 15 30 45)[?4]
[156]  CIRU[11;16+⍳4]←('00'⍕?3),'00'
[157]  aa←⍷ESPE[outr[3];⍳2]
[158]  bb←1⍋(aa=⍷,MEDI[;22+⍳2],' ')/⍳1↑⍴MEDI
[159]  CIRU[11;20+⍳2]←MEDI[bb;⍳2]
[160]  aa←⍷ESPE[anes;⍳2]
[161]  bb←1⍋(aa=⍷,MEDI[;22+⍳2],' ')/⍳1↑⍴MEDI
[162]  CIRU[11;22+⍳2]←MEDI[bb;⍳2]
[163]  CIRU[11;24+⍳3]←PACI[11;⍳3]
[164]  CIRU[11;27+⍳20]←20↑,NOCIR[?1↑⍴NOCIR;]
[165]  CIEQ[16;4+⍳2]←EQUI[sala[2];⍳2]
[166]  →testa12
[167] errado11:
[168]  CIEQ[16;⍳4]←CIRU[11;⍳4]←'0000'⍕idci[11]
[169]  CIRU[11;4+⍳12]←('00000000'⍕DATAS[6]),('00'⍕7+?3),'00'⍕(0 15 30 45)[?4]
[170]  CIRU[11;16+⍳4]←('00'⍕?3),'00'
[171]  aa←⍷ESPE[outr[3];⍳2]
[172]  bb←1⍋(aa=⍷,MEDI[;22+⍳2],' ')/⍳1↑⍴MEDI
[173]  CIRU[11;20+⍳2]←MEDI[bb;⍳2]
[174]  aa←⍷ESPE[anes;⍳2]
[175]  bb←1⍋(aa=⍷,MEDI[;22+⍳2],' ')/⍳1↑⍴MEDI
[176]  CIRU[11;22+⍳2]←MEDI[bb;⍳2]
[177]  →(1=?2)/outro
[178]  CIRU[11;20+⍳2]←achemedruim
[179]  →bla3
[180] outro:
[181]  CIRU[11;22+⍳2]←achemedruim
[182] bla3:
[183]  CIRU[11;24+⍳3]←PACI[11;⍳3]
[184]  CIRU[11;27+⍳20]←20↑,NOCIR[?1↑⍴NOCIR;]
[185]  CIEQ[16;4+⍳2]←EQUI[sala[2];⍳2]
[186]  →testa12
[187] ⍝ decimo segundo
[188] testa12:
[189]  →(mask[2]=0)/errado12
[190] certo12:
[191]  CIEQ[17;⍳4]←CIRU[12;⍳4]←'0000'⍕idci[12]
[192]  CIRU[12;4+⍳12]←('00000000'⍕DATAS[6]),('00'⍕14+?3),'00'⍕(0 15 30 45)[?4]
[193]  CIRU[12;16+⍳4]←('00'⍕?3),'00'⍕(0 15 30 45)[?4]
[194]  aa←⍷ESPE[outr[4];⍳2]
[195]  bb←1⍋(aa=⍷,MEDI[;22+⍳2],' ')/⍳1↑⍴MEDI
[196]  CIRU[12;20+⍳2]←MEDI[bb;⍳2]
[197]  aa←⍷ESPE[anes;⍳2]
[198]  bb←1⍋(aa=⍷,MEDI[;22+⍳2],' ')/⍳1↑⍴MEDI
[199]  CIRU[12;22+⍳2]←MEDI[bb;⍳2]
[200]  CIRU[12;24+⍳3]←PACI[12;⍳3]
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[201]  CIRU[12;27+⍳20]←20↑,NOCIR[?1↑⍴NOCIR;]
[202]  CIEQ[17;4+⍳2]←EQUI[sala[1];⍳2]
[203]  →testa13
[204] errado12:
[205]  CIEQ[17;⍳4]←CIRU[12;⍳4]←'0000'⍕idci[12]
[206]  CIRU[12;4+⍳12]←('00000000'⍕DATAS[6]),('00'⍕14+?3),'00'⍕(0 15 30 45)[?4]
[207]  CIRU[12;16+⍳4]←('00'⍕?3),'00'⍕(0 15 30 45)[?4]
[208]  aa←⍎ESPE[outr[4];⍳2]
[209]  bb←1↑(aa=⍎,MEDI[;22+⍳2],' ')/⍳1↑⍴MEDI
[210]  CIRU[12;20+⍳2]←MEDI[bb;⍳2]
[211]  aa←⍎ESPE[(outr[5],gine,pedi)[?3];⍳2] ⍝ to detonando o anestesista
[212]  bb←1↑(aa=⍎,MEDI[;22+⍳2],' ')/⍳1↑⍴MEDI
[213]  CIRU[12;22+⍳2]←MEDI[bb;⍳2]
[214]  CIRU[12;24+⍳3]←PACI[12;⍳3]
[215]  CIRU[12;27+⍳20]←20↑,NOCIR[?1↑⍴NOCIR;]
[216]  CIEQ[17;4+⍳2]←EQUI[sala[1];⍳2]
[217]  →testa13
[218] testa13:
[219]  →(mask[3]=0)/errado13
[220] certo13:
[221]  CIEQ[18;⍳4]←CIEQ[19;⍳4]←CIRU[13;⍳4]←'0000'⍕idci[13]
[222]  CIRU[13;4+⍳12]←('00000000'⍕DATAS[7]),('00'⍕8+?3),'00'⍕(0 15 30 45)[?4]
[223]  CIRU[13;16+⍳4]←('00'⍕?3),'00'⍕(0 15 30 45)[?4]
[224]  aa←⍎ESPE[outr[5];⍳2]
[225]  bb←1↑(aa=⍎,MEDI[;22+⍳2],' ')/⍳1↑⍴MEDI
[226]  CIRU[13;20+⍳2]←MEDI[bb;⍳2]
[227]  aa←⍎ESPE[anes;⍳2]
[228]  bb←1↑(aa=⍎,MEDI[;22+⍳2],' ')/⍳1↑⍴MEDI
[229]  CIRU[13;22+⍳2]←MEDI[bb;⍳2]
[230]  CIRU[13;24+⍳3]←PACI[13;⍳3]
[231]  CIRU[13;27+⍳20]←20↑,NOCIR[?1↑⍴NOCIR;]
[232]  CIEQ[18;4+⍳2]←EQUI[sala[3];⍳2]
[233]  CIEQ[19;4+⍳2]←EQUI[ousa[?7];⍳2]
[234]  →testa14
[235] errado13:
[236]  CIEQ[18;⍳4]←CIEQ[19;⍳4]←CIRU[13;⍳4]←'0000'⍕idci[13]
[237]  CIRU[13;4+⍳12]←('00000000'⍕DATAS[7]),('00'⍕8+?3),'00'⍕(0 15 30 45)[?4]
[238]  CIRU[13;16+⍳4]←('00'⍕?3),'00'⍕(0 15 30 45)[?4]
[239]  aa←⍎ESPE[anes;⍳2]
[240]  bb←1↑(aa=⍎,MEDI[;22+⍳2],' ')/⍳1↑⍴MEDI
[241]  CIRU[13;20+⍳2]←CIRU[13;22+⍳2]←MEDI[bb;⍳2] ⍝ o titular e anestesista
[242]  CIRU[13;24+⍳3]←PACI[13;⍳3]
[243]  CIRU[13;27+⍳20]←20↑,NOCIR[?1↑⍴NOCIR;]
[244]  CIEQ[18;4+⍳2]←EQUI[sala[3];⍳2]
[245]  CIEQ[19;4+⍳2]←EQUI[ousa[?7];⍳2]
[246]  →testa14
[247] testa14:
[248]  →(mask[4]=0)/errado14
[249] certo14:
[250]  CIEQ[20;⍳4]←CIEQ[21;⍳4]←CIRU[14;⍳4]←'0000'⍕idci[14]
[251]  CIRU[14;4+⍳12]←('00000000'⍕DATAS[7]),('00'⍕13+?3),'00'⍕(0 15 30 45)[?4]
[252]  CIRU[14;16+⍳4]←('00'⍕?3),'00'⍕(0 15 30 45)[?4]
[253]  aa←⍎ESPE[outr[5];⍳2]
[254]  bb←1↑(aa=⍎,MEDI[;22+⍳2],' ')/⍳1↑⍴MEDI
[255]  CIRU[14;20+⍳2]←MEDI[bb;⍳2]
[256]  aa←⍎ESPE[anes;⍳2]
[257]  bb←1↑(aa=⍎,MEDI[;22+⍳2],' ')/⍳1↑⍴MEDI
[258]  CIRU[14;22+⍳2]←MEDI[bb;⍳2]
[259]  CIRU[14;24+⍳3]←PACI[14;⍳3]
[260]  CIRU[14;27+⍳20]←20↑,NOCIR[?1↑⍴NOCIR;]
[261]  CIEQ[20;4+⍳2]←EQUI[sala[1];⍳2]
[262]  CIEQ[21;4+⍳2]←EQUI[ousa[?7];⍳2]
[263]  →testa15
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[264] errado14:
[265]  CIEQ[20;⍳4]←CIEQ[21;⍳4]←CIRU[14;⍳4]←'0000'⍕idci[14]
[266]  CIRU[14;4+⍳12]←('00000000'⍕DATAS[7]),('00'⍕13+?3),'00'⍕(0 15 30 45)[?4]
[267]  CIRU[14;16+⍳4]←('00'⍕?3),'00'⍕(0 15 30 45)[?4]
[268]  aa←⍎ESPE[outr[5];⍳2]
[269]  bb←1⍋(aa=⍎,MEDI[;22+⍳2],' ')/⍳1⍋⍴MEDI
[270]  CIRU[14;20+⍳2]←MEDI[bb;⍳2]
[271]  aa←⍎ESPE[anes;⍳2]
[272]  bb←1⍋(aa=⍎,MEDI[;22+⍳2],' ')/⍳1⍋⍴MEDI
[273]  CIRU[14;22+⍳2]←MEDI[bb;⍳2]
[274]  CIRU[14;24+⍳3]←pacienteruim ⍝ detona o paciente
[275]  CIRU[14;27+⍳20]←20⍋,NOCIR[?1⍋⍴NOCIR;]
[276]  CIEQ[20;4+⍳2]←EQUI[sala[1];⍳2]
[277]  CIEQ[21;4+⍳2]←EQUI[ousa[?7];⍳2]
[278]  →testa15
[279] testa15:
[280]  →(mask[5]=0)/errado15
[281] certo15:
[282]  CIEQ[22;⍳4]←CIRU[15;⍳4]←'0000'⍕idci[15]
[283]  CIRU[15;4+⍳12]←('00000000'⍕DATAS[8]),('00'⍕7+?3),'00'⍕(0 15 30 45)[?4]
[284]  CIRU[15;16+⍳4]←('00'⍕?3),'00'⍕(0 15 30 45)[?4]
[285]  aa←⍎ESPE[gine;⍳2]
[286]  bb←1⍋(aa=⍎,MEDI[;22+⍳2],' ')/⍳1⍋⍴MEDI
[287]  CIRU[15;20+⍳2]←MEDI[bb;⍳2]
[288]  aa←⍎ESPE[anes;⍳2]
[289]  bb←1⍋(aa=⍎,MEDI[;22+⍳2],' ')/⍳1⍋⍴MEDI
[290]  CIRU[15;22+⍳2]←MEDI[bb;⍳2]
[291]  CIRU[15;24+⍳3]←PACI[1⍋qualmulhe;⍳3]
[292]  CIRU[15;27+⍳20]←20⍋,NOCIR[?1⍋⍴NOCIR;]
[293]  CIEQ[22;4+⍳2]←EQUI[sala[3];⍳2]
[294]  →testa16
[295] errado15:
[296]  CIEQ[22;⍳4]←CIRU[15;⍳4]←'0000'⍕idci[15]
[297]  CIRU[15;4+⍳12]←('00000000'⍕DATAS[8]),('00'⍕7+?3),'00'⍕(0 15 30 45)[?4]
[298]  CIRU[15;16+⍳4]←('00'⍕?3),'00'⍕(0 15 30 45)[?4]
[299]  aa←⍎ESPE[gine;⍳2]
[300]  bb←1⍋(aa=⍎,MEDI[;22+⍳2],' ')/⍳1⍋⍴MEDI
[301]  CIRU[15;20+⍳2]←MEDI[bb;⍳2]
[302]  aa←⍎ESPE[anes;⍳2]
[303]  bb←1⍋(aa=⍎,MEDI[;22+⍳2],' ')/⍳1⍋⍴MEDI
[304]  CIRU[15;22+⍳2]←MEDI[bb;⍳2]
[305]  CIRU[15;24+⍳3]←PACI[1⍋qualhomen;⍳3]
[306]  CIRU[15;27+⍳20]←20⍋,NOCIR[?1⍋⍴NOCIR;]
[307]  CIEQ[22;4+⍳2]←EQUI[sala[3];⍳2]
[308]  →testa16
[309] testa16:
[310]  →(mask[6]=0)/errado16
[311] certo16:
[312]  CIEQ[23;⍳4]←CIRU[16;⍳4]←'0000'⍕idci[16]
[313]  CIRU[16;4+⍳12]←('00000000'⍕DATAS[8]),('00'⍕15+?3),'00'⍕(0 15 30 45)[?4]
[314]  CIRU[16;16+⍳4]←('00'⍕?3),'00'⍕(0 15 30 45)[?4]
[315]  aa←⍎ESPE[outr[4];⍳2]
[316]  bb←1⍋(aa=⍎,MEDI[;22+⍳2],' ')/⍳1⍋⍴MEDI
[317]  CIRU[16;20+⍳2]←MEDI[bb;⍳2]
[318]  aa←⍎ESPE[anes;⍳2]
[319]  bb←1⍋(aa=⍎,MEDI[;22+⍳2],' ')/⍳1⍋⍴MEDI
[320]  CIRU[16;22+⍳2]←MEDI[bb;⍳2]
[321]  CIRU[16;24+⍳3]←PACI[16;⍳3]
[322]  CIRU[16;27+⍳20]←20⍋,NOCIR[?1⍋⍴NOCIR;]
[323]  CIEQ[23;4+⍳2]←EQUI[sala[3];⍳2]
[324]  →testa17
[325] errado16:
[326]  CIEQ[23;⍳4]←CIRU[16;⍳4]←'0000'⍕idci[16]
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[327]  CIRU[16;4+⍳12]←('00000000'↑DATAS[8]),('00'↑15+?3),'00'↑(0 15 30 45)[?4]
[328]  CIRU[16;16+⍳4]←('00'↑?3),'00'↑(0 15 30 45)[?4]
[329]  aa←⍷ESPE[outr[4];⍳2]
[330]  bb←1⍴(aa=⍷,MEDI[;22+⍳2],' ')/⍳1⍴⍴MEDI
[331]  CIRU[16;20+⍳2]←MEDI[bb;⍳2]
[332]  aa←⍷ESPE[anes;⍳2]
[333]  bb←1⍴(aa=⍷,MEDI[;22+⍳2],' ')/⍳1⍴⍴MEDI
[334]  CIRU[16;22+⍳2]←MEDI[bb;⍳2]
[335]  CIRU[16;24+⍳3]←PACI[16;⍳3]
[336]  CIRU[16;27+⍳20]←20⍴,NOCIR[?1⍴⍴NOCIR;]
[337]  CIEQ[23;4+⍳2]←'00'↑20+?10
[338]  →testa17
[339] testa17:
[340]  →(mask[7]=0)/errado17
[341] certo17:
[342]  CIEQ[24;⍳4]←CIRU[17;⍳4]←'0000'↑idci[17]
[343]  CIRU[17;4+⍳12]←('00000000'↑DATAS[9]),('00'↑7+?3),'00'↑(0 15 30 45)[?4]
[344]  CIRU[17;16+⍳4]←('00'↑?3),'00'↑(0 15 30 45)[?4]
[345]  aa←⍷ESPE[pedi;⍳2]
[346]  bb←1⍴(aa=⍷,MEDI[;22+⍳2],' ')/⍳1⍴⍴MEDI
[347]  CIRU[17;20+⍳2]←MEDI[bb;⍳2]
[348]  aa←⍷ESPE[anes;⍳2]
[349]  bb←1⍴(aa=⍷,MEDI[;22+⍳2],' ')/⍳1⍴⍴MEDI
[350]  CIRU[17;22+⍳2]←MEDI[bb;⍳2]
[351]  CIRU[17;24+⍳3]←PACI[pacicrianca;⍳3]
[352]  CIRU[17;27+⍳20]←20⍴,NOCIR[?1⍴⍴NOCIR;]
[353]  CIEQ[24;4+⍳2]←EQUI[sala[1];⍳2]
[354]  →testa18
[355] errado17:
[356]  CIEQ[24;⍳4]←CIRU[17;⍳4]←'0000'↑idci[17]
[357]  CIRU[17;4+⍳12]←('00000000'↑DATAS[9]),('00'↑7+?3),'00'↑(0 15 30 45)[?4]
[358]  CIRU[17;16+⍳4]←('00'↑?3),'00'↑(0 15 30 45)[?4]
[359]  aa←⍷ESPE[pedi;⍳2]
[360]  bb←1⍴(aa=⍷,MEDI[;22+⍳2],' ')/⍳1⍴⍴MEDI
[361]  CIRU[17;20+⍳2]←MEDI[bb;⍳2]
[362]  aa←⍷ESPE[anes;⍳2]
[363]  bb←1⍴(aa=⍷,MEDI[;22+⍳2],' ')/⍳1⍴⍴MEDI
[364]  CIRU[17;22+⍳2]←MEDI[bb;⍳2]
[365]  CIRU[17;24+⍳3]←PACI[paciadulto;⍳3]  ⍝ detonando o paciente
[366]  CIRU[17;27+⍳20]←20⍴,NOCIR[?1⍴⍴NOCIR;]
[367]  CIEQ[24;4+⍳2]←EQUI[sala[1];⍳2]
[368]  →testa18
[369] testa18:
[370]  →(mask[8]=0)/errado18
[371] certo18:
[372]  CIEQ[25;⍳4]←CIRU[18;⍳4]←'0000'↑idci[18]
[373]  CIRU[18;4+⍳12]←('00000000'↑DATAS[9]),('00'↑13+?3),'00'↑(0 15 30 45)[?4]
[374]  CIRU[18;16+⍳4]←('00'↑?3),'00'↑(0 15 30 45)[?4]
[375]  aa←⍷ESPE[outr[1];⍳2]
[376]  bb←1⍴(aa=⍷,MEDI[;22+⍳2],' ')/⍳1⍴⍴MEDI
[377]  CIRU[18;20+⍳2]←MEDI[bb;⍳2]
[378]  aa←⍷ESPE[anes;⍳2]
[379]  bb←1⍴(aa=⍷,MEDI[;22+⍳2],' ')/⍳1⍴⍴MEDI
[380]  CIRU[18;22+⍳2]←MEDI[bb;⍳2]
[381]  CIRU[18;24+⍳3]←PACI[18;⍳3]
[382]  CIRU[18;27+⍳20]←20⍴,NOCIR[?1⍴⍴NOCIR;]
[383]  CIEQ[25;4+⍳2]←EQUI[sala[1];⍳2]
[384]  →testa19
[385] errado18:
[386]  CIEQ[25;⍳4]←CIRU[18;⍳4]←'0000'↑idci[18]
[387]  CIRU[18;4+⍳12]←('00000000'↑DATAS[9]),('00'↑13+?3),'00'↑(0 15 30 45)[?4]
[388]  CIRU[18;16+⍳4]←('00'↑?3),'00'↑(0 15 30 45)[?4]
[389]  aa←⍷ESPE[outr[1];⍳2]
```

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[390]  bb←1↑(aa=⍷,MEDI[;22+⍳2],' ')/⍳1↑⍴MEDI
[391]  CIRU[18;20+⍳2]←MEDI[bb;⍳2]
[392]  aa←⍷ESPE[anes;⍳2]
[393]  bb←1↑(aa=⍷,MEDI[;22+⍳2],' ')/⍳1↑⍴MEDI
[394]  CIRU[18;22+⍳2]←MEDI[bb;⍳2]
[395]  CIRU[18;24+⍳3]←PACI[18;⍳3]
[396]  CIRU[18;27+⍳20]←20↑,NOCIR[?1↑⍴NOCIR;]
[397]  CIEQ[25;4+⍳2]←EQUI[sala[1];⍳2]
[398]  CIRU[7;4+⍳12]←('00000000'⍕DATAS[9]),('00'⍕17+?2),'00'
[399]  CIRU[8;4+⍳12]←('00000000'⍕DATAS[9]),('00'⍕20+?2),'00'⍕(0 15 30 45)[?4]
[400]  CIRU[7;16+⍳4]←'0000'
[401]  CIRU[8;16+⍳4]←'0030'
[402]  CIRU[7;20+⍳2]←CIRU[8;20+⍳2]←CIRU[18;20+⍳2]
[403]  →testa19
[404] testa19:
[405]  →(mask[9]=0)/errado19
[406] certo19:
[407]  CIEQ[26;⍳4]←CIRU[19;⍳4]←'0000'⍕idci[19]
[408]  CIRU[19;4+⍳12]←('00000000'⍕DATAS[10]),('00'⍕15+?3),'00'⍕(0 15 30 45)[?4]
[409]  CIRU[19;16+⍳4]←('00'⍕?3),'00'⍕(0 15 30 45)[?4]
[410]  aa←⍷ESPE[outr[5];⍳2]
[411]  bb←1↑(aa=⍷,MEDI[;22+⍳2],' ')/⍳1↑⍴MEDI
[412]  CIRU[19;20+⍳2]←MEDI[bb;⍳2]
[413]  aa←⍷ESPE[anes;⍳2]
[414]  bb←1↑(aa=⍷,MEDI[;22+⍳2],' ')/⍳1↑⍴MEDI
[415]  CIRU[19;22+⍳2]←MEDI[bb;⍳2]
[416]  CIRU[19;24+⍳3]←PACI[19;⍳3]
[417]  CIRU[19;27+⍳20]←20↑,NOCIR[?1↑⍴NOCIR;]
[418]  CIEQ[26;4+⍳2]←EQUI[sala[2];⍳2]
[419]  →testa20
[420] errado19:
[421]  CIEQ[26;⍳4]←CIRU[19;⍳4]←'0000'⍕idci[19]
[422]  CIRU[19;4+⍳12]←('00000000'⍕DATAS[10]),('00'⍕15+?3),'00'⍕(0 15 30 45)[?4]
[423]  CIRU[19;16+⍳4]←('00'⍕9+?3),'00'⍕(0 15 30 45)[?4]
[424]  aa←⍷ESPE[outr[5];⍳2]
[425]  bb←1↑(aa=⍷,MEDI[;22+⍳2],' ')/⍳1↑⍴MEDI
[426]  CIRU[19;20+⍳2]←MEDI[bb;⍳2]
[427]  aa←⍷ESPE[anes;⍳2]
[428]  bb←1↑(aa=⍷,MEDI[;22+⍳2],' ')/⍳1↑⍴MEDI
[429]  CIRU[19;22+⍳2]←MEDI[bb;⍳2]
[430]  CIRU[19;24+⍳3]←PACI[19;⍳3]
[431]  CIRU[19;27+⍳20]←20↑,NOCIR[?1↑⍴NOCIR;]
[432]  CIEQ[26;4+⍳2]←EQUI[sala[2];⍳2]
[433]  →testa20
[434] testa20:
[435]  →(mask[10]=0)/errado20
[436] certo20:
[437]  CIEQ[27;⍳4]←CIEQ[28;⍳4]←CIRU[20;⍳4]←'0000'⍕idci[20]
[438]  CIRU[20;4+⍳12]←('00000000'⍕DATAS[10]),('00'⍕8+?3),'00'⍕(0 15 30 45)[?4]
[439]  CIRU[20;16+⍳4]←('00'⍕?3),'00'⍕(0 15 30 45)[?4]
[440]  aa←⍷ESPE[outr[4];⍳2]
[441]  bb←1↑(aa=⍷,MEDI[;22+⍳2],' ')/⍳1↑⍴MEDI
[442]  CIRU[20;20+⍳2]←MEDI[bb;⍳2]
[443]  aa←⍷ESPE[anes;⍳2]
[444]  bb←1↑(aa=⍷,MEDI[;22+⍳2],' ')/⍳1↑⍴MEDI
[445]  CIRU[20;22+⍳2]←MEDI[bb;⍳2]
[446]  CIRU[20;24+⍳3]←PACI[20;⍳3]
[447]  CIRU[20;27+⍳20]←20↑,NOCIR[?1↑⍴NOCIR;]
[448]  CIEQ[27;4+⍳2]←EQUI[sala[2];⍳2]
[449]  CIEQ[28;4+⍳2]←EQUI[ousa[?7];⍳2]
[450]  →testa21
[451] errado20:
[452]  CIEQ[27;⍳4]←CIEQ[28;⍳4]←CIRU[20;⍳4]←'0000'⍕idci[20]
```

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[453]  CIRU[20;4+⍳12]←('00000000'⍕DATAS[10]),('00'⍕8+?3),'00'⍕(0 15 30 45)[?4]
[454]  CIRU[20;16+⍳4]←('00'⍕?3),'00'⍕(0 15 30 45)[?4]
[455]  aa←⍎ESPE[outr[4];⍳2]
[456]  bb←1↑(aa=⍎,MEDI[;22+⍳2],' ')/⍳1↑⍴MEDI
[457]  CIRU[20;20+⍳2]←MEDI[bb;⍳2]
[458]  aa←⍎ESPE[anes;⍳2]
[459]  bb←1↑(aa=⍎,MEDI[;22+⍳2],' ')/⍳1↑⍴MEDI
[460]  CIRU[20;22+⍳2]←MEDI[bb;⍳2]
[461]  CIRU[20;24+⍳3]←PACI[20;⍳3]
[462]  CIRU[20;27+⍳20]←20↑,NOCIR[?1↑⍴NOCIR;]
[463]  CIEQ[27;4+⍳2]←EQUI[ousa[1];⍳2]
[464]  CIEQ[28;4+⍳2]←EQUI[ousa[4];⍳2]
[465]  →testa21
[466] testa21:
[467]  MEDI←MEDI[⍋(⍎,MEDI[;⍳2],' ');]
[468]  PACI←PACI[⍋(⍎,PACI[;⍳3],' ');]
[469]  ESPE←ESPE[⍋(⍎,ESPE[;⍳2],' ');]
[470]  EQUI←EQUI[⍋(⍎,EQUI[;⍳3],' ');]
[471]  vv←⍎,CIRU[;9 10 11 12 7 8 5 6 13 14 15 16],' '
[472]  CIRU←CIRU[⍋vv;]
-------------------------------------------------------------
[ 0]  r←geraequi
[ 1]  r←10 22⍴' '
[ 2]  r[1;3+⍳19]←19↑'RESPIRADOR'
[ 3]  r[2;3+⍳19]←19↑'RAIO X PORTATIL'
[ 4]  r[3;3+⍳19]←19↑'SALA CIRURGICA 1'
[ 5]  r[4;3+⍳19]←19↑'SALA CIRURGICA 2'
[ 6]  r[5;3+⍳19]←19↑'SALA CIRURGICA 3'
[ 7]  r[6;3+⍳19]←19↑'RESPIRADOR'
[ 8]  r[7;3+⍳19]←19↑'GERADOR EMERGENCIA'
[ 9]  r[8;3+⍳19]←19↑'RESSUCITADOR'
[10]  r[9;3+⍳19]←19↑'RESSUCITADOR'
[11]  r[10;3+⍳19]←19↑'RAIO X COMPLETO'
[12]  r←r[10?10;]
[13]  r[;⍳2]←'55'⍕10 1⍴10+⍳10
-------------------------------------------------------------
[ 0]  r←geraespe
[ 1]  r←10 22⍴' '
[ 2]  r[1;3+⍳19]←19↑'CARDIOLOGIA'
[ 3]  r[2;3+⍳19]←19↑'UROLOGIA'
[ 4]  r[3;3+⍳19]←19↑'ANESTESIOLOGIA'
[ 5]  r[4;3+⍳19]←19↑'NEUROLOGIA'
[ 6]  r[5;3+⍳19]←19↑'GINECOLOGIA'
[ 7]  r[6;3+⍳19]←19↑'OBSTETRICIA'
[ 8]  r[7;3+⍳19]←19↑'PEDIATRIA'
[ 9]  r[8;3+⍳19]←19↑'GASTROLOGIA'
[10]  r[9;3+⍳19]←19↑'ANGIOLOGIA'
[11]  r[10;3+⍳19]←19↑'DERMATOLOGIA'
[12]  r←r[10?10;]
[13]  r[;⍳2]←'55'⍕10 1⍴10+⍳10
-------------------------------------------------------------
[ 0]  r←geramedi n;espe;i;meds;xx;yy;zz
[ 1]  r←(n,24)⍴' '
[ 2]  i←1
[ 3]  meds←n?89
[ 4] novo:
[ 5]  espe←(10?10),?n⍴10
[ 6]  xx←qualanest
[ 7]  →(xx∈espe)/ped
[ 8]  →novo
[ 9] ped:yy←qualpedia
[10]  →(yy∈espe)/aca11
[11]  →novo
```

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[12] aca11:zz←qualginec
[13]  →(zz∈espe)/aca
[14]  →novo
[15] aca:→(i>n)/fim
[16]  r[i;⍳2]←'55'⍕10+meds[i]
[17]  r[i;3+⍳19]←19↑geranome
[18]  r[i;22+⍳2]←'55'⍕10+espe[i]
[19]  i←i+1
[20]  →aca
[21] fim:
------------------------------------------------------------
[0]  r←geranome
[1]  r←,NOMES[?1↑⍴NOMES;]
------------------------------------------------------------
[ 0]  r←gerapaci n;i;pacs;aa
[ 1]  r←(n,28)⍴' '
[ 2]  pacs←100+n?200
[ 3]  i←1
[ 4] t1:→(i>n)/fim
[ 5]  r[i;⍳3]←'555'⍕pacs[i]
[ 6]  aa←geranome
[ 7]  r[i;4+⍳20]←aa[⍳18],aa[20],' '
[ 8]  r[i;24+⍳4]←'5555'⍕1970+?44
[ 9]  i←i+1
[10]  →t1
[11] fim:
------------------------------------------------------------
[ 0]  r←geraquestaoprova;mask;rr
[ 1]  mask←¯1+?5⍴2
[ 2]  r←30 80⍴' '
[ 3]  r[1;]←80↑'Suponha um banco de dados composto pelas seguintes tabelas: '
[ 4]  r[2;]←80↑'create table A (AA int PK, AB int, AC int)'
[ 5]  r[3;]←80↑'create table B (BA int PK, BB int, BC int)'
[ 6]  r[4;]←80↑'create table C (CA int PK, CB int, CC int)'
[ 7]  r[5;]←80↑'create table D (DA int PK, DB int, DC int)'
[ 8]  r[6;]←80↑'Definem-se as seguintes regras de restri⍀~oes de integridade:'
[ 9]  r[7;]←80↑'1. Todo campo AB deve existir em BA'
[10]  r[8;]←80↑'2. Todo campo AC deve existir em CA'
[11]  r[9;]←80↑'3. Todo campo CC deve existir em DA'
[12]  r[10;]←80↑'4. Todo campo DC deve existir em CA'
[13]  r[11;]←80↑'5. Todo campo BB deve existir em DB'
[14]  r[12;]←80↑'A seguir uma instância completa das entidades A, B C e D'
[15]  r[13;]←80↑'Responda S ou N se a restri⍀~ao é ou n⍀~ao respeitada.'
[16]  r[14;]←80↑'⍀begin{verbatim}'
[17]  r[15;]←80↑' -----A-----   -----B-----   -----C-----   -----D----- '
[18]  r[16;]←80↑'  AA  AB  AC    BA  BB  BC    CA  CB  CC    DA  DB  DC '
[19]  r[17;]←80↑' --- --- ---   --- --- ---   --- --- ---   --- --- --- '
[20]  rr←geraabcd mask
[21]  r[17+⍳6;]←6 80↑(4 0⍕rr[1;;]),(6 0 4 0 4 0⍕rr[2;;]),(6 0 4 0 4 0⍕rr[3;;]),6 0 4 0 4 0
      ⍕rr[4;;]
[22]  r[24;]←80↑'⍀end{verbatim}'
[23]  r[25;]←80↑'Resposta = ',3 0⍕mask
------------------------------------------------------------
[0]  r←hoje
[1]  r←('99'⍕⎕TS[3]),('99'⍕⎕TS[2]),'9999'⍕⎕TS[1]
------------------------------------------------------------
[ 0]  r←paciadulto;x
[ 1]  x←?1↑⍴PACI
[ 2] novo:
[ 3]  x←x+1
[ 4]  →(x≤1↑⍴PACI)/okok
[ 5]  x←1
[ 6] okok:
```

```
[ 7]  →(((⍤,PACI[x;24+⍳4],' ')+20)>⎕TS[1])/novo
[ 8]  r←x
[ 9]  →0
------------------------------------------------------------
[ 0]  r←pacicrianca;x
[ 1]  x←?1↑⍴PACI
[ 2] novo:
[ 3]  x←x+1
[ 4]  →(x≤1↑⍴PACI)/okok
[ 5]  x←1
[ 6] okok:
[ 7]  →(((⍤,PACI[x;24+⍳4],' ')+15)<⎕TS[1])/novo
[ 8]  r←x
[ 9]  →0
------------------------------------------------------------
[0]  r←pacienteruim;x
[1] novo:
[2]  x←100+?199
[3]  →(x∈⍤,PACI[;⍳3],' ')/novo
[4]  r←'000'⍕x
[5]  →0
------------------------------------------------------------
[ 0]  r←qualanest;y;i
[ 1]  y←ESPE
[ 2]  r←0
[ 3]  i←1
[ 4] t1:→(i>1↑⍴y)/fim
[ 5]  →(5=+/y[i;3+⍳5]='ANEST')/ok
[ 6]  i←i+1
[ 7]  →t1
[ 8] ok:r←i
[ 9] fim:
------------------------------------------------------------
[ 0]  r←qualginec;y;i
[ 1]  y←ESPE
[ 2]  r←0
[ 3]  i←1
[ 4] t1:→(i>1↑⍴y)/fim
[ 5]  →(5=+/y[i;3+⍳5]='GINEC')/ok
[ 6]  →(5=+/y[i;3+⍳5]='OBSTE')/ok
[ 7]  i←i+1
[ 8]  →t1
[ 9] ok:r←i
[10] fim:
------------------------------------------------------------
[ 0]  r←qualhomen;y;i
[ 1]  y←PACI
[ 2]  r←⍳0
[ 3]  i←1
[ 4] t1:→(i>1↑⍴y)/fim
[ 5]  →(y[i;23]='M')/ok
[ 6]  i←i+1
[ 7]  →t1
[ 8] ok:r←r,i
[ 9]  i←i+1
[10]  →t1
[11] fim:
------------------------------------------------------------
[ 0]  r←qualmulhe;y;i
[ 1]  y←PACI
[ 2]  r←⍳0
[ 3]  i←1
[ 4] t1:→(i>1↑⍴y)/fim
```

```
[ 5]  →(y[i;23]='F')/ok
[ 6]  i←i+1
[ 7]  →t1
[ 8] ok:r←r,i
[ 9]  i←i+1
[10]  →t1
[11] fim:
-------------------------------------------------------------
[ 0]  r←qualpedia;y;i
[ 1]  y←ESPE
[ 2]  r←0
[ 3]  i←1
[ 4] t11:→(i>1↑⍴y)/fim1
[ 5]  →(5=+/y[i;3+⍳5]='PEDIA')/ok1
[ 6]  i←i+1
[ 7]  →t11
[ 8] ok1:r←i
[ 9] fim1:
-------------------------------------------------------------
[ 0]  r←qualsalas;y;i
[ 1]  y←EQUI
[ 2]  r←⍳0
[ 3]  i←1
[ 4] t1:→(i>1↑⍴y)/fim
[ 5]  →(5=+/y[i;3+⍳5]='SALA ')/ok
[ 6]  i←i+1
[ 7]  →t1
[ 8] ok:r←r,i
[ 9]  i←i+1
[10]  →t1
[11] fim:
-------------------------------------------------------------
[0]  r←veci x;aa
[1]  aa←1 1 0 1 1 0 1 1 1 1 0 1 1 0 1 1
[2]  r←((4⍴1),0,aa,0,(4⍴1),0 1 1 0 1 1 0 1 1 1 0,20⍴1)⌿[2]x
[3]  r[;8 11]←'/'
[4]  r[;19]←'h'
-------------------------------------------------------------
[ 0]  opesq vivod64a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;mask;nomes;ql39;
      qlinha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLd64   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⌿apl2⌿',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAd64←ajusta80 FOLHALAd64
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAd64)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⌿apl2⌿VIVOBLO1'
[13]  xk←1 ⋄ resu←0 11⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←81 80⍴' '
[16]  f←FOLHALAd64
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⌿#05')/⍳1↑⍴f
```

```
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[80;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[81;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  mask←¯1+?10⍴2
[35]  geracasod64 mask
[36]  esse[7+⍳10;]←10 80↑ESPE,(10 4⍴' '),EQUI
[37]  esse[17+⍳30;]←30 80↑PACI,(30 10⍴' '),(1 1 1 1 0 1 1⍀[2]CIEQ),[1]2 7⍴' '
[38]  esse[47+⍳12;]←12 80↑MEDI
[39]  esse[59+⍳20;]←20 80↑veci CIRU
[40]  resp←resp,mask
[41]  resu←resu,[1]1 11⍴resp
[42]  acuja←(f[;2]='#')/⍳1↑⍴f
[43]  f[acuja;⍳80]←esse[⌸,f[acuja;3 4],' ';]
[44]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[45]  ⍞←(⍕xk←xk+1),'-'
[46]  →testa
[47] fim:upag←(1 0+⍴f)⍴' '
[48]  →(1=≡n)/elafa
[49]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[50]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[51]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0,(5 0,8⍴3 0),5 0,8⍴3 0)⍕resu
[52]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[53]  →terminando
[54] elafa:aaa←(ylu[;⍳36],((5 0,8⍴3 0),5 0,8⍴3 0)⍕0 1↓resu)
[55]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[56]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[57] terminando:
[58]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[59]  relat[1↑⍴relat;;]←upag
[60]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[61]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[62]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[63]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivod66

```
[ 0]  opesq vivod66a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;nomes;num
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLd66   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAd66←ajusta80 FOLHALAd66
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAd66)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 2⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
```

```
[15]  esse←20 80ρ' '
[16]  f←FOLHALAd66
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[20]  esse[4;]←80↑ylu[xk;ι6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[⎕IO+1]f[;ι4]=((1↑ρf),4)ρ'⍀#05')/ι1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:
[28]  esse[5;]←80↑ylu[xk;6+ι30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[32]  esse[19;ι10]←'@',esse[6;5+ι3],esse[4;1+ι5],'@'
[33]  esse[20;]←80↑esse[6;5+ι3],'-',esse[4;1+ι5],' - ',opesq[6 7],'/',opesq[9 10]
[34] ini1:
[35]  esse[8;]←80↑'1'
[36]  esse[9;]←80↑'1'
[37]  esse[10;]←80↑'1'
[38]  esse[11;]←80↑'1'
[39]  esse[12;]←80↑'1'
[40]  resu←resu,[1]1 2ρresp
[41]  acuja←(f[;2]='#')/ι1↑ρf
[42]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'⍀newpage'
[44]  ⍞←(⍕xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+ρf)ρ' '
[47]  →terminando
[48]  →(1=≡n)/elafa
[49]  upag[1;]←(1↓ρupag)↑'⍀begin{verbatim}'
[50]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[51]  upag[2+ι1↑ρresu;ι+/lixo1]←(lixo1←4 0 8 0)⍕resu
[52]  upag[3+1↑ρresu;]←(1↓ρupag)↑'⍀end{verbatim}'
[53]  →terminando
[54] elafa:aaa←(ylu[;ι36],4 0⍕0 1↓resu)
[55]  lixonol←aaa ⍙FM('c:⍀apl2⍀',((~⍬∧⍀⍬EVENTO=' ')/EVENTO),'.gpa')
[56]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[57] terminando:
[58]  upag[1↑ρupag;]←(1↓ρupag)↑'⍀end{document}'
[59]  relat[1↑ρrelat;;]←upag
[60]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[61] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[62]  lixonol←lixonol ⍙FM'c:⍀apl2⍀',((~⍬∧⍀⍬EVENTO=' ')/EVENTO),'.tex'
[63]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex)'
-------------------------------------------------------------
```

vivod69

```
[ 0]  opesq vivod69b n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLd69b  '
[ 6]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
```

```
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAd69b←ajusta80 FOLHALAd69b
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAd69b)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALAd69b
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34] ⍝ xx←geracaso
[35] ⍝ esse[7+⍳3;]←3 80↑acertaca xx
[36] ⍝ resp←resp,,xx[2 3;5]
[37]  resu←resu,[1]1 3⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⍞←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:
[44]  upag←(1 0+⍴f)⍴' '
[45]  →terminando  ⍝ nao ha arquivo GPA
[46]  →(1=≡n)/elafa
[47]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[48]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[49]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍕resu
[50]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[51]  →terminando
[52] elafa:aaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[53]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[54]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[55] terminando:
[56]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[57]  relat[1↑⍴relat;;]←upag
[58]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[59]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[60]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[61]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivod71

```
[ 0]  exemplosd71;r;lixo
[ 1] ⍝ esta funcao imprime todos os exercicios do banco de dados
[ 2]  EXEMPLOSd71←ajusta80 EXEMPLOSd71
```

```
[ 3]  r←ajusta80 ΔFM'c:\apl2\VIVOBLO1'
[ 4]  r←r,[1]1 80ρ80↑'\section*{Exemplos de d71}'
[ 5]  r←r,[1]EXEMPLOSd71
[ 6]  r←r,[1]1 80ρ80↑'\end{document}'
[ 7]  lixo←r ΔFM'c:\apl2\exemd71.tex'
[ 8]  'Salvo em c:\apl2\ com o nome de exemd71.tex'
------------------------------------------------------------
[ 0]  r←gerad71b;a1;alf;i;ij;in;respo;zax;zica;zu
[ 1]  r←3ρ0
[ 2]  alf←gernew DEFId71
[ 3] novissimo:
[ 4]  in←10?1↑ρalf
[ 5]  zax←alf[in;]
[ 6]  a1←0 80ρ' '
[ 7]  i←1
[ 8] t1:→(i>10)/fix
[ 9]  zica←zax[i;]
[10]  a1←a1,[1]DEFId71[zica[2]+⍳zica[3];]
[11]  i←i+1
[12]  →t1
[13] fix:
[14]  →(40≥1↑ρa1)/ok1
[15]  □←'o'
[16]  →novissimo
[17] ok1:
[18]  r[1]←⊂a1
[19]  a1←0 80ρ' '
[20]  i←1
[21]  respo←10?10
[22] t2:→(i>10)/jul
[23]  zica←zax[respo[i];]
[24]  a1←(a1,[1]1 80ρ80↑,'--- ',(⍕i),' ---'),[1]DEFId71[zica[4]+⍳zica[5];]
[25]  i←i+1
[26]  →t2
[27] jul:
[28]  →(70≥1↑ρa1)/ok2
[29]  □←'⊗'
[30]  →novissimo
[31] ok2:
[32]  r[2]←⊂((1 80ρ80↑'\begin{verbatim}'),[1]a1),[1]1 80ρ80↑'\end{verbatim}'
[33]  zu←2 10ρ0
[34]  zu[2;]←respo
[35]  zu[1;]←⍳10
[36]  ij←⍳0
[37]  i←1
[38] t3:→(i>10)/lo
[39]  ij←ij,zu[1;(zu[2;]=i)/⍳10]
[40]  i←i+1
[41]  →t3
[42] lo:r[3]←⊂ij
------------------------------------------------------------
[ 0]  r←gerad71c;a1;alf;alfr;i;ij;in;respo;zax;zaxr;zica;zu
[ 1]  r←3ρ0
[ 2]  alf←gernew DEFId71
[ 3]  alfr←gernew DEFId71ruim
[ 4] novissimo:
[ 5]  in←10?1↑ρalf
[ 6]  zax←alf[in;]
[ 7]  zaxr←alfr[in;]
[ 8]  a1←0 80ρ' '
[ 9]  i←1
[10] t1:→(i>10)/fix
[11]  zica←zax[i;]
```

```
[12]  a1←a1,[1]DEFId71[zica[2]+⍳zica[3];]
[13]  i←i+1
[14]  →t1
[15] fix:
[16]  →(40≥1↑⍴a1)/ok1
[17]  □←'o'
[18]  →novissimo
[19] ok1:
[20]  r[1]←⊂a1
[21]  a1←0 80⍴' '
[22]  i←1
[23]  respo←¯1+?10⍴2
[24] t2:→(i>10)/jul
[25]  →(respo[i]=0)/ruimm
[26] bomm:
[27]  zica←zax[i;]
[28]  a1←(a1,[1]1 80⍴80↑'--- ',(⍕i),' ---'),[1]DEFId71[zica[4]+⍳zica[5];]
[29]  i←i+1
[30]  →t2
[31] ruimm:
[32]  zica←zaxr[i;]
[33]  a1←(a1,[1]1 80⍴80↑'--- ',(⍕i),' ---'),[1]DEFId71ruim[zica[4]+⍳zica[5];]
[34]  i←i+1
[35]  →t2
[36] jul:
[37]  →(70≥1↑⍴a1)/ok2
[38]  □←'⊗'
[39]  →novissimo
[40] ok2:
[41]  r[2]←⊂((1 80⍴80↑'\begin{verbatim}'),[1]a1),[1]1 80⍴80↑'\end{verbatim}'
[42]  r[3]←⊂respo
-------------------------------------------------------------
[ 0]  r←gernew x;lin;i;tam;trata
[ 1]  r←0 6⍴0
[ 2]  i←1
[ 3] t1:→(i>1↑⍴x)/fim
[ 4]  →(x[i;1]='%')/descobre
[ 5]  i←i+1
[ 6]  →t1
[ 7] descobre:
[ 8]  →(x[i;2]='i')/ini
[ 9]  →(x[i;2]='r')/res
[10]  →(x[i;2]='f')/fiz
[11]  'deu xabu... veja o indice =',⍕i
[12]  →0
[13] ini:
[14]  trata←6⍴0
[15]  trata[1 2]←(⍎x[i;3 4 5]),i
[16]  i←i+1
[17]  →t1
[18] res:trata[3 4]←(¯1+i-trata[2]),i
[19]  i←i+1
[20]  →t1
[21] fiz:trata[5 6]←(¯1+i-trata[4]),i
[22]  i←i+1
[23]  r←r,[1]1 6⍴trata
[24]  →t1
[25] fim:
-------------------------------------------------------------
[ 0]  todosd71;r;lixo
[ 1] ⍝ esta funcao imprime todos os exercicios do banco de dados
[ 2]  DEFId71←ajusta80 DEFId71
[ 3]  r←ajusta80 ⎕FM'c:\apl2\VIVOBLO1'
```

```
[ 4]  r←r,[1]1 80ρ80↑'\section*{Listagem de todos os problemas de d71}'
[ 5]  r←r,[1]1 80ρ80↑'\begin{enumerate}'
[ 6]  r←r,[1]DEFId71
[ 7]  r←r,[1]1 80ρ80↑'\end{enumerate}'
[ 8]  r←r,[1]1 80ρ80↑'\end{document}'
[ 9]  lixo←r ΔFM'c:\apl2\todosd71.tex'
[10]  'Salvo em c:\apl2\ com o nome de todosd71.tex'
------------------------------------------------------------
[ 0]  opesq vivod71b n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLd71b  '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAd71b←ajusta80 FOLHALAd71b
[11]  DEFId71←ajusta80 DEFId71
[12]  relat←((2+1↑ρylu),1 0+ρFOLHALAd71b)ρ' '
[13]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLO1'
[14]  xk←1 ⋄ resu←0 11ρ0
[15] testa:→(xk>1↑ρylu)/fim
[16]  esse←119 80ρ' '
[17]  f←FOLHALAd71b
[18]  esse[1;]←80↑dhx[1;]
[19]  esse[2;]←80↑dhx[2;]
[20]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[21]  esse[4;]←80↑ylu[xk;⍳6]
[22]  →(36=1↓ρylu)/zebra
[23]  qlinha←(1=∧/[2]f[;⍳5]=((1↑ρf),5)ρ'\#005')/⍳1↑ρf
[24]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[25]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[26]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[27]  →maiszebra
[28] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[32]  esse[118;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[119;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] inica:
[35]  xx←gerad71b
[36]  esse[7+⍳40;]←40 80↑⊃xx[1]
[37]  esse[47+⍳70;]←70 80↑⊃xx[2]
[38]  resp←resp,,⊃xx[3]
[39]  resu←resu,[1]1 11ρresp
[40]  acuja←(f[;2]='#')/⍳1↑ρf
[41]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4 5],' ';]
[42]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\clearpage'
[43]  ⍞←(⍎xk←xk+1),'-'
[44]  →testa
[45] fim:upag←(1 0+ρf)ρ' '
[46]  →(1=≡n)/elafa
[47]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[48]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[49]  upag[2+⍳1↑ρresu;⍳+/lixo1]←(lixo1←5 0 8 0 3 0 3 0 3 0 3 0 8 0 3 0 3 0 3 0 3 0)⍎resu
[50]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[51]  →terminando
[52] elafa:aaa←(ylu[;⍳36],((10ρ3 0),8 0,8ρ3 0)⍎0 1↓resu)
```

```
[53]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[54]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[55] terminando:
[56]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[57]  relat[1↑⍴relat;;]←upag
[58]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[59]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[60]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[61]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivod71c n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLd71c  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAd71c←ajusta80 FOLHALAd71c
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAd71c)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 11⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←119 80⍴' '
[16]  f←FOLHALAd71c
[17]  DEFId71ruim←ajusta80 DEFId71ruim
[18]  DEFId71←ajusta80 DEFId71
[19]  esse[1;]←80↑dhx[1;]
[20]  esse[2;]←80↑dhx[2;]
[21]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[22]  esse[4;]←80↑ylu[xk;⍳6]
[23]  →(36=1↓⍴ylu)/zebra
[24]  qlinha←(1=∧/[2]f[;⍳5]=((1↑⍴f),5)⍴'⍀#005')/⍳1↑⍴f
[25]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[26]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[27]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[28]  →maiszebra
[29] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[30] maiszebra:
[31]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[32]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[33]  esse[118;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[34]  esse[119;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[35] inica:
[36]  xx←gerad71c
[37]  esse[7+⍳40;]←40 80↑⊃xx[1]
[38]  esse[47+⍳70;]←70 80↑⊃xx[2]
[39]  resp←resp,,⊃xx[3]
[40]  resu←resu,[1]1 11⍴resp
[41]  acuja←(f[;2]='#')/⍳1↑⍴f
[42]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4 5],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[44]  ⍞←(⍕xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+⍴f)⍴' '
[47]  →(1=≡n)/elafa
[48]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[49]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[50]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 8 0 3 0 3 0 3 0 3 0 8 0 3 0 3 0 3 0 3 0)⍕resu
```

```
[51]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[52]  →terminando
[53] elafa:aaa←(ylu[;⍳36],((10⍴3 0),8 0,8⍴3 0)⍕0 1↓resu)
[54]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[55]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[56] terminando:
[57]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[58]  relat[1↑⍴relat;;]←upag
[59]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[60]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[61]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[62]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivod75

```
[ 0]  Z←TNCP AP2WSM N;⎕IO;CODE;PRE;T;TAB;F;W;M
[ 1] ⍝ - RETURN MESSAGE (↑N) FROM TABLE (↑TNCP)
[ 2] ⍝ - (1↓,N) IS MESSAGE TOKENS ; EXCESS TOKENS ARE IGNORED.
[ 3] ⍝ - TNCP IS TABLENAME [CODEPREFIX];
[ 4] ⍝   IF TNCP IS SIMPLE THEN IT IS BOTH NAME AND PREFIX.
[ 5] ⍝ - ALL IBM CODE PREFIXES MUST BE 'AP2W',WSNAME
[ 6] ⍝ - THE MESSAGE TABLE HAS A NUMBER (⍕N,' ') FOLLOWED BY MESSAGE TEXT.
[ 7] ⍝    'ω' MARKS POSITIONS FOR TOKENS ; EXTRA MARKERS ARE FILLED WITH '**'
[ 8] ⍝    'α' SEPARATES MESSAGE FROM 'MORE' INFORMATION
[ 9] ⍝ - THE GLOBAL VARIABLE 'MORE' IS GIVEN THE CODE AND THE 'MORE' TEXT.
[10] ⍝ - IF TABLE DOES NOT EXIST OR N IS INVALID, RETURN MESSAGE 999
[11] ⍝
[12] ⍝ EXECUTION PROPERTIES: NON-SUSPENDABLE -
[13] ⍝  ON INVALID ARGUMENTS, SUSPENSION IN THE CALLING FUNCTION IS:
[14] ⍝    PRODUCED EXPLICITLY , VIA ⎕ES:
[15] ⍝         VALENCE ERROR ON MISSING LEFT ARGUMENT
[16] ⍝         DOMAIN ERROR ON EMPTY RIGHT ARGUMENT 'N'
[17] ⍝         RANK ERROR ON LEFT ARGUMENT (MUST BE VECTOR)
[18] ⍝    OR PRODUCED IMPLICITLY , VIA A FAILED OPERATION:
[19] ⍝         DOMAIN ERROR ON NUMERIC LEFT ARGUMENT
[20] ⍝         RANK ERROR OR AXIS ERROR ON MESSAGE TABLE
[21] ⍝  N MAY BE ANY TYPE AND RANK , BUT NOT EMPTY
[22]  ⎕IO←0
[23]  ⎕ES(2≠⎕NC'TNCP')/5 1              ⍝ VALENCE ERROR
[24]  ⎕ES(0∈⍴N)/5 4                     ⍝ DOMAIN ERROR
[25]  ⎕ES(1≠⍴⍴TNCP)/5 2                 ⍝ RANK ERROR
[26]  ⍎(1=≡TNCP)/'TNCP←TNCP TNCP'      ⍝ IF SIMPLE, NAME = PREFIX
[27] ⍝_____ ENSURE MESSAGE TABLE EXISTS, AND INDEX IS VALID
[28]  Z←'999 ERROR ω HAS OCCURREDαMESSAGE ω CAN NOT BE FOUND'
[29]  PRE←'AP2WMESSAGE'                 ⍝ MESSAGE 999 PREFIX
[30]  CODE←(1⊃TNCP),⍕↑N                 ⍝ MESSAGE CODE
[31]  T←CODE'TABLE'                     ⍝ TOKENS FOR MISSING TABLE
[32]  →(2≠⎕NC↑TNCP)/L0                  ⍝ TABLE IS MISSING
[33]  TAB←⍎↑TNCP                        ⍝ TAB IS MESSAGE TABLE
[34]  T←CODE'TEXT'                      ⍝ TOKENS FOR MISSING TEXT
[35]  (↑N)←((⍕↑N)⍷TAB)[;⎕IO]⍳1         ⍝ GET ROW NUMBER
[36]  →((↑N)≥↑⍴TAB)/L0                  ⍝ NO TEXT FOR INDEX (↑N)
[37] ⍝_____ SELECT MESSAGE ; INSERT TOKENS
[38]  PRE←1⊃TNCP                        ⍝ CODE PREFIX
[39]  Z←TAB[↑N;]                        ⍝ SELECT MESSAGE
[40]  T←1↓,N                            ⍝ TOKENS FOR MESSAGE ↑N
[41] L0:W←Z='ω'                         ⍝ FIND TOKEN MARKERS
[42]  (W/Z)←(+/W)↑T,(+/W)⍴⊂'**'         ⍝ ASSIGN TOKENS OR '**'
[43] ⍝_____ RETURN MESSAGE ; SET 'MORE' WITH CODE AND MESSAGE
[44]  F←1+Z⍳' '                         ⍝ LENGTH OF THE MESSAGE NUMBER
[45]  M←(PRE,F↑Z),(1+Z⍳'α')↓Z           ⍝ ASSIGN 'MORE' TEXT
```

```
[46]  M←(~⍵∧⍷⍵M≡¨' ')/M                ⍝ DELETE TRAILING BLANKS
[47]  Z←F⍎(Z⍳'⍺')↑Z                    ⍝ RETURN MESSAGE TEXT
[48]  Z←(~⍵∧⍷⍵Z≡¨' ')/Z                ⍝ DELETE TRAILING BLANKS
[49]  →(1 3 4=⎕NC'MORE')/0             ⍝ NAME CONFLICT
[50]  MORE←M                           ⍝ ASSIGN M TO 'MORE'
-------------------------------------------------------------
[0]  Z←TAB APPEND X
[1] ⍝ TRIVIAL APPEND - CALLED BY QUERY
[2] ⍝ - MAY WANT TO CHANGE NEXT TO TAB←''
[3]  Z←TAB,[1]X   ⍝ APPEND RESULT
-------------------------------------------------------------
[0]  Z←CALL ARGS
[1] ⍝ SQL CALL - ARGS IS  (NAME [VALUES])
[2] ⍝ IF ARGS IS SIMPLE (NAME ONLY), IT IS ENCLOSED
[3]  Z←'' ''
[4]  →(↑(↑Z)←3 ER_ 2≠⎕SVO'DAT')/0   ⍝ DAT NOT SHARED
[5]  ⍎(1=≡ARGS)/'ARGS←⊂ARGS'      ⍝ ENCLOSE IF SIMPLE (NAME ONLY)
[6]  →(↑(↑Z)←8 ER_ 2≤⍴⍴ARGS)/0      ⍝ ARGS MUST BE SCALAR OR VECTOR
[7]  Z←DAT_(⊂'CALL'),ARGS           ⍝ SPEC,REF DAT
-------------------------------------------------------------
[0]  Z←CCM_ CODE;⎕IO
[1]  ⎕IO←0
[2]  Z←(⊂3↑CODE)⊃CC_          ⍝ GET COMPLETION MESSAGE
-------------------------------------------------------------
[0]  Z←CHECK CODE
[1]  →(~Z←1=↑CODE)/0
[2]  ⎕←MESSAGE CODE
-------------------------------------------------------------
[0]  Z←CLOSE ARGS
[1]  Z←'' ''
[2]  →(↑(↑Z)←3 ER_ 2≠⎕SVO'DAT')/0  ⍝ DAT NOT SHARED
[3]  Z←DAT_'CLOSE'ARGS            ⍝ SPEC,REF DAT
-------------------------------------------------------------
[0]  Z←STMT COMBINE X
[1] ⍝ COMBINE RESULTS OF MATRIX VALUE LIST
[2]  Z←X
[3]  →(2≠⍴⍴2⊃STMT)/0  ⍝ EXIT IF SINGLE RESULT
[4]  →(0=⍴Z)/0
[5]  Z←↑,[1]/(,Z)~⊂'' ⍝ ELIDE EMPTIES AND COMBINE
-------------------------------------------------------------
[0]  Z←COMMIT
[1]  Z←DAT_'COMMIT'
-------------------------------------------------------------
[ 0]  Z←CONNECT ARGS
[ 1] ⍝ ARGS MAY BE:
[ 2] ⍝ CMS:  (db) or (id pw) or (id pw db)
[ 3] ⍝ TSO:  (db) or ('RESET')
[ 4] ⍝ Workstation systems:
[ 5] ⍝       (db) or (db 'SHARE'|'EXCLUSIVE') or ('RESET')
[ 6] ⍝        or  (db id pw) or (db 'SHARE'|'EXCLUSIVE' id pw)
[ 7]  Z←'' ''
[ 8]  →(↑Z←OFFER'')/0  ⍝ ENSURE AN OFFER
[ 9]  ⍎(1=≡ARGS)/'ARGS←⊂ARGS'  ⍝ ENCLOSE IF SIMPLE (DB ONLY)
[10]  →(↑(↑Z)←8 ER_ 2≤⍴⍴ARGS)/0  ⍝ ARGS MUST BE SCALAR OR VECTOR
[11]  Z←DAT_(⊂'CONNECT'),ARGS
-------------------------------------------------------------
[ 0]  Z←CUR_ ARGS;VAL
[ 1] ⍝ - CREATES THE STACK (OR QUEUE) FOR A SELECT STATEMENT -
[ 2] ⍝   THE SEQUENCE IS (PREP OPEN FETCH CLOSE).
[ 3] ⍝ - ARGS IS A NON-SIMPLE 1 OR 2-ITEM VECTOR OF (STMT [VALUES]).
[ 4] ⍝    IF (↑VAL←1↓ARGS) IS A MATRIX, THE CALL TO SUBFUNCTION  OFC_
[ 5] ⍝    REPEATS THE (OPEN FETCH CLOSE) SEQUENCE FOR EACH ROW.
[ 6]  Z←⊂'PREP' 'APL2'(↑ARGS)    ⍝ FIRST ARGUMENT IS STATEMENT
```

```
[ 7]  VAL←1↓ARGS                  ⍝ SELECT VALUE-LIST (MAY BE EMPTY)
[ 8]  ⍎(1=⍴ARGS)/'VAL←⊂⍳0'       ⍝ SET EMPTY IF MISSING
[ 9]  ⍎(2=⍴⍴↑VAL)/'VAL←⊂[2]↑VAL' ⍝ ENCLOSE IF MATRIX
[10]  Z←Z,↑,/OFC_¨VAL             ⍝ CATENATE (OPEN FETCH CLOSE) SEQUENCES
-------------------------------------------------------------
[ 0]  Z←F DATE T
[ 1]  →(2=⎕NC'F')/L1
[ 2]  F←0
[ 3]  →(2≠⎕NC'TFMT')/L1
[ 4]  F←TFMT
[ 5] L1:T←3↑T
[ 6]  →(F=1 2 3)/USA,EUR,JIS
[ 7] ISO:
[ 8] JIS:Z←'0556-06-05'⍕T
[ 9]  →0
[10] USA:Z←'06/06/0555'⍕T[⎕IO+1 2 0]
[11]  →0
[12] EUR:Z←'05 05 0555'⍕T[⎕IO+2 1 0]
[13]  ((Z=' ')/Z)←'.'
-------------------------------------------------------------
[0]  Z←DAT_ OP
[1]  DAT←OP                   ⍝ SPECIFY OPERATION
[2]  Z←DAT                    ⍝ REFERENCE RESULT
-------------------------------------------------------------
[0]  Z←DECLARE ARGS
[1] ⍝ ARGS IS A 2-ITEM VECTOR WITH CURSOR NAME, OPTIONAL 'HOLD'
[2]  Z←'' ''
[3]  →(↑(↑Z)←OFFER)/0             ⍝ ENSURE AN OFFER
[4]  ⍎(1=≡ARGS)/'ARGS←⊂ARGS'     ⍝ ENCLOSE IF SIMPLE (NAME ONLY)
[5]  →(↑(↑Z)←8 ER_ 2≤⍴⍴ARGS)/0    ⍝ ARGS MUST BE SCALAR OR VECTOR
[6]  Z←DAT_(⊂'DECLARE'),ARGS      ⍝ SPEC,REF DAT
-------------------------------------------------------------
[0]  Z←DEF_ ARGS
[1] ⍝ - CREATES THE STACK FOR A DEFINED STATEMENT -THE SEQUENCE IS
[2] ⍝   (PREP CALL).
[3] ⍝ - ARGS IS A NON-SIMPLE 1 OR 2-ITEM VECTOR OF (STMT [VALUES]).
[4] ⍝ - IF VALUES IS A MATRIX, THE CALL REQUEST IS REPEATED FOR EACH ROW.
[5]  Z←⊂'PREP' 'APL2'(↑ARGS)         ⍝ FIRST ARGUMENT IS STATEMENT
[6]  VALUES←↑1↓ARGS                  ⍝ SELECT VALUE-LIST (MAY BE EMPTY)
[7]  VALUES←⊂[1↓⍳⍴⍴VALUES]VALUES     ⍝ CREATE VECTOR IF MATRIX
[8]  Z←Z,(⊂'CALL' 'APL2'),¨⊂¨VALUES  ⍝ CATENATE CALL REQUESTS
-------------------------------------------------------------
[0]  Z←DESC NM
[1] ⍝ ISSUE 'DESCRIBE' FOR CURSOR NM
[2]  Z←'' ''
[3]  →(↑(↑Z)←3 ER_ 2≠⎕SVO'DAT')/0  ⍝ DAT NOT SHARED
[4]  ⍎(1=≡NM)/'NM←,⊂NM'  ⍝ENCLOSE IF SIMPLE
[5]  Z←DAT_(⊂'DESCRIBE'),NM
-------------------------------------------------------------
[ 0]  D←S DISPLAY A;⎕IO;R;C;HL;HC;HT;HB;VL;VB;V;W;N;B
[ 1] ⍝ Display a general array in pictorial form
[ 2] ⍝  Normal call is monadic.  Dyadic call used only in
[ 3] ⍝    recursion to specify display rank, shape, and depth.
[ 4]  ⎕IO←0
[ 5]  ⍎(0=⎕NC'S')/'S←⍴A'
[ 6]  R←↑⍴,S                    ⍝ Pseudo rank
[ 7]  C←'┐┌└┘'                  ⍝ UR, UL, LL, and LR corners
[ 8]  HL←'─'                    ⍝ Horizontal line
[ 9]  HC←HL,'⊖→',HL,'~+∈'       ⍝ Horizontal borders
[10]  HT←HC[(0<R)×1+0<↑¯1↑,S]
[11] ⍝W←,0≡¨↑0⍴⊂(1⌈⍴A)↑A
[12]  HB←HC[3+3⌊('2×~A≡⍕A'⎕EA'1+↑∈0×(1⌈×/⍴A)↑,A')+3×1<⍴⍴S]
[13]  VL←'│'                    ⍝ Vertical line
```

```
[14]  VB←VL,'⍞↓'                ⍝ Vertical border
[15]  V←VB[(1<R)×1+0<¯1↑¯1↓,S]
[16]  ⍎(0∊⍴A)/'A←(1⌈⍴A)⍴⊂↑A'   ⍝ Show prototype of empties
[17]  →(1<≡A)/GEN
[18]  →(2<⍴⍴A)/D3
[19]  D←⍪A                      ⍝ Simple arrays
[20]  W←1↑⍴D←(¯2↑1 1,⍴D)⍴D
[21]  N←¯1+1↓⍴D
[22]  →(0=⍴⍴A)/SS
[23]  D←(C[1],V,((W-1)⍴VL),C[2]),((HT,N⍴HL),[0]D,[0]HB,N⍴HL),C[0],(W⍴VL),C[3]
[24]  →0
[25] SS:HB←((0 ' ')=↑0⍴⊂A)/' -'
[26]  D←' ',(' ',[0]D,[0]HB,N⍴' '),' '
[27]  →0
[28] GEN:D←⍪⎕DISPLAY¨A          ⍝ Enclosed arrays
[29]  N←D∨.≠' '
[30]  D←(N∨~1⌽N)⌿D
[31]  D←(∨⌿~'  '⍷D)/D
[32]  D←((1,⍴S)⍴S)⎕DISPLAY D
[33]  →(2≥⍴,S)↓D3E,0
[34] D3:D←0 ¯1↓0 1↓⍪⊂A          ⍝ Multi-dimensional arrays
[35]  W←1↑⍴D
[36]  N←¯1+1↓⍴D
[37]  D←(C[1],V,((W-1)⍴VL),C[2]),((HT,N⍴HL),[0]D,[0]HB,N⍴HL),C[0],(W⍴VL),C[3]
[38] D3E:N←¯2+⍴,S
[39]  V←C[N⍴1],[0]VB[1+0<¯2↓,S],[0](((¯3+↑⍴D),N)⍴VL),[0]C[N⍴2]
[40]  D←V,D
[41] ⍝¶⍝ APL2/6000 FKEY verification tag - DO NOT REMOVE, MUST BE LAST LINE
-------------------------------------------------------------
[ 0]  D←S ⎕DISPLAYC A;⎕IO;R;C;HL;HC;HT;HB;VL;VB;V;W;N;B
[ 1] ⍝ Display a general array in pictorial form
[ 2] ⍝  Normal call is monadic.  Dyadic call used only in
[ 3] ⍝    recursion to specify display rank, shape, and depth.
[ 4]  ⎕IO←0
[ 5]  ⍎(0=⎕NC'S')/'S←⍴A'
[ 6]  R←↑⍴,S                    ⍝ Pseudo rank
[ 7]  C←'..'''''                ⍝ UR, UL, LL, and LR corners
[ 8]  HL←'-'                    ⍝ Horizontal line
[ 9]  HC←HL,'⊖→',HL,'~+∊'       ⍝ Horizontal borders
[10]  HT←HC[(0<R)×1+0<↑¯1↑,S]
[11] ⍝W←,0≡¨↑0⍴⊂(1⌈⍴A)↑A
[12]  HB←HC[3+3⌊('2×~A≡⍪A'⎕EA'1+↑∊0×(1⌈×/⍴A)↑,A')+3×1<⍴⍴S]
[13]  VL←'|'                    ⍝ Vertical line
[14]  VB←VL,'⍞↓'                ⍝ Vertical border
[15]  V←VB[(1<R)×1+0<¯1↑¯1↓,S]
[16]  ⍎(0∊⍴A)/'A←(1⌈⍴A)⍴⊂↑A'   ⍝ Show prototype of empties
[17]  →(1<≡A)/GEN
[18]  →(2<⍴⍴A)/D3
[19]  D←⍪A                      ⍝ Simple arrays
[20]  W←1↑⍴D←(¯2↑1 1,⍴D)⍴D
[21]  N←¯1+1↓⍴D
[22]  →(0=⍴⍴A)/SS
[23]  D←(C[1],V,((W-1)⍴VL),C[2]),((HT,N⍴HL),[0]D,[0]HB,N⍴HL),C[0],(W⍴VL),C[3]
[24]  →0
[25] SS:HB←((0 ' ')=↑0⍴⊂A)/' -'
[26]  D←' ',(' ',[0]D,[0]HB,N⍴' '),' '
[27]  →0
[28] GEN:D←⍪⎕DISPLAYC¨A          ⍝ Enclosed arrays
[29]  N←D∨.≠' '
[30]  D←(N∨~1⌽N)⌿D
[31]  D←(∨⌿~'  '⍷D)/D
[32]  D←((1,⍴S)⍴S)⎕DISPLAYC D
[33]  →(2≥⍴,S)↓D3E,0
```

```
[34] D3:D←0 ¯1↓0 1↓⍕⊂A          ⍝ Multi-dimensional arrays
[35]  W←1↑⍴D
[36]  N←¯1+1↓⍴D
[37]  D←(C[1],V,((W-1)⍴VL),C[2]),((HT,N⍴HL),[0]D,[0]HB,N⍴HL),C[0],(W⍴VL),C[3]
[38] D3E:N←¯2+⍴,S
[39]  V←C[N⍴1],[0]VB[1+0<¯2↓,S],[0](((¯3+↑⍴D),N)⍴VL),[0]C[N⍴2]
[40]  D←V,D
------------------------------------------------------------
[ 0]  D←S DISPLAYG A;⎕IO;R;C;HL;HC;HT;HB;VL;VB;V;W;N;B
[ 1] ⍝ Display a general array in pictorial form
[ 2] ⍝  Normal call is monadic.  Dyadic call used only in
[ 3] ⍝    recursion to specify display rank, shape, and depth.
[ 4]  ⎕IO←0
[ 5]  ⍎(0=⎕NC'S')/'S←⍴A'
[ 6]  R←↑⍴,S                    ⍝ Pseudo rank
[ 7]  C←'┐┌└┘'                  ⍝ UR, UL, LL, and LR corners
[ 8]  HL←'─'                    ⍝ Horizontal line
[ 9]  HC←HL,'⊖→',HL,'~+∊'       ⍝ Horizontal borders
[10]  HT←HC[(0<R)×1+0<↑¯1↑,S]
[11] ⍝W←,0≡¨↑0⍴⊂(1⌈⍴A)↑A
[12]  HB←HC[3+3⌊('2×~A≡⍕A'⎕EA'1+↑∊0×(1⌈×/⍴A)↑,A')+3×1<⍴⍴S]
[13]  VL←'│'                    ⍝ Vertical line
[14]  VB←VL,'⍬↓'                ⍝ Vertical border
[15]  V←VB[(1<R)×1+0<¯1↑¯1↓,S]
[16]  ⍎(0∊⍴A)/'A←(1⌈⍴A)⍴⊂↑A'   ⍝ Show prototype of empties
[17]  →(1<≡A)/GEN
[18]  →(2<⍴⍴A)/D3
[19]  D←⍕A                      ⍝ Simple arrays
[20]  W←1↑⍴D←(¯2↑1 1,⍴D)⍴D
[21]  N←¯1+1↓⍴D
[22]  →(0=⍴⍴A)/SS
[23]  D←(C[1],V,((W-1)⍴VL),C[2]),((HT,N⍴HL),[0]D,[0]HB,N⍴HL),C[0],(W⍴VL),C[3]
[24]  →0
[25] SS:HB←((0 ' ')=↑0⍴⊂A)/' -'
[26]  D←' ',(' ',[0]D,[0]HB,N⍴' '),' '
[27]  →0
[28] GEN:D←⍕DISPLAYG¨A          ⍝ Enclosed arrays
[29]  N←D∨.≠' '
[30]  D←(N∨~1⍬N)⌿D
[31]  D←(∨⌿~'  '⍷D)/D
[32]  D←((1,⍴S)⍴S)DISPLAYG D
[33]  →(2≥⍴,S)↓D3E,0
[34] D3:D←0 ¯1↓0 1↓⍕⊂A          ⍝ Multi-dimensional arrays
[35]  W←1↑⍴D
[36]  N←¯1+1↓⍴D
[37]  D←(C[1],V,((W-1)⍴VL),C[2]),((HT,N⍴HL),[0]D,[0]HB,N⍴HL),C[0],(W⍴VL),C[3]
[38] D3E:N←¯2+⍴,S
[39]  V←C[N⍴1],[0]VB[1+0<¯2↓,S],[0](((¯3+↑⍴D),N)⍴VL),[0]C[N⍴2]
[40]  D←V,D
[41] ⍝¶⍝ APL2/6000 FKEY verification tag - DO NOT REMOVE, MUST BE LAST LINE
------------------------------------------------------------
[0]  Z←L EC S;E;X
[1] ⍝ EVALUATE CHARACTERS
[2]  (X E Z)←⎕EC S   ⍝ TRAP RESULT
[3]  →(0≠X)/0         ⍝ EXIT IF OK
[4]  S EXIT X E Z    ⍝ ELSE CALL USER EXIT
[5]  Z←S             ⍝ AND RETURN ORIGINAL
------------------------------------------------------------
[ 0]  Z←N ER_ E
[ 1] ⍝ RETURNS WORKSPACE ERROR CODE N IF E IS 1
[ 2] ⍝ RETURNS A 5-ITEM CODE - 4TH ITEM IS 3, 5TH IS N
[ 3] ⍝ IF SWITCH E_ IS 1, THE MESSAGE IS PRINTED
[ 4] ⍝                    AND AN ERROR SIGNALLED
```

```
[ 5]  Z←5ρ0                       ⍝ SET NORMAL CODE
[ 6]  →(0=E)/0                    ⍝ EXIT IF NO ERROR
[ 7]  Z←1 0 0 3 N                 ⍝ TYPE 3 ERROR - MESSAGE NUMBER N
[ 8]  →(~1≡E_)/0                 ⍝ RETURN IF E_ IS NOT 1
[ 9]  ⎕ES⍎'AP2WSQL'AP2WSM N     ⍝ ELSE TERMINATE WITH MESSAGE
-------------------------------------------------------------
[0]  Z←EVAL M
[1] ⍝ EVALUATE A MIXED MATRIX
[2]  ⎕ES(2≠ρρM)/5 2      ⍝ MUST BE MATRIX
[3]  ⎕ES(0∈ρM)/5 3       ⍝ MUST NOT BE NULL
[4]  Z←⍎¨⊂[1+⎕IO]M       ⍝ EXECUTE EACH ROW
[5]  ⎕ES(∨/2≠/∈ρ¨Z)/5 3 ⍝ MUST BE UNIFORM LENGTH
[6]  Z←⊃Z                ⍝ DISCLOSE BACK TO MATRIX
-------------------------------------------------------------
[0]  Z←EVALIN;IN
[1] ⍝ EVALUATE PROMPTED INPUT LINES, GIVING MATRIX RESULT
[2]  Z←0ρ⊂0ρ0             ⍝ ASSUME VECTOR OF NUMERIC VECTORS
[3] L:→(' '∧.=IN←⍞)/LX    ⍝ EXIT ON BLANK OR EMPTY
[4]  Z←Z,⊂⍎IN             ⍝ EXECUTE AND APPEND
[5]  →L                   ⍝ END_WHILE
[6] LX:Z←⊃Z               ⍝ ITEMS TO ROWS IN A MATRIX
-------------------------------------------------------------
[ 0]  Z←BL EVALSIM M;B;L;⎕IO
[ 1]  ⎕IO←1
[ 2] ⍝ EVALUATE A SIMPLE MATRIX
[ 3]  ⎕ES(2≠⎕NC'BL')/5 1    ⍝ VALENCE ERROR
[ 4]  ⍎(2>≡BL)/'BL←1,⊂BL' ⍝ DEFAULT FOR B IS 1
[ 5]  (B L)←BL
[ 6]  B←(ρL)ρB            ⍝ FORCE CONFORMITY
[ 7] ⍝ L IS THE COLUMN LENGTHS OF MATRIX M
[ 8] ⍝ B INDICATES WHICH COLUMNS ARE NUMERIC
[ 9]  ⎕ES(2≠ρρM)/5 2      ⍝ RANK ERROR
[10]  ⎕ES(0∈ρM)/5 3       ⍝ LENGTH ERROR
[11]  Z←⊃(⊂L)NEST¨⊂[2]M   ⍝ SEPARATE COLUMNS
[12]  →(~∨/B)/0           ⍝ EXIT IF NO NUMERICS
[13]  (B/B)←∧⌿NUMTEST¨B/Z ⍝ VALID NUMERICS
[14]  →(~∨/B)/0           ⍝ EXIT IF NO NUMERICS
[15]  (B/Z)←⊃EC⍤⍤⊂[2]B/Z  ⍝ EVALUATE NUMERICS
-------------------------------------------------------------
[0]  Z←EXEC ARGS
[1] ⍝ ARGS MUST BE A SIMPLE CHARACTER ARRAY
[2]  Z←'' ''
[3]  →(↑(↑Z)←OFFER)/0       ⍝ ENSURE OFFER
[4]  Z←DAT_'EXEC'ARGS       ⍝ SPEC,REF DAT
-------------------------------------------------------------
[0]  S EXIT QEC
[1] ⍝ USER ERROR EXIT
[2] ⍝ S IS ORIGINAL DATA; QEC IS ⎕EC RESULTS
[3] ⍝ DEFAULT ACTION: PRINT ERROR AND DATA
[4]  →(' '∧.=S)/0   ⍝ NO ACTION IF ALL BLANKS
[5]  ⎕←(1↑[1]↑2↓QEC)':'S
-------------------------------------------------------------
[0]  Z←EX_ STMT
[1] ⍝ GENERATES THE REQUEST FOR AN EXECUTE IMMEDIATE STATEMENT
[2]  Z←,⊂(⊂'EXEC'),STMT
-------------------------------------------------------------
[0]  Z←FETCH ARGS
[1]  Z←'' ''
[2]  →(↑(↑Z)←3 ER_ 2≠⎕SVO'DAT')/0  ⍝ DAT NOT SHARED
[3]  ⍎(1=≡ARGS)/'ARGS←⊂ARGS'      ⍝ ENCLOSE IF SIMPLE (NAME ONLY)
[4]  →(↑(↑Z)←8 ER_ 2≤ρρARGS)/0      ⍝ ARGS MUST BE SCALAR OR VECTOR
[5]  Z←DAT_(⊂'FETCH'),ARGS          ⍝ SPEC,REF DAT
-------------------------------------------------------------
```

```
[0]  Z←GETOPT
[1]  →(↑Z←OFFER'')/0
[2]  Z←DAT_'GETOPT'
------------------------------------------------------------
[0]  Z←HEAD R;D
[1] ⍝ R IS A RESULT MATRIX; APPEND A HEADER
[2] ⍝ USE 'COMBINE R'  FIRST IF FROM MATRIX VALUE LIST
[3]  D←DESC'APL2'       ⍝ CURSOR IS 'APL2'
[4]  →(0≠⍴Z←MESSAGE↑D)/0 ⍝ EXIT IF MESSAGE NOT EMPTY
[5]  D←(2⊃D)[1;]         ⍝ NAMES AND DESCRIPTORS
[6]  R←TOMAT R           ⍝ MAKE INTO MATRIX
[7]  Z←' ',[1]D,[1]' ',[1]R
------------------------------------------------------------
[0]  Z←IN;X
[1] ⍝ INPUT A CHARACTER MATRIX
[2]  Z←''
[3] L1:→(0=⍴X←⍞)/L2   ⍝ EXIT ON EMPTY
[4]  Z←Z,⊂X           ⍝ APPEND INPUT LINE
[5]  →L1              ⍝ END_WHILE
[6] L2:Z←⊃Z           ⍝ LINES TO ROWS IN A MATRIX
------------------------------------------------------------
[0]  Z←ISOL LEV
[1]  →(↑Z←OFFER'')/0  ⍝ ENSURE AN OFFER
[2]  Z←DAT_(⊂'ISOL'),(0≠⍴,LEV)⍴⊂LEV
------------------------------------------------------------
[0]  Z←IUD_ ARGS;VAL
[1] ⍝ - CREATES THE STACK FOR AN INSERT,UPDATE, OR DELETE STATEMENT;
[2] ⍝   THE SEQUENCE IS (PREP CALL).
[3] ⍝ - ARGS IS A NON-SIMPLE 1 OR 2-ITEM VECTOR OF (STMT [VALUES]).
[4]  Z←⊂'PREP' 'APL2'(↑ARGS)        ⍝ FIRST ARGUMENT IS STATEMENT
[5]  VAL←↑1↓ARGS                    ⍝ SELECT VALUE-LIST (MAY BE EMPTY)
[6]  ⍎(1=⍴ARGS)/'VAL←⊂⍳0'           ⍝ SET EMPTY IF MISSING
[7]  Z←Z,⊂'CALL' 'APL2'VAL         ⍝ CATENATE CALL REQUESTS
------------------------------------------------------------
[ 0]  Z←MESSAGE CODE;⎕IO;MS;E_;T
[ 1] ⍝ PL14659 - RETURN CORRECT MESSAGE IF 'MSG' FAILS
[ 2] ⍝ RETURNS THE MESSAGE INFORMATION FROM THE LAST TRANSACTION.
[ 3] ⍝ - CODE IS THE 5-ITEM RETURN CODE.
[ 4] ⍝ - Z IS ONE OF THE FOLLOWING:
[ 5] ⍝    ∘ AN EMPTY VECTOR (IF CODE IS EMPTY)
[ 6] ⍝    ∘ A WORKSPACE MESSAGE
[ 7] ⍝    ∘ A COMPLETION CODE MESSAGE
[ 8] ⍝    ∘ A COMPLETION MESSAGE WITH AN AP MESSAGE
[ 9] ⍝    ∘ A COMPLETION MESSAGE WITH A 6×1 DBM MESSAGE MATRIX
[10] ⍝   THE WORKSPACE OR AP MESSAGE MAY INDICATE A BAD CODE
[11] ⍝
[12] ⍝ EXECUTION PROPERTIES - 0 1 0 1
[13] ⍝   NONSUSPENDABLE - AN OFFER FAILURE FORCES AN EXIT
[14] ⍝   DOMAIN ERROR FORCED - ON CALL WITH COMPLEX NUMBERS
[15] ⍝
[16]  ⎕IO←0
[17]  Z←''                          ⍝ SET EMPTY RESULT
[18]  →(0=⍴CODE)/0                  ⍝ EXIT IF EMPTY CODE
[19]  Z←'AP2WSQL'AP2WSM 14         ⍝ NOT SIMPLE 5 - ITEM VECTOR ?
[20]  →((1≠≡CODE)∨5≠⍴,CODE)/0      ⍝ EXIT IF TRUE
[21]  Z←''
[22]  →(0=CODE[3])/0                ⍝ EXIT IF NO ERROR
[23]  Z←'AP2WSQL'AP2WSM CODE[4]    ⍝ GET WORKSPACE MESSAGE
[24]  →(3=CODE[3])/0                ⍝ AND EXIT IF THERE IS ONE
[25]  Z←CCM_ CODE                   ⍝ GET COMPLETION MESSAGE
[26]  →CODE[2]/0                    ⍝ EXIT IF 'INCOMPLETE' BIT IS ON
[27]  E_←1                          ⍝ FORCE SIGNAL IF OFFER FAILS
[28]  →0⍴OFFER                      ⍝ ENSURE OFFER
```

```
[29]  MS←DAT_'MSG'CODE           ⍝ GET MESSAGE
[30]  Z←(⊂Z),[0],[⍳0],1↓MS         ⍝ COMPLETION CODE, MESSAGE
[31]  →(0∧.=↑MS)/0                 ⍝ EXIT IF MSG CALL SUCCESSFUL
[32]  Z←CCM_(↑MS)                  ⍝ ELSE CHANGE COMPLETION CODE,
[33]  T←1⊃DAT_'MSG'(↑MS)          ⍝ AND GET THE 'MSG' ERROR, PL14659
[34]  Z←(,⊂Z),[0],[⍳0],⊂T          ⍝ AND RETURN IT             PL14659
-------------------------------------------------------------
[0]  Z←NAMES
[1]  →(↑Z←OFFER'')/0
[2]  Z←DAT_'NAMES'
-------------------------------------------------------------
[0]  Z←L NEST V;S
[1] ⍝ Z IS A NESTED VECTOR OF FIELDS IN V
[2] ⍝ L IS LENGTHS OF FIELDS IN VECTOR V
[3]  S←0,¯1↓+⍀L   ⍝ BEGINNINGS OF FIELDS
[4]  Z←L↑¨S↓¨⊂V   ⍝ PARTITION
-------------------------------------------------------------
[0]  Z←NUMTEST A
[1] ⍝ DOES A CONTAIN ONLY NUMERIC DIGITS?
[2]  Z←∧/,A∈'-¯0123456789. ' ⍝ EXCLUDE E, J NOTATION
-------------------------------------------------------------
[0]  Z←ODBC ARGS
[1] ⍝ ODBC COMMAND IS AVAILABLE FOR AP 227 ONLY
[2] ⍝ ARGS IS TYPE OF INFO AND OPTIONAL EXTRA PARMS
[3]  →(↑Z←OFFER'')/0  ⍝ ENSURE AN OFFER
[4]  ⍎(1=≡ARGS)/'ARGS←⊂ARGS'       ⍝ ENCLOSE IF SIMPLE (TYPE ONLY)
[5]  →(↑(↑Z)←8 ER_ 2≤⍴⍴ARGS)/0     ⍝ ARGS MUST BE SCALAR OR VECTOR
[6]  Z←DAT_(⊂'ODBC'),ARGS
-------------------------------------------------------------
[0]  Z←ODBCOPEN ARGS
[1] ⍝ ODBCOPEN COMMAND IS AVAILABLE FOR AP 227 ONLY
[2] ⍝ ARGS IS CURSOR NAME, TYPE, OPTIONAL PARMS
[3]  Z←'' ''
[4]  →(↑(↑Z)←OFFER)/0              ⍝ ENSURE AN OFFER
[5]  →(↑(↑Z)←10 ER_ 1=≡ARGS)/0     ⍝ ARGS MUST NOT BE SIMPLE
[6]  →(↑(↑Z)←5 ER_ 1≠⍴⍴ARGS)/0     ⍝ ARGS MUST BE VECTOR
[7]  Z←DAT_(⊂'ODBCOPEN'),ARGS      ⍝ SPEC,REF DAT
-------------------------------------------------------------
[0]  Z←OFC_ VAL
[1] ⍝ - GENERATES  A SINGLE (OPEN FETCH CLOSE) SEQUENCE
[2]  Z←(⊂'OPEN' 'APL2'VAL),(⊂'FETCH' 'APL2'),⊂'CLOSE' 'APL2'
-------------------------------------------------------------
[ 0]  Z←OFFER;X;⎕IO
[ 1] ⍝  MAKES A SHARE OFFER TO AP127
[ 2] ⍝  SETS THE ACCESS CONTROL VECTOR TO 1 0 1 1
[ 3]  Z←⎕IO←0
[ 4]  X←SQL_AP ⎕SVO'DAT'          ⍝ MAKE OFFER
[ 5]  →0⍴1 0 1 1 ⎕SVC'DAT'        ⍝ SET ACCESS CONTROL
[ 6]  →(2=X)/0                     ⍝ EXIT IF OFFERED
[ 7]  →(↑Z←1 ER_ 0=X)/0            ⍝ ERROR IN OFFER
[ 8]  ⎕SVE←15                      ⍝ SET SIGNAL TIME
[ 9] L1:→(2=⎕SVO'DAT')/0          ⍝ EXIT IF MATCHED
[10]  →(0≠⎕SVE)/L1                 ⍝ TRY UNTIL TIME ELAPSED
[11]  Z←2 ER_ 1                    ⍝ UNABLE TO OFFER
-------------------------------------------------------------
[0]  Z←OKA_ A
[1] ⍝ IS ARGUMENT OK ?
[2]  →(↑Z←5 ER_(1≠≡A)∧1≠⍴⍴A)/0      ⍝ UNLESS SIMPLE,MUST BE A VECTOR
[3]  →(↑Z←4 ER_∨/∈(⊂0 ' ')∧.=∈A)/0    ⍝ IS NULL OR ALL ZERO OR ALL BLANK
-------------------------------------------------------------
[0]  Z←OKS_ A
[1] ⍝ IS CHARACTER STRING OK?
[2]  →(↑Z←7 ER_ 1≠≡A)/0            ⍝ NOT SIMPLE
```

```
[3]  →(↑Z←11 ER_' '≠↑0ρA)/0          ⍝ NOT CHARACTER
[4]  →(↑Z←12 ER_ 1=ρ∈A)/0             ⍝ HAS ONLY ONE ITEM
[5]  →(↑Z←4 ER_' '∧.=∈A)/0           ⍝ IS EMPTY OR ALL BLANK
-------------------------------------------------------------
[0]  Z←OO_ ARGS
[1] ⍝  CREATES THE STACK (OR QUEUE) FOR ODBCOPEN STATEMENTS
[2] ⍝  THE SEQUENCE IS (ODBCOPEN FETCH CLOSE).
[3] ⍝  NOTE: ODBCOPEN IS AVAILABLE FOR AP 227 ONLY
[4]  Z←⊂'ODBCOPEN' 'APL2',ARGS
[5]  Z←Z,(⊂'FETCH' 'APL2'),⊂'CLOSE' 'APL2'
-------------------------------------------------------------
[0]  Z←OPEN ARGS
[1] ⍝ ARGS IS A VALUE LIST
[2]  Z←'' ''
[3]  →(↑(↑Z)←3 ER_ 2≠⎕SVO'DAT')/0  ⍝ DAT NOT SHARED
[4]  ⍎(1=≡ARGS)/'ARGS←⊂ARGS'       ⍝ ENCLOSE IF SIMPLE (NAME ONLY)
[5]  →(↑(↑Z)←8 ER_ 2≤ρρARGS)/0       ⍝ ARGS MUST BE SCALAR OR VECTOR
[6]  Z←DAT_(⊂'OPEN'),ARGS            ⍝ SPEC,REF DAT
-------------------------------------------------------------
[0]  Z←PREP ARGS
[1] ⍝ ARGS IS A 2-ITEM VECTOR WITH CURSOR NAME, STATEMENT
[2]  Z←'' ''
[3]  →(↑(↑Z)←OFFER)/0               ⍝ ENSURE AN OFFER
[4]  →(↑(↑Z)←10 ER_ 1=≡ARGS)/0  ⍝ ARGS MUST NOT BE SIMPLE
[5]  →(↑(↑Z)←5 ER_ 1≠ρρARGS)/0     ⍝ ARGS MUST BE VECTOR
[6]  Z←DAT_(⊂'PREP'),ARGS           ⍝ SPEC,REF DAT
-------------------------------------------------------------
[0]  Z←PURGE ARGS
[1]  Z←'' ''
[2]  →(↑(↑Z)←3 ER_ 2≠⎕SVO'DAT')/0  ⍝ DAT NOT SHARED
[3]  ⍎(1=≡ARGS)/'ARGS←⊂ARGS'       ⍝ ENCLOSE IF SIMPLE (NAME ONLY)
[4]  Z←DAT_(⊂'PURGE'),ARGS            ⍝ APPEND OPERATION CODE
-------------------------------------------------------------
[0]  Z←PUT ARGS
[1] ⍝ ARGS IS A VALUE LIST
[2]  Z←'' ''
[3]  →(↑(↑Z)←3 ER_ 2≠⎕SVO'DAT')/0  ⍝ DAT NOT SHARED
[4]  ⍎(1=≡ARGS)/'ARGS←⊂ARGS'       ⍝ ENCLOSE IF SIMPLE (NAME ONLY)
[5]  →(↑(↑Z)←8 ER_ 2≤ρρARGS)/0       ⍝ ARGS MUST BE SCALAR OR VECTOR
[6]  Z←DAT_(⊂'PUT'),ARGS            ⍝ SPEC,REF DAT
-------------------------------------------------------------
[ 0]  Z←QUE STACK
[ 1] ⍝ - PROCESSES A FIFO STACK (OR QUEUE) OF AP127 REQUESTS.
[ 2] ⍝   STACK MUST BE A VECTOR OF ENCLOSED REQUESTS.
[ 3] ⍝ - ANY NONZERO RETURN CODE ITEM CAUSES AN EXIT.
[ 4] ⍝ - THE RESULT Z CONTAINS THE ITEMS CODE, DATA, AND STACK:
[ 5] ⍝   ∘ CODE IS THE 5-ITEM RETURN CODE FROM THE LAST OPERATION.
[ 6] ⍝   ∘ DATA IS ALL RESULT DATA. INDIVIDUAL ITEMS MAY BE EMPTY.
[ 7] ⍝   ∘ STACK IS THE REMAINDER OF THE STACK, BEGINNING WITH
[ 8] ⍝     ANY COMMAND WHICH HAS NOT BEEN COMPLETED. THIS FIELD
[ 9] ⍝     IS EMPTY IF STACK PROCESSING COMPLETES.
[10] ⍝ - CALLED BY THE FUNCTION RESUME, WHICH PROCESSES A STACK OF
[11] ⍝   DATA ACCESS REQUESTS.
[12] ⍝ - CAN BE USED TO PROCESS ANY REQUEST STACK.
[13] ⍝
[14]  Z←'' '' ''                     ⍝ RESULT IS (CODE DATA STACK)
[15]  →(↑(↑Z)←9 ER_ 0∈ρSTACK)/0      ⍝ EXIT IF STACK IS EMPTY
[16]  →(↑(↑Z)←15 ER_ 2≠ρρSTACK)/0    ⍝ STACK MUST BE A MATRIX
[17]  →(↑(↑Z)←6 ER_ 1≠1↓ρSTACK)/0    ⍝ AND MUST HAVE ONE COLUMN
[18]  →(↑(↑Z)←OFFER)/0               ⍝ ENSURE OFFER HAS BEEN MADE
[19]  Z←DAT_ SEQ STACK               ⍝ PROCESS EACH SEQUENTIALLY
-------------------------------------------------------------
[ 0]  TAB←QUERY STMT;X;RES;H
```

```
[ 1] ⍝ PROCESS ALL OF A FETCHED TABLE
[ 2]  RES←SQL STMT       ⍝ FIRST CALL
[ 3]  H←HEAD STMT COMBINE 2⊃RES
[ 4]  TAB←(3,1↓⍴H)⍴H     ⍝ INITIALIZE TABLE
[ 5] L1:→(CHECK⍱RES)/0   ⍝ EXIT IF ERROR
[ 6]  →(0∊⍴2⊃RES)/0      ⍝ NO RESULT
[ 7]  X←2⊃RES            ⍝ DATA PORTION
[ 8]  X←STMT COMBINE X   ⍝ COMBINE IF NECESSARY
[ 9]  X←H REPORT X       ⍝ USER EXIT
[10] ⍝ TO PRODUCE DIRECT OUTPUT ONLY, CHANGE APPEND
[11]  TAB←TAB APPEND X   ⍝ APPEND RESULT
[12]  →(0=3⊃⍴RES)/0      ⍝ EXIT IF THROUGH
[13]  RES←RESUME 3⊃RES   ⍝ PROCESS REST
[14]  →L1
------------------------------------------------------------
[0]  Z←HEAD REPORT DATA
[1] ⍝ DUMMY REPORT FUNCTION -
[2] ⍝ INSERT CALCULATIONS USING HEAD, DATA
[3] ⍝ OUTPUT MAY ALSO BE DIRECT TO FILE OR TERMINAL
[4]  Z←DATA
------------------------------------------------------------
[ 0]  Z←RESUME STACK;S
[ 1] ⍝ - RESUME CALLS  QUE  TO PROCESS A STACK OF DATA ACCESS REQUESTS
[ 2] ⍝ - QUE CALLS  OFFER  TO SHARE 'DAT', IF IT IS NOT ALREADY SHARED
[ 3] ⍝ - ANY ERROR FORCES AN EXIT FROM QUE WITH THE CURRENT CODE,
[ 4] ⍝   DATA, AND STACK VALUES IN THE RESULT VECTOR Z
[ 5] ⍝ - RESUME REDUCES THE SECOND ITEM OF THE RESULT TO THE RESULT
[ 6] ⍝   OF FETCH REQUESTS ONLY
[ 7] ⍝ - IF THERE WAS MORE THAN ONE FETCH, A MATRIX IS RETURNED
[ 8]  Z←QUE STACK                    ⍝ PROCESS STACK WITH QUE
[ 9]  S←⍴⍤(⍴2⊃Z)⍴,STACK              ⍝ S IS PROCESSED OPCODES
[10]  S←(⊂'FETCH')⍷S                 ⍝ S INDICATES FETCH COMMANDS
[11]  S←S∨(-⍴S)⍴~∨/S                 ⍝ IF NO FETCHES USE LAST RESULT
[12]  (2⊃Z)←S/2⊃Z                    ⍝ SELECT FETCH DATA ONLY
[13]  →(0=⍴2⊃Z)/0                    ⍝ EXIT IF NOTHING
[14]  (2⊃Z)←,[⍳0]2⊃Z                 ⍝ CREATE MATRIX OTHERWISE
[15]  →(1≠1⍴⍴2⊃Z)/0                  ⍝ EXIT IF MULTIPLE FETCH
[16]  (2⊃Z)←⍴2⊃Z                     ⍝ DECREASE DEPTH IF SINGULAR
------------------------------------------------------------
[0]  RETRACT
[1]  →0⍴⎕SVR'DAT'
------------------------------------------------------------
[0]  Z←ROLLBACK
[1]  Z←DAT_'ROLLBACK'
------------------------------------------------------------
[0]  Z←SETOPT OPTS
[1]  Z←'' ''
[2]  →(⍴(⍴Z)←OFFER)/0           ⍝ SHARE DAT
[3]  ⍎(1=≡OPTS)/'OPTS←,⊂OPTS' ⍝ ENCLOSE IF SIMPLE
[4]  Z←DAT_(⊂'SETOPT'),OPTS
------------------------------------------------------------
[ 0]  Z←SHOW CDS;⎕IO
[ 1] ⍝ DISPLAY SQL RESULT ← CODE DATA STACK
[ 2] ⍝
[ 3] ⍝ NON-SUSPENDABLE
[ 4] ⍝
[ 5]  ⎕IO←1
[ 6]  Z←'' '' ''                       ⍝ INITIALIZE TO EMPTIES
[ 7]  →(⍴(⍴Z)←6 ER_~(⍴CDS)≡,3)/0      ⍝ CDS MUST BE 3-ITEM VECTOR
[ 8]  (1⊃Z)←MESSAGE 1⊃CDS              ⍝ CODE - GET MESSAGE IF ANY
[ 9]  (2⊃Z)←2⊃CDS                      ⍝ DATA
[10]  (3⊃Z)←3⊃CDS                      ⍝ STACK - EMPTY OR DEPTH 3 OR 4
[11]  Z←,[⍳0]Z                         ⍝ DISPLAY DOWN THE SCREEN
```

```
------------------------------------------------------------
[ 0]  Z←SQL ARGS;STMT;S;C;V;D;E;F;T;U;O;STACK;⎕IO
[ 1] ⍝ - CREATES AND PROCESSES A SEQUENCE OF AP127 OPERATIONS.
[ 2] ⍝ - ARGS IS (STMT [VALUES]) ; IF SIMPLE, IT IS STMT ONLY.
[ 3] ⍝ - IF THE FIRST WORD IN STMT IS 'SELECT', A CURSOR STATEMENT SEQUENCE
[ 4] ⍝   ('PREP' 'OPEN' 'FETCH' 'CLOSE') IS BUILT BY THE FUNCTION CUR_.
[ 5] ⍝ - IF THE STATEMENT IS 'INSERT' 'UPDATE' OR 'DELETE', AND VALUES
[ 6] ⍝   IS PRESENT, A ('PREP' 'CALL') SEQUENCE IS BUILT BY IUD_.
[ 7] ⍝ - 'COMMIT' STATEMENTS ARE PROCESSED DIRECTLY (USING 1↑).
[ 8] ⍝ - IF VALUES IS A MATRIX,  CUR_ OR IUD_ REPEATS THE SEQUENCE AFTER
[ 9] ⍝   'PREP' FOR EACH ROW OF VALUES. 'FETCH' RESULTS ARE ACCUMULATED.
[10] ⍝ - THE FUNCTION  ER_  RETURNS A MESSAGE IF A CONDITION IS TRUE
[11] ⍝ - THE FUNCTION  RESUME  IS CALLED TO PROCESS THE STACK.
[12] ⍝
[13]  ⎕IO←1
[14]  Z←'' '' ''                          ⍝ RESULT Z IS (CODE DATA STACK)
[15]  →(↑(↑Z)←OKA_ ARGS)/0                ⍝ CHECK ARGUMENT VALIDITY
[16]  ⍎(1=≡ARGS)/'ARGS←,⊂ARGS'          ⍝ DEPTH 1 (SIMPLE) → NESTED VECTOR
[17]  →(↑(↑Z)←6 ER_ 1 2∧.≠⍴ARGS)/0       ⍝ ARGUMENT LENGTH ERROR
[18]  →(↑(↑Z)←OKS_↑ARGS)/0                ⍝ CHECK FIRST FOR SIMPLE CHAR STRING
[19]  S←↑(S≠' ')⊂S←,↑ARGS                 ⍝ S IS 'SELECT' WORD CANDIDATE
[20]  ((S∈LOWER)/S)←UPPER[LOWER⍳(S∈LOWER)/S]  ⍝ COERCE TO UPPER CASE
[21]  C←(S←⊂S)∈'SELECT' 'WITH'            ⍝ C IS PRESENCE OF QUERY
[22]  V←2=⍴ARGS                           ⍝ V IS PRESENCE OF VALUES
[23]  D←V∧S∈'INSERT' 'UPDATE' 'DELETE'    ⍝ D IS INSERT, UPDATE OR DELETE
[24]  O←S∈'GETTYPEINFO' 'TABLES'          ⍝ O IS ODBCOPEN COMMAND TYPES (AP 227 ONLY)
[25]  T←S∈⊂'COMMIT'                       ⍝ COMMIT STATEMENT
[26]  U←S∈⊂'ROLLBACK'                     ⍝ ROLLBACK STATEMENT
[27]  E←~C∨D∨T∨U∨O                        ⍝ E IS EXEC STATEMENT
[28]  →(↑(↑Z)←13 ER_ V∧E)/0               ⍝ VALUES NOT ALLOWED WITH EXEC
[29]  F←'CUR_' 'IUD_' 'EX_' 'OO_' '1↑' '1↑' ⍝ F IS LIST OF BUILD FUNCTIONS
[30]  F←↑(C,D,E,O,T,U)/F                  ⍝ F IS BUILD FUNCTION TO CALL
[31]  ⍎'STACK←',F,' ARGS'                 ⍝ FUNCTIONS TAKE ARGS, RETURN STACK
[32]  Z←RESUME,[⍳0]STACK                  ⍝ PROCESS STACK AS 1 COLUMN MATRIX
------------------------------------------------------------
[0]  Z←SQLCA
[1] ⍝ RETURNS CURRENT CONTENTS OF THE SQLCA CONTROL BLOCK
[2]  Z←'' ''
[3]  →(↑(↑Z)←OFFER)/0             ⍝ ENSURE AN OFFER
[4]  Z←DAT_'SQLCA'
------------------------------------------------------------
[0]  Z←SQLSTATE
[1] ⍝ RETURNS THE CURRENT VALUE OF SQLSTATE
[2]  Z←'' ''
[3]  →(↑(↑Z)←OFFER)/0             ⍝ ENSURE AN OFFER
[4]  Z←DAT_'SQLSTATE'
------------------------------------------------------------
[0]  Z←SSID ID
[1]  →(↑Z←OFFER'')/0  ⍝ ENSURE AN OFFER
[2]  Z←DAT_(⊂'SSID'),(0≠⍴,ID)⍴⊂ID
------------------------------------------------------------
[0]  Z←STATE NAME;⎕IO
[1]  ⎕IO←0
[2] ⍝ RETURNS THE STATE WITH A MEANING APPENDED
[3]  →(↑Z←OFFER'')/0            ⍝ ENSURE AN OFFER
[4]  Z←DAT_'STATE'NAME         ⍝ SPEC,REF DAT
[5]  →(↑↑Z)/0                    ⍝ EXIT IF ERROR
[6]  (1⊃Z)←(1⊃Z)((1⊃Z)⊃¨STM_)  ⍝ APPEND MEANING
------------------------------------------------------------
[0]  Z←STMT NAME
[1]  →(↑Z←OFFER'')/0    ⍝ ENSURE AN OFFER
[2]  Z←DAT_'STMT'NAME  ⍝ SPEC,REF DAT
------------------------------------------------------------
```

```
[ 0]  Z←F TIME T
[ 1]  →(2=⎕NC'F')/L1
[ 2]  F←0
[ 3]  →(2≠⎕NC'TFMT')/L1
[ 4]  F←TFMT
[ 5] L1:T←3↑3↓T
[ 6]  →(F=1 2 3)/USA,EUR,JIS
[ 7] ISO:
[ 8] EUR:Z←'06 06 05'⍕T
[ 9]  Z[⎕IO+2 5]←'.'
[10]  →0
[11] USA:Z←('AP'[⎕IO+(T[⎕IO]≥12)∧T[⎕IO]<24]),'M'
[12]  →(T[⎕IO+0 1]≡0 0)/USA2
[13]  T[⎕IO]←12|T[⎕IO]
[14]  T[⎕IO]←T[⎕IO]+12×T[⎕IO]=0
[15] USA2:Z←('06:05 '⍕2↑T[⎕IO+0 1]),Z
[16]  →0
[17] JIS:Z←'06:06:05'⍕T
-------------------------------------------------------------
[0]  Z←TIMESTAMP T
[1]  Z←(0 DATE T),'-',(0 TIME T),'.','055'⍕1↑6↓T
-------------------------------------------------------------
[0]  Z←TOMAT X
[1] ⍝ MATRIX GIVEN ANY ARRAY
[2]  →(X←2=ρρZ←X)/0
[3]  Z←(((××/ρZ)××/¯1↓ρZ),¯1↑1,ρZ)ρZ
-------------------------------------------------------------
[0]  Z←TRACE N1N2
[1]  →(↑Z←OFFER'')/0  ⍝ ENSURE AN OFFER
[2]  Z←DAT_'TRACE'N1N2
-------------------------------------------------------------
[0]  r←formatadata x;aspa;z
[1]  aspa←''''
[2]  z←'00000000'⍕x
[3]  r←aspa,z[5 6 7 8],'-',z[3 4],'-',z[1 2],aspa
-------------------------------------------------------------
[ 0]  rr←gerad75a qtd;a;aa;aspa;aux;c;cime;cire;cods;e;i;j;keyc;keye;keym;keyp;lixo;m;men;
      nome;p;qu;r;virgula
[ 1]  virgula←','
[ 2]  aspa←''''
[ 3]  p←200 31ρ' '
[ 4]  i←1
[ 5]  keyp←100000000+200?899999999
[ 6] t1:→(i>200)/vai1
[ 7]  p[i;⍳11]←('123456789'[?2ρ9]),'555555555'⍕keyp[i]
[ 8]  p[i;11+⍳20]←20↑geranome
[ 9]  i←i+1
[10]  →t1
[11] vai1:
[12]  i←1
[13]  m←100 27ρ' '
[14]  keym←1000+100?8999
[15] t2:→(i>100)/vai2
[16]  aa←'    ','5555'⍕keym[i]
[17]  m[i;⍳7]←aa
[18]  m[i;7+⍳20]←20↑geranome
[19]  i←i+1
[20]  →t2
[21] vai2:
[22]  i←1
[23]  e←100 35ρ' '
[24]  keye←1000+100?8999
[25] t3:→(i>100)/vai3
```

```
[26]  e[i;ι5]←'55555'⍕keye[i]
[27]  e[i;5+ι30]←30↑geraequip
[28]  i←i+1
[29]  →t3
[30] vai3:
[31]  c←200 45⍴' '
[32]  cods←200?10000
[33]  cods←cods[⍋cods]
[34]  c[;ι7]←'5555555'⍕200 1⍉cods
[35]  i←1
[36]  men←99999
[37] t4:→(i>200)/vai5
[38]  c[i;7+ι11]←p[?1↑⍴p;ι11]
[39]  j←500+?5000
[40]  c[i;18+ι12]←formatadata DTS1[j]
[41]  c[i;30+ι12]←formatadata DTS1[qu←j+?30]
[42]  →(qu≥men)/blz
[43]  men←qu
[44] blz:
[45]  c[i;42+ι3]←'555'⍕(15 30 45 60 75 90 120 60 120 360 480 90 120 60 60 60)[?16]
[46]  i←i+1
[47]  →t4
[48] vai5:
[49]  cime←300 14⍴' '
[50]  i←1
[51] t6:→(i>300)/vai7
[52]  cime[i;ι7]←m[?1↑⍴m;ι7]
[53]  cime[i;7+ι7]←c[?1↑⍴c;ι7]
[54]  i←i+1
[55]  →t6
[56] vai7:
[57]  cire←300 12⍴' '
[58]  i←1
[59] t7:→(i>300)/vai8
[60]  cire[i;ι5]←e[?1↑⍴e;ι5]
[61]  cire[i;5+ι7]←c[?1↑⍴c;ι7]
[62]  i←i+1
[63]  →t7
[64] vai8:
[65]  r←1200 78⍴' '
[66]  aux←((200,⍴a)⍴a←'insert into paci values (',p[;ι11],virgula,aspa,p[;11+ι20],aspa,20
      0 2⍴');'
[67]  r[ι200;ι1↓⍴aux]←aux
[68]  aux←((100,⍴a)⍴a←'insert into medi values (',m[;ι7],virgula,aspa,m[;7+ι20],aspa,100
      2⍴');'
[69]  r[200+ι100;ι1↓⍴aux]←aux
[70]  aux←((100,⍴a)⍴a←'insert into recu values (',e[;ι5],virgula,aspa,e[;5+ι30],aspa,100
      2⍴');'
[71]  r[300+ι100;ι1↓⍴aux]←aux
[72]  aux←((200,⍴a)⍴a←'insert into ciru values (',c[;ι7],virgula,c[;7+ι11],virgula,c[;18+
      ι12],virgula,c[;30+ι12],virgula,c[;42+ι3],200 2⍴');'
[73]  r[400+ι200;ι1↓⍴aux]←aux
[74]  aux←((300,⍴a)⍴a←'insert into cime values (',cime[;ι7],virgula,cime[;7+ι7],300 2⍴');
      '
[75]  r[600+ι300;ι1↓⍴aux]←aux
[76]  aux←((300,⍴a)⍴a←'insert into cire values (',cire[;ι7],virgula,cire[;7+ι5],300 2⍴');
      '
[77]  r[900+ι300;ι1↓⍴aux]←aux
[78]  R←r
[79]  nome←'D75-',('000'⍕qtd),'.myd'
[80]  lixo←r ΔFM'c:\apl2\',nome
[81]  rr←6⍴' '
[82]  rr[1]←⊂nome
```

```
[83]  rr[2]←⊂c[100;⍳7]
[84]  rr[3]←⊂⍕+/(≠,c[100;⍳7])=≠,cire[;5+⍳7],' '
[85]  rr[4]←⊂⍕(+/≠,c[;42+⍳3],' ')÷200
[86]  rr[5]←⊂⍕+/(≠,c[;42+⍳3],' ')>415
[87]  rr[6]←⊂formatadata DTS1[men]
-------------------------------------------------------------
[ 0]  r←geraequip;z;q
[ 1]  →vai
[ 2]  EQUI←'raio x' 'oximetro' 'canula' 'mascara' 'aspirador' 'umidificador' 'reanimador'
[ 3]  EQUI←EQUI,'carrinho' 'cilindro' 'conector' 'extensor' 'fluxometro' 'oxicapnografo'
[ 4]  EQUI←EQUI,'monitor' 'maca' 'balao' 'laringoscopio' 'mandril' 'eletrocardiógrafo'
[ 5]  EQUI←EQUI,'eletrodo' 'autoclave' 'fotopolimerizador' 'negatoscopio'
[ 6] vai:
[ 7]  z←?3
[ 8]  →(z=2)/completa
[ 9]  r←,⊃EQUI[?⍴EQUI]
[10]  →0
[11] completa:
[12]  q←?4
[13]  →(q=1)/um
[14]  →(q=2)/dois
[15]  →(q=3)/tres
[16]  →quatro
[17] um:r←,(,⊃EQUI[?⍴EQUI]),' portatil'
[18]  →0
[19] dois:
[20]  r←,(,⊃EQUI[?⍴EQUI]),' de mesa'
[21]  →0
[22] tres:
[23]  r←,(,⊃EQUI[?⍴EQUI]),' fixo'
[24]  →0
[25] quatro:
[26]  r←,(,⊃EQUI[?⍴EQUI]),' sobre rodas'
-------------------------------------------------------------
[ 0]  r←geranome
[ 1]  →vai
[ 2]  PRE←'luis' 'pedro' 'paulo' 'maria' 'quiteria' 'mario' 'alfredo' 'isidoro'
[ 3]  PRE←PRE,'antonio' 'antonia' 'debora' 'firmina' 'eleoterio' 'patricia'
[ 4]  PRE←PRE,'patrick' 'genoveva' 'augusto' 'ricardo' 'beatriz' 'silvia'
[ 5]  PRE←PRE,'ana' 'sandra' 'miguel' 'lucas' 'guilherme' 'gabriel' 'mateus' 'joao'
[ 6]  SOB←'neves' 'souza' 'barreto' 'nogueira' 'pereira' 'limoeiro' 'macieira'
[ 7]  SOB←SOB,'silva' 'bitencourt' 'lima' 'fagundes' 'trindade' 'lins' 'vargas'
[ 8]  SOB←SOB,'ferraz' 'marques' 'morais' 'muniz' 'duarte' 'barros' 'ribeiro'
[ 9]  SOB←SOB,'castro' 'moura' 'roriz' 'gimenez' 'alves' 'goncalves' 'rezende'
[10]  SOB←SOB,'arantes' 'fernandes' 'menezes' 'sanches' 'lessa' 'noronha' 'bastos' 'rios'
[11] vai:
[12]  r←,(⊃PRE[?⍴PRE]),' ',⊃SOB[?⍴SOB]
-------------------------------------------------------------
[ 0]  opesq vivod75a n;CORRECAO;EVENTO;IDX;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;q
      linha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLd75   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ IDX←3↑2↓n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n ⋄ IDX←'XXX'
[ 9]  ylu←n grupo ylu
[10]  FOLHALAd75←ajusta80 FOLHALAd75
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAd75)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
```

```
[13]  xk←1 ⋄ resu←0 50⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←11 80⍴' '
[16]  f←FOLHALAd75
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.06
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[10;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[11;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerad75a xk
[35]  esse[8;⍳15]←15↑⊃xx[1]
[36]  esse[9;⍳15]←15↑⊃xx[2]
[37]  zz←(10↑⊃xx[3]),(10↑⊃xx[4]),(10↑⊃xx[5]),(15↑⊃xx[6])
[38]  resp←(4 0⍕resp),'-',zz
[39]  resu←resu,[1]1 50⍴resp
[40]  acuja←(f[;2]='#')/⍳1↑⍴f
[41]  f[acuja;⍳80]←esse[⌽,f[acuja;3 4],' ';]
[42]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[43]  ⎕←(⍕xk←xk+1),'-'
[44]  →testa
[45] fim:upag←(1 0+⍴f)⍴' '
[46]  →(1=≡n)/elafa
[47]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[48]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[49]  upag[2+⍳1↑⍴resu;⍳50]←resu
[50]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[51]  →terminando
[52] elafa:aaa←(ylu[;⍳36],0 5↓resu)
[53]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[54]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[55] terminando:
[56]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[57]  relat[1↑⍴relat;;]←upag
[58]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[59]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[60]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[61]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
[62]  'Nao esqueca de mover os arquivos gerados'
------------------------------------------------------------
```

vivod76

```
[ 0]  r←DMA data;A;B;C;D;E;F;G;H;I
[ 1] ⍝data e um vetor de 3: dd,mm,aa com 4 digitos
[ 2]  A←⌊(12-data[2])÷10
[ 3]  B←data[3]-A
[ 4]  C←data[2]+12×A
[ 5]  D←⌊B÷100
[ 6]  E←⌊D÷4
[ 7]  F←E+2-D
```

```
[ 8]  G←⌊365.25×B
[ 9]  H←⌊30.6001×C+1
[10]  I←F+G+H+data[1]+5
[11]  r←7|I
------------------------------------------------------------
[0]  r←a dist b
[1]  r←(((a[1]-b[1])*2)+((a[2]-b[2])*2))*0.5
------------------------------------------------------------
[0]  r←formatadata x;aspa;z
[1]  aspa←''''
[2]  z←'00000000'⍕x
[3]  r←aspa,z[5 6 7 8],'-',z[3 4],'-',z[1 2],aspa
------------------------------------------------------------
[ 0]  r←gerad76a n;f;l;m;tamanhoonibus;v;valorkm;nome;lixo;z
[ 1] ⍝ cria uma instancia da folha d76
[ 2] ⍝ n[1]=tamanhoonibus, n[2]=valorkm, n[3]=numero da folha
[ 3]  m←geramunic
[ 4]  l←geralinha
[ 5]  v←geraviagem
[ 6]  z←(1↓⍴m)⌈(1↓⍴l)⌈1↓⍴v
[ 7]  tamanhoonibus←n[1]
[ 8]  valorkm←n[2]
[ 9]  r←tamanhoonibus resolved76 valorkm
[10]  f←((50,z)↑m),[1]((100,z)↑l),[1]((1500,z)↑v)
[11]  nome←'c:\apl2\D76-',('000'⍕n[3]),'.myd'
[12] ⍝'Arquivo criado em c:\apl2\',nome
[13]  lixo←f ⎕FM nome
------------------------------------------------------------
[ 0]  r←geralinha;cod;i;inds;dis;pre;vi;a
[ 1]  cod←1000+100?8999
[ 2]  cod←cod[⍋cod]
[ 3]  vi←','
[ 4]  LINH←100 27⍴' '
[ 5]  i←1
[ 6] t1:→(i>100)/fim
[ 7]  LINH[i;ι4]←4 0⍕cod[i]
[ 8]  inds←2?50
[ 9]  LINH[i;5+ι3]←MUNI[inds[1];ι3]
[10]  LINH[i;9+ι3]←MUNI[inds[2];ι3]
[11]  dis←(⍎'-¯'edit MUNI[inds[1];20+ι12])dist⍎'-¯'edit MUNI[inds[2];20+ι12]
[12]  dis←6 1⍕dis+?100
[13]  pre←0.001×((?2000)+(⍎dis)×300+?500)
[14]  LINH[i;13+ι6]←dis
[15]  LINH[i;20+ι7]←7 2⍕pre
[16]  i←i+1
[17]  →t1
[18] fim:r←((100,⍴a)⍴a←'insert into linh values (',LINH[;ι4],vi,LINH[;5+ι3],vi,LINH[;9+ι3
      ],vi,LINH[;12+ι7],vi,LINH[;19+ι8],100 2⍴');'
------------------------------------------------------------
[ 0]  r←geramunic;cods;n;x;y;vi;as;a
[ 1]  vi←','
[ 2]  as←''''
[ 3] ⍝→vai
[ 4]  nome←'jacumino' 'lousada' 'ribeirao' 'santa rita' 'sao joao' 'santo antonio'
[ 5]  nome←nome,'ituaba' 'jacaranda' 'zelosa' 'quica de cima' 'quica de baixo'
[ 6]  nome←nome,'zureta' 'tirosanga' 'culebra' 'agora sim' 'zelobra' 'inga do sul'
[ 7]  nome←nome,'inga do norte' 'estrela do oeste' 'pavao real' 'gatinhos'
[ 8]  nome←nome,'sacolona' 'vila zumbi' 'zumbilandia' 'recaladao' 'isomorfa'
[ 9]  nome←nome,'asdrubal' 'alfredao' 'zigorna' 'ylusao' 'alunada' 'vambora'
[10]  nome←nome,'alvorada' 'foz do caju' 'indagora' 'sete de maio' 'farinha'
[11]  nome←nome,'xisto' 'jacare' 'cao louco' 'mozart' 'bach' 'rio fevereiro'
[12]  nome←nome,'pinhao' 'pinhalao' 'pinheirinho' 'secante' 'arco tangente'
[13]  nome←nome,'ibiroba' 'mateigao' 'mato alto' 'pato dagua' 'boiadeiro'
```

```
[14]  nome←nome,'imbirota' 'jacanao' 'morangos' 'pereiral' 'nogueira' 'roseiral'
[15]  nome←nome,'ondevai' 'ondevim' 'zaquirao' 'selecao' 'canarinho' 'valentona'
[16]  nome←nome,'vi de cima' 'vi de baixo' 'sai dai' 'vamosnessa' 'xumbirao'
[17] vai:
[18]  cods←100+50?800
[19]  cods←cods[⍋cods]
[20]  x←'¯-'edit 6 0⍕50 1⍴x←¯500+50?1000
[21]  y←'¯-'edit 6 0⍕50 1⍴y←¯500+50?1000
[22]  n←50 16⍴⊃nome[50?⍴nome]
[23]  n←n[⎕AV⍋n;]
[24]  MUNI←(3 0⍕50 1⍴cods),' ',n,x,y
[25]  r←((50,⍴a)⍴a←'insert into muni values ('),(3 0⍕50 1⍴cods),vi,as,n,as,vi,x,vi,y,50 2⍴
      ');'
-------------------------------------------------------------
[ 0]  r←geraviagem;a;da;i;vi;via
[ 1]  vi←','
[ 2]  VIAG←1500 25⍴' '
[ 3]  da←?1500⍴⍴DATAS
[ 4]  da←da[⍋da]
[ 5]  via←5000+1500?4999
[ 6]  via←via[⍋via]
[ 7]  i←1
[ 8] t1:→(i>1500)/fim
[ 9]  VIAG[i;⍳4]←4 0⍕via[i]
[10]  VIAG[i;5+⍳4]←LINH[?100;⍳4]
[11]  VIAG[i;10+⍳12]←formatadata DATAS[da[i]]
[12]  VIAG[i;23+⍳2]←2 0⍕?39
[13]  i←i+1
[14]  →t1
[15] fim:
[16]  r←((1500,⍴a)⍴a←'insert into viag values ('),VIAG[;⍳4],vi,VIAG[;5+⍳4],vi,VIAG[;10+⍳12
      ],vi,VIAG[;23+⍳2],1500 2⍴');'
-------------------------------------------------------------
[  0]  r←tam resolved76 cus;c1;c10;c10x;c2;c3;c3x;c4x;c5x;c6;c7;c8;c8x;c9;c9x;i;i0;i1;i2;i3
      ;i4;i9;imax;linhas;max;munici
[  1] ⍝ pressupoe criados e operacionais MUNI, LINH e VIAG.
[  2]  c1←100⍴0
[  3]  c2←12⍴0
[  4]  c3←50⍴0
[  5]  c6←0
[  6]  c7←7⍴0
[  7]  c8←100⍴0
[  8]  c9←100⍴0
[  9]  c10←100⍴0
[ 10]  linhas←⍬,LINH[;⍳4],' '
[ 11]  munici←⍬,MUNI[;⍳3],' '
[ 12]  i←1
[ 13] t1:→(i>1500)/fim
[ 14]  →(2014≠⍬,VIAG[i;11+⍳4])/soma
[ 15] ⍝ ------- q1 --------
[ 16]  i0←⍬,VIAG[i;5+⍳4]
[ 17]  i1←(linhas=i0)/⍳100
[ 18]  c1[i1]←c1[i1]+⍬,VIAG[i;23+⍳2]
[ 19] ⍝ ------ q2 --------
[ 20]  i0←⍬,VIAG[i;16+⍳2]
[ 21]  c2[i0]←c2[i0]+⍬,VIAG[i;23+⍳2]
[ 22] ⍝ ------ q3 --------
[ 23]  i0←⍬VIAG[i;5+⍳4] ⍝ a linha
[ 24]  i1←(linhas=i0)/⍳100
[ 25]  i2←⍬,LINH[i1;9+⍳3]
[ 26]  i3←(munici=i2)/⍳50
[ 27]  c3[i3]←c3[i3]+⍬,VIAG[i;23+⍳2]
[ 28] ⍝ -------- q6 -------
```

```
[ 29]  i0←⍦,VIAG[i;5+⍳4] ⍝ a linha
[ 30]  i1←(linhas=i0)/⍳100
[ 31]  i2←⍦,LINH[i1;13+⍳6]
[ 32]  c6←c6+i2×⍦,VIAG[i;23+⍳2]
[ 33] ⍝ -------- q7 ---------
[ 34]  i4←1+DMA(⍦,VIAG[i;19+⍳2]),(⍦,VIAG[i;16+⍳2]),⍦,VIAG[i;11+⍳4]
[ 35] ⍝ 1=sab, 2=dom, 3=seg, ... 7=sex
[ 36]  c7[i4]←c7[i4]+⍦,VIAG[i;23+⍳2]
[ 37] soma:i←i+1
[ 38]  →t1
[ 39] fim:
[ 40] ⍝ agora as tratativas das questoes 8, 9 e 10
[ 41]  i←1
[ 42] t2:→(i>100)/theend
[ 43] ⍝ ------ q8 --------
[ 44]  i0←(munici=⍦,LINH[i;5+⍳3])/⍳50
[ 45]  i1←(munici=⍦,LINH[i;9+⍳3])/⍳50
[ 46]  i2←(⍦,MUNI[i0;21+⍳5]),⍦,MUNI[i0;27+⍳5]
[ 47]  i3←(⍦,MUNI[i1;21+⍳5]),⍦,MUNI[i1;27+⍳5]
[ 48]  c8[i]←i2 dist i3
[ 49] ⍝ ------- q9 -------
[ 50]  c9[i]←(tam×⍦,LINH[i;20+⍳7])-cus×⍦,LINH[i;13+⍳6]
[ 51] ⍝ --------q10-------
[ 52]  c10[i]←c10[i]+c1[i]×⍦,LINH[i;20+⍳7]
[ 53]  i←i+1
[ 54]  →t2
[ 55] theend:
[ 56]  r←0⍴' '
[ 57]  max←-9999
[ 58]  i←1
[ 59] t3:→(i>100)/ika1
[ 60]  →(c1[i]≤max)/bola
[ 61]  max←c1[i]
[ 62]  imax←i
[ 63] bola:i←i+1
[ 64]  →t3
[ 65] ika1:r←r,,MUNI[((munici=⍦,LINH[imax;5+⍳3])/⍳50);4+⍳16]
[ 66]  r←r,,MUNI[((munici=⍦,LINH[imax;9+⍳3])/⍳50);4+⍳16],'/'
[ 67]  max←-9999
[ 68]  i←1
[ 69] t4:→(i>12)/ika2
[ 70]  →(c2[i]≤max)/bola2
[ 71]  max←c2[i]
[ 72]  imax←i
[ 73] bola2:i←i+1
[ 74]  →t4
[ 75] ika2:r←r,(2 0⍕imax),'/'
[ 76]  c3←c3[i9←⍒c3]
[ 77]  c3x←(⍳50)[i9]
[ 78]  r←r,MUNI[c3x[1];4+⍳16],MUNI[c3x[2];4+⍳16],MUNI[c3x[3];4+⍳16],'/'
[ 79] ⍝------ q4 -----
[ 80]  c4x←c1
[ 81]  c4x←c4x[i9←⍋c4x]
[ 82] ⍝ c4y←(⍳100)[i9]   sera que precisa ????????
[ 83]  i←1
[ 84] t5:→(i>100)/bola3
[ 85]  →(c4x[i]=0)/som4
[ 86]  r←r,LINH[i9[i];⍳4],' ',LINH[i9[i+1];⍳4],' ',LINH[i9[i+2];⍳4],'/'
[ 87]  →bola3
[ 88] som4:i←i+1
[ 89]  →t5
[ 90] bola3:
[ 91]  c5x←c2÷((+/c2)÷12)
```

```
[ 92]  i←1
[ 93]  max←-9999
[ 94] t6:→(i>12)/bola4
[ 95]  →(c5x[i]≤max)/som6
[ 96]  max←c5x[i]
[ 97]  imax←i
[ 98] som6:i←i+1
[ 99]  →t6
[100] bola4:r←r,(7 2⍕max),' ',(2 0⍕imax),'/'
[101] ⍝--------q6---------
[102]  r←r,(10 0⍕c6),'/'
[103]  c7←c7[i9←⍒c7]
[104]  r←r,(,(7 3⍴'SABDOMSEGTERQUAQUISEX')[i9[1];]),' ',(8 0⍕c7[1]),'/'
[105] ⍝-------q8--------
[106]  c8x←c8
[107]  c8x←c8x[i9←⍒c8x]
[108]  r←r,(,LINH[i9[1];⍳4]),(8 0⍕c1[i9[1]]),'/'
[109] ⍝-------q9-------
[110]  c9x←c9
[111]  c9x←c9x[i9←⍒c9x]
[112]  r←r,(,LINH[i9[1];⍳4]),' ',(,LINH[i9[2];⍳4]),' ',(,LINH[i9[3];⍳4]),'/'
[113] ⍝------q10-------
[114]  c10x←c10
[115]  c10x←c10x[i9←⍒c10x]
[116]  r←r,(,LINH[i9[1];⍳4]),' ',(,LINH[i9[2];⍳4]),' ',(,LINH[i9[3];⍳4])
-------------------------------------------------------------
[ 0]  opesq vivod76a n;CORRECAO;EVENTO;IDX;aaa;acuja;cuskm;dhx;esse;f;lixo1;lixonol;nomes;
      ql39;qlinha;relat;resp;resu;tamoni;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLd76   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ IDX←3↑2↓n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n ⋄ IDX←'XXX'
[ 9]  ylu←n grupo ylu
[10]  FOLHALAd76←ajusta80 FOLHALAd76
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAd76)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 80⍴0
[14]  FOLHARES←0 177⍴' '
[15] testa:→(xk>1↑⍴ylu)/fim
[16]  esse←12 80⍴' '
[17]  f←FOLHALAd76
[18]  esse[1;]←80↑dhx[1;]
[19]  esse[2;]←80↑dhx[2;]
[20]  esse[3;]←80↑4 2⍕VERSAOa←1.02
[21]  esse[4;]←80↑ylu[xk;⍳6]
[22]  →(36=1↓⍴ylu)/zebra
[23]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[24]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[25]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[26]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[27]  →maiszebra
[28] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[32]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] inica:
```

```
[35]  tamoni←36+?9
[36]  cuskm←0.01×101+?36
[37]  xx←gerad76a tamoni,cuskm,xk
[38]  esse[8;]←80↑'D76-',('000'⍕xk),'.myd'
[39]  esse[9;]←80↑2 0⍕tamoni
[40]  esse[10;]←80↑6 2⍕cuskm
[41]  FOLHARES←FOLHARES,[1]xx
[42]  resp←(4 0⍕resp),76↑xx
[43]  resu←resu,[1]1 80⍴resp
[44]  acuja←(f[;2]='#')/⍳1↑⍴f
[45]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[46]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[47]  □←(⍕xk←xk+1),'-'
[48]  →testa
[49] fim:upag←(1 0+⍴f)⍴' '
[50]  →(1=≡n)/elafa
[51]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim} AQUI SO ESTAO OS 76 BYTES INICIAIS'
[52]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[53]  upag[2+⍳1↑⍴presu;⍳80]←resu
[54]  upag[3+1↑⍴presu;]←(1↓⍴upag)↑'\end{verbatim}'
[55]  →terminando
[56] elafa:aaa←(ylu[;⍳36],FOLHARES)
[57]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[58]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[59] terminando:
[60]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[61]  relat[1↑⍴relat;;]←upag
[62]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[63]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[64]  lixonol←□EX 2 10⍴'quantos   matriz    '
[65]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
[66]  'Nao esqueca de mover os arquivos gerados'
------------------------------------------------------------
```

vivod77

```
[ 0]  exemplosd77;r;lixo
[ 1] ⍝ esta funcao imprime todos os exercicios do banco de dados
[ 2]  EXEMPLOSd77←ajusta80 EXEMPLOSd77
[ 3]  r←ajusta80 ⎕FM'c:\apl2\VIVOBLO1'
[ 4]  r←r,[1]1 80⍴80↑'\section*{Exemplos de d77}'
[ 5]  r←r,[1]EXEMPLOSd77
[ 6]  r←r,[1]1 80⍴80↑'\end{document}'
[ 7]  lixo←r ⎕FM'c:\apl2\exemd77.tex'
[ 8]  'Salvo em c:\apl2\ com o nome de exemd77.tex'
------------------------------------------------------------
[0]  r←geracasod77 x;y;z
[1]  y←geradirt DEFId77
[2]  x←x+1
[3]  z←⍋,y[x;]
[4]  r←DEFId77[z[2]+⍳z[3];]
------------------------------------------------------------
[ 0]  r←gerad77 n;x;quais;i;y;resps;defs
[ 1]  DEFId77←ajusta80 DEFId77
[ 2]  x←geradirt DEFId77
[ 3]  y←((1↑⍴x),4)⍴⍋,x,' '
[ 4]  quais←n?1↑⍴y
[ 5]  resps←''
[ 6]  defs←0 80⍴' '
[ 7]  i←1
[ 8] t1:→(i>n)/fim
[ 9]  defs←defs,[1]DEFId77[y[quais[i];2]+⍳y[quais[i];3];]
```

```
[10]  resps←resps,' | ',trim DEFId77[y[quais[i];4];]
[11]  i←i+1
[12]  →t1
[13] fim:r←2ρ0
[14]  r[1]←⊂defs
[15]  r[2]←⊂1↓resps
[16] ⍝'Tamanho ',⍕1↑ρr
-------------------------------------------------------------
[ 0]  r←geradirt x;lin;i;tam
[ 1]  r←(((+/(,x[;1])='%')÷3),20)ρ' '
[ 2]  tam←0
[ 3]  lin←1
[ 4]  i←1
[ 5] t1:→(i>1↑ρx)/fim
[ 6]  →((x[i;1]='%')∧(x[i;2]='i'))/comeca
[ 7]  →((x[i;1]='%')∧(x[i;2]='f'))/termina
[ 8]  →((x[i;1]='%')∧(x[i;2]='r'))/resposta
[ 9]  tam←tam+1
[10]  i←i+1
[11]  →t1
[12] comeca:r[lin;⍳3]←x[i;3 4 5]
[13]  r[lin;5+⍳5]←5 0⍕i
[14]  tam←0
[15]  i←i+1
[16]  →t1
[17] resposta:r[lin;10+⍳5]←5 0⍕tam
[18]  i←i+1
[19]  →t1
[20] termina:r[lin;15+⍳5]←5 0⍕i-1
[21]  lin←lin+1
[22]  i←i+1
[23]  →t1
[24] fim:
-------------------------------------------------------------
[ 0]  todosd77;r;lixo
[ 1] ⍝ esta funcao imprime todos os exercicios do banco de dados
[ 2]  DEFId77←ajusta80 DEFId77
[ 3]  r←ajusta80 ⎕FM'c:\apl2\VIVOBLO1'
[ 4]  r←r,[1]1 80ρ80↑'\section*{Listagem de todos os problemas de d77}'
[ 5]  r←r,[1]1 80ρ80↑'\begin{enumerate}'
[ 6]  r←r,[1]DEFId77
[ 7]  r←r,[1]1 80ρ80↑'\end{enumerate}'
[ 8]  r←r,[1]1 80ρ80↑'\end{document}'
[ 9]  lixo←r ⎕FM'c:\apl2\todosd77.tex'
[10]  'Salvo em c:\apl2\ com o nome de todosd77.tex'
-------------------------------------------------------------
[ 0]  opesq vivod77a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLd77   '
[ 6]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAd77←ajusta80 FOLHALAd77
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALAd77)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑⎕FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3ρ0
[14] testa:→(xk>1↑ρylu)/fim
```

```
[15]  esse←99 80ρ' '
[16]  f←FOLHALAd77
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;ι6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;ι4]=((1↑ρf),4)ρ'⍀#05')/ι1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+ι30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[98;ι10]←'@',esse[6;5+ι3],esse[4;1+ι5],'@'
[32]  esse[99;]←80↑esse[6;5+ι3],'-',esse[4;1+ι5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracasod77 4|xk
[35]  esse[7+ι90;]←90 80↑xx
[36] ⍝ resp←resp,,xx[2 3;5]
[37] ⍝ resu←resu,[1]1 3ρresp
[38]  acuja←(f[;2]='#')/ι1↑ρf
[39]  f[acuja;ι80]←esse[⍤,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'⍀clearpage'
[41]  ⍞←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:
[44]  upag←(1 0+ρf)ρ' '
[45]  →terminando  ⍝ pula-se a geracao de GPA
[46]  →(1=≡n)/elafa
[47]  upag[1;]←(1↓ρupag)↑'⍀begin{verbatim}'
[48]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[49]  upag[2+ι1↑ρresu;ι+/lixo1]←(lixo1←5 0 10 0 8 0)⍕resu
[50]  upag[3+1↑ρresu;]←(1↓ρupag)↑'⍀end{verbatim}'
[51]  →terminando
[52] elafa:aaa←(ylu[;ι36],9 0⍕0 1↓resu)
[53]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[54]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[55] terminando:
[56]  upag[1↑ρupag;]←(1↓ρupag)↑'⍀end{document}'
[57]  relat[1↑ρrelat;;]←upag
[58]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[59]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[60]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[61]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivod80

```
[ 0]  opesq vivod80a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;nomes;num
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLd80   '
[ 6]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕ιn
```

```
[ 9]  ylu←n grupo ylu
[10]  FOLHALAd80←ajusta80 FOLHALAd80
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAd80)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 2⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←9 80⍴' '
[16]  f←FOLHALAd80
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.03
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[□IO+1]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[□IO]nomes,[□IO](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:
[28]  esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+□LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[32]  esse[8;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[9;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] ini1:
[35]  acuja←(f[;2]='#')/⍳1↑⍴f
[36]  f[acuja;]←esse[⍤,f[acuja;3 4],' ';]
[37]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[38]  □←(⍕xk←xk+1),'-'
[39]  →testa
[40] fim:upag←(1 0+⍴f)⍴' '
[41]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[42]  relat[1↑⍴relat;;]←upag
[43]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[44]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.tex'
[45]  'Arquivo criado com o nome de c:⍀apl2⍀',EVENTO,'    .tex  (nao ha GPA)'
-------------------------------------------------------------
```

vivod81

```
[ 0]  opesq vivod81a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;nomes;num
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠□NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  □RL←⌊(□TS[7]+□TS[6]+□TS[5])*2.7364736473
[ 5]  EVENTO←'PLd81   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×□TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×□TS[
      4 5],□TS[6]+□TS[7]÷1000
[ 7]  →(isnum n)/1+□LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+□LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAd81←ajusta80 FOLHALAd81
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAd81)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 2⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←9 80⍴' '
[16]  f←FOLHALAd81
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
```

```
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:
[28]  esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[32]  esse[8;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[9;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] ini1:
[35]  acuja←(f[;2]='#')/⍳1↑⍴f
[36]  f[acuja;]←esse[⍬,f[acuja;3 4],' ';]
[37]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[38]  ⎕←(⍕xk←xk+1),'-'
[39]  →testa
[40] fim:upag←(1 0+⍴f)⍴' '
[41]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[42]  relat[1↑⍴relat;;]←upag
[43]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[44]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍬∧⍀⍬EVENTO=' ')/EVENTO),'.tex'
[45]  'Arquivo criado com o nome de c:⍀apl2⍀',EVENTO,'    .tex  (nao ha GPA)'
-------------------------------------------------------------
```

vivod85

```
[ 0]  r←n formatad85 x;LA;PC;a;as;f;i;lixo;nome;r1;r2;vi
[ 1]  vi←','
[ 2]  as←''''
[ 3]  PC←⊃x[1]
[ 4]  LA←⊃x[2]
[ 5]  r1←((35,⍴a)⍴a←'insert into PLAC values('),PC[;1 2],vi,as,PC[;3+⍳12],as,vi,as,PC[;15+
      ⍳34],as,vi,as,PC[;51 52],as,35 2⍴');'
[ 6]  r2←((350,⍴a)⍴a←'insert into LANC values('),LA[;1 2 3],vi,LA[;5 6],vi,as,LA[;7+⍳4],as
      ,vi,LA[;12+⍳11],vi,LA[;24+⍳12],350 2⍴');'
[ 7]  f←r1,[1]350 85↑r2
[ 8]  nome←'c:⍀apl2⍀D85-',('000'⍕n),'.myd'
[ 9]  r←'Arquivo criado em ','⍀/'edit nome
[10]  lixo←f ΔFM nome
-------------------------------------------------------------
[0]  r←formatadata x;aspa;z
[1]  aspa←''''
[2]  z←'00000000'⍕x
[3]  r←aspa,z[5 6 7 8],'-',z[3 4],'-',z[1 2],aspa
-------------------------------------------------------------
[ 0]  r←geracasod85;LA;LI;PC;i;id;min;qual;vale;viha;viva
[ 1]  r←3⍴0
[ 2]  PC←PLACON85
[ 3]  qual←3?26
[ 4]  viva←38⍴1
[ 5]  viva[,LINSD85[qual;1]]←0
[ 6]  PC←viva/[1]PC
[ 7]  viha←26⍴1
[ 8]  viha[qual]←0
[ 9]  LI←viha/[1]LINSD85
[10]  min←35?99
[11]  min←min[⍋min]
```

```
[12]  PC←PC,[2]'00'⍕(35,1)⍴min
[13]  i←1
[14]  vale←⍳0
[15] t1:→(i>35)/fim
[16]  →((⍋PC[i;1 2])∈LINSD85[;1])/soma
[17]  PC[i;51 52]←' '
[18]  →junta
[19] soma:vale←vale,⍋PC[i;51 52]
[20] junta:
[21]  i←i+1
[22]  →t1
[23] fim:
[24]  LA←350 36⍴' '
[25]  id←350?999
[26]  id←id[⍋id]
[27]  i←1
[28] t2:→(i>350)/oba
[29]  LA[i;⍳3]←'000'⍕id[i]
[30]  LA[i;5 6]←'00'⍕vale[?⍴vale]
[31]  LA[i;8 9 10 11]←geradesc
[32]  LA[i;12+⍳11]←11 2⍕geraval
[33]  LA[i;24+⍳12]←formatadata⍋('00'⍕10+?18),('00'⍕?3),'2016'
[34]  i←i+1
[35]  →t2
[36] oba:
[37]  r[1]←⊂PC
[38]  r[2]←⊂LA
[39]  r[3]←⊂LI
-------------------------------------------------------------
[0]  r←geradesc
[1]  r←'ABCDEFGHIJKLMNOPQRSTUVWXYZ'[?4⍴26]
-------------------------------------------------------------
[0]  geratextod85;zz
[1]  TEXTOd85←ajusta80 TEXTOd85
[2]  zz←⎕FM'c:\apl2\VIVOBLOI'
[3]  zz←ajusta80 zz
[4]  zz←zz,[1]TEXTOd85
[5]  zz←zz,[1]1 80⍴80↑'\end{document}'
[6]  zz ⎕FM'c:\apl2\TEXTOd85'
[7]  'Arquivo criado com o nome de c:\apl2\TEXTOd85'
-------------------------------------------------------------
[0]  r←geraval;z
[1]  z←(10⍴20000),(5⍴1000000),2⍴100000000
[2]  r←0.01×?z[?⍴z]
-------------------------------------------------------------
[ 0]  r←ma resolved85 x;LA;LI;PC;b;i;in;j;aprov
[ 1]  PC←⊃x[1]
[ 2]  LA←⊃x[2]
[ 3]  LI←⊃x[3]
[ 4]  b←38 3⍴0
[ 5]  aprov←0
[ 6]  i←1
[ 7] t1:→(i>350)/fim
[ 8]  →(ma≠⍋LA[i;31 32])/soma
[ 9]  aprov←aprov+1
[10]  in←⍋LA[i;5 6]
[11]  j←1
[12] t2:
[13]  →(2=+/'  '=PC[j;51 52])/sokk
[14]  →(in=⍋PC[j;51 52])/achou
[15] sokk:
[16]  j←j+1
[17]  →t2
```

```
[18] achou:
[19]  →(17>⍤PC[j;1 2])/cre
[20]  →deb
[21] cre:
[22]  b[⍤PC[j;1 2];1]←b[⍤PC[j;1 2];1]+⍤LA[i;12+⍳11]
[23]  →soma
[24] deb:
[25]  b[⍤PC[j;1 2];2]←b[⍤PC[j;1 2];2]+⍤LA[i;12+⍳11]
[26] soma:
[27]  i←i+1
[28]  →t1
[29] fim:
[30]  i←1
[31] t3:→(i>1↑⍴LI)/xu
[32]  →(i>16)/debito
[33]  j←2
[34] t4:→(LI[i;j]=0)/uja
[35]  b[LI[i;j];1]←b[LI[i;j];1]+b[LI[i;1];1]
[36]  j←j+1
[37]  →t4
[38] uja:i←i+1
[39]  →t3
[40] debito:
[41]  j←2
[42] t5:→(LI[i;j]=0)/uja44
[43]  b[LI[i;j];2]←b[LI[i;j];2]+b[LI[i;1];2]
[44]  j←j+1
[45]  →t5
[46] uja44:i←i+1
[47]  →t3
[48] xu:
[49]  r←4⍴0
[50]  r[1]←aprov
[51]  r[2]←b[2;1]
[52]  r[3]←b[18;2]
[53]  r[4]←b[1;1]-b[17;2]
-------------------------------------------------------------
[ 0]  opesq vivod85a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;mes;nomes
      ;num;ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←8 ⋄ EVENTO←'PLd85   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAd85←ajusta80 FOLHALAd85
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAd85)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[13]  xk←1 ⋄ resu←0 5⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←11 80⍴' '
[16]  f←FOLHALAd85
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
```

```
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[10;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[11;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] ini1:
[34]  aaa←geracasod85
[35]  esse[8;]←80↑xk formatad85 aaa
[36]  esse[9;]←80↑'00'⍕mes←?3
[37]  resp←resp,mes resolved85 aaa
[38]  resu←resu,[1]1 5⍴resp
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;]←esse[⌽,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[42]  ⎕←(⍕xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴presu;⍳47]←'¯-'edit 4 0 4 0 13 2 13 2 13 2⍕resu
[49]  upag[3+1↑⍴presu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu,'¯-'edit 4 0 13 2 13 2 13 2⍕0 1↓resu)
[52]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivod86

```
[0]  AVISO
[1]  'Este WS espera que exista um aluno 001 = MODELO'
-------------------------------------------------------------
[ 0]  rx←calcfolhad86 x;a1;a2;a3;a4;a5;a6;a7;a8;bl2;cab;f;g;i;ind;inse;insr;l;p;r;res;rex;
      sub;vbf
[ 1]  cab←(10↑'NOME'),(¯9↑'BRUTO'),(¯8↑'ATRASO'),(¯9↑'DEVIDO'),(¯8↑'INSS')
[ 2]  cab←cab,(¯8↑'IR'),(¯8↑'S.FAM'),(¯9↑'LIQUIDO'),¯8↑'FGTS'
[ 3]  sub←(10↑'----'),(¯9↑'-----'),(¯8↑'------'),(¯9↑'------'),(¯8↑'----')
[ 4]  sub←sub,(¯8↑'--'),(¯8↑'-----'),(¯9↑'-------'),¯8↑'----'
[ 5]  cab←2 77⍴cab,sub
[ 6]  ind←1
[ 7]  res←((1↑⍴x),77)⍴' '
[ 8] t1:→(ind>1↑⍴x)/fim
[ 9]  res[ind;⍳10]←x[ind;⍳10]
[10]  res[ind;10+⍳9]←9 2⍕⌹x[ind;15+⍳12]
[11]  res[ind;19+⍳8]←8 2⍕⌹x[ind;27+⍳12]
[12]  res[ind;27+⍳9]←9 2⍕p←(⌹x[ind;15+⍳12])-⌹x[ind;27+⍳12]
[13]  res[ind;36+⍳8]←8 2⍕i←inssd86 p
[14]  res[ind;44+⍳8]←8 2⍕r←ird86 p
[15]  res[ind;52+⍳8]←8 2⍕f←p sfd86⌹x[ind;39+⍳10]
[16]  res[ind;60+⍳9]←9 2⍕l←(p+f)-(i+r)
[17]  res[ind;69+⍳8]←8 2⍕g←0.08×p
```

```
[18]  ind←ind+1
[19]  →t1
[20] fim:
[21]  a1←(11 2⍕+/⍎,res[;10+⍳9],' ')
[22]  a2←(11 2⍕+/⍎,res[;19+⍳8],' ')
[23]  a3←(11 2⍕+/⍎,res[;27+⍳9],' ')
[24]  a4←(11 2⍕+/⍎,res[;36+⍳8],' ')
[25]  a5←(11 2⍕+/⍎,res[;44+⍳8],' ')
[26]  a6←(11 2⍕+/⍎,res[;52+⍳8],' ')
[27]  a7←(11 2⍕+/⍎,res[;60+⍳9],' ')
[28]  a8←(11 2⍕+/⍎,res[;69+⍳8],' ')
[29]  rex←cab,[1]res,[1](1 77⍴sub),[1]1 77⍴(10↑'TOTAL'),a1,a2,a3,a4,a5,a6,a7,a8
[30]  bl2←9 77⍴' '
[31]  bl2[1;]←77↑'INSS empregados:       ',13 2⍕⍎a4
[32]  bl2[2;]←77↑'FGTS a recolher:       ',13 2⍕⍎a8
[33]  bl2[3;]←77↑'IR a recolher:         ',13 2⍕IRR←⍎a5
[34]  bl2[4;]←77↑'SF a pagar:            ',13 2⍕SFP←⍎a6
[35]  bl2[5;]←77↑'Liquido a creditar:    ',13 2⍕⍎a7
[36]  bl2[6;]←77↑'Valor bruto da folha:  ',13 2⍕vbf←(⍎a3)+⍎a8
[37]  bl2[7;]←77↑'INSS da empresa:       ',13 2⍕inse←0.268×vbf
[38]  bl2[8;]←77↑'INSS a recolher:       ',13 2⍕insr←inse-⍎a6
[39]  bl2[9;]←77↑'Despesa Total empresa: ',13 2⍕DTE←vbf+insr
[40]  rx←rex,[1]bl2
-------------------------------------------------------------
[0]  r←descobreonde x;i
[1]  i←1
[2] t1:→(i>1↑⍴x)/0
[3]  →(9=+/x[i;⍳9]='FOLHA1-01')/achou
[4]  i←i+1
[5]  →t1
[6] achou:r←i-1
-------------------------------------------------------------
[ 0]  r←n formatad86 aaa;a;as;i;j;r1;r2;r3;rg;t;vi;nome;lixo;f
[ 1]  t←1↑⍴aaa
[ 2]  vi←','
[ 3]  as←''''
[ 4]  rg←t?1000
[ 5]  rg←rg[⍋rg]
[ 6]  rg←(t,5)⍴5 0⍕rg
[ 7]  r1←((t,⍴a)⍴a←'insert into FUNC values('),rg,vi,as,aaa[;⍳15],as,vi,aaa[;15+⍳12],(t,2)
      ⍴');'
[ 8]  i←1
[ 9]  r2←0 77⍴' '
[10] t1:→(i>t)/fim
[11]  j←1
[12] t2:→(j>⍎aaa[i;39+⍳10])/soma
[13]  r2←r2,[1]1 77⍴77↑'insert into DEPE values(',rg[i;],vi,(4 0⍕j),vi,as,'filho(a)   ',as
      ,');'
[14]  j←j+1
[15]  →t2
[16] soma:i←i+1
[17]  →t1
[18] fim:
[19]  i←1
[20]  r3←0 77⍴' '
[21] t3:→(i>t)/fmes
[22]  →(0=⍎aaa[i;27+⍳12])/sju
[23]  r3←r3,[1]1 77⍴77↑'insert into DESC values(',rg[i;],vi,as,'atraso/falta ',as,vi,aaa[i
      ;27+⍳12],');'
[24] sju:i←i+1
[25]  →t3
[26] fmes:
[27]  f←(((1↑⍴r1),77)↑r1),[1]r2,[1]r3
```

```
[28]  nome←'c:\apl2\D86-',('000'⍕n),'.myd'
[29]  r←8↓nome
[30]  lixo←f ΔFM nome
-------------------------------------------------------------
[ 0]  r←geracasod86 n;nomes;i;vals;atrasos;filhos
[ 1]  r←(n,49)⍴' '
[ 2]  nomes←'pedro' 'paulo' 'maria' 'jose' 'joao' 'andre' 'quiteria'
[ 3]  nomes←nomes,'paula' 'zelia' 'ana' 'joaquim' 'manuel' 'luiz'
[ 4]  nomes←nomes,'bianca' 'jane' 'sueli' 'alfredo' 'cris'
[ 5]  i←1
[ 6] t1:→(i>n)/fim
[ 7]  r[i;⍳10]←10↑,⊃nomes[?⍴nomes]
[ 8]  vals←0.01×(80000+10000×10?10),100000+10?1000000
[ 9]  r[i;15+⍳12]←12 2⍕vals[?⍴vals]
[10]  atrasos←(8⍴0),0.001×(80000+100×3?10),1000+3?10000
[11]  r[i;27+⍳12]←12 2⍕atrasos[?⍴atrasos]
[12]  filhos←(8⍴0),1,1,1,1,1,2,2,2,3,3,4
[13]  r[i;39+⍳10]←10 0⍕filhos[?⍴filhos]
[14]  i←i+1
[15]  →t1
[16] fim:
-------------------------------------------------------------
[ 0]  r←inssd86 x
[ 1]  →(x>1556.94)/p1
[ 2]  r←0.08×x
[ 3]  →fim
[ 4] p1:→(x>2594.92)/p2
[ 5]  r←0.09×x
[ 6]  →fim
[ 7] p2:
[ 8] p3:→(x>5189.82)/p4
[ 9]  r←0.11×x
[10]  →fim
[11] p4:r←570.88
[12] fim:
-------------------------------------------------------------
[ 0]  r←ird86 x
[ 1]  →(x>1903.98)/p1
[ 2]  r←0
[ 3]  →fim
[ 4] p1:→(x>2826.65)/p2
[ 5]  r←(0.075×x)-142.8
[ 6]  →fim
[ 7] p2:→(x>3751.01)/p3
[ 8]  r←(0.15×x)-354.8
[ 9]  →fim
[10] p3:→(x>4664.68)/p4
[11]  r←(0.225×x)-636.13
[12]  →fim
[13] p4:r←(0.275×x)-869.36
[14] fim:
-------------------------------------------------------------
[0]  r←p sfd86 nf
[1]  →(p>806.8)/gra
[2]  r←41.37×nf
[3]  →0
[4] gra:r←29.16×nf
-------------------------------------------------------------
[ 0]  opesq vivod86a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kkk;lixo1;lixonol;nomes;nu
      m;ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
```

```
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLd86   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAd86←ajusta80 FOLHALAd86
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAd86)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 4⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALAd86
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.03
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:
[28]  esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[32]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] ini1:
[35]  aaa←geracasod86 10
[36]  esse[8;]←1 80⍴80↑xk formatad86 aaa
[37]  kkk←calcfolhad86 aaa
[38]  →(xk≠1)/pula
[39]  'Guardando a folha 1 (modelo)...'
[40]  FOLHA1←kkk
[41] pula:
[42]  f[(descobreonde f)+⍳23;⍳77]←23 77↑FOLHA1
[43]  resp←resp,IRR,SFP,DTE
[44]  resu←resu,[1]1 4⍴resp
[45]  acuja←(f[;2]='#')/⍳1↑⍴f
[46]  f[acuja;]←esse[±,f[acuja;3 4],' ';]
[47]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[48]  ⍞←(⍎xk←xk+1),'-'
[49]  →testa
[50] fim:upag←(1 0+⍴f)⍴' '
[51]  →(1=≡n)/elafa
[52]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[53]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[54]  upag[2+⍳1↑⍴resu;⍳40]←'¯'-'edit 4 0 12 2 12 2 12 2⍎resu
[55]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[56]  →terminando
[57] elafa:aaa←(ylu[;⍳36],'¯'-'edit 12 2 12 2 12 2⍎0 1↓resu)
[58]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[59]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[60] terminando:
[61]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[62]  relat[1↑⍴relat;;]←upag
[63]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[64] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[65]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
```

```
[66]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivod87

```
[0]  AVISO
[1]  'Para mostrar um estoque faca cabe x←geraprodsd87'
[2]  'Para mostrar um ABC faca cabeab z←0.6 0.9 geraabcd87 x'
[3]  'Para mostrar tabela compras, gt62d87 qtdano, cusunit, txanualarmaz, custoaq'
[4]  '                          por exemplo: gt62d87 100 5 0.3 50'
[5]  ' '
[6]  'Se quiser mostrar uma instancia completa da folha, faca geracasod87'
-------------------------------------------------------------
[0]  r←cabe es;x;y
[1]  x←63⍴(15↑'produto'),(7↑'unid'),(¯9↑'preco'),(¯24↑'    ultimos 3 consumos'),¯8↑'estoq
      ue'
[2]  y←' -'[1+x≠' ']
[3]  r←(2 63⍴x,y),[1]es
-------------------------------------------------------------
[0]  r←cabeab es;x;y
[1]  x←64⍴'   ',(15↑'produto'),(7↑'unid'),(¯9↑'preco'),(¯15↑'med consumo'),¯15↑'custo'
[2]  y←' -'[1+x≠' ']
[3]  r←(2 64⍴x,y),[1]⊃es[2]
-------------------------------------------------------------
[ 0]  r←n formatad87 aaa;PC;am;as;az;col;f;ids;lixo;nome;r1;r2;vi;xux;zic;a
[ 1]  vi←','
[ 2]  as←''''
[ 3]  PC←aaa[2+⍳20;]
[ 4]  ids←20 3⍴3 0⍕az←20?999
[ 5]  r1←((20,⍴a)⍴a←'insert into ESTO values('),ids,vi,as,PC[;⍳15],as,vi,as,PC[;15+⍳7],as,
      vi,PC[;22+⍳9],vi,PC[;55+⍳8],20 2⍴');'
[ 6]  am←az,az,az
[ 7]  ids←60 3⍴3 0⍕am←am[⍋az]
[ 8]  col←60 3⍴3 0⍕60?99
[ 9]  xux←60 3⍴3 0⍕60?999
[10]  zic←PC[;31+⍳8],[1]PC[;39+⍳8],[1]PC[;47+⍳8]
[11]  r2←((60,⍴a)⍴a←'insert into LIRM values('),xux,vi,col,vi,ids,vi,zic,60 2⍴');'
[12]  f←(20 79↑r1),[1]60 79↑r2
[13]  nome←'c:⍀apl2⍀D87-',('000'⍕n),'.myd'
[14]  r←8↓nome
[15]  lixo←f ⎕FM nome
-------------------------------------------------------------
[ 0]  re←abc geraabcd87 estoque;x;y;t;z;w;r;ww;f;h
[ 1]  r←2⍴0
[ 2]  h←1↑⍴estoque
[ 3]  x←(h,3)⍴⍬,estoque[;31+⍳24],' '
[ 4]  y←(⍬,estoque[;22+⍳9],' ')×f←(+/[2]x)÷3
[ 5]  t←+/y
[ 6]  z←y[ww←⍒y]
[ 7]  estoque←(2 0⍕(h,1)⍴⍳h),'-',estoque[;⍳31],(15 2⍕(h,1)⍴f),(15 2⍕(h,1)⍴y)
[ 8] ⍝ estoque←estoque[ww;]
[ 9]  W←w←+⍀z÷t
[10]  r[1]←1↑(w>abc[1])/⍳1↑⍴estoque
[11]  r[2]←1↑(w>abc[2])/⍳1↑⍴estoque
[12]  re←(r estoque[ww;])
-------------------------------------------------------------
[ 0]  r←geracasod87;yy;zz;j;p;umdois;tx1;caq;cons;cusu;nome;gtcaso;xx;caca
[ 1]  r←44 70⍴' '
[ 2] vorta:xx←geraprodsd87
[ 3]  yy←(0.5+0.01×?20),0.7+0.01×?20
[ 4]  zz←yy geraabcd87 xx
[ 5]  j←⊃zz[1]
```

```
[ 6]  →(j[1]≠j[2])/blz
[ 7]  ⍞←'∘'
[ 8]  →vorta
[ 9] blz:p←⊃zz[2]
[10]  umdois←?2
[11]  tx1←0.2+0.01×?20
[12]  caq←40+?30
[13]  cons←⌈12×⍟p[umdois;34+⍳15]
[14]  cusu←⍟p[umdois;25+⍳9]
[15]  nome←p[umdois;3+⍳14]
[16]  gtcaso←gt62d87 caca←cons,cusu,tx1,caq
[17]  r[⍳22;]←22 70↑cabe xx
[18]  r[23;]←70↑(40↑'Pontos A e B de corte.....'),'55555555
      5559.99'⍕yy
[19]  r[24;]←70↑(40↑'Respostas em itens A e B.....'),2 0⍕j
[20]  r[25;]←70↑(30↑'cab de gt62.....'),'5555559.
      99'⍕caca
[21]  r[26;]←70↑(30↑'Nome produto pedido.....'),nome
[22]  r[26+⍳18;]←18 70↑gtcaso
-------------------------------------------------------
[ 0]  r←geraprodsd87;x;ind;i1;i2
[ 1]  x←32 63⍴' '
[ 2] ⍝ 15:descricao, 7unid, 9-2:preco, 3×8-0:tres consumos; 8-0:estoque
[ 3]  x[1;]←(15↑'aco 8mm'),(7↑'m2'),(9 2⍕120+?1000),(8 0⍕100+4?500)
[ 4]  x[2;]←(15↑'aco 12mm'),(7↑'m2'),(9 2⍕220+?1000),(8 0⍕100+4?500)
[ 5]  x[3;]←(15↑'aco 20mm'),(7↑'m2'),(9 2⍕300+?1000),(8 0⍕100+4?500)
[ 6]  x[4;]←(15↑'prego 10mm'),(7↑'milhar'),(9 2⍕0.01×1000+?1000),(8 0⍕10+4?50)
[ 7]  x[5;]←(15↑'prego 20mm'),(7↑'milhar'),(9 2⍕0.01×2000+?1000),(8 0⍕10+4?50)
[ 8]  x[6;]←(15↑'prego 50mm'),(7↑'milhar'),(9 2⍕0.01×3000+?1000),(8 0⍕10 10 10 100+4?50)
[ 9]  x[7;]←(15↑'oleo diesel'),(7↑'litro'),(9 2⍕0.01×100+?100),(8 0⍕1000+4?5000)
[10]  x[8;]←(15↑'querosene'),(7↑'litro'),(9 2⍕0.01×100+?100),(8 0⍕100 100 100 1000+4?8000)
[11]  x[9;]←(15↑'parafina'),(7↑'kg'),(9 2⍕0.01×800+?100),(8 0⍕100 100 100 1000+4?800)
[12]  x[10;]←(15↑'arame 1mm'),(7↑'metro'),(9 2⍕0.01×10+?100),(8 0⍕4?200)
[13]  x[11;]←(15↑'arame 2mm'),(7↑'metro'),(9 2⍕0.01×20+?100),(8 0⍕1+4?200)
[14]  x[12;]←(15↑'arame 5mm'),(7↑'metro'),(9 2⍕0.01×30+?100),(8 0⍕1 1 1 10+4?200)
[15]  x[13;]←(15↑'cano cobre 1p'),(7↑'metro'),(9 2⍕0.01×1000+?1000),(8 0⍕100 100 100 1000+
      4?900)
[16]  x[14;]←(15↑'cano cobre 2p'),(7↑'metro'),(9 2⍕0.01×1400+?1000),(8 0⍕4?900)
[17]  x[15;]←(15↑'cano cobre 4p'),(7↑'metro'),(9 2⍕0.01×2000+?1000),(8 0⍕100+4?900)
[18]  x[16;]←(15↑'cano cobre 10p'),(7↑'metro'),(9 2⍕0.01×7000+?1000),(8 0⍕100+4?900)
[19]  x[17;]←(15↑'tinta branca'),(7↑'galao'),(9 2⍕20+?20),(8 0⍕5 5 5 10+4?30)
[20]  x[18;]←(15↑'tinta preta'),(7↑'galao'),(9 2⍕20+?20),(8 0⍕0 0 0 5+4?20)
[21]  x[19;]←(15↑'rebite 1mm'),(7↑'um'),(9 2⍕0.01×10+?100),(8 0⍕1000+4?50000)
[22]  x[20;]←(15↑'rebite 2mm'),(7↑'um'),(9 2⍕0.01×20+?100),(8 0⍕1000+4?50000)
[23]  x[21;]←(15↑'rebite 5mm'),(7↑'um'),(9 2⍕0.01×30+?100),(8 0⍕1000 1000 1000 4000+4?5000
      0)
[24]  x[22;]←(15↑'cal'),(7↑'ton'),(9 2⍕40+?100),(8 0⍕100+4?50)
[25]  x[23;]←(15↑'gesso'),(7↑'ton'),(9 2⍕40+?100),(8 0⍕100+4?50)
[26]  x[24;]←(15↑'areia fina'),(7↑'ton'),(9 2⍕40+?20),(8 0⍕10 10 10 40+4?10)
[27]  x[25;]←(15↑'ripa fina'),(7↑'m'),(9 2⍕200+?100),(8 0⍕20 20 20 30+4?20)
[28]  x[26;]←(15↑'ripa media'),(7↑'m'),(9 2⍕400+?100),(8 0⍕20 20 20 30+4?20)
[29]  x[27;]←(15↑'ripa grossa'),(7↑'m'),(9 2⍕600+?100),(8 0⍕20 20 20 30+4?20)
[30]  x[28;]←(15↑'papel A4-75mg'),(7↑'resma'),(9 2⍕1200+?400),(8 0⍕4?10)
[31]  x[29;]←(15↑'papel A4-90mg'),(7↑'resma'),(9 2⍕2200+?400),(8 0⍕2+4?10)
[32]  x[30;]←(15↑'grampos ind'),(7↑'milhar'),(9 2⍕200+?100),(8 0⍕200 200 200 300+4?1000)
[33]  x[31;]←(15↑'condensador'),(7↑'um'),(9 2⍕10000+?10000),(8 0⍕0 0 0 4+4?10)
[34]  x[32;]←(15↑'misturador'),(7↑'um'),(9 2⍕10000+?10000),(8 0⍕0 0 0 4+4?10)
[35]  r←x[20?32;]
[36]  ind←6?20
[37]  i1←3↑ind
[38]  i2←3↓ind
[39]  r[i1;22+⍳9]←3 9⍴9 2⍕2×⍟,r[i1;22+⍳9],' '
[40]  r[i1;31+⍳32]←3 32⍴8 0⍕2×⍟,(r[i1;31+⍳8],' '),(r[i1;39+⍳8],' '),(r[i1;47+⍳8],' '),r[i1
```

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      ;55+⍳8],' '
[41]  r[i2;22+⍳9]←3 9⍴9 2⍕0.5×⍵,r[i2;22+⍳9],' '
[42]  r[i2;31+⍳32]←3 32⍴8 0⍕0.5×⍵,(r[i2;31+⍳8],' '),(r[i2;39+⍳8],' '),(r[i2;47+⍳8],' '),r[
      i2;55+⍳8],' '
-------------------------------------------------------------
[ 0]  r←gt62d87 x;z;c;f;y;m;p
[ 1] ⍝ este algoritmo gera a tabela da pagina 62 do livro stocks
[ 2] ⍝ x[1]=lote anual (8400); x[2]=preco unitario (3); x[3]=tx anual (0.3); x[4]=custo aq
      (50)
[ 3]  y←12 5⍴0
[ 4]  y[;1]←1 2 3 4 6 8 12 24 52 121 182 365
[ 5]  y[;2]←x[1]÷y[;1]
[ 6]  y[;3]←0.5×y[;2]×x[2]×x[3]
[ 7]  y[;4]←x[4]×y[;1]
[ 8]  y[;5]←+/[2]y[;3 4]
[ 9]  m←18 61⍴' '
[10]  m[3;⍳13]←13↑'anual' ⋄ m[4;⍳13]←13↑'semestral' ⋄ m[5;⍳13]←13↑'quadrimestral'
[11]  m[6;⍳13]←13↑'trimestral' ⋄ m[7;⍳13]←13↑'bimestral' ⋄ m[8;⍳13]←13↑'p. 45 d.'
[12]  m[9;⍳13]←13↑'mensal' ⋄ m[10;⍳13]←13↑'quinzenal' ⋄ m[11;⍳13]←13↑'semanal'
[13]  m[12;⍳13]←13↑'a cada 3d' ⋄ m[13;⍳13]←13↑'a cada 2d' ⋄ m[14;⍳13]←13↑'diario'
[14]  m[2+⍳12;14+⍳3]←3 0⍕12 1⍴y[;1]
[15]  m[2+⍳12;17+⍳11]←11 2⍕12 1⍴y[;2]
[16]  m[2+⍳12;28+⍳11]←11 2⍕12 1⍴y[;3]
[17]  m[2+⍳12;39+⍳11]←11 2⍕12 1⍴y[;4]
[18]  m[2+⍳12;50+⍳11]←11 2⍕12 1⍴y[;5]
[19]  m[1;]←(14↑'ciclo'),'qtd',(¯11↑'unids'),(¯11↑'Carmaz'),(¯11↑'Caq'),¯11↑'Ctot'
[20]  m[2;]←'- '[1+m[1;]=' ']
[21]  z←((2×x[4]×x[1])÷(x[2]×x[3]))*0.5 ⍝ z e o lote minimo em unidades
[22]  c←x[1]÷z ⍝ c e a quantidade de aquisicoes no ano
[23]  f←365÷c ⍝ f e o periodo em dias entre uma e outra aquisicao
[24]  m[16;]←61↑(40↑'Lote minimo em unidades.....'),8 1⍕z
[25]  m[17;]←61↑(40↑'Quantidade de aquisicoes no ano.....'),8 1⍕c
[26]  m[18;]←61↑(40↑'Periodo em dias entre 2 aquisicoes.....'),8 1⍕f
[27]  r←m
-------------------------------------------------------------
[ 0]  opesq vivod87a n;CORRECAO;EVENTO;a;aaa;bbb;acuja;b;dhx;esse;f;kk;lixo1;lixonol;num;r
      elat;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←8 ⋄ EVENTO←'PLd87   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⍙FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALAd87←ajusta80 FOLHALAd87
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAd87)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑⍙FM'c:\apl2\VIVOBLO1'
[12]  xk←1 ⋄ resu←0 5⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←17 80⍴' '
[15]  f←FOLHALAd87
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[16;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[17;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] ini1:
```

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[26]  AAA←aaa←geracasod87
[27]  esse[8;]←80↑xk formatad87 aaa
[28]  esse[9;]←80↑aaa[23;40+⍳30]
[29]  esse[10;]←80↑aaa[26;30+⍳20]
[30]  esse[11;]←80↑aaa[28+bbb←?12;⍳13]
[31]  esse[12;]←80↑aaa[25;30+⍳10]
[32]  esse[13;]←80↑aaa[25;40+⍳10]
[33]  esse[14;]←80↑aaa[25;50+⍳10]
[34]  esse[15;]←80↑aaa[25;60+⍳10]
[35]  resu←resu,[1]1 5⍴resp,(⍕aaa[24;40+⍳2],' ',aaa[24;42+⍳2]),(⍕aaa[28+bbb;50+⍳11]),⍕aaa[
      43;40+⍳30]
[36]  acuja←(f[;2]='#')/⍳1↑⍴f
[37]  f[acuja;]←esse[⍕,f[acuja;3 4],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[39]  ⎕←(⍕xk←xk+1),'-'
[40]  →testa
[41] fim:upag←(1 0+⍴f)⍴' '
[42]  →(1=≡n)/elafa
[43]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[44]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[45]  upag[2+⍳1↑⍴resu;⍳37]←'¯'-'edit 4 0 6 0 4 0 15 2 8 1⍕resu
[46]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[47]  →terminando
[48] elafa:aaa←(ylu,'¯'-'edit 4 0 4 0 15 2 8 1⍕0 1↓resu)
[49]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[50]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[51] terminando:
[52]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[53]  relat[1↑⍴relat;;]←upag
[54]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[55] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[56]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[57]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
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vivod89

```
[ 0]  r←formatad90 n;f;lixo;nome;z;z1;z2;z3;palp
[ 1]  r←7⍴0
[ 2]  z←ΔFM'f:\p\n\d90\back76.ba2'
[ 3]  palp←(50+?49),(?12),(-600+?200),(-600+?200),((80000+?10000)÷100),(500+?800)÷10
[ 4]  z[300;51+⍳2]←2 0⍕palp[1] ⍝ passageiros transportados (era 39)
[ 5]  r[2]←⊂12376+palp[1]
[ 6]  z[300;39+⍳10]←'2015-',('00'⍕palp[2]),'-15' ⍝ data (era 2014-03-05)
[ 7]  r[3]←⊂palp[2]
[ 8]  z[150;17+⍳4]←'-',3 0⍕|palp[3] ⍝ coordeanad x
[ 9]  r[4]←⊂palp[3]
[10]  z[150;70+⍳4]←'-',3 0⍕|palp[4] ⍝ coordenada y
[11]  r[5]←⊂palp[4]
[12]  z[50;48+⍳6]←6 2⍕palp[5]⍝ preco (era 303.00)
[13]  r[6]←⊂palp[5]
[14]  z[50;70+⍳5]←5 1⍕palp[6]⍝ distancia (era 705.9)
[15]  r[7]←⊂palp[6]
[16] fmes:
[17]  nome←'c:\apl2\D90-',('000'⍕n),'.myd'
[18]  r[1]←⊂8↓nome
[19]  lixo←z ΔFM nome
-------------------------------------------------------------
[ 0]  opesq vivod89a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
```

```
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLd89   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAd89←ajusta80 FOLHALAd89
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAd89)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 7⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALAd89
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  resu←resu,[1]1 7⍴resp
[35]  acuja←(f[;2]='#')/⍳1↑⍴f
[36]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[37]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[38]  ⍞←(⍎xk←xk+1),'-'
[39]  →testa
[40] fim:upag←(1 0+⍴f)⍴' '
[41]  'Nao ha arquivo GPA'
[42]  →terminando
[43]  →(1=≡n)/elafa
[44]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[45]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[46]  upag[2+⍳1↑⍴resu;⍳¯3++/lixo1]←'¯-'edit(lixo1←5 0 10 0 3 0 6 0 6 0 8 2 7 1)⍎resu
[47]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[48]  →terminando
[49] elafa:aaa←'¯-'edit(ylu[;⍳36],6 0 6 0 3 0 6 0 6 0 8 2 7 1⍎0 1↓resu)
[50]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[51]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[52] terminando:
[53]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[54]  relat[1↑⍴relat;;]←upag
[55]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[56]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[57]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[58]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivod90

```
[ 0]  r←formatad90 n;f;lixo;nome;z;z1;z2;z3;palp
```

```
[ 1]  r←7ρ0
[ 2]  z←ΔFM'c:\apl2\back76.ba2'
[ 3]  palp←(50+?49),(?12),(-600+?200),(-600+?200),((80000+?10000)÷100),(500+?800)÷10
[ 4]  z[300;51+ι2]←2 0⍕palp[1] ⍝ passageiros transportados (era 39)
[ 5]  r[2]←⊂12376+palp[1]
[ 6]  z[300;39+ι10]←'2015-',('00'⍕palp[2]),'-15' ⍝ data (era 2014-03-05)
[ 7]  r[3]←⊂palp[2]
[ 8]  z[150;17+ι4]←'-',3 0⍕|palp[3] ⍝ coordeanad x
[ 9]  r[4]←⊂palp[3]
[10]  z[150;70+ι4]←'-',3 0⍕|palp[4] ⍝ coordenada y
[11]  r[5]←⊂palp[4]
[12]  z[50;48+ι6]←6 2⍕palp[5]⍝ preco (era 303.00)
[13]  r[6]←⊂palp[5]
[14]  z[50;70+ι5]←5 1⍕palp[6]⍝ distancia (era 705.9)
[15]  r[7]←⊂palp[6]
[16] fmes:
[17]  nome←'c:\apl2\D90-',('000'⍕n),'.myd'
[18]  r[1]←⊂8↓nome
[19]  lixo←z ΔFM nome
-------------------------------------------------------------
[ 0]  opesq vivod90a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLd90   '
[ 6]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕ιn
[ 9]  ylu←n grupo ylu
[10]  FOLHALAd90←ajusta80 FOLHALAd90
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALAd90)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 7ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←10 80ρ' '
[16]  f←FOLHALAd90
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;ι6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;ι4]=((1↑ρf),4)ρ'\#05')/ι1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+ι30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[9;ι10]←'@',esse[6;5+ι3],esse[4;1+ι5],'@'
[32]  esse[10;]←80↑esse[6;5+ι3],'-',esse[4;1+ι5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←formatad90 xk
[35]  esse[8;]←1 80ρ80↑⊃xx[1]
[36]  resp←resp,(⊃xx[2]),(⊃xx[3]),(⊃xx[4]),(⊃xx[5]),(⊃xx[6]),(⊃xx[7])
[37]  resu←resu,[1]1 7ρresp
[38]  acuja←(f[;2]='#')/ι1↑ρf
[39]  f[acuja;ι80]←esse[±,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\clearpage'
```

```
[41]  ⍞←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳¯3++/lixo1]←'¯'-'edit(lixo1←5 0 10 0 3 0 6 0 6 0 8 2 7 1)⍕resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:aaa←'¯'-'edit(ylu[;⍳36],6 0 6 0 3 0 6 0 6 0 8 2 7 1⍕0 1↓resu)
[51]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivod90

```
[ 0]  r←formatad90 n;f;lixo;nome;z;z1;z2;z3;palp
[ 1]  r←7⍴0
[ 2]  z←ΔFM'c:\apl2\back76.ba2'
[ 3]  palp←(50+?49),(?12),(-600+?200),(-600+?200),((80000+?10000)÷100),(500+?800)÷10
[ 4]  z[300;51+⍳2]←2 0⍕palp[1] ⍝ passageiros transportados (era 39)
[ 5]  r[2]←⊂12376+palp[1]
[ 6]  z[300;39+⍳10]←'2015-',('00'⍕palp[2]),'-15' ⍝ data (era 2014-03-05)
[ 7]  r[3]←⊂palp[2]
[ 8]  z[150;17+⍳4]←'-',3 0⍕|palp[3] ⍝ coordeanad x
[ 9]  r[4]←⊂palp[3]
[10]  z[150;70+⍳4]←'-',3 0⍕|palp[4] ⍝ coordenada y
[11]  r[5]←⊂palp[4]
[12]  z[50;48+⍳6]←6 2⍕palp[5]⍝ preco (era 303.00)
[13]  r[6]←⊂palp[5]
[14]  z[50;70+⍳5]←5 1⍕palp[6]⍝ distancia (era 705.9)
[15]  r[7]←⊂palp[6]
[16] fmes:
[17]  nome←'c:\apl2\D90-',('000'⍕n),'.myd'
[18]  r[1]←⊂8↓nome
[19]  lixo←z ΔFM nome
-------------------------------------------------------------
[ 0]  opesq vivod90a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLd90   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAd90←ajusta80 FOLHALAd90
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAd90)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 7⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
```

```
[16]  f←FOLHALAd90
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←formatad90 xk
[35]  esse[8;]←1 80⍴80↑⊃xx[1]
[36]  resp←resp,(⊃xx[2]),(⊃xx[3]),(⊃xx[4]),(⊃xx[5]),(⊃xx[6]),(⊃xx[7])
[37]  resu←resu,[1]1 7⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[41]  ⎕←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳¯3++/lixo1]←'¯'-'edit(lixo1←5 0 10 0 3 0 6 0 6 0 8 2 7 1)⍕resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[49]  →terminando
[50] elafa:aaa←'¯'-'edit(ylu[;⍳36],6 0 6 0 3 0 6 0 6 0 8 2 7 1⍕0 1↓resu)
[51]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivod92

```
[ 0]  r←formatad90 n;f;lixo;nome;z;z1;z2;z3;palp
[ 1]  r←7⍴0
[ 2]  z←ΔFM'f:⍀p⍀n⍀d90⍀back76.ba2'
[ 3]  palp←(50+?49),(?12),(-600+?200),(-600+?200),((80000+?10000)÷100),(500+?800)÷10
[ 4]  z[300;51+⍳2]←2 0⍕palp[1] ⍝ passageiros transportados (era 39)
[ 5]  r[2]←⊂12376+palp[1]
[ 6]  z[300;39+⍳10]←'2015-',('00'⍕palp[2]),'-15' ⍝ data (era 2014-03-05)
[ 7]  r[3]←⊂palp[2]
[ 8]  z[150;17+⍳4]←'-',3 0⍕|palp[3] ⍝ coordeanad x
[ 9]  r[4]←⊂palp[3]
[10]  z[150;70+⍳4]←'-',3 0⍕|palp[4] ⍝ coordenada y
[11]  r[5]←⊂palp[4]
[12]  z[50;48+⍳6]←6 2⍕palp[5]⍝ preco (era 303.00)
[13]  r[6]←⊂palp[5]
```

```
[14]  z[50;70+⍳5]←5 1⍕palp[6]⍝ distancia (era 705.9)
[15]  r[7]←⊂palp[6]
[16] fmes:
[17]  nome←'c:\apl2\D90-',('000'⍕n),'.myd'
[18]  r[1]←⊂8↓nome
[19]  lixo←z ΔFM nome
------------------------------------------------------------
[ 0]  r←geracasod92;x
[ 1]  x←?9
[ 2]  r←2 79⍴' '
[ 3]  →(x=1)/eum
[ 4]  →(x=2)/edois
[ 5]  →(x=3)/etres
[ 6]  →(x=4)/equatro
[ 7]  →(x=5)/ecinco
[ 8]  →(x=6)/eseis
[ 9]  →(x=7)/esete
[10]  →(x=8)/eoito
[11]  →(x=9)/enove
[12]  →0
[13] eum:
[14]  r[1;]←79↑'Receba 2 códigos de linha no arquivo LINH e devolva o'
[15]  r[2;]←79↑'preço da linha mais cara.'
[16]  →0
[17] edois:
[18]  r[1;]←79↑'Receba 2 códigos de viagem no arquivo VIAG e devolva o'
[19]  r[2;]←79↑'código da viagem que mais passageiros transportou.'
[20]  →0
[21] etres:
[22]  r[1;]←79↑'Receba 2 códigos de viagem no arquivo VIAG e devolva a'
[23]  r[2;]←79↑'diferença em dias entre as 2 datas.'
[24]  →0
[25] equatro:
[26]  r[1;]←79↑'Receba 2 códigos de município no arquivo MUNI e devolva o'
[27]  r[2;]←79↑'nome do município mais ocidental (à esquerda)'
[28]  →0
[29] ecinco:
[30]  r[1;]←79↑'Receba 2 códigos de município no arquivo MUNI e devolva o'
[31]  r[2;]←79↑'nome do município mais meridional (ao sul)'
[32]  →0
[33] eseis:
[34]  r[1;]←79↑'Receba 2 códigos de linha no arquivo LINH e devolva a'
[35]  r[2;]←79↑'distância percorrida pela linha mais longa.'
[36]  →0
[37] esete:
[38]  r[1;]←79↑'Receba 2 códigos de linha no arquivo LINH e devolva a'
[39]  r[2;]←79↑'distância percorrida pela linha mais curta.'
[40]  →0
[41] eoito:
[42]  r[1;]←79↑'Receba 3 códigos de município no arquivo MUNI e devolva o'
[43]  r[2;]←79↑'nome do município de nome mais comprido.'
[44]  →0
[45] enove:
[46]  r[1;]←79↑'Receba 3 códigos de município no arquivo MUNI e devolva o'
[47]  r[2;]←79↑'nome do município de nome mais curto.'
[48]  →0
------------------------------------------------------------
[ 0]  opesq vivod92a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
```

```
[ 5]  EVENTO←'PLd92   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAd92←ajusta80 FOLHALAd92
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAd92)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 7⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←11 80⍴' '
[16]  f←FOLHALAd92
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[10;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[11;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracasod92
[35]  esse[7+⍳2;]←2 80↑xx
[36]  resu←resu,[1]1 7⍴resp
[37]  acuja←(f[;2]='#')/⍳1↑⍴f
[38]  f[acuja;⍳80]←esse[⍤,f[acuja;3 4],' ';]
[39]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[40]  ⍞←(⍎xk←xk+1),'-'
[41]  →testa
[42] fim:upag←(1 0+⍴f)⍴' '
[43]  →(1=≡n)/elafa
[44]  'Nao ha aquivo GPA'
[45]  →terminando
[46] elafa:
[47]  →terminando
[48]  'Nao ha aquivo GPA'
[49] terminando:
[50]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[51]  relat[1↑⍴relat;;]←upag
[52]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[53]  lixonol←lixonol ΔFM'c:\apl2\',((~⍬∧\⍬EVENTO=' ')/EVENTO),'.tex'
[54]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[55]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivod93

```
[0]  AVISO
[1]  'Em f:\p\n\d93\tri1.sql tem uma resposta para inicial=2 e mes=03'
-------------------------------------------------------------
[0]  r←formatadata x;aspa;z
[1]  aspa←''''
[2]  z←'00000000'⍎x
```

```
[3]  r←aspa,z[5 6 7 8],'-',z[3 4],'-',z[1 2],aspa
------------------------------------------------------------
[ 0]  r←gerad93a n;v;nome;lixo;z
[ 1] ⍝ cria uma instancia da folha d93
[ 2] ⍝  n[1]=numero da folha
[ 3] ⍝ n[2]=inicial a somar nos passageiros
[ 4] ⍝ n[3]=mes a asomar
[ 5]  r←3⍴0
[ 6]  v←geraviagem
[ 7]  nome←'c:\apl2\D93-',('000'⍕n[1]),'.myd'
[ 8] ⍝'Arquivo criado em c:\apl2\',nome
[ 9]  lixo←v ⎕FM nome
[10]  z←1500 3⍴⍬,v[;31],' ',v[;42 43],' ',v[;49 50],' '
[11]  r[1]←⊂8↓nome
[12]  r[2]←⊂+/,(z[;1]=n[2])/z[;3]
[13]  r[3]←⊂+/,(z[;2]=n[3])/z[;3]
------------------------------------------------------------
[ 0]  r←geraviagem;a;da;i;vi;via
[ 1]  vi←','
[ 2]  VIAG←1500 25⍴' '
[ 3]  da←?1500⍴⍴DATAS
[ 4]  da←da[⍋da]
[ 5]  via←5000+1500?4999
[ 6]  via←via[⍋via]
[ 7]  i←1
[ 8] t1:→(i>1500)/fim
[ 9]  VIAG[i;⍳4]←4 0⍕via[i]
[10]  VIAG[i;5+⍳4]←LINH[?100;⍳4]
[11]  VIAG[i;10+⍳12]←formatadata DATAS[da[i]]
[12]  VIAG[i;23+⍳2]←2 0⍕?39
[13]  i←i+1
[14]  →t1
[15] fim:
[16]  r←((1500,⍴a)⍴a←'insert into viag values ('),VIAG[;⍳4],vi,VIAG[;5+⍳4],vi,VIAG[;10+⍳12
      ],vi,VIAG[;23+⍳2],1500 2⍴');'
------------------------------------------------------------
[ 0]  opesq vivod93a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLd93   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAd93←ajusta80 FOLHALAd93
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAd93)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALAd93
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
```

```
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  zz←(?9),(?12)
[35]  xx←gerad93a xk,zz
[36]  esse[8;]←1 80⍴80↑⊃xx[1]
[37]  esse[9;1]←1 0⍕zz[1]
[38]  esse[10;1 2]←'00'⍕zz[2]
[39]  resp←resp,(⊃xx[2]),⊃xx[3]
[40]  resu←resu,[1]1 3⍴resp
[41]  acuja←(f[;2]='#')/⍳1↑⍴f
[42]  f[acuja;⍳80]←esse[⍤,f[acuja;3 4],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[44]  ⎕←(⍕xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+⍴f)⍴' '
[47]  →(1=≡n)/elafa
[48]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[49]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[50]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯'-'edit(lixo1←5 0 10 0 5 0)⍕resu
[51]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[52]  →terminando
[53] elafa:aaa←'¯'-'edit(ylu[;⍳36],5 0 5 0⍕0 1↓resu)
[54]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[55]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[56] terminando:
[57]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[58]  relat[1↑⍴relat;;]←upag
[59]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[60]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[61]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[62]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivod94

```
[0]  r←formatadata x;aspa;z
[1]  aspa←''''
[2]  z←'00000000'⍕x
[3]  r←aspa,z[5 6 7 8],'-',z[3 4],'-',z[1 2],aspa
-------------------------------------------------------------
[ 0]  r←geracasod94 n;a;bb;c;crg;i;ind;lixo;no;r1;r2;r3;t;v;vc;zica;zica2
[ 1]  r←2⍴0
[ 2]  c←27+?15
[ 3]  vc←c⍴0
[ 4]  t←42+?19
[ 5]  crg←c?99
[ 6]  v←(t?100000)÷100
[ 7]  a←''''
[ 8] ⍝ novos tamanhos: 4-rg, 15-nome, 20-endereco e 15-municipio
[ 9]  i←1
[10]  r1←(c,90)⍴' '
[11] t2:→(i>c)/fim
[12]  bb←'insert into clie values(',(4 0⍕crg[i]),',',a,(,NOMC[?1↑⍴NOMC;]),a,',',a,(,ENDE[?
      1↑⍴ENDE;]),a,',',a,(,MUNI[?1↑⍴MUNI;]),a,');'
[13]  r1[i;]←90↑bb
```

```
[14]  i←i+1
[15]  →t2
[16] fim:
[17]  r1←r1[⍋(⍋,r1[;27 28 26]);]
[18]  r2←(t,90)⍴' '
[19]  i←1
[20] t3:→(i>t)/zeu
[21]  r2[i;]←90↑'insert into tran values(',(4 0⍕crg[?⍴crg]),',',(3 0⍕i),',',(formatadata D
      ATAS[?⍴DATAS]),',',(10 2⍕v[i]),');'
[22]  i←i+1
[23]  →t3
[24] zeu:
[25]  r2[⍳c;25 26 27 28]←r1[;25 26 27 28]
[26]  zica←r2[;25 26 27 28 48 49 50 51 52 53 54 55 56]
[27]  zica2←(t,2)⍴⍋,zica
[28]  i←1
[29] t4:→(i>t)/ouf
[30]  ind←crg⍳zica2[i;1]
[31]  vc[ind]←vc[ind]+zica2[i;2]
[32]  i←i+1
[33]  →t4
[34] ouf:
[35]  r[1]←⊂no←'D94-',('000'⍕n),'.myd'
[36]  r[2]←⊂c,(⌈/vc),⌊/vc
[37]  r3←r1,[1]r2
[38]  lixo←r3 ⎕FM'c:\apl2\',no
------------------------------------------------------------
[ 0]  opesq vivod94a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLd94   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAd94←ajusta80 FOLHALAd94
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAd94)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 4⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALAd94
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
```

```
[34]  xx←geracasod94 xk
[35]  esse[8;]←80↑⊃xx[1]
[36]  resp←resp,,⊃xx[2]
[37]  resu←resu,[1]1 4⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍬,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⎕←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:
[44]  upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳+/33]←5 0 10 0 10 2 8 2⍕resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],5 0 10 2 8 2⍕0 1↓resu)
[52]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivod95

```
[0]  r←formatadata x;aspa;z
[1]  aspa←''''
[2]  z←'00000000'⍕x
[3]  r←aspa,z[5 6 7 8],'-',z[3 4],'-',z[1 2],aspa
------------------------------------------------------------
[ 0]  r←geracasod94 n;a;bb;c;crg;i;ind;lixo;no;r1;r2;r3;t;v;vc;zica;zica2
[ 1]  r←2⍴0
[ 2]  c←27+?15
[ 3]  vc←c⍴0
[ 4]  t←42+?19
[ 5]  crg←c?99
[ 6]  v←(t?100000)÷100
[ 7]  a←''''
[ 8] ⍝ novos tamanhos: 4-rg, 15-nome, 20-endereco e 15-municipio
[ 9]  i←1
[10]  r1←(c,90)⍴' '
[11] t2:→(i>c)/fim
[12]  bb←'insert into clie values(',(4 0⍕crg[i]),',',a,(,NOMC[?1↑⍴NOMC;]),a,',',a,(,ENDE[?
      1↑⍴ENDE;]),a,',',a,(,MUNI[?1↑⍴MUNI;]),a,');'
[13]  r1[i;]←90↑bb
[14]  i←i+1
[15]  →t2
[16] fim:
[17]  r1←r1[⍋(⍬,r1[;27 28 26]);]
[18]  r2←(t,90)⍴' '
[19]  i←1
[20] t3:→(i>t)/zeu
[21]  r2[i;]←90↑'insert into tran values(',(4 0⍕crg[?⍴crg]),',',(3 0⍕i),',',(formatadata D
      ATAS[?⍴DATAS]),',',(10 2⍕v[i]),');'
[22]  i←i+1
[23]  →t3
```

```
[24] zeu:
[25]  r2[⍳c;25 26 27 28]←r1[;25 26 27 28]
[26]  zica←r2[;25 26 27 28 48 49 50 51 52 53 54 55 56]
[27]  zica2←(t,2)⍴⍋,zica
[28]  i←1
[29] t4:→(i>t)/ouf
[30]  ind←⌈/⍳zica2[i;1]
[31]  vc[ind]←vc[ind]+zica2[i;2]
[32]  i←i+1
[33]  →t4
[34] ouf:
[35]  r[1]←⊂no←'D94-',('000'⍕n),'.myd'
[36]  r[2]←⊂c,(⌈/vc),⌊/vc
[37]  r3←r1,[1]r2
[38]  lixo←r3 ⎕FM'c:\apl2\',no
-------------------------------------------------------------
[ 0]  opesq vivod95a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLd95   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAd95←ajusta80 FOLHALAd95
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAd95)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 4⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALAd95
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34] ⍝ xx←geracasod95 xk
[35] ⍝ esse[8;]←80↑⊃xx[1]
[36] ⍝ resp←resp,,⊃xx[2]
[37]  resu←resu,[1]1 4⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⍞←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:
[44]  upag←(1 0+⍴f)⍴' '
```

```
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳+/33]←5 0 10 0 10 2 8 2⍕resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],5 0 10 2 8 2⍕0 1↓resu)
[52]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivod97

```
[ 0]  opesq vivod97a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLd97   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAd97←ajusta80 FOLHALAd97
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAd97)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 4⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALAd97
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34] ⍝ xx←geracasod97 xk
[35] ⍝ esse[8;]←80↑⊃xx[1]
[36] ⍝ resp←resp,,⊃xx[2]
[37]  resu←resu,[1]1 4⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
```

```
[40]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'⍀clearpage'
[41]  ⍞←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:
[44]  upag←(1 0+ρf)ρ' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓ρupag)↑'⍀begin{verbatim}'
[47]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[48]  upag[2+⍳1↑ρresu;⍳+/33]←5 0 10 0 10 2 8 2⍕resu
[49]  upag[3+1↑ρresu;]←(1↓ρupag)↑'⍀end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],5 0 10 2 8 2⍕0 1↓resu)
[52]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[54] terminando:
[55]  upag[1↑ρupag;]←(1↓ρupag)↑'⍀end{document}'
[56]  relat[1↑ρrelat;;]←upag
[57]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[58]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivod98

```
[ 0]  opesq vivod98a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLd98   '
[ 6]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAd98←ajusta80 FOLHALAd98
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALAd98)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 4ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←10 80ρ' '
[16]  f←FOLHALAd98
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑ρf),4)ρ'⍀#05')/⍳1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  resu←resu,[1]1 4ρresp
```

```
[35]  acuja←(f[;2]='#')/⍳1↑⍴f
[36]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[37]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[38]  ⍞←(⍕xk←xk+1),'-'
[39]  →testa
[40] fim:
[41]  upag←(1 0+⍴f)⍴' '
[42]  →terminando
[43]  →(1=≡n)/elafa
[44]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[45]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[46]  upag[2+⍳1↑⍴resu;⍳+/33]←5 0 10 0 10 2 8 2⍕resu
[47]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[48]  →terminando
[49] elafa:aaa←(ylu[;⍳36],5 0 10 2 8 2⍕0 1↓resu)
[50]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[51]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[52] terminando:
[53]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[54]  relat[1↑⍴relat;;]←upag
[55]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[56]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[57]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[58]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'    .tex'
[59]  'Nao ha GPA'
```

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vivod99

```
[ 0]  opesq vivod99a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLd99   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAd99←ajusta80 FOLHALAd99
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAd99)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 4⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALAd99
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
```

```
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34] ⍝ xx←geracasod99 xk
[35] ⍝ esse[8;]←80↑⊃xx[1]
[36] ⍝ resp←resp,,⊃xx[2]
[37]  resu←resu,[1]1 4⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍫,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⍞←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:
[44]  upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳+/33]←5 0 10 0 10 2 8 2⍕resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],5 0 10 2 8 2⍕0 1↓resu)
[52]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivoe01

```
[ 0]  data brilha n;a;lixo;b;r
[ 1] ⍝ gera o formulario da sexta brilhante com o programa n deste ws
[ 2]  a←100 80⍴' '
[ 3]  a[1;]←80↑'\documentclass{article}'
[ 4]  a[2;]←80↑'\usepackage[pc850]{inputenc}'
[ 5]  a[3;]←80↑'\usepackage[table]{xcolor}'
[ 6]  a[4;]←80↑'\usepackage{graphicx}'
[ 7]  a[5;]←80↑'\usepackage[dvips]{geometry}'
[ 8]  a[6;]←80↑'\geometry{a4paper,left=0.7in,right=0.5in,top=0.7in,bottom=1in}'
[ 9]  a[7;]←80↑'\begin{document} \large \setlength{\parindent}{0pt}'
[10]  a[8;]←80↑'\section*{projeto SEXTA BRILHANTE}'
[11]  a[9;]←80↑'Um desafio para as cabeças brilhantes da UP\\[1cm]'
[12]  a[11;]←80↑'Desafio do dia ',data
[13] ⍝ a[12;]←80↑'{ \huge '
[14]  b←⍫'gera','0'⍕n
[15]  a[12+⍳20;]←20 80↑⊃b[1]
[16]  r←⍕⊃b[2]
[17]  r
[18]  a[34;]←80↑'\subsubsection*{Regras}'
[19]  a[36;]←80↑'1. Um novo desafio é proposto a cada sexta feira, sempre das 18h00'
[20]  a[37;]←80↑'às 19h00, na sala 42 do Bloco Vermelho.'
[21]  a[39;]←80↑'2. Estão convidados todos os alunos de EC e BSI da Universidade'
[22]  a[40;]←80↑'Positivo.'
[23]  a[42;]←80↑'3. A entrega do desafio é a devolução desta folha com o resultado'
[24]  a[43;]←80↑'e a identificação do autor da solução.'
[25]  a[45;]←80↑'4. Ao achar a solução, por favor mantenha-a secreta, para preservar'
[26]  a[46;]←80↑'o salutar clima de disputa do desafio.'
[27]  a[48;]←80↑'5. Como é muito difícil (impossível ?) acertar na primeira tentativa'
```

```
[28]  a[49;]←80↑'você pode apresentar informalmente sua soluçto e perguntar se ela'
[29]  a[50;]←80↑'está ou nto correta, ANTES de entregar formalmente a resposta.'
[30]  a[52;]←80↑'6. Dúvidas ou esclarecimentos: ehamerski@gmail.com ou pkantek@up.com.br.'
[31]  a[54;]←80↑'7. A entrega deve ser feita pessoalmente aos prof. Hamerski ou P.Kantek.'
[32]  a[56;]←80↑'\vspace*{2cm}'
[33]  a[58;]←80↑'\begin{verbatim}'
[34]  a[60;]←80↑'Aluno_____________________________________________________ Data___/___/_
      __'
[35]  a[63;]←80↑'Curso, série e turno_____________________________'
[36]  a[66;]←80↑'Resposta_____________________________'
[37]  a[69;]←80↑'Assinatura do aluno_____________________'
[38]  a[70;]←80↑'\end{verbatim} \end{document}'
[39]  lixo←(70 80↑a)ΔFM'c:\apl2\brilha.tex'
[40]  lixo←ΔFM'c:\apl2\brilhar.res'
[41]  r←r,'-',,lixo
[42]  lixo←r ΔFM'c:\apl2\brilhar.res'
[43]  'gravado c:\apl2\brilha.tex. Resposta em c:\apl2\brilhar.res'
-------------------------------------------------------------
[ 0]  ca701a n;acuja;esse;f;relat;resp;xk;x;coifa;lixo1
[ 1]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 2]  FOLHALA701←ajusta80 FOLHALA701
[ 3]  relat←ΔFM'c:\apl2\VIVOBLOI'
[ 4]  xk←1
[ 5] testa:→(xk>n)/fim
[ 6]  esse←12 80⍴' '
[ 7]  f←FOLHALA701
[ 8]  esse[1;⍳⍴x]←x←'   --- Cavaleiros da Tavola Redonda'
[ 9]  esse[3;]←80↑4 2⍕1.01
[10]  esse[11;⍳8]←'@000000@'
[11] inica:
[12]  coifa←geracaso
[13]  esse[8;]←80↑coifa[1;]
[14]  esse[9;]←80↑coifa[2;]
[15]  esse[10;]←80↑coifa[3;]
[16]  resp←CASOS-1
[17]  acuja←(f[;2]='#')/⍳1↑⍴f
[18]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[19]  ⎕←(⍕xk←xk+1),'-'
[20]  f←(((1↑⍴relat),1↓⍴f)↑relat),[1]f
[21]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'\end{document}'
[22]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'%',⍕resp
[23]  lixo1←f ΔFM'c:\apl2\CA701a',('00'⍕xk-1),'.tex'
[24]  →testa
[25] fim:
-------------------------------------------------------------
[ 0]  cavaleiroe01a n;aaa;acuja;esse;f;lixo1;relat;resp;xk;xx;ylu;zz;x;quais
[ 1]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 2]  FOLHALAe01←ajusta80 FOLHALAe01
[ 3]  relat←ΔFM'c:\apl2\VIVOBLO1'
[ 4]  xk←1
[ 5] testa:→(xk>n)/fim
[ 6]  esse←89 80⍴' '
[ 7]  f←FOLHALAe01
[ 8]  esse[1;⍳⍴x]←x←' ---- Cavaleiros da Tavola Redonda --'
[ 9]  esse[3;]←80↑4 2⍕1.01
[10]  esse[88;⍳8]←'@000000@'
[11] inica:
[12]  xx←quais←3?9
[13]  ⍎'zz←gera0'
[14]  esse[7+⍳20;]←20 80↑⊃zz[1]
[15]  resp←,⊃zz[2]
[16]  ⍎'zz←gera','0'⍕xx[1]
[17]  esse[27+⍳20;]←20 80↑⊃zz[1]
```

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[18]  resp←resp,,⊃zz[2]
[19]  ⍞'zz←gera','0'⍕xx[2]
[20]  esse[47+⍳20;]←20 80↑⊃zz[1]
[21]  resp←resp,,⊃zz[2]
[22]  ⍞'zz←gera','0'⍕xx[3]
[23]  esse[67+⍳20;]←20 80↑⊃zz[1]
[24]  resp←resp,,⊃zz[2]
[25]  acuja←(f[;2]='#')/⍳1↑⍴f
[26]  f[acuja;⍳80]←esse[⍞,f[acuja;3 4],' ';]
[27]  □←(⍕xk←xk+1),'-'
[28]  f←(((1↑⍴relat),1↓⍴f)↑relat),[1]f
[29]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'\end{document}'
[30]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'%',⍕resp
[31]  lixo1←f ΔFM'c:\apl2\CAe01a',('00'⍕xk-1),'.tex'
[32]  →testa
[33] fim:
-------------------------------------------------------------
[ 0]  k1←sim docf ja;i
[ 1] Afgera uma matriz de caracteres com a □CR da funcao
[ 2] Arse 1 docf 'funcao' gera uma matriz simples so numerada
[ 3] Arse docf 'funcao' gera a matriz com ∇ acima e abaixo
[ 4] Ada matriz com ou sem ∇
[ 5]  k1←□CR ja
[ 6]  k1←(((1↑⍴k1),6)⍴' '),k1
[ 7]  i←0
[ 8] testa:→(i≥1↑⍴k1)/aca
[ 9]  →(i≥10)/mai1
[10]  k1[i+1;3 4 5]←'[',(1 0⍕i),']'
[11]  →soma
[12] mai1:→(i≥100)/mai2
[13]  k1[i+1;2 3 4 5]←'[',(2 0⍕i),']'
[14]  →soma
[15] mai2:k1[i+1;1 2 3 4 5]←'[',(3 0⍕i),']'
[16] soma:→(i=i←i+1)/testa
[17] aca:
[18]  →(0≠□NC'sim')/0
[19]  k1←((1,1↓⍴k1)⍴1000↑'     ∇'),[1]k1
[20]  k1←k1,[1](1,1↓⍴k1)⍴1000↑'     ∇'
-------------------------------------------------------------
[ 0]  r←gera0;te;re;xa
[ 1] A gera uma instancia do exercicio 0
[ 2]  r←2⍴0
[ 3]  te←20 79⍴' '
[ 4]  te[1;]←79↑'\paragraph{Múltiplos de 3 e 5}'
[ 5]  te[2;]←79↑'Se listarmos os números naturais abaixo de 10 que s⍞o múltiplos'
[ 6]  te[3;]←79↑'de 3 ou 5, obteremos 3, 5, 6 e 9.'
[ 7]  te[4;]←79↑'A soma de tais múltiplos é 23. '
[ 8]  xa←?6
[ 9]  →(1=xa)/eum
[10]  →(2=xa)/edo
[11]  →(3=xa)/etr
[12]  →(4=xa)/equ
[13]  →(5=xa)/eci
[14] ese:te[5;]←79↑'Ache a soma de todos os múltiplos de 3 e 5 abaixo de 3000.'
[15]  re←2098500
[16]  →ju
[17] eum:te[5;]←79↑'Ache a soma de todos os múltiplos de 3 e 5 abaixo de 3500.'
[18]  re←2855418
[19]  →ju
[20] edo:te[5;]←79↑'Ache a soma de todos os múltiplos de 3 e 5 abaixo de 4000.'
[21]  re←3732668
[22]  →ju
[23] etr:te[5;]←79↑'Ache a soma de todos os múltiplos de 3 e 5 abaixo de 4500.'
```

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[24]  re←4722750
[25]  →ju
[26] equ:te[5;]←79↑'Ache a soma de todos os múltiplos de 3 e 5 abaixo de 5000.'
[27]  re←5829168
[28]  →ju
[29] eci:te[5;]←79↑'Ache a soma de todos os múltiplos de 3 e 5 abaixo de 5500.'
[30]  re←7057418
[31] ju:
[32]  r[1]←⊂5 79↑te
[33]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera1;te;re;xa
[ 1] ⍝ gera uma instancia do exercicio 1
[ 2]  r←2⍴0
[ 3]  te←20 79⍴' '
[ 4]  te[1;]←79↑'\paragraph{Números de Fibonacci}'
[ 5]  te[2;]←79↑'Cada novo termo na sequencia de Fibonacci é gerado somando os 2'
[ 6]  te[3;]←79↑'termos anteriores. Começando em 1 e 2, os primeiros 10 termos da'
[ 7]  te[4;]←79↑'sequencia sto: $$1, 2, 3, 5, 8, 13, 21, 34, 55, 89$$'
[ 8]  te[5;]←79↑'Considerando os termos da sequência que sto'
[ 9]  xa←?6
[10]  →(1=xa)/eum
[11]  →(2=xa)/edo
[12]  →(3=xa)/etr
[13]  →(4=xa)/equ
[14]  →(5=xa)/eci
[15] ese:te[6;]←79↑'menores que 5000000, some os termos que sto pares.'
[16]  re←4613732
[17]  →ju
[18] eum:te[6;]←79↑'menores que 5000000, some os termos que sto ímpares.'
[19]  re←10316618
[20]  →ju
[21] edo:te[6;]←79↑'menores que 6000000, some os termos que sto pares.'
[22]  re←4613732
[23]  →ju
[24] etr:te[6;]←79↑'menores que 6000000, some os termos que sto ímpares.'
[25]  re←19544083
[26]  →ju
[27] equ:te[6;]←79↑'menores que 7000000, some os termos que sto pares.'
[28]  re←4613732
[29]  →ju
[30] eci:te[6;]←79↑'menores que 7000000, some os termos que sto ímpares.'
[31]  re←19544083
[32] ju:
[33]  r[1]←⊂6 79↑te
[34]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera2;te;re;xa
[ 1] ⍝ gera uma instancia do exercicio 1
[ 2]  r←2⍴0
[ 3]  te←20 79⍴' '
[ 4]  te[1;]←79↑'\paragraph{Maior fator primo}'
[ 5]  te[2;]←79↑'Os fatores primos de 13195 sto 5, 7, 13 e 29.'
[ 6]  te[3;]←79↑'Qual o maior fator'
[ 7]  te[4;]←79↑'primo do número'
[ 8]  xa←?8
[ 9]  →(1=xa)/eum
[10]  →(2=xa)/edo
[11]  →(3=xa)/etr
[12]  →(4=xa)/equ
[13]  →(5=xa)/eci
[14]  →(6=xa)/ese
[15]  →(7=xa)/est
```

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[16] eoi:te[5;]←79↑'14149438811 ?'
[17]  re←7103
[18]  →ju
[19] eum:te[5;]←79↑'28468376977 ?'
[20]  re←3701
[21]  →ju
[22] edo:te[5;]←79↑'47053331321 ?'
[23]  re←7793
[24]  →ju
[25] etr:te[5;]←79↑'1304168017 ?'
[26]  re←7487
[27]  →ju
[28] equ:te[5;]←79↑'17034641531 ?'
[29]  re←3581
[30]  →ju
[31] eci:te[5;]←79↑'90082379063 ?'
[32]  re←7129
[33]  →ju
[34] ese:te[5;]←79↑'10035430927 ?'
[35]  re←7417
[36]  →ju
[37] est:te[5;]←79↑'26126339399 ?'
[38]  re←6359
[39] ju:
[40]  r[1]←⊂5 79↑te
[41]  r[2]←⊂re
-------------------------------------------------------------
[ 0]  r←gera3;te;re;xa
[ 1]  r←2⍴0
[ 2]  te←20 79⍴' '
[ 3]  te[1;]←79↑'\paragraph{Maior produto palindrômico}'
[ 4]  te[2;]←79↑'Um número palindrômico é lido igualmente da direita para a'
[ 5]  te[3;]←79↑'esquerda e da esquerda para a direita. O maior palíndromo feito'
[ 6]  te[4;]←79↑'pelo produto de números de 2 dígitos é $9009=91 \times 99$. '
[ 7]  te[5;]←79↑'Considerando todos os palíndromos produtos de 2 números de 3 dígitos'
[ 8]  te[6;]←79↑'cada, Ache'
[ 9]  xa←?6
[10]  →(1=xa)/eum
[11]  →(2=xa)/edo
[12]  →(3=xa)/etr
[13]  →(4=xa)/equ
[14]  →(5=xa)/eci
[15] ese:te[7;]←79↑'o menor deles.'
[16]  re←10201
[17]  →ju
[18] eum:te[7;]←79↑'a quantidade que há de palíndromos.'
[19]  re←1239
[20]  →ju
[21] edo:te[7;]←79↑'quantos palíndromos há que sto maiores ou iguais a 500000.'
[22]  re←126
[23]  →ju
[24] etr:te[7;]←79↑'quantos palíndromos há que sto maiores ou iguais a 300000.'
[25]  re←254
[26]  →ju
[27] equ:te[7;]←79↑'quantos palíndromos há que sto maiores ou iguais a 100000.'
[28]  re←489
[29]  →ju
[30] eci:te[7;]←79↑'quantos palíndromos há que sto maiores ou iguais a 50000.'
[31]  re←960
[32] ju:
[33]  r[1]←⊂7 79↑te
[34]  r[2]←⊂re
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[ 0]  r←gera4;te;re;xa
[ 1]  r←2ρ0
[ 2]  te←20 79ρ' '
[ 3]  te[1;]←79↑'\paragraph{Menor múltiplo}'
[ 4]  te[2;]←79↑'2520 é o menor número que pode ser dividido por cada um dos'
[ 5]  te[3;]←79↑'números de 1 a 10 sem deixar nenhum resto. Ache o menor inteiro'
[ 6]  te[4;]←79↑'positivo que seja totalmente divisível por todos os números'
[ 7]  xa←?3
[ 8]  →(1=xa)/eum
[ 9]  →(2=xa)/edo
[10] etr:te[5;]←79↑'entre 1 e 18.'
[11]  re←12252240
[12]  →ju
[13] eum:te[5;]←79↑'entre 1 e 16.'
[14]  re←720720
[15]  →ju
[16] edo:te[5;]←79↑'entre 1 e 24.'
[17]  re←5354228880
[18] ju:
[19]  r[1]←⊂5 79↑te
[20]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera5;te;re;xa
[ 1]  r←2ρ0
[ 2]  te←20 79ρ' '
[ 3]  te[1;]←79↑'\paragraph{Diferença da soma dos quadrados}'
[ 4]  te[2;]←79↑'A soma dos quadrados dos primeiros 10 números naturais é:'
[ 5]  te[3;]←79↑'$$1^2 + 2^2 + ... + 10^2 = 385$$  '
[ 6]  te[4;]←79↑'O quadrado da soma dos primeiros 10 números naturais é:    '
[ 7]  te[5;]←79↑'$$(1 + 2 + ... + 10)^2 = 55^2 = 3025$$  '
[ 8]  te[6;]←79↑'Aqui a diferença entre a soma dos quadrados dos primeiros 10'
[ 9]  te[7;]←79↑'números naturais e o quadrado da soma é 3025-385=2640.'
[10]  xa←?7
[11]  →(1=xa)/eum
[12]  →(2=xa)/edo
[13]  →(3=xa)/etr
[14]  →(4=xa)/equ
[15]  →(5=xa)/eci
[16]  →(6=xa)/ese
[17] est:
[18]  te[8;]←79↑'Ache a diferença entre a soma dos quadrados dos primeiros'
[19]  te[9;]←79↑'110 números naturais e o quadrado da soma deles.'
[20]  re←36821290
[21]  →ju
[22] eum:
[23]  te[8;]←79↑'Ache a diferença entre a soma dos quadrados dos primeiros'
[24]  te[9;]←79↑'120 números naturais e o quadrado da soma deles.'
[25]  re←52124380
[26]  →ju
[27] edo:
[28]  te[8;]←79↑'Ache a diferença entre a soma dos quadrados dos primeiros'
[29]  te[9;]←79↑'130 números naturais e o quadrado da soma deles.'
[30]  re←71764420
[31]  →ju
[32] etr:
[33]  te[8;]←79↑'Ache a diferença entre a soma dos quadrados dos primeiros'
[34]  te[9;]←79↑'140 números naturais e o quadrado da soma deles.'
[35]  re←96492410
[36]  →ju
[37] equ:
[38]  te[8;]←79↑'Ache a diferença entre a soma dos quadrados dos primeiros'
[39]  te[9;]←79↑'150 números naturais e o quadrado da soma deles.'
[40]  re←127119350
```

```
[41]  →ju
[42] eci:
[43]  te[8;]←79↑'Ache a diferença entre a soma dos quadrados dos primeiros'
[44]  te[9;]←79↑'160 números naturais e o quadrado da soma deles.'
[45]  re←164516240
[46]  →ju
[47] ese:
[48]  te[8;]←79↑'Ache a diferença entre a soma dos quadrados dos primeiros'
[49]  te[9;]←79↑'170 números naturais e o quadrado da soma deles.'
[50]  re←209614080
[51] ju:
[52]  r[1]←⊂9 79↑te
[53]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera6;te;re;xa
[ 1]  r←2⍴0
[ 2]  te←20 79⍴' '
[ 3]  te[1;]←79↑'\paragraph{N-ésimo número primo}'
[ 4]  te[2;]←79↑'Listando os 6 primeiros primos tem-se 2,3,5,7,11 e 13. Aqui'
[ 5]  te[3;]←79↑'pode-se ver que o 6$^o$ primo é 13. Qual'
[ 6]  xa←?6
[ 7]  →(1=xa)/eum
[ 8]  →(2=xa)/edo
[ 9]  →(3=xa)/etr
[10]  →(4=xa)/equ
[11]  →(5=xa)/eci
[12] ese:
[13]  te[4;]←79↑'20000$^o$ primo ?'
[14]  re←224737
[15]  →ju
[16] eum:
[17]  te[4;]←79↑'25000$^o$ primo ?'
[18]  re←287117
[19]  →ju
[20] edo:
[21]  te[4;]←79↑'30000$^o$ primo ?'
[22]  re←350377
[23]  →ju
[24] etr:
[25]  te[4;]←79↑'35000$^o$ primo ?'
[26]  re←414977
[27]  →ju
[28] equ:
[29]  te[4;]←79↑'40000$^o$ primo ?'
[30]  re←479909
[31]  →ju
[32] eci:
[33]  te[4;]←79↑'45000$^o$ primo ?'
[34]  re←545747
[35] ju:
[36]  r[1]←⊂4 79↑te
[37]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera7;te;re;xa
[ 1]  r←2⍴0
[ 2]  te←20 79⍴' '
[ 3]  te[1;]←79↑'\paragraph{o maior produto em uma série}'
[ 4]  te[2;]←79↑'Dado um número enorme, deve-se achar o maior'
[ 5]  te[3;]←79↑'produto de 5 dígitos consecutivos.'
[ 6]  xa←?6
[ 7]  →(1=xa)/eum
[ 8]  →(2=xa)/edo
[ 9]  →(3=xa)/etr
```

```
[10]  →(4=xa)/equ
[11]  →(5=xa)/eci
[12] ese:
[13]  te[4;]←79↑'Considere o número a seguir formado por 100 dígitos:'
[14]  te[5;⍳50]←'858615607891129494954595017379583319528532088055 11'
[15]  te[6;⍳50]←'125406987471585238630507156932909632952274430435 57'
[16]  re←14112
[17]  →ju
[18] eum:
[19]  te[4;]←79↑'Considere o número a seguir formado por 100 dígitos:'
[20]  te[5;⍳50]←'668966489504452445231617318564030987111217223831 13'
[21]  te[6;⍳50]←'622298934233803081353362766142828064444866452387 49'
[22]  re←15552
[23]  →ju
[24] edo:
[25]  te[4;]←79↑'Considere o número a seguir formado por 100 dígitos:'
[26]  te[5;⍳50]←'303589072962904915604407723907138105158593079608 66'
[27]  te[6;⍳50]←'701724271218839987979087922749219016997208880937 76'
[28]  re←40824
[29]  →ju
[30] etr:
[31]  te[4;]←79↑'Considere o número a seguir formado por 100 dígitos:'
[32]  te[5;⍳50]←'657273330010533678812202354218097512545405947522 43'
[33]  te[6;⍳50]←'525849077116705560136048395864467063244157221553 97'
[34]  re←8640
[35]  →ju
[36] equ:
[37]  te[4;]←79↑'Considere o número a seguir formado por 100 dígitos:'
[38]  te[5;⍳50]←'572215539753697817977846174064955149290862569321 97'
[39]  te[6;⍳50]←'846862248283972241375657056057490261407972968652 41'
[40]  re←24696
[41]  →ju
[42] eci:
[43]  te[4;]←79↑'Considere o número a seguir formado por 100 dígitos:'
[44]  te[5;⍳50]←'453510047482166370484403199890008895243450658541 22'
[45]  te[6;⍳50]←'758866688116427171479924442928230863465674813919 12'
[46]  re←13824
[47] ju:
[48]  r[1]←⊂6 79↑te
[49]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera8;te;re;xa
[ 1]  r←2⍴0
[ 2]  te←20 79⍴' '
[ 3]  te[1;]←79↑'\paragraph{Tripla pitagórica especial}'
[ 4]  te[2;]←79↑'Uma tripla pitagórica é um conjunto de 3 números naturais, $a, b $'
[ 5]  te[3;]←79↑'e $c$ para os quais $$a^2 + b^2 = c^2$$  '
[ 6]  te[4;]←79↑'Como por exemplo $3^2+4^2= 9+16=25=5^2 $.  '
[ 7] ⍝ te[5;]←79↑'$$(1 + 2 + ... + 10)^2 = 55^2 = 3025$$  '
[ 8]  te[6;]←79↑'Existem possiveis triplas para a(s) qual(is) '
[ 9]  xa←?7
[10]  →(1=xa)/eum
[11]  →(2=xa)/edo
[12]  →(3=xa)/etr
[13]  →(4=xa)/equ
[14]  →(5=xa)/eci
[15]  →(6=xa)/ese
[16] est:
[17]  te[7;]←79↑'$a+b+c=1012$. Ache o produto (único) $a.b.c$'
[18]  re←10307220
[19]  →ju
[20] eum:
[21]  te[7;]←79↑'$a+b+c=1020$. Ache o menor produto $a.b.c$'
```

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[22]  re←24292320
[23]  →ju
[24] edo:
[25]  te[7;]←79↑'$a+b+c=1026$. Ache o produto (único) $a.b.c$'
[26]  re←38372400
[27]  →ju
[28] etr:
[29]  te[7;]←79↑'$a+b+c=1040$. Ache o maior produto $a.b.c$'
[30]  re←38088960
[31]  →ju
[32] equ:
[33]  te[7;]←79↑'$a+b+c=1044$. Ache o menor produto $a.b.c$'
[34]  re←35772660
[35]  →ju
[36] eci:
[37]  te[7;]←79↑'$a+b+c=1050$. Ache o menor produto $a.b.c$'
[38]  re←32629800
[39]  →ju
[40] ese:
[41]  te[7;]←79↑'$a+b+c=1054$. Ache o produto (único) $a.b.c$'
[42]  re←21469980 ⍝ conferido, resposta unica
[43] ju:
[44]  r[1]←⊂7 79↑te
[45]  r[2]←⊂re
-------------------------------------------------------------
[ 0]  r←gera9;te;re;xa
[ 1]  r←2⍴0
[ 2]  te←20 79⍴' '
[ 3]  te[1;]←79↑'\paragraph{Soma de primos}'
[ 4]  te[2;]←79↑'A soma dos primos abaixo de 10 é $2+3+5+7=17$. '
[ 5]  te[3;]←79↑'Ache a soma de todos abaixo de '
[ 6]  xa←⍰5
[ 7]  →(1=xa)/eum
[ 8]  →(2=xa)/edo
[ 9]  →(3=xa)/etr
[10]  →(4=xa)/equ
[11] eci:
[12]  te[4;]←79↑'1900000.'
[13]  re←129451433482
[14]  →ju
[15] eum:
[16]  te[4;]←79↑'1800000.'
[17]  re←11658113784 7
[18]  →ju
[19] edo:
[20]  te[4;]←79↑'1700000.'
[21]  re←10445095870 4
[22]  →ju
[23] etr:
[24]  te[4;]←79↑'1600000.'
[25]  re←92878592188
[26]  →ju
[27] equ:
[28]  te[4;]←79↑'1500000.'
[29]  re←82074443256
[30] ju:
[31]  r[1]←⊂4 79↑te
[32]  r[2]←⊂re
-------------------------------------------------------------
[ 0]  simnao listaeu ws;a;a;aa;b;i;k;lixo;n;r
[ 1] ⍝ lista os 10 exercícios deste ws
[ 2]  k←0 80⍴' '
[ 3]  →(simnao=0)/oba
```

```
[ 4]  k←9 80⍴' '
[ 5]  k[1;]←80↑'\documentclass{article}'
[ 6]  k[2;]←80↑'\usepackage[pc850]{inputenc}'
[ 7]  k[3;]←80↑'\usepackage[table]{xcolor}'
[ 8]  k[4;]←80↑'\usepackage{graphicx}'
[ 9]  k[5;]←80↑'\usepackage[dvips]{geometry}'
[10]  k[6;]←80↑'\geometry{a4paper,left=0.7in,right=0.5in,top=0.7in,bottom=1in}'
[11]  k[7;]←80↑'\begin{document} \large \setlength{\parindent}{0pt}'
[12]  k[8;]←80↑'\section*{Algoritmos selecionados}'
[13]  k[9;]←80↑'Por P. Kantek, com auxílio do site projecteuler.net\\*'
[14] oba:n←0
[15] t1:→(n>9)/fim
[16]  b←⍎'gera','0'⍕n
[17]  i←20 80↑⊃b[1]
[18]  i←(80≠+/[2]i=' ')/[1]i
[19]  k←k,[1]i
[20]  k←k,[1]1 80⍴80↑'(Workspace = ',(8↑ws),' Função = ',(2 0⍕n+1),')\\[2cm]'
[21]  n←n+1
[22]  →t1
[23] fim:
[24]  →(simnao=0)/ufa
[25]  k←k,[1]1 80⍴80↑'\end{document}'
[26] ufa:lixo←k ΔFM aa←'c:\apl2\leu',ws[4+⍳3],'.tex'
[27]  'gravado ',aa
-------------------------------------------------------------
[ 0]  opesq vivoe01a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;quais;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLe01   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAe01←ajusta80 FOLHALAe01
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAe01)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 5⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←89 80⍴' '
[16]  f←FOLHALAe01
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[88;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[89;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←quais←3?9
[35]  ⍎'zz←gera0'
```

```
[36]  esse[7+⍳20;]←20 80⍴⊃zz[1]
[37]  resp←resp,,⊃zz[2]
[38]  ⍎'zz←gera','0'⍕xx[1]
[39]  esse[27+⍳20;]←20 80⍴⊃zz[1]
[40]  resp←resp,,⊃zz[2]
[41]  ⍎'zz←gera','0'⍕xx[2]
[42]  esse[47+⍳20;]←20 80⍴⊃zz[1]
[43]  resp←resp,,⊃zz[2]
[44]  ⍎'zz←gera','0'⍕xx[3]
[45]  esse[67+⍳20;]←20 80⍴⊃zz[1]
[46]  resp←resp,,⊃zz[2]
[47]  resu←resu,[1]1 5⍴resp
[48]  acuja←(f[;2]='#')/⍳1↑⍴f
[49]  f[acuja;⍳80]←esse[⍎,f[acuja;3 4],' ';]
[50]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[51]  ⍞←(⍕xk←xk+1),'-'
[52]  →testa
[53] fim:upag←(1 0+⍴f)⍴' '
[54]  →(1=≡n)/elafa
[55]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[56]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[57]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←7 0 25 0 16 0 16 0 16 0)⍕resu
[58]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[59]  →terminando
[60] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[61] elafa:aaa←(ylu[;⍳36],20 0⍴0 1↓resu)
[62] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[63]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[64]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[65] terminando:
[66]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[67]  relat[1↑⍴relat;;]←upag
[68]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[69] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[70]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[71]  lixonol←⍞EX 2 10⍴'quantos   matriz    '
[72]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivoe03

```
[ 0]  r←DMA data;A;B;C;D;E;F;G;H;I
[ 1] ⍝data e um vetor de 3: dd,mm,aa com 4 digitos
[ 2]  A←⌊(12-data[2])÷10
[ 3]  B←data[3]-A
[ 4]  C←data[2]+12×A
[ 5]  D←⌊B÷100
[ 6]  E←⌊D÷4
[ 7]  F←E+2-D
[ 8]  G←⌊365.25×B
[ 9]  H←⌊30.6001×C+1
[10]  I←F+G+H+data[1]+5
[11]  r←7|I
-------------------------------------------------------------
[ 0]  r←acerta18 x;e;i;w
[ 1]  i←1↑⍴x
[ 2]  e←''
[ 3]  r←(i,80)⍴' '
[ 4] t1:→(i<1)/fim
[ 5]  w←'  55'⍕x[i;]
[ 6]  e←e,'  '
[ 7]  r[i;]←80↑e,,w
```

```
[ 8]  i←i-1
[ 9]  →t1
[10] fim:
------------------------------------------------------------
[ 0]  data brilha n;a;lixo;b;r
[ 1] ⍝ gera o formulario da sexta brilhante com o programa n deste ws
[ 2]  a←100 80⍴' '
[ 3]  a[1;]←80↑'\documentclass{article}'
[ 4]  a[2;]←80↑'\usepackage[pc850]{inputenc}'
[ 5]  a[3;]←80↑'\usepackage[table]{xcolor}'
[ 6]  a[4;]←80↑'\usepackage{graphicx}'
[ 7]  a[5;]←80↑'\usepackage[dvips]{geometry}'
[ 8]  a[6;]←80↑'\geometry{a4paper,left=0.7in,right=0.5in,top=0.7in,bottom=1in}'
[ 9]  a[7;]←80↑'\begin{document} \large \setlength{\parindent}{0pt}'
[10]  a[8;]←80↑'\section*{projeto SEXTA BRILHANTE}'
[11]  a[9;]←80↑'Um desafio para as cabeças brilhantes da UP\\[1cm]'
[12]  a[11;]←80↑'Desafio do dia ',data
[13] ⍝ a[12;]←80↑'{ \huge '
[14]  b←⍎'gera','0'⍕n
[15]  a[12+⍳20;]←20 80↑⊃b[1]
[16]  r←⍕⊃b[2]
[17]  r
[18]  a[34;]←80↑'\subsubsection*{Regras}'
[19]  a[36;]←80↑'1. Um novo desafio é proposto a cada sexta feira, sempre das 18h00'
[20]  a[37;]←80↑'às 19h00, na sala 42 do Bloco Vermelho.'
[21]  a[39;]←80↑'2. Estão convidados todos os alunos de EC e BSI da Universidade'
[22]  a[40;]←80↑'Positivo.'
[23]  a[42;]←80↑'3. A entrega do desafio é a devolução desta folha com o resultado'
[24]  a[43;]←80↑'e a identificação do autor da solução.'
[25]  a[45;]←80↑'4. Ao achar a solução, por favor mantenha-a secreta, para preservar'
[26]  a[46;]←80↑'o salutar clima de disputa do desafio.'
[27]  a[48;]←80↑'5. Como é muito difícil (impossível ?) acertar na primeira tentativa'
[28]  a[49;]←80↑'você pode apresentar informalmente sua solução e perguntar se ela'
[29]  a[50;]←80↑'está ou não correta, ANTES de entregar formalmente a resposta.'
[30]  a[52;]←80↑'6. Dúvidas ou esclarecimentos: ehamerski@gmail.com ou pkantek@up.com.br.'
[31]  a[54;]←80↑'7. A entrega deve ser feita pessoalmente aos prof. Hamerski ou P.Kantek.'
[32]  a[56;]←80↑'\vspace*{2cm}'
[33]  a[58;]←80↑'\begin{verbatim}'
[34]  a[60;]←80↑'Aluno_____________________________________________________ Data___/___/_
      __'
[35]  a[63;]←80↑'Curso, série e turno_____________________________'
[36]  a[66;]←80↑'Resposta_____________________________'
[37]  a[69;]←80↑'Assinatura do aluno_____________________'
[38]  a[70;]←80↑'\end{verbatim} \end{document}'
[39]  lixo←(70 80↑a)⎕NFM'c:\apl2\brilha.tex'
[40]  lixo←⎕NFM'c:\apl2\brilhar.res'
[41]  r←r,'-',,lixo
[42]  lixo←r ⎕NFM'c:\apl2\brilhar.res'
[43]  'gravado c:\apl2\brilha.tex. Resposta em c:\apl2\brilhar.res'
------------------------------------------------------------
[ 0]  ca701a n;acuja;esse;f;relat;resp;xk;x;coifa;lixo1
[ 1]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 2]  FOLHALA701←ajusta80 FOLHALA701
[ 3]  relat←⎕NFM'c:\apl2\VIVOBLOI'
[ 4]  xk←1
[ 5] testa:→(xk>n)/fim
[ 6]  esse←12 80⍴' '
[ 7]  f←FOLHALA701
[ 8]  esse[1;⍳⍴x]←x←'   --- Cavaleiros da Tavola Redonda'
[ 9]  esse[3;]←80↑4 2⍕1.01
[10]  esse[11;⍳8]←'@000000@'
[11] inica:
[12]  coifa←geracaso
```

```
[13]  esse[8;]←80↑coifa[1;]
[14]  esse[9;]←80↑coifa[2;]
[15]  esse[10;]←80↑coifa[3;]
[16]  resp←CASOS-1
[17]  acuja←(f[;2]='#')/⍳1↑⍴f
[18]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[19]  ⎕←(⍕xk←xk+1),'-'
[20]  f←(((1↑⍴relat),1↓⍴f)↑relat),[1]f
[21]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'\end{document}'
[22]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'%',⍕resp
[23]  lixo1←f ΔFM'c:\apl2\CA701a',('00'⍕xk-1),'.tex'
[24]  →testa
[25] fim:
------------------------------------------------------------
[ 0]  cavaleiroe03a n;aaa;acuja;esse;f;lixo1;quais;relat;resp;x;xk;xx;ylu;zz
[ 1]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 2]  FOLHALAe03←ajusta80 FOLHALAe03
[ 3]  relat←ΔFM'c:\apl2\VIVOBLO1'
[ 4]  xk←1
[ 5] testa:→(xk>n)/fim
[ 6]  esse←89 80⍴' '
[ 7]  f←FOLHALAe03
[ 8]  esse[1;⍳⍴x]←x←' --- Cavaleiros da Tavola Redonda -- '
[ 9]  esse[3;]←80↑4 2⍕1.01
[10]  esse[88;⍳8]←'@000000@'
[11] inica:
[12]  xx←quais←¯1+4?10
[13]  ⍎'zz←gera','0'⍕xx[1]
[14]  esse[7+⍳20;]←20 80↑⊃zz[1]
[15]  resp←,⊃zz[2]
[16]  ⍎'zz←gera','0'⍕xx[2]
[17]  esse[27+⍳20;]←20 80↑⊃zz[1]
[18]  resp←resp,,⊃zz[2]
[19]  ⍎'zz←gera','0'⍕xx[3]
[20]  esse[47+⍳20;]←20 80↑⊃zz[1]
[21]  resp←resp,,⊃zz[2]
[22]  ⍎'zz←gera','0'⍕xx[4]
[23]  esse[67+⍳20;]←20 80↑⊃zz[1]
[24]  resp←resp,,⊃zz[2]
[25]  acuja←(f[;2]='#')/⍳1↑⍴f
[26]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[27]  ⎕←(⍕xk←xk+1),'-'
[28]  f←(((1↑⍴relat),1↓⍴f)↑relat),[1]f
[29]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'\end{document}'
[30]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'%',⍕resp
[31]  lixo1←f ΔFM'c:\apl2\CAe03a',('00'⍕xk-1),'.tex'
[32]  →testa
[33] fim:
------------------------------------------------------------
[ 0]  r←divisores x;lim;i
[ 1]  lim←⌊x*0.5
[ 2]  r←1
[ 3]  i←2
[ 4] t1:→(i>lim)/aca
[ 5]  →(0=i|x)/tem
[ 6] soma:i←i+1
[ 7]  →t1
[ 8] tem:r←r,i
[ 9]  →soma
[10] aca:r←r,⊖x÷r
------------------------------------------------------------
[ 0]  r←divs21 x;di;som;qua
[ 1]  di←2
```

```
[ 2]  som←1
[ 3]  qua←,1
[ 4] t0:→(di>(x*0.5))/fim
[ 5] t1:→(0=di|x)/sim
[ 6]  di←di+1
[ 7]  →t0
[ 8] sim:qua←qua,di
[ 9]  di←di+1
[10]  →t0
[11] fim:→((di-1)=x*0.5)/qp
[12]  r←qua,⊖x÷qua
[13]  →ju
[14] qp:r←qua,1↓⊖x÷qua
[15] ju:
------------------------------------------------------------
[ 0]  k1←sim docf ja;i
[ 1] ⍝fgera uma matriz de caracteres com a ⎕CR da funcao
[ 2] ⍝rse 1 docf 'funcao' gera uma matriz simples so numerada
[ 3] ⍝rse docf 'funcao' gera a matriz com ∇ acima e abaixo
[ 4] ⍝da matriz com ou sem ∇
[ 5]  k1←⎕CR ja
[ 6]  k1←(((1↑⍴k1),6)⍴' '),k1
[ 7]  i←0
[ 8] testa:→(i≥1↑⍴k1)/aca
[ 9]  →(i≥10)/mai1
[10]  k1[i+1;3 4 5]←'[',(1 0⍕i),']'
[11]  →soma
[12] mai1:→(i≥100)/mai2
[13]  k1[i+1;2 3 4 5]←'[',(2 0⍕i),']'
[14]  →soma
[15] mai2:k1[i+1;1 2 3 4 5]←'[',(3 0⍕i),']'
[16] soma:→(i=i←i+1)/testa
[17] aca:
[18]  →(0≠⎕NC'sim')/0
[19]  k1←((1,1↓⍴k1)⍴1000↑'     ∇'),[1]k1
[20]  k1←k1,[1](1,1↓⍴k1)⍴1000↑'     ∇'
------------------------------------------------------------
[0]  a eu18reca lc
[1]  →(lc[1]=1+1↑⍴N18)/aca
[2]  (a+N18[lc[1];lc[2]])eu18reca lc+1 0
[3]  (a+N18[lc[1];lc[2]])eu18reca lc+1 1
[4]  →0
[5] aca:→(a<MAX)/0
[6]  MAX←a
------------------------------------------------------------
[ 0]  r←euler11a n18;l;c;ino;na;max;ine;ies;ise;isu;isw;iwe;inw
[ 1] ⍝ consulta a variavel N11
[ 2]  max←-9999999
[ 3]  l←1
[ 4] t1:→(l>1↑⍴n18)/fim
[ 5]  c←1
[ 6] t2:→(c>1↓⍴n18)/ufa
[ 7]  ino←4 2⍴(l-3),c,(l-2),c,(l-1),c,l,c
[ 8]  →(1=∨/,ino≤0)/p1
[ 9]  →(1=∨/,ino>1↑⍴n18)/p1
[10]  na←×/n18 retval11a ino
[11]  →(na≤max)/p1
[12]  max←na
[13] p1:
[14]  ine←4 2⍴l,c,(l-1),(c+1),(l-2),(c+2),(l-3),(c+3)
[15]  →(1=∨/,ine≤0)/p2
[16]  →(1=∨/,ine>1↑⍴n18)/p2
[17]  na←×/n18 retval11a ine
```

```
[18]  →(na≤max)/p2
[19]  max←na
[20] p2:
[21]  ies←4 2ρl,c,l,(c+1),l,(c+2),l,(c+3)
[22]  →(1=∨/,ies≤0)/p3
[23]  →(1=∨/,ies>1↑ρn18)/p3
[24]  na←×/n18 retval11a ies
[25]  →(na≤max)/p3
[26]  max←na
[27] p3:
[28]  ise←4 2ρl,c,(l+1),(c+1),(l+2),(c+2),(l+3),(c+3)
[29]  →(1=∨/,ise≤0)/p4
[30]  →(1=∨/,ise>1↑ρn18)/p4
[31]  na←×/n18 retval11a ise
[32]  →(na≤max)/p4
[33]  max←na
[34] p4:
[35]  isu←4 2ρl,c,(l+1),(c),(l+2),(c),(l+3),(c)
[36]  →(1=∨/,isu≤0)/p5
[37]  →(1=∨/,isu>1↑ρn18)/p5
[38]  na←×/n18 retval11a isu
[39]  →(na≤max)/p5
[40]  max←na
[41] p5:
[42]  isw←4 2ρl,c,(l+1),(c-1),(l+2),(c-2),(l+3),(c-3)
[43]  →(1=∨/,isw≤0)/p6
[44]  →(1=∨/,isw>1↑ρn18)/p6
[45]  na←×/n18 retval11a isw
[46]  →(na≤max)/p6
[47]  max←na
[48] p6:
[49]  iwe←4 2ρl,c,(l),(c-1),(l),(c-2),(l),(c-3)
[50]  →(1=∨/,iwe≤0)/p7
[51]  →(1=∨/,iwe>1↑ρn18)/p7
[52]  na←×/n18 retval11a iwe
[53]  →(na≤max)/p7
[54]  max←na
[55] p7:
[56]  inw←4 2ρl,c,(l-1),(c-1),(l-2),(c-2),(l-3),(c-3)
[57]  →(1=∨/,inw≤0)/p8
[58]  →(1=∨/,inw>1↑ρn18)/p8
[59]  na←×/n18 retval11a inw
[60]  →(na≤max)/p8
[61]  max←na
[62] p8:
[63]  c←c+1
[64]  →t2
[65] ufa:l←l+1
[66]  →t1
[67] fim:r←max
------------------------------------------------------------
[ 0]  euler12a lim;n;t;d
[ 1]  n←1
[ 2] t1:t←+/ιn
[ 3]  d←divs21 t
[ 4]  →(lim>ρd)/soma
[ 5]  'lim=',⍕lim
[ 6]  'n=',30 0⍕n
[ 7]  't=',30 0⍕t
[ 8]  →0
[ 9] soma:n←n+1
[10]  →t1
------------------------------------------------------------
```

```
[ 0]  r←euler13a N13;c;conta;i;l;n13;ru;vu
[ 1]  n13←(6 10⍴'0'),N13
[ 2]  l←1
[ 3]  ru←80⍴'0'
[ 4] t1:→(l>6)/fim
[ 5]  c←80
[ 6]  vu←0
[ 7] t2:→(c<1)/oba
[ 8]  conta←(⍎ru[c])+(⍎n13[l;c])+vu
[ 9]  →(conta>9)/foi
[10]  ru[c]←1 0⍕conta
[11]  vu←0
[12]  →pula
[13] foi:
[14]  ru[c]←1 0⍕conta-10
[15]  vu←1
[16] pula:c←c-1
[17]  →t2
[18] oba:l←l+1
[19]  →t1
[20] fim:ru←30↑ru
[21]  i←1
[22] vorta:→('0'≠ru[i])/deu
[23]  i←i+1
[24]  →vorta
[25] deu:ru←(i-1)↓ru
[26]  r←10↑ru
-------------------------------------------------------------
[ 0]  euler14a lim;i;max;n;seq;maxi;vx
[ 1]  i←1
[ 2]  max←-99999
[ 3]  vx←lim⍴0
[ 4] t1:→(i≥lim)/fim
[ 5]  n←i
[ 6]  seq←⍳0
[ 7] t2:seq←seq,n
[ 8]  →(n=1)/pula
[ 9]  →(0=2|n)/par
[10] impar:n←1+3×n
[11]  →t2
[12] par:n←n÷2
[13]  →(n>lim)/t2
[14]  →(vx[n]≠0)/fui
[15]  →t2
[16] fui:seq←seq,⍳vx[n]
[17] pula:
[18]  vx[i]←⍴seq
[19]  →(max>⍴seq)/soma
[20]  max←⍴seq
[21]  maxi←i
[22] soma:i←i+1
[23]  →t1
[24] fim:'Abaixo de ... ',⍕lim
[25]  'produz a maior cadeia n=',⍕maxi
-------------------------------------------------------------
[  0]  euler15a;i;x
[  1]  x←21 21⍴0
[  2]  x[;1]←0,20⍴1
[  3]  x[;2]←0,1+⍳20
[  4]  x[;3]←0,1↓+⍀⍳21
[  5]  x[3;4]←x[4;3]
[  6]  i←4
[  7] t1:→(i>21)/fi
```

```
[  8]  x[i;4]←x[i-1;4]+x[i;3]
[  9]  i←i+1
[ 10]  →t1
[ 11] fi:x[4;5]←x[5;4]
[ 12]  i←5
[ 13] t2:→(i>21)/fi2
[ 14]  x[i;5]←x[i-1;5]+x[i;4]
[ 15]  i←i+1
[ 16]  →t2
[ 17] fi2:
[ 18]  x[5;6]←x[6;5]
[ 19]  i←6
[ 20] t3:→(i>21)/fi3
[ 21]  x[i;6]←x[i-1;6]+x[i;5]
[ 22]  i←i+1
[ 23]  →t3
[ 24] fi3:
[ 25]  x[6;7]←x[7;6]
[ 26]  i←7
[ 27] t4:→(i>21)/fi4
[ 28]  x[i;7]←x[i-1;7]+x[i;6]
[ 29]  i←i+1
[ 30]  →t4
[ 31] fi4:
[ 32]  x[7;8]←x[8;7]
[ 33]  i←8
[ 34] t5:→(i>21)/fi5
[ 35]  x[i;8]←x[i-1;8]+x[i;7]
[ 36]  i←i+1
[ 37]  →t5
[ 38] fi5:
[ 39]  x[8;9]←x[9;8]
[ 40]  i←9
[ 41] t6:→(i>21)/fi6
[ 42]  x[i;9]←x[i-1;9]+x[i;8]
[ 43]  i←i+1
[ 44]  →t6
[ 45] fi6:
[ 46]  x[9;10]←x[10;9]
[ 47]  i←10
[ 48] t7:→(i>21)/fi7
[ 49]  x[i;10]←x[i-1;10]+x[i;9]
[ 50]  i←i+1
[ 51]  →t7
[ 52] fi7:
[ 53]  x[10;11]←x[11;10]
[ 54]  i←11
[ 55] t8:→(i>21)/fi8
[ 56]  x[i;11]←x[i-1;11]+x[i;10]
[ 57]  i←i+1
[ 58]  →t8
[ 59] fi8:
[ 60]  x[11;12]←x[12;11]
[ 61]  i←12
[ 62] t9:→(i>21)/fi9
[ 63]  x[i;12]←x[i-1;12]+x[i;11]
[ 64]  i←i+1
[ 65]  →t9
[ 66] fi9:
[ 67]  x[12;13]←x[13;12]
[ 68]  i←13
[ 69] t10:→(i>21)/fi10
[ 70]  x[i;13]←x[i-1;13]+x[i;12]
```

```
[ 71]  i←i+1
[ 72]  →t10
[ 73] fi10:
[ 74]  x[13;14]←x[14;13]
[ 75]  i←14
[ 76] t11:→(i>21)/fi11
[ 77]  x[i;14]←x[i-1;14]+x[i;13]
[ 78]  i←i+1
[ 79]  →t11
[ 80] fi11:
[ 81]  x[14;15]←x[15;14]
[ 82]  i←15
[ 83] t12:→(i>21)/fi12
[ 84]  x[i;15]←x[i-1;15]+x[i;14]
[ 85]  i←i+1
[ 86]  →t12
[ 87] fi12:
[ 88]  x[15;16]←x[16;15]
[ 89]  i←16
[ 90] t13:→(i>21)/fi13
[ 91]  x[i;16]←x[i-1;16]+x[i;15]
[ 92]  i←i+1
[ 93]  →t13
[ 94] fi13:
[ 95]  x[16;17]←x[17;16]
[ 96]  i←17
[ 97] t14:→(i>21)/fi14
[ 98]  x[i;17]←x[i-1;17]+x[i;16]
[ 99]  i←i+1
[100]  →t14
[101] fi14:
[102]  x[17;18]←x[18;17]
[103]  i←18
[104] t15:→(i>21)/fi15
[105]  x[i;18]←x[i-1;18]+x[i;17]
[106]  i←i+1
[107]  →t15
[108] fi15:
[109]  x[18;19]←x[19;18]
[110]  i←19
[111] t16:→(i>21)/fi16
[112]  x[i;19]←x[i-1;19]+x[i;18]
[113]  i←i+1
[114]  →t16
[115] fi16:
[116]  x[19;20]←x[20;19]
[117]  i←20
[118] t17:→(i>21)/fi17
[119]  x[i;20]←x[i-1;20]+x[i;19]
[120]  i←i+1
[121]  →t17
[122] fi17:
[123]  x[20;21]←x[21;20]
[124]  i←21
[125] t18:→(i>21)/fi18
[126]  x[i;21]←x[i-1;21]+x[i;20]
[127]  i←i+1
[128]  →t18
[129] fi18:30 0⍎+/x[20;]
-------------------------------------------------------------
[  0]  euler15ax h;i;x
[  1]  x←(h,h)⍴0
[  2]  x[;1]←0,(h-1)⍴1
```

```
[  3]  x[;2]←0,1+⍳h-1
[  4]  x[;3]←0,1↓+⍀⍳h
[  5]  x[3;4]←x[4;3]
[  6]  i←4
[  7] t1:→(i>h)/fi
[  8]  x[i;4]←x[i-1;4]+x[i;3]
[  9]  i←i+1
[ 10]  →t1
[ 11] fi:x[4;5]←x[5;4]
[ 12]  i←5
[ 13] t2:→(i>h)/fi2
[ 14]  x[i;5]←x[i-1;5]+x[i;4]
[ 15]  i←i+1
[ 16]  →t2
[ 17] fi2:
[ 18]  x[5;6]←x[6;5]
[ 19]  i←6
[ 20] t3:→(i>h)/fi3
[ 21]  x[i;6]←x[i-1;6]+x[i;5]
[ 22]  i←i+1
[ 23]  →t3
[ 24] fi3:
[ 25]  x[6;7]←x[7;6]
[ 26]  i←7
[ 27] t4:→(i>h)/fi4
[ 28]  x[i;7]←x[i-1;7]+x[i;6]
[ 29]  i←i+1
[ 30]  →t4
[ 31] fi4:
[ 32]  x[7;8]←x[8;7]
[ 33]  i←8
[ 34] t5:→(i>h)/fi5
[ 35]  x[i;8]←x[i-1;8]+x[i;7]
[ 36]  i←i+1
[ 37]  →t5
[ 38] fi5:
[ 39]  x[8;9]←x[9;8]
[ 40]  i←9
[ 41] t6:→(i>h)/fi6
[ 42]  x[i;9]←x[i-1;9]+x[i;8]
[ 43]  i←i+1
[ 44]  →t6
[ 45] fi6:
[ 46]  x[9;10]←x[10;9]
[ 47]  i←10
[ 48] t7:→(i>h)/fi7
[ 49]  x[i;10]←x[i-1;10]+x[i;9]
[ 50]  i←i+1
[ 51]  →t7
[ 52] fi7:
[ 53]  x[10;11]←x[11;10]
[ 54]  i←11
[ 55] t8:→(i>h)/fi8
[ 56]  x[i;11]←x[i-1;11]+x[i;10]
[ 57]  i←i+1
[ 58]  →t8
[ 59] fi8:
[ 60]  x[11;12]←x[12;11]
[ 61]  i←12
[ 62] t9:→(i>h)/fi9
[ 63]  x[i;12]←x[i-1;12]+x[i;11]
[ 64]  i←i+1
[ 65]  →t9
```

```
[ 66] fi9:
[ 67]  x[12;13]←x[13;12]
[ 68]  i←13
[ 69] t10:→(i>h)/fi10
[ 70]  x[i;13]←x[i-1;13]+x[i;12]
[ 71]  i←i+1
[ 72]  →t10
[ 73] fi10:
[ 74]  x[13;14]←x[14;13]
[ 75]  i←14
[ 76] t11:→(i>h)/fi11
[ 77]  x[i;14]←x[i-1;14]+x[i;13]
[ 78]  i←i+1
[ 79]  →t11
[ 80] fi11:
[ 81]  x[14;15]←x[15;14]
[ 82]  i←15
[ 83] t12:→(i>h)/fi12
[ 84]  x[i;15]←x[i-1;15]+x[i;14]
[ 85]  i←i+1
[ 86]  →t12
[ 87] fi12:
[ 88]  x[15;16]←x[16;15]
[ 89]  i←16
[ 90] t13:→(i>h)/fi13
[ 91]  x[i;16]←x[i-1;16]+x[i;15]
[ 92]  i←i+1
[ 93]  →t13
[ 94] fi13:
[ 95]  x[16;17]←x[17;16]
[ 96]  i←17
[ 97] t14:→(i>h)/fi14
[ 98]  x[i;17]←x[i-1;17]+x[i;16]
[ 99]  i←i+1
[100]  →t14
[101] fi14:
[102]  x[17;18]←x[18;17]
[103]  i←18
[104] t15:→(i>h)/fi15
[105]  x[i;18]←x[i-1;18]+x[i;17]
[106]  i←i+1
[107]  →t15
[108] fi15:
[109]  x[18;19]←x[19;18]
[110]  i←19
[111] t16:→(i>h)/fi16
[112]  x[i;19]←x[i-1;19]+x[i;18]
[113]  i←i+1
[114]  →t16
[115] fi16:
[116]  x[19;20]←x[20;19]
[117]  i←20
[118] t17:→(i>h)/fi17
[119]  x[i;20]←x[i-1;20]+x[i;19]
[120]  i←i+1
[121]  →t17
[122] fi17:
[123]  x[20;21]←x[21;20]
[124]  i←21
[125] t18:→(i>h)/fi18
[126]  x[i;21]←x[i-1;21]+x[i;20]
[127]  i←i+1
[128]  →t18
```

```
[129] fi18:30 0⍕+/x[h-1;]
-------------------------------------------------------------
[ 0]  euler16a lim;i;r;som
[ 1]  i←1
[ 2]  r←'1'
[ 3] t1:→(i>lim)/fim
[ 4]  r←mult16 r
[ 5]  i←i+1
[ 6]  →t1
[ 7] fim:
[ 8]  i←1
[ 9]  som←0
[10] reca:→(i>400)/ufa
[11]  som←som+⍎r[i]
[12]  i←i+1
[13]  →reca
[14] ufa:
[15]  'limite= ',⍕lim
[16]  'soma d= ',⍕som
-------------------------------------------------------------
[0]  r←euler18a n
[1]  N18←n
[2]  MAX←-999
[3]  0 eu18reca 1,1
[4]  r←MAX
-------------------------------------------------------------
[ 0]  euler19a dea;a;m;som
[ 1]  'seculo ',2 0⍕dea+1
[ 2]  '01/01/',(2 0⍕dea),'00    foi um ',⍕DMA 1 1,⍎(2 0⍕dea),'00'
[ 3]  '01/01/',(2 0⍕dea),'01    foi um ',⍕DMA 1 1,⍎(2 0⍕dea),'01'
[ 4]  '31/12/',(2 0⍕dea+1),'00    foi um ',⍕DMA 1 1,⍎(2 0⍕dea+1),'00'
[ 5]  a←⍎(2 0⍕dea),'01'
[ 6]  m←1
[ 7]  som←0
[ 8] t1:→(a>⍎((2 0⍕1+dea),'00'))/fim
[ 9]  m←1
[10] t2:→(m>12)/somaano
[11]  →(1=DMA 1,m,a)/sim
[12]  m←m+1
[13]  →t2
[14] sim:som←som+1
[15]  m←m+1
[16]  →t2
[17] somaano:a←a+1
[18]  →t1
[19] fim:som
-------------------------------------------------------------
[ 0]  euler20a lim;mu;n;som;i
[ 1]  mu←'2'
[ 2]  n←'1'
[ 3] t1:
[ 4]  n←mu mult20 n
[ 5]  →(lim=⍎mu)/fim
[ 6]  mu←'00'⍕1+⍎mu
[ 7]  →t1
[ 8] fim:i←2
[ 9]  som←0
[10] t2:→(i>400)/zica
[11]  som←som+⍎n[i]
[12]  i←i+1
[13]  →t2
[14] zica:
[15]  'limite=',⍕lim
```

```
[16]  'soma dos d.=',⍕som
-------------------------------------------------------------
[ 0]  euler21a lim;i;ta;ia;soma
[ 1]  i←1
[ 2]  ta←limρ0
[ 3] t1:→(i>9999)/fim
[ 4]  ta[i]←+/¯1↓divs21 i
[ 5]  i←i+1
[ 6]  →t1
[ 7] fim:soma←0
[ 8]  i←2
[ 9] t3:→(i>9999)/mesmo
[10]  ia←ta[i]
[11]  →(ia>9999)/sss
[12]  →(ta[ia]=i)/sao
[13] sss:i←i+1
[14]  →t3
[15] sao:→(ta[i]=ta[ia])/sss
[16]  soma←soma+ta[i]+ta[ia]
[17]  i,ia
[18]  i←i+1
[19]  →t3
[20] mesmo:
[21]  'limite=',⍕lim
[22]  'soma=',⍕soma÷2
-------------------------------------------------------------
[ 0]  r←gera0;te;re;xa;aa;var
[ 1]  r←2ρ0
[ 2]  te←20 80ρ' '
[ 3]  te[⍳aa←1↑ρTF0;]←TF0←ajusta80 TF0
[ 4]  te[aa+⍳10;]←10 80↑3 0⍕var←10 10ρ?1000ρ99
[ 5]  re←euler11a var
[ 6]  te[19;]←80↑'\end{verbatim}              '
[ 7] ju:
[ 8]  r[1]←⊂te
[ 9]  r[2]←⊂re
-------------------------------------------------------------
[ 0]  r←gera1;te;re;xa;aa
[ 1]  r←2ρ0
[ 2]  te←20 80ρ' '
[ 3]  te[⍳aa←1↑ρTF1;]←TF1←ajusta80 TF1
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80ρ80↑' 250 fatores ?'
[12]  re←2162160
[13]  →ju
[14] eum:
[15]  te[aa+1;]←1 80ρ80↑' 300 fatores ?'
[16]  re←2162160
[17]  →ju
[18] edo:
[19]  te[aa+1;]←1 80ρ80↑' 350 fatores ?'
[20]  re←17907120
[21]  →ju
[22] etr:
[23]  te[aa+1;]←1 80ρ80↑' 400 fatores ?'
[24]  re←17907120
[25]  →ju
```

```
[26] equ:
[27]  te[aa+1;]←1 80ρ80↑' 450 fatores ?'
[28]  re←17907120
[29]  →ju
[30] eci:
[31]  te[aa+1;]←1 80ρ80↑' 550 fatores ?'
[32]  re←76576500
[33]  →ju
[34] ju:
[35]  r[1]←⊂te
[36]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera2;te;re;xa;ins;aa
[ 1]  r←2ρ0
[ 2]  te←20 80ρ' '
[ 3]  te[⍳aa←1↑ρTF2;]←TF2←ajusta80 TF2
[ 4]  te[aa+1;]←80↑'\begin{verbatim}'
[ 5]  te[aa+1+⍳6;]←6 80↑ins←6 70ρ1 0⍕¯1+?420ρ10
[ 6]  re←euler13a ins
[ 7]  te[aa+8;]←80↑'\end{verbatim}'
[ 8] ju:
[ 9]  r[1]←⊂((aa+8),80)↑te
[10]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera3;te;re;xa;aa
[ 1]  r←2ρ0
[ 2]  te←20 80ρ' '
[ 3]  te[⍳aa←1↑ρTF3;]←TF3←ajusta80 TF3
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80ρ80↑'$N=500000$'
[12]  re←410011
[13]  →ju
[14] eum:
[15]  te[aa+1;]←1 80ρ80↑'$N=600000$'
[16]  re←511935
[17]  →ju
[18] edo:
[19]  te[aa+1;]←1 80ρ80↑'$N=700000$'
[20]  re←626331
[21]  →ju
[22] etr:
[23]  te[aa+1;]←1 80ρ80↑'$N=800000$'
[24]  re←626331
[25]  →ju
[26] equ:
[27]  te[aa+1;]←1 80ρ80↑'$N=900000$'
[28]  re←837799
[29]  →ju
[30] eci:
[31]  te[aa+1;]←1 80ρ80↑'$N=1100000$'
[32]  re←837799
[33]  →ju
[34] ju:
[35]  r[1]←⊂te
[36]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera4;te;re;xa;aa
```

```
[ 1]  r←2⍴0
[ 2]  te←20 80⍴' '
[ 3]  te[⍳aa←1↑⍴TF4;]←TF4←ajusta80 TF4
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80⍴80↑'$16 \times 16$ ?'
[12]  re←601080390
[13]  →ju
[14] eum:
[15]  te[aa+1;]←1 80⍴80↑'$17 \times 17$ ?'
[16]  re←2333606220
[17]  →ju
[18] edo:
[19]  te[aa+1;]←1 80⍴80↑'$18 \times 18$ ?'
[20]  re←9075135300
[21]  →ju
[22] etr:
[23]  te[aa+1;]←1 80⍴80↑'$19 \times 19$ ?'
[24]  re←35345263800
[25]  →ju
[26] equ:
[27]  te[aa+1;]←1 80⍴80↑'$21 \times 21$ ?'
[28]  re←269128937220
[29]  →ju
[30] eci:
[31]  te[aa+1;]←1 80⍴80↑'$15 \times 15$ ?'
[32]  re←155117520
[33]  →ju
[34] ju:
[35]  r[1]←⊂te
[36]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera5;te;re;xa;aa
[ 1]  r←2⍴0
[ 2]  te←20 80⍴' '
[ 3]  te[⍳aa←1↑⍴TF5;]←TF5←ajusta80 TF5
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80⍴80↑'$2^{900}$ ?'
[12]  re←1198
[13]  →ju
[14] eum:
[15]  te[aa+1;]←1 80⍴80↑'$2^{800}$ ?'
[16]  re←1048
[17]  →ju
[18] edo:
[19]  te[aa+1;]←1 80⍴80↑'$2^{1100}$ ?'
[20]  re←1561
[21]  →ju
[22] etr:
[23]  te[aa+1;]←1 80⍴80↑'$2^{1200}$ ?'
[24]  re←1729
[25]  →ju
```

```
[26] equ:
[27]  te[aa+1;]←1 80ρ80↑'$2^{700}$ ?'
[28]  re←961
[29]  →ju
[30] eci:
[31]  te[aa+1;]←1 80ρ80↑'$2^{1300}$ ?'
[32]  re←1816
[33]  →ju
[34] ju:
[35]  r[1]←⊂te
[36]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera6;te;re;xa;ins;aa
[ 1]  r←2ρ0
[ 2]  te←20 80ρ' '
[ 3]  te[⍳6;]←TF6←ajusta80 TF6
[ 4]  te[6+⍳13;]←13 80↑acerta18 ins←instancia18 13
[ 5]  te[20;]←1 80ρ80↑'\end{verbatim}'
[ 6]  re←euler18a ins
[ 7] ju:
[ 8]  r[1]←⊂te
[ 9]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera7;te;re;xa;aa
[ 1]  r←2ρ0
[ 2]  te←20 80ρ' '
[ 3]  te[⍳aa←1↑ρTF7;]←TF7←ajusta80 TF7
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80ρ80↑'Dia 01/01/2600 será uma quarta, pede-se a quantidade'
[12]  te[aa+2;]←1 80ρ80↑'de domingos durante o século 27, de 01/01/2601 a 31/12/2700.'
[13]  re←173
[14]  →ju
[15] eum:
[16]  te[aa+1;]←1 80ρ80↑'Dia 01/01/2400 será um domingo, pede-se a quantidade'
[17]  te[aa+2;]←1 80ρ80↑'de domingos durante o século 25, de 01/01/2401 a 31/12/2500.'
[18]  re←172
[19]  →ju
[20] edo:
[21]  te[aa+1;]←1 80ρ80↑'Dia 01/01/2200 será uma quarta, pede-se a quantidade'
[22]  te[aa+2;]←1 80ρ80↑'de domingos durante o século 23, de 01/01/2201 a 31/12/2300.'
[23]  re←173
[24]  →ju
[25] etr:
[26]  te[aa+1;]←1 80ρ80↑'Dia 01/01/2000 foi um domingo, pede-se a quantidade'
[27]  te[aa+2;]←1 80ρ80↑'de domingos durante o século 21, de 01/01/2001 a 31/12/2100.'
[28]  re←172
[29]  →ju
[30] equ:
[31]  te[aa+1;]←1 80ρ80↑'Dia 01/01/1600 foi um domingo, pede-se a quantidade'
[32]  te[aa+2;]←1 80ρ80↑'de domingos durante o século 17, de 01/01/1601 a 31/12/1700.'
[33]  re←172
[34]  →ju
[35] eci:
[36]  te[aa+1;]←1 80ρ80↑'Dia 01/01/1800 foi uma quarta, pede-se a quantidade'
[37]  te[aa+2;]←1 80ρ80↑'de domingos durante o século 19, de 01/01/1801 a 31/12/1900.'
[38]  re←173
[39]  →ju
```

```
[40] ju:
[41]  r[1]←⊂((aa+2),80)↑te
[42]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera8;te;re;xa;aa
[ 1]  r←2⍴0
[ 2]  te←20 80⍴' '
[ 3]  te[⍳aa←1↑⍴TF8;]←TF8←ajusta80 TF8
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80⍴80↑'{ \normalsize $93!$ }'
[12]  re←513
[13]  →ju
[14] eum:
[15]  te[aa+1;]←1 80⍴80↑'{ \normalsize $94!$ }'
[16]  re←549
[17]  →ju
[18] edo:
[19]  te[aa+1;]←1 80⍴80↑'{ \normalsize $95!$ }'
[20]  re←585
[21]  →ju
[22] etr:
[23]  te[aa+1;]←1 80⍴80↑'{ \normalsize $96!$ }'
[24]  re←648
[25]  →ju
[26] equ:
[27]  te[aa+1;]←1 80⍴80↑'{ \normalsize $97!$ }'
[28]  re←648
[29]  →ju
[30] eci:
[31]  te[aa+1;]←1 80⍴80↑'{ \normalsize $98!$ }'
[32]  re←639
[33]  →ju
[34] ju:
[35]  r[1]←⊂((aa+1),80)↑te
[36]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera9;te;re;xa;aa
[ 1]  r←2⍴0
[ 2]  te←20 80⍴' '
[ 3]  te[⍳aa←1↑⍴TF9;]←TF9←ajusta80 TF9
[ 4]  xa←?4
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8] equ:
[ 9]  te[aa+1;]←1 80⍴80↑'segunda dupla (informa-se que $n<100000$).'
[10]  re←1184,1210
[11]  →ju
[12] eum:
[13]  te[aa+1;]←1 80⍴80↑'terceira dupla (informa-se que $n<100000$).'
[14]  re←2620,2924
[15]  →ju
[16] edo:
[17]  te[aa+1;]←1 80⍴80↑'quarta dupla (informa-se que $n<100000$).'
[18]  re←5020,5564
[19]  →ju
[20] etr:
```

```
[21]  te[aa+1;]←1 80⍴80↑'quinta dupla (informa-se que $n<100000$).'
[22]  re←6232,6368
[23]  →ju
[24] ju:
[25]  r[1]←⊂((aa+1),80)↑te
[26]  r[2]←⊂re
-------------------------------------------------------------
[ 0]  r←instancia18 tam;i;j
[ 1]  r←(tam,tam)⍴?(tam*2)⍴99
[ 2]  i←1
[ 3] t1:→(i>tam)/fim
[ 4]  j←1
[ 5] t2:→(j>tam)/oba
[ 6]  →(j≤i)/soma
[ 7]  r[i;j]←0
[ 8] soma:j←j+1
[ 9]  →t2
[10] oba:i←i+1
[11]  →t1
[12] fim:
-------------------------------------------------------------
[ 0]  simnao listaeu ws;a;a;aa;b;i;k;lixo;n;r
[ 1] ⍝ lista os 10 exercícios deste ws
[ 2]  k←0 80⍴' '
[ 3]  →(simnao=0)/oba
[ 4]  k←9 80⍴' '
[ 5]  k[1;]←80↑'\documentclass{article}'
[ 6]  k[2;]←80↑'\usepackage[pc850]{inputenc}'
[ 7]  k[3;]←80↑'\usepackage[table]{xcolor}'
[ 8]  k[4;]←80↑'\usepackage{graphicx}'
[ 9]  k[5;]←80↑'\usepackage[dvips]{geometry}'
[10]  k[6;]←80↑'\geometry{a4paper,left=0.7in,right=0.5in,top=0.7in,bottom=1in}'
[11]  k[7;]←80↑'\begin{document} \large \setlength{\parindent}{0pt}'
[12]  k[8;]←80↑'\section*{Algoritmos selecionados}'
[13]  k[9;]←80↑'Por P. Kantek, com auxílio do site projecteuler.net\\*'
[14] oba:n←0
[15] t1:→(n>9)/fim
[16]  b←⍎'gera','0'⍕n
[17]  i←20 80↑⊃b[1]
[18]  i←(80≠+/[2]i=' ')/[1]i
[19]  k←k,[1]i
[20]  k←k,[1]1 80⍴80↑'(Workspace = ',(8↑ws),' Função = ',(2 0⍕n+1),')\\[2cm]'
[21]  n←n+1
[22]  →t1
[23] fim:
[24]  →(simnao=0)/ufa
[25]  k←k,[1]1 80⍴80↑'\end{document}'
[26] ufa:lixo←k ⎕FM aa←'c:\apl2\leu',ws[4+⍳3],'.tex'
[27]  'gravado ',aa
-------------------------------------------------------------
[ 0]  r←mult16 b;b1;vai;i;temp
[ 1]  b1←¯400↑(400⍴'0'),b
[ 2]  r←''
[ 3]  vai←0
[ 4]  i←400
[ 5] t1:→(i<1)/fim
[ 6]  temp←vai+2×⍎b1[i]
[ 7]  →(temp>9)/vu
[ 8]  r←r,1 0⍕temp
[ 9]  vai←0
[10]  →subi
[11] vu:r←r,1 0⍕temp-10
[12]  vai←1
```

```
[13] subi:i←i-1
[14]  →t1
[15] fim:r←⊖r
------------------------------------------------------------
[ 0]  rr←a mult20 b;a1;b1;r;i;vai;temp
[ 1]  a1←¯2↑'00',a
[ 2]  b1←¯400↑(400⍴'0'),b
[ 3]  r←3 400⍴' '
[ 4]  i←400
[ 5]  vai←0
[ 6] t1:→(i<2)/fim1
[ 7]  temp←vai+(±a1[2])×±b1[i]
[ 8]  →(temp>9)/foi1
[ 9]  r[1;i]←1 0⍕temp
[10]  vai←0
[11]  i←i-1
[12]  →t1
[13] foi1:
[14]  r[1;i]←1 0⍕10|temp
[15]  vai←⌊temp÷10
[16]  i←i-1
[17]  →t1
[18] fim1:
[19]  i←400
[20]  r[2;400]←'0'
[21]  vai←0
[22] t2:→(i<2)/fim2
[23]  temp←vai+(±a1[1])×±b1[i]
[24]  →(temp>9)/foi2
[25]  r[2;i-1]←1 0⍕temp
[26]  vai←0
[27]  i←i-1
[28]  →t2
[29] foi2:
[30]  r[2;i-1]←1 0⍕10|temp
[31]  vai←⌊temp÷10
[32]  i←i-1
[33]  →t2
[34] fim2:i←400
[35]  vai←0
[36] t3:→(i<2)/ufa
[37]  temp←vai+(±r[1;i])+±r[2;i]
[38]  →(temp>9)/cri
[39]  r[3;i]←1 0⍕temp
[40]  vai←0
[41]  i←i-1
[42]  →t3
[43] cri:
[44]  r[3;i]←1 0⍕temp-10
[45]  vai←1
[46]  i←i-1
[47]  →t3
[48] ufa:rr←r[3;]
------------------------------------------------------------
[0]  r←n18 retval11a x;i
[1]  i←1
[2]  r←⍳0
[3] t1:
[4]  →(i>4)/fim
[5]  r←r,n18[x[i;1];x[i;2]]
[6]  i←i+1
[7]  →t1
[8] fim:
```

```
------------------------------------------------------------
[ 0]  opesq vivoe03a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;quais;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLe03   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAe03←ajusta80 FOLHALAe03
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAe03)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 5⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←89 80⍴' '
[16]  f←FOLHALAe03
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.01
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[88;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[89;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←quais←¯1+4?10
[35]  ⍝'zz←gera','0'⍎xx[1]
[36]  esse[7+⍳20;]←20 80↑⊃zz[1]
[37]  resp←resp,,⊃zz[2]
[38]  ⍝'zz←gera','0'⍎xx[2]
[39]  esse[27+⍳20;]←20 80↑⊃zz[1]
[40]  resp←resp,,⊃zz[2]
[41]  ⍝'zz←gera','0'⍎xx[3]
[42]  esse[47+⍳20;]←20 80↑⊃zz[1]
[43]  resp←resp,,⊃zz[2]
[44]  ⍝'zz←gera','0'⍎xx[4]
[45]  esse[67+⍳20;]←20 80↑⊃zz[1]
[46]  resp←resp,,⊃zz[2]
[47]  resu←resu,[1]1 5⍴resp
[48]  acuja←(f[;2]='#')/⍳1↑⍴f
[49]  f[acuja;⍳80]←esse[⍝,f[acuja;3 4],' ';]
[50]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[51]  ⍞←(⍎xk←xk+1),'-'
[52]  →testa
[53] fim:upag←(1 0+⍴f)⍴' '
[54]  →(1=≡n)/elafa
[55]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[56]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[57]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←7 0 25 0 16 0 16 0 16 0)⍎resu
[58]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[59]  →terminando
```

```
[60] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[61] elafa:aaa←(ylu[;⍳36],20 0⍕0 1↓resu)
[62] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[63]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[64]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[65] terminando:
[66]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[67]  relat[1↑⍴relat;;]←upag
[68]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[69] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[70]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[71]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[72]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivoe05

```
[ 0]  data brilha n;a;lixo;b;r
[ 1] ⍝ gera o formulario da sexta brilhante com o programa n deste ws
[ 2]  a←100 80⍴' '
[ 3]  a[1;]←80↑'\documentclass{article}'
[ 4]  a[2;]←80↑'\usepackage[pc850]{inputenc}'
[ 5]  a[3;]←80↑'\usepackage[table]{xcolor}'
[ 6]  a[4;]←80↑'\usepackage{graphicx}'
[ 7]  a[5;]←80↑'\usepackage[dvips]{geometry}'
[ 8]  a[6;]←80↑'\geometry{a4paper,left=0.7in,right=0.5in,top=0.7in,bottom=1in}'
[ 9]  a[7;]←80↑'\begin{document} \large \setlength{\parindent}{0pt}'
[10]  a[8;]←80↑'\section*{projeto SEXTA BRILHANTE}'
[11]  a[9;]←80↑'Um desafio para as cabeças brilhantes da UP\\[1cm]'
[12]  a[11;]←80↑'Desafio do dia ',data
[13] ⍝ a[12;]←80↑'{ \huge '
[14]  b←⍎'gera','0'⍕n
[15]  a[12+⍳20;]←20 80↑⊃b[1]
[16]  r←⍕⊃b[2]
[17]  r
[18]  a[34;]←80↑'\subsubsection*{Regras}'
[19]  a[36;]←80↑'1. Um novo desafio é proposto a cada sexta feira, sempre das 18h00'
[20]  a[37;]←80↑'às 19h00, na sala 42 do Bloco Vermelho.'
[21]  a[39;]←80↑'2. Estão convidados todos os alunos de EC e BSI da Universidade'
[22]  a[40;]←80↑'Positivo.'
[23]  a[42;]←80↑'3. A entrega do desafio é a devolução desta folha com o resultado'
[24]  a[43;]←80↑'e a identificação do autor da solução.'
[25]  a[45;]←80↑'4. Ao achar a solução, por favor mantenha-a secreta, para preservar'
[26]  a[46;]←80↑'o salutar clima de disputa do desafio.'
[27]  a[48;]←80↑'5. Como é muito difícil (impossível ?) acertar na primeira tentativa'
[28]  a[49;]←80↑'você pode apresentar informalmente sua solução e perguntar se ela'
[29]  a[50;]←80↑'está ou não correta, ANTES de entregar formalmente a resposta.'
[30]  a[52;]←80↑'6. Dúvidas ou esclarecimentos: ehamerski@gmail.com ou pkantek@up.com.br.'
[31]  a[54;]←80↑'7. A entrega deve ser feita pessoalmente aos prof. Hamerski ou P.Kantek.'
[32]  a[56;]←80↑'\vspace*{2cm}'
[33]  a[58;]←80↑'\begin{verbatim}'
[34]  a[60;]←80↑'Aluno_____________________________________________________ Data___/___/_
      __'
[35]  a[63;]←80↑'Curso, série e turno_____________________________'
[36]  a[66;]←80↑'Resposta_____________________________'
[37]  a[69;]←80↑'Assinatura do aluno_____________________'
[38]  a[70;]←80↑'\end{verbatim} \end{document}'
[39]  lixo←(70 80↑a)⎕FM'c:\apl2\brilha.tex'
[40]  lixo←⎕FM'c:\apl2\brilhar.res'
[41]  r←r,'-',,lixo
[42]  lixo←r ⎕FM'c:\apl2\brilhar.res'
[43]  'gravado c:\apl2\brilha.tex. Resposta em c:\apl2\brilhar.res'
```

```
------------------------------------------------------------
[ 0]  cavaleiroe05a n;acuja;esse;f;lixo1;quais;relat;resp;x;xk;xx;ylu;zz
[ 1]  □RL←⌊(□TS[7]+□TS[6]+□TS[5])*2.7364736473
[ 2]  FOLHALAe05←ajusta80 FOLHALAe05
[ 3]  relat←ΔFM'c:⍀apl2⍀VIVOBLO1'
[ 4]  xk←1
[ 5] testa:→(xk>n)/fim
[ 6]  esse←89 80⍴' '
[ 7]  f←FOLHALAe05
[ 8]  esse[1;⍳⍴x]←x←' ---- Cavaleiros da Tavola Redonda -- '
[ 9]  esse[3;]←80↑4 2⍕1.01
[10]  esse[88;⍳8]←'@OOOOOO@'
[11] inica:
[12]  xx←quais←¯1+4?10
[13]  ⍝'zz←gera','0'⍕xx[1]
[14]  esse[7+⍳20;]←20 80↑⊃zz[1]
[15]  resp←,⊃zz[2]
[16]  ⍝'zz←gera','0'⍕xx[2]
[17]  esse[27+⍳20;]←20 80↑⊃zz[1]
[18]  resp←resp,,⊃zz[2]
[19]  ⍝'zz←gera','0'⍕xx[3]
[20]  esse[47+⍳20;]←20 80↑⊃zz[1]
[21]  resp←resp,,⊃zz[2]
[22]  ⍝'zz←gera','0'⍕xx[4]
[23]  esse[67+⍳20;]←20 80↑⊃zz[1]
[24]  resp←resp,,⊃zz[2]
[25]  acuja←(f[;2]='#')/⍳1↑⍴f
[26]  f[acuja;⍳80]←esse[⍝,f[acuja;3 4],' ';]
[27]  □←(⍕xk←xk+1),'-'
[28]  f←(((1↑⍴relat),1↓⍴f)↑relat),[1]f
[29]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'⍀end{document}'
[30]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'%',⍕resp
[31]  lixo1←f ΔFM'c:⍀apl2⍀CAe05a',('OO'⍕xk-1),'.tex'
[32]  →testa
[33] fim:
------------------------------------------------------------
[ 0]  r←detectcicl26 n;aa;x;i;y
[ 1]  aa←1
[ 2] vorta:x←(100×aa)divisao26 n
[ 3]  →(x=0)/r0
[ 4]  i←(10+?80)+⍳5
[ 5]  y←(x[i]⍷x)/⍳⍴x
[ 6]  →(3<⍴y)/ok
[ 7]  aa←aa×10
[ 8]  →vorta
[ 9] ok:r←y[⍴y]-y[¯1+⍴y]
[10]  →0
[11] r0:r←0
------------------------------------------------------------
[ 0]  r←lim divisao26 n;x;aa
[ 1]  →((n=1)∨(n=10)∨(n=100))/acabou
[ 2]  r←'0.'
[ 3]  x←10
[ 4] t1:→(x>n)/fi
[ 5]  x←x×10
[ 6]  r←r,'0'
[ 7]  →t1
[ 8] fi:r←r,1 0⍕aa←⌊x÷n
[ 9]  →(lim<⍴r)/0
[10]  x←10×x-n×aa
[11]  →(x=0)/acabou
[12]  →t1
[13] acabou:r←0
```

```
[14]  →0
-------------------------------------------------------------
[ 0]  r←divs23 x;di;som;qua
[ 1]  di←2
[ 2]  som←1
[ 3]  qua←,1
[ 4] t0:→(di>(x*0.5))/fim
[ 5] t1:→(0=di|x)/sim
[ 6]  di←di+1
[ 7]  →t0
[ 8] sim:qua←qua,di
[ 9]  di←di+1
[10]  →t0
[11] fim:→((di-1)=x*0.5)/qp
[12]  r←¯1↓qua,⊖x÷qua
[13]  →ju
[14] qp:r←¯1↓qua,1↓⊖x÷qua
[15] ju:
-------------------------------------------------------------
[ 0]  k1←sim docf ja;i
[ 1] ⍝fgera uma matriz de caracteres com a ⎕CR da funcao
[ 2] ⍝rse 1 docf 'funcao' gera uma matriz simples so numerada
[ 3] ⍝rse docf 'funcao' gera a matriz com ∇ acima e abaixo
[ 4] ⍝da matriz com ou sem ∇
[ 5]  k1←⎕CR ja
[ 6]  k1←(((1↑⍴k1),6)⍴' '),k1
[ 7]  i←0
[ 8] testa:→(i≥1↑⍴k1)/aca
[ 9]  →(i≥10)/mai1
[10]  k1[i+1;3 4 5]←'[',(1 0⍕i),']'
[11]  →soma
[12] mai1:→(i≥100)/mai2
[13]  k1[i+1;2 3 4 5]←'[',(2 0⍕i),']'
[14]  →soma
[15] mai2:k1[i+1;1 2 3 4 5]←'[',(3 0⍕i),']'
[16] soma:→(i=i←i+1)/testa
[17] aca:
[18]  →(0≠⎕NC'sim')/0
[19]  k1←((1,1↓⍴k1)⍴1000↑'     ∇'),[1]k1
[20]  k1←k1,[1](1,1↓⍴k1)⍴1000↑'     ∇'
-------------------------------------------------------------
[ 0]  r←euler22a qual;x;alfa;tam;i;vets
[ 1]  x←⍎FM'f:\p\n\e05\nomes.txt'
[ 2]  x←,x
[ 3]  x←('"'≠x)/x
[ 4]  NO22←⊃(~x∊',')⊂x
[ 5]  NO22←(((qual-1)⍴1),0,((1↑⍴NO22)-qual)⍴1)/[1]NO22
[ 6]  NO22←NO22[⎕AV⍋NO22;]
[ 7]  alfa←'ABCDEFGHIJKLMNOPQRSTUVWXYZ'
[ 8]  tam←0
[ 9]  i←1
[10] t1:→(i>1↑⍴NO22)/fim
[11]  vets←+/alfa⍳((NO22[i;]≠' ')/NO22[i;])
[12]  tam←tam+(vets×i)
[13]  i←i+1
[14]  →t1
[15] fim:r←tam
-------------------------------------------------------------
[ 0]  r←euler23a;x;i;j;som;sebo
[ 1]  x←28123⍴0
[ 2]  i←1
[ 3] t1:→(i>28123)/fim
[ 4]  x[i]←+/divs23 i
```

```
[ 5]  i←i+1
[ 6]  →t1
[ 7] fim:i←1
[ 8] t2:→(i>28123)/mesmo
[ 9]  →(x[i]≤i)/soma
[10]  i←i+1
[11]  →t2
[12] soma:
[13]  x[i]←0
[14]  i←i+1
[15]  →t2
[16] mesmo:abu←(x≠0)/⍳28123
[17]  sebo←⍳28123
[18]  i←1
[19] t3:→(i>6965)/fim33
[20]  j←1
[21] t4:→(j>6965)/fim44
[22]  som←abu[i]+abu[j]
[23]  →(som>28123)/som66
[24]  sebo[som]←0
[25] som66:j←j+1
[26]  →t4
[27] fim44:i←i+1
[28]  →t3
[29] fim33:rrr←(sebo≠0)/sebo
------------------------------------------------------------
[ 0]  euler24a lim;qua;conta;i
[ 1]  conta←1
[ 2]  i←123456789
[ 3] teste:
[ 4]  qua←'9999999999'↑i
[ 5]  →(~'1'∈qua)/nao
[ 6]  →(~'2'∈qua)/nao
[ 7]  →(~'3'∈qua)/nao
[ 8]  →(~'4'∈qua)/nao
[ 9]  →(~'5'∈qua)/nao
[10]  →(~'6'∈qua)/nao
[11]  →(~'7'∈qua)/nao
[12]  →(~'8'∈qua)/nao
[13]  →(~'9'∈qua)/nao
[14]  →(~'0'∈qua)/nao
[15]  →sim
[16] nao:i←i+1
[17]  →teste
[18] sim:
[19]  →(0≠100000|conta)/uja
[20]  conta,i
[21] uja:
[22]  →(conta=lim)/achei
[23]  conta←conta+1
[24]  i←i+1
[25]  →teste
[26] achei:i
------------------------------------------------------------
[ 0]  euler25a lim;a;b;n;r
[ 1]  b←((999-1)⍴'0'),'1'
[ 2]  n←3
[ 3]  r←((999-1)⍴'0'),'2'
[ 4] vorta:→(r[2+1000-lim]≠'0')/fim
[ 5]  n←n+1
[ 6]  a←b
[ 7]  b←r
[ 8]  r←a soma25a b
```

```
[ 9]  →vorta
[10] fim:n
------------------------------------------------------------
[ 0]  euler26a lim;i;max;s;imax
[ 1]  i←1
[ 2]  max←-99999
[ 3] t1:→(i>lim-1)/fim
[ 4]  s←detectcicl26 i
[ 5]  →(s≤max)/soma
[ 6]  max←s
[ 7]  imax←i
[ 8] soma:i←i+1
[ 9]  →t1
[10] fim:
[11]  'max=',⍕max
[12]  'Resposta >>>>>> imax=',⍕imax
------------------------------------------------------------
[ 0]  euler27a lim;a;b;ia;ib;imax;max;n;qtp;x
[ 1]  a←-lim
[ 2]  max←-9999999
[ 3] t1:→(a>lim)/fim0
[ 4]  b←-lim
[ 5] t2:→(b>lim)/truco
[ 6] ⍝ →(~b∈PRIMO)/fui
[ 7] ⍝ →(~(a+b+1)∈PRIMO)/fui
[ 8]  n←0
[ 9]  qtp←0
[10] t3:→((n>|a)∧(n>|b))/troca
[11]  x←(n*2)+(a×n)+b
[12]  →(~x∈PRIMO)/troca
[13] sim:qtp←qtp+1
[14]  n←n+1
[15]  →t3
[16] troca:→(max>qtp)/fui
[17]  max←qtp
[18]  imax←a×b
[19]  ia←a
[20]  ib←b
[21] fui:b←b+1
[22]  →t2
[23] truco:a←a+1
[24]  →(0≠100|a)/t1
[25]  a
[26]  →t1
[27] fim0:
[28]  'max=',⍕max
[29]  'imax=',⍕imax
[30]  'a=',⍕ia
[31]  'b=',⍕ib
------------------------------------------------------------
[ 0]  r←euler28a tam;i;j;k;plan;sem;soma;x;z;zica
[ 1] ⍝ tam tem que ser impar
[ 2]  x←(tam,tam)⍴0
[ 3]  sem←2
[ 4]  plan←1
[ 5]  i←j←zica←((tam-1)÷2)+1
[ 6]  x[zica;zica]←1
[ 7] t0:
[ 8]  z←plan prox28 i,j
[ 9]  k←1
[10] t1:
[11]  →(k>1↑⍴z)/ufa
[12]  x[z[k;1];z[k;2]]←sem
```

```
[13]  sem←sem+1
[14]  →(sem>tam*2)/terminou
[15]  k←k+1
[16]  →t1
[17] ufa:i←z[k-1;1]
[18]  j←z[k-1;2]
[19]  plan←plan+1
[20]  →t0
[21] terminou:
[22]  i←1
[23]  soma←0
[24] t7:→(i>tam)/t8
[25]  soma←soma+x[i;i]
[26]  i←i+1
[27]  →t7
[28] t8:
[29]  i←1
[30]  j←tam
[31] t9:→(j<1)/ju
[32]  soma←soma+x[i;j]
[33]  i←i+1
[34]  j←j-1
[35]  →t9
[36] ju:
[37]  r←soma-1
-------------------------------------------------------------
[ 0]  euler29a lim;a;b;j;x;ct;i
[ 1]  x←(((lim-1)*2),210)⍴' '
[ 2]  a←2
[ 3]  j←1
[ 4] t1:→(a>lim)/fim
[ 5]  b←2
[ 6] t2:
[ 7]  →(b>lim)/trocaa
[ 8]  x[j;]←(⍕a)pot29⍕b
[ 9]  j←j+1
[10]  b←b+1
[11]  →t2
[12] trocaa:a←a+1
[13]  →t1
[14] fim:
[15] ⍝ x←' 0' edit x
[16]  x←x[⍋AV⍋x;]
[17]  ct←0
[18]  i←2
[19] t1a:→(i>1↑⍴x)/fima
[20]  →(x[i;]igual29 x[i-1;])/iguais
[21] diferentes:
[22]  ct←ct+1
[23]  i←i+1
[24]  →t1a
[25] iguais:i←i+1
[26]  →t1a
[27] fima:ct←ct+1
[28]  ct
-------------------------------------------------------------
[ 0]  euler30a;som;sp;a1;i;t
[ 1]  som←0
[ 2]  i←2
[ 3] t1:→(i>9999999)/fim
[ 4]  a1←⍕i
[ 5]  t←1
[ 6]  sp←0
```

```
[ 7] t2:→(t>ρa1)/t3
[ 8]  sp←sp+(⍋a1[t])*5
[ 9]  t←t+1
[10]  →t2
[11] t3:→(i=sp)/sim
[12] nao:i←i+1
[13]  →t1
[14] sim:
[15]  i
[16]  som←som+i
[17]  i←i+1
[18]  →t1
[19] fim:'som=',⍕som
------------------------------------------------------------
[ 0]  euler32a;i;quem;a1;b1;b2;c1
[ 1]  i←123456789
[ 2]  quem←⍳0
[ 3] t1:→(i>987654321)/fim
[ 4]  a1←⍎i
[ 5]  →('0'∈a1)/nao
[ 6]  →(9≠+/'123456789'∈⍎i)/nao
[ 7]  b1←1 1 1 1 0 1 1 0 1 1 1↓a1
[ 8]  b2←1 1 1 1 0 1 0 1 1 1 1↓a1
[ 9]  b1[5]←b2[5]←'='
[10]  b1[8]←b2[7]←'×'
[11]  →(1=⍋b1)/sim
[12]  →(1=⍋b2)/sim
[13] nao:i←i+1
[14]  →t1
[15] sim:
[16]  →(9≠+/'123456789'∈⍎b1)/nao
[17]  →(9≠+/'123456789'∈⍎b2)/nao
[18]  →((c1←⍋4↑b1)∈quem)/nao
[19]  b1
[20]  b2
[21]  quem←quem,c1
[22]  →nao
[23] fim:+/quem
------------------------------------------------------------
[ 0]  r←gera0;te;re;xa;aa
[ 1]  r←2ρ0
[ 2]  te←20 80ρ' '
[ 3]  te[⍳aa←1↑ρTF0;]←TF0←ajusta80 TF0
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80ρ80↑'1000.'
[12]  re←870882877
[13]  →ju
[14] eum:
[15]  te[aa+1;]←1 80ρ80↑'1500.'
[16]  re←870783401
[17]  →ju
[18] edo:
[19]  te[aa+1;]←1 80ρ80↑' 2000.'
[20]  re←870845017
[21]  →ju
[22] etr:
[23]  te[aa+1;]←1 80ρ80↑' 2500.'
```

```
[24]  re←870874499
[25]  →ju
[26] equ:
[27]  te[aa+1;]←1 80ρ80↑'3000.'
[28]  re←870871155
[29]  →ju
[30] eci:
[31]  te[aa+1;]←1 80ρ80↑'3500.'
[32]  re←870887614
[33]  →ju
[34] ju:
[35]  r[1]←⊂te
[36]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera1;te;re;xa;aa
[ 1]  r←2ρ0
[ 2]  te←20 80ρ' '
[ 3]  te[⍳aa←1↑ρTF1;]←TF1←ajusta80 TF1
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80ρ80↑'quantos sto os naturais que nto podem'
[12]  te[aa+2;]←1 80ρ80↑'ser escritos como a soma de 2 abundantes ?'
[13]  re←1456
[14]  →ju
[15] eum:
[16]  te[aa+1;]←1 80ρ80↑'qual o maior natural que nto pode ser escrito'
[17]  te[aa+2;]←1 80ρ80↑'como a soma de 2 abundantes ?'
[18]  re←20161
[19]  →ju
[20] edo:
[21]  te[aa+1;]←1 80ρ80↑'qual o primeiro natural $> 10000$ que nto pode '
[22]  te[aa+2;]←1 80ρ80↑'ser escrito como a soma de 2 abundantes ?'
[23]  re←10331
[24]  →ju
[25] etr:
[26]  te[aa+1;]←1 80ρ80↑'qual o primeiro natural $> 20000$ que nto pode '
[27]  te[aa+2;]←1 80ρ80↑'ser escrito como a soma de 2 abundantes ?'
[28]  re←20161
[29]  →ju
[30] equ:
[31]  te[aa+1;]←1 80ρ80↑'qual o primeiro natural $> 15000$ que nto pode '
[32]  te[aa+2;]←1 80ρ80↑'ser escrito como a soma de 2 abundantes ?'
[33]  re←15371
[34]  →ju
[35] eci:
[36]  te[aa+1;]←1 80ρ80↑'qual o primeiro natural $> 5000$ que nto pode '
[37]  te[aa+2;]←1 80ρ80↑'ser escrito como a soma de 2 abundantes ?'
[38]  re←5003
[39]  →ju
[40] ju:
[41]  r[1]←⊂te
[42]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera2;te;re;xa;aa
[ 1]  r←2ρ0
[ 2]  te←20 80ρ' '
[ 3]  te[⍳aa←1↑ρTF2;]←TF2←ajusta80 TF2
[ 4]  xa←?6
```

```
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80⍴80↑'$400000^a$ permutaçto lexicográfica.'
[12]  re←1094637582
[13]  →ju
[14] eum:
[15]  te[aa+1;]←1 80⍴80↑'$500000^a$ permutaçto lexicográfica.'
[16]  re←1452683097
[17]  →ju
[18] edo:
[19]  te[aa+1;]←1 80⍴80↑'$600000^a$ permutaçto lexicográfica.'
[20]  re←1690387542
[21]  →ju
[22] etr:
[23]  te[aa+1;]←1 80⍴80↑'$700000^a$ permutaçto lexicográfica.'
[24]  re←1938246570
[25]  →ju
[26] equ:
[27]  te[aa+1;]←1 80⍴80↑'$800000^a$ permutaçto lexicográfica.'
[28]  re←2187064395
[29]  →ju
[30] eci:
[31]  te[aa+1;]←1 80⍴80↑'$900000^a$ permutaçto lexicográfica.'
[32]  re←2536987410
[33]  →ju
[34] ju:
[35]  r[1]←⊂te
[36]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera3;te;re;xa;aa
[ 1]  r←2⍴0
[ 2]  te←20 80⍴' '
[ 3]  te[⍳aa←1↑⍴TF3;]←TF3←ajusta80 TF3
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80⍴80↑'900 dígitos ?'
[12]  re←4304
[13]  →ju
[14] eum:
[15]  te[aa+1;]←1 80⍴80↑'800 dígitos ?'
[16]  re←3825
[17]  →ju
[18] edo:
[19]  te[aa+1;]←1 80⍴80↑'700 dígitos ?'
[20]  re←3347
[21]  →ju
[22] etr:
[23]  te[aa+1;]←1 80⍴80↑'600 dígitos ?'
[24]  re←2868
[25]  →ju
[26] equ:
[27]  te[aa+1;]←1 80⍴80↑'500 dígitos ?'
[28]  re←2390
[29]  →ju
```

```
[30] eci:
[31]  te[aa+1;]←1 80ρ80↑'400 dígitos ?'
[32]  re←1911
[33]  →ju
[34] ju:
[35]  r[1]←⊂te
[36]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera4;te;re;xa;aa
[ 1]  r←2ρ0
[ 2]  te←20 80ρ' '
[ 3]  te[⍳aa←1↑ρTF4;]←TF4←ajusta80 TF4
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80ρ80↑'$d<900$.'
[12]  re←887
[13]  →ju
[14] eum:
[15]  te[aa+1;]←1 80ρ80↑'$d<800$.'
[16]  re←743
[17]  →ju
[18] edo:
[19]  te[aa+1;]←1 80ρ80↑'$d<700$.'
[20]  re←659
[21]  →ju
[22] etr:
[23]  te[aa+1;]←1 80ρ80↑'$d<600$.'
[24]  re←593
[25]  →ju
[26] equ:
[27]  te[aa+1;]←1 80ρ80↑'$d<500$.'
[28]  re←499
[29]  →ju
[30] eci:
[31]  te[aa+1;]←1 80ρ80↑'$d<950$.'
[32]  re←941
[33]  →ju
[34] ju:
[35]  r[1]←⊂te
[36]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera5;te;re;xa;aa
[ 1]  r←2ρ0
[ 2]  te←20 80ρ' '
[ 3]  te[⍳aa←1↑ρTF5;]←TF5←ajusta80 TF5
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80ρ80↑'900$.'
[12]  re←-48621
[13]  →ju
[14] eum:
[15]  te[aa+1;]←1 80ρ80↑'800$.'
[16]  re←-43835
```

```
[17]  →ju
[18] edo:
[19]  te[aa+1;]←1 80⍴80↑'700$.'
[20]  re←-35241
[21]  →ju
[22] etr:
[23]  te[aa+1;]←1 80⍴80↑'600$.'
[24]  re←-27871
[25]  →ju
[26] equ:
[27]  te[aa+1;]←1 80⍴80↑'500$.'
[28]  re←-18901
[29]  →ju
[30] eci:
[31]  te[aa+1;]←1 80⍴80↑'400$.'
[32]  re←-14171
[33]  →ju
[34] ju:
[35]  r[1]←⊂te
[36]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera6;te;re;xa;aa
[ 1]  r←2⍴0
[ 2]  te←20 80⍴' '
[ 3]  te[⍳aa←1↑⍴TF6;]←TF6←ajusta80 TF6
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80⍴80↑'dimensÃes de $981 ↑times 981$ ?'
[12]  re←629866581
[13]  →ju
[14] eum:
[15]  te[aa+1;]←1 80⍴80↑'dimensÃes de $961 ↑times 961$ ?'
[16]  re←592132161
[17]  →ju
[18] edo:
[19]  te[aa+1;]←1 80⍴80↑'dimensÃes de $941 ↑times 941$ ?'
[20]  re←555935741
[21]  →ju
[22] etr:
[23]  te[aa+1;]←1 80⍴80↑'dimensÃes de $921 ↑times 921$ ?'
[24]  re←521245321
[25]  →ju
[26] equ:
[27]  te[aa+1;]←1 80⍴80↑'dimensÃes de $901 ↑times 901$ ?'
[28]  re←488028901
[29]  →ju
[30] eci:
[31]  te[aa+1;]←1 80⍴80↑'dimensÃes de $881 ↑times 881$ ?'
[32]  re←456254481
[33]  →ju
[34] ju:
[35]  r[1]←⊂te
[36]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera7;te;re;xa;aa
[ 1]  r←2⍴0
[ 2]  te←20 80⍴' '
[ 3]  te[⍳aa←1↑⍴TF7;]←TF7←ajusta80 TF7
```

```
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80ρ80↑'$2 ⍀le a ⍀le 50 $ e $2 ⍀le b ⍀le 50 $ ?'
[12]  re←2184
[13]  →ju
[14] eum:
[15]  te[aa+1;]←1 80ρ80↑'$2 ⍀le a ⍀le 55 $ e $2 ⍀le b ⍀le 55 $ ?'
[16]  re←2677
[17]  →ju
[18] edo:
[19]  te[aa+1;]←1 80ρ80↑'$2 ⍀le a ⍀le 60 $ e $2 ⍀le b ⍀le 60 $ ?'
[20]  re←3216
[21]  →ju
[22] etr:
[23]  te[aa+1;]←1 80ρ80↑'$2 ⍀le a ⍀le 65 $ e $2 ⍀le b ⍀le 65 $ ?'
[24]  re←3771
[25]  →ju
[26] equ:
[27]  te[aa+1;]←1 80ρ80↑'$2 ⍀le a ⍀le 70 $ e $2 ⍀le b ⍀le 70 $ ?'
[28]  re←4406
[29]  →ju
[30] eci:
[31]  te[aa+1;]←1 80ρ80↑'$2 ⍀le a ⍀le 75 $ e $2 ⍀le b ⍀le 75 $ ?'
[32]  re←5098
[33]  →ju
[34] ju:
[35]  r[1]←⊂((aa+2),80)↑te
[36]  r[2]←⊂re
-------------------------------------------------------------
[ 0]  r←gera8;te;re;xa;aa
[ 1]  r←2ρ0
[ 2]  te←20 80ρ' '
[ 3]  te[⍳aa←1↑ρTF8;]←TF8←ajusta80 TF8
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80ρ80↑'o primeiro e o sexto números deste tipo.'
[12]  re←194979+4150
[13]  →ju
[14] eum:
[15]  te[aa+1;]←1 80ρ80↑'o quinto e o sexto números deste tipo.'
[16]  re←194979+93084
[17]  →ju
[18] edo:
[19]  te[aa+1;]←1 80ρ80↑'o quarto e o quinto números deste tipo.'
[20]  re←93084+92727
[21]  →ju
[22] etr:
[23]  te[aa+1;]←1 80ρ80↑'o quarto e o sexto números deste tipo.'
[24]  re←194979+92727
[25]  →ju
[26] equ:
[27]  te[aa+1;]←1 80ρ80↑'o terceiro e o quarto números deste tipo.'
[28]  re←54748+92727
```

```
[29]  →ju
[30] eci:
[31]  te[aa+1;]←1 80⍴80↑'o segundo e o quinto números deste tipo.'
[32]  re←4151+93084
[33]  →ju
[34] ju:
[35]  r[1]←⊂((aa+1),80)↑te
[36]  r[2]←⊂re
-------------------------------------------------------------
[ 0]  r←gera9;te;re;xa;aa
[ 1]  r←2⍴0
[ 2]  te←20 80⍴' '
[ 3]  te[⍳aa←1↑⍴TF9;]←TF9←ajusta80 TF9
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80⍴80↑'primeiro e o último produtos.'
[12]  re←4396+7852
[13]  →ju
[14] eum:
[15]  te[aa+1;]←1 80⍴80↑'terceiro e o quarto produtos.'
[16]  re←5796+6952
[17]  →ju
[18] edo:
[19]  te[aa+1;]←1 80⍴80↑'segundo e o sexto produtos.'
[20]  re←5346+7632
[21]  →ju
[22] etr:
[23]  te[aa+1;]←1 80⍴80↑'segundo e o quarto produtos.'
[24]  re←5346+6952
[25]  →ju
[26] equ:
[27]  te[aa+1;]←1 80⍴80↑'primeiro e o sexto produtos.'
[28]  re←4396+7632
[29]  →ju
[30] eci:
[31]  te[aa+1;]←1 80⍴80↑'quarto e o último produtos.'
[32]  re←6952+7852
[33]  →ju
[34] ju:
[35]  r[1]←⊂((aa+1),80)↑te
[36]  r[2]←⊂re
-------------------------------------------------------------
[0]  r←a igual29 b;i
[1]  i←⍴,a
[2]  r←0
[3] t1:→(i<3)/fim
[4]  →(a[i]=b[i])/sim
[5] nao:→0
[6] sim:i←i-1
[7]  →t1
[8] fim:r←1
-------------------------------------------------------------
[ 0]  simnao listaeu ws;a;a;aa;b;i;k;lixo;n;r
[ 1] ⍝ lista os 10 exercícios deste ws
[ 2]  k←0 80⍴' '
[ 3]  →(simnao=0)/oba
[ 4]  k←9 80⍴' '
[ 5]  k[1;]←80↑'\documentclass{article}'
```

```
[ 6]  k[2;]←80↑'\usepackage[pc850]{inputenc}'
[ 7]  k[3;]←80↑'\usepackage[table]{xcolor}'
[ 8]  k[4;]←80↑'\usepackage{graphicx}'
[ 9]  k[5;]←80↑'\usepackage[dvips]{geometry}'
[10]  k[6;]←80↑'\geometry{a4paper,left=0.7in,right=0.5in,top=0.7in,bottom=1in}'
[11]  k[7;]←80↑'\begin{document} \large \setlength{\parindent}{0pt}'
[12]  k[8;]←80↑'\section*{Algoritmos selecionados}'
[13]  k[9;]←80↑'Por P. Kantek, com auxílio do site projecteuler.net\\*'
[14] oba:n←0
[15] t1:→(n>9)/fim
[16]  b←⍕'gera','0'⍕n
[17]  i←20 80↑⍎b[1]
[18]  i←(80≠+/[2]i=' ')/[1]i
[19]  k←k,[1]i
[20]  k←k,[1]1 80⍴80↑'(Workspace = ',(8↑ws),' Função = ',(2 0⍕n+1),')\\[2cm]'
[21]  n←n+1
[22]  →t1
[23] fim:
[24]  →(simnao=0)/ufa
[25]  k←k,[1]1 80⍴80↑'\end{document}'
[26] ufa:lixo←k ⎕FM aa←'c:\apl2\leu',ws[4+⍳3],'.tex'
[27]  'gravado ',aa
-------------------------------------------------------------
[ 0]  rr←a mult29 b;a1;b1;r;i;vai;temp
[ 1]  →(3=+/'100'=3↑a)/cem
[ 2]  a1←¯2↑'00',a
[ 3]  b1←¯210↑(210⍴'0'),b
[ 4]  r←3 210⍴' '
[ 5]  i←210
[ 6]  vai←0
[ 7] t1:→(i<2)/fim1
[ 8]  temp←vai+(⍎a1[2])×⍎b1[i]
[ 9]  →(temp>9)/foi1
[10]  r[1;i]←1 0⍕temp
[11]  vai←0
[12]  i←i-1
[13]  →t1
[14] foi1:
[15]  r[1;i]←1 0⍕10|temp
[16]  vai←⌊temp÷10
[17]  i←i-1
[18]  →t1
[19] fim1:
[20]  i←210
[21]  r[2;210]←'0'
[22]  vai←0
[23] t2:→(i<2)/fim2
[24]  temp←vai+(⍎a1[1])×⍎b1[i]
[25]  →(temp>9)/foi2
[26]  r[2;i-1]←1 0⍕temp
[27]  vai←0
[28]  i←i-1
[29]  →t2
[30] foi2:
[31]  r[2;i-1]←1 0⍕10|temp
[32]  vai←⌊temp÷10
[33]  i←i-1
[34]  →t2
[35] fim2:i←210
[36]  vai←0
[37] t3:→(i<2)/ufa
[38]  temp←vai+(⍎r[1;i])+⍎r[2;i]
[39]  →(temp>9)/cri
```

```
[40]  r[3;i]←1 0⍕temp
[41]  vai←0
[42]  i←i-1
[43]  →t3
[44] cri:
[45]  r[3;i]←1 0⍕temp-10
[46]  vai←1
[47]  i←i-1
[48]  →t3
[49] ufa:rr←r[3;]
[50]  →0
[51] cem:
[52]  rr←(¯208↑(210⍴'0'),b),'00'
-------------------------------------------------------------
[0]  r←a pot29 b;ba
[1]  ba←⍎b
[2]  a←⍕a
[3]  r←'1'
[4] t1:→(ba=0)/fim
[5]  r←a mult29 r
[6]  ba←ba-1
[7]  →t1
[8] fim:
-------------------------------------------------------------
[ 0]  r←n prox28 atua;i
[ 1]  r←(0,2)⍴0
[ 2]  →(0=2|n)/par
[ 3] impar:
[ 4]  i←1
[ 5] t1:→(i>n)/fim1
[ 6]  atua←atua+0 1
[ 7]  r←r,[1]atua
[ 8]  i←i+1
[ 9]  →t1
[10] fim1:
[11]  i←1
[12] t2:→(i>n)/fim2
[13]  atua←atua+1 0
[14]  r←r,[1]atua
[15]  i←i+1
[16]  →t2
[17] par:
[18]  i←1
[19] t3:→(i>n)/fim3
[20]  atua←atua+0 ¯1
[21]  r←r,[1]atua
[22]  i←i+1
[23]  →t3
[24] fim3:
[25]  i←1
[26] t4:→(i>n)/fim2
[27]  atua←atua+¯1 0
[28]  r←r,[1]atua
[29]  i←i+1
[30]  →t4
[31] fim2:
-------------------------------------------------------------
[ 0]  r←a soma25a b;a1;b1;temp;vai;i
[ 1]  a1←¯1000↑(1000⍴'0'),a
[ 2]  b1←¯1000↑(1000⍴'0'),b
[ 3]  r←1001⍴'0'
[ 4]  vai←0
[ 5]  i←1000
```

```
[ 6] vorta:→(i<1)/fim
[ 7]  temp←vai+(±a1[i])+±b1[i]
[ 8]  →(temp>9)/foi
[ 9]  r[i+1]←1 0⍕temp
[10]  vai←0
[11]  →soma
[12] foi:r[i+1]←1 0⍕temp-10
[13]  vai←1
[14] soma:i←i-1
[15]  →vorta
[16] fim:→(vai=0)/0
[17]  r[1]←'1'
-------------------------------------------------------------
[ 0]  opesq vivoe05a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;quais;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLe05   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAe05←ajusta80 FOLHALAe05
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAe05)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 5⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←89 80⍴' '
[16]  f←FOLHALAe05
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[88;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[89;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←quais←¯1+4?10
[35]  ±'zz←gera','0'⍕xx[1]
[36]  esse[7+⍳20;]←20 80↑⊃zz[1]
[37]  resp←resp,,⊃zz[2]
[38]  ±'zz←gera','0'⍕xx[2]
[39]  esse[27+⍳20;]←20 80↑⊃zz[1]
[40]  resp←resp,,⊃zz[2]
[41]  ±'zz←gera','0'⍕xx[3]
[42]  esse[47+⍳20;]←20 80↑⊃zz[1]
[43]  resp←resp,,⊃zz[2]
[44]  ±'zz←gera','0'⍕xx[4]
[45]  esse[67+⍳20;]←20 80↑⊃zz[1]
[46]  resp←resp,,⊃zz[2]
[47]  resu←resu,[1]1 5⍴resp
```

```
[48]  acuja←(f[;2]='#')/⍳1↑⍴f
[49]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[50]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[51]  ⎕←(⍕xk←xk+1),'-'
[52]  →testa
[53] fim:upag←(1 0+⍴f)⍴' '
[54]  →(1=≡n)/elafa
[55]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[56]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[57]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯'-'edit(lixo1←7 0 25 0 16 0 16 0 16 0)⍕resu
[58]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[59]  →terminando
[60] AAAAAAAAAAA↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[61] elafa:aaa←(ylu[;⍳36],'¯'-'edit 20 0⍕0 1↓resu)
[62] AAAAAAAAAAA↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[63]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[64]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[65] terminando:
[66]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[67]  relat[1↑⍴relat;;]←upag
[68]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[69] A se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[70]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[71]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[72]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivoe07

```
[0]  r←H45 i
[1]  r←i×(2×i)-1
-------------------------------------------------------------
[0]  r←P45 i
[1]  r←(i×(3×i)-1)÷2
-------------------------------------------------------------
[0]  r←T45 i
[1]  r←(i×i+1)÷2
-------------------------------------------------------------
[ 0]  data brilha n;a;lixo;b;r
[ 1] A gera o formulario da sexta brilhante com o programa n deste ws
[ 2]  a←100 80⍴' '
[ 3]  a[1;]←80↑'\documentclass{article}'
[ 4]  a[2;]←80↑'\usepackage[pc850]{inputenc}'
[ 5]  a[3;]←80↑'\usepackage[table]{xcolor}'
[ 6]  a[4;]←80↑'\usepackage{graphicx}'
[ 7]  a[5;]←80↑'\usepackage[dvips]{geometry}'
[ 8]  a[6;]←80↑'\geometry{a4paper,left=0.7in,right=0.5in,top=0.7in,bottom=1in}'
[ 9]  a[7;]←80↑'\begin{document} \large \setlength{\parindent}{0pt}'
[10]  a[8;]←80↑'\section*{projeto SEXTA BRILHANTE}'
[11]  a[9;]←80↑'Um desafio para as cabeças brilhantes da UP\\[1cm]'
[12]  a[11;]←80↑'Desafio do dia ',data
[13] A a[12;]←80↑'{ \huge '
[14]  b←⍋'gera','0'⍕n
[15]  a[12+⍳20;]←20 80↑⊃b[1]
[16]  r←⍕⊃b[2]
[17]  r
[18]  a[34;]←80↑'\subsubsection*{Regras}'
[19]  a[36;]←80↑'1. Um novo desafio é proposto a cada sexta feira, sempre das 18h00'
[20]  a[37;]←80↑'às 19h00, na sala 42 do Bloco Vermelho.'
[21]  a[39;]←80↑'2. Estto convidados todos os alunos de EC e BSI da Universidade'
[22]  a[40;]←80↑'Positivo.'
[23]  a[42;]←80↑'3. A entrega do desafio é a devoluçto desta folha com o resultado'
```

```
[24]  a[43;]←80↑'e a identificaçto do autor da soluçto.'
[25]  a[45;]←80↑'4. Ao achar a soluçto, por favor mantenha-a secreta, para preservar'
[26]  a[46;]←80↑'o salutar clima de disputa do desafio.'
[27]  a[48;]←80↑'5. Como é muito difícil (impossível ?) acertar na primeira tentativa'
[28]  a[49;]←80↑'você pode apresentar informalmente sua soluçto e perguntar se ela'
[29]  a[50;]←80↑'está ou nto correta, ANTES de entregar formalmente a resposta.'
[30]  a[52;]←80↑'6. Dúvidas ou esclarecimentos: ehamerski@gmail.com ou pkantek@up.com.br.'
[31]  a[54;]←80↑'7. A entrega deve ser feita pessoalmente aos prof. Hamerski ou P.Kantek.'
[32]  a[56;]←80↑'\vspace*{2cm}'
[33]  a[58;]←80↑'\begin{verbatim}'
[34]  a[60;]←80↑'Aluno_____________________________________________________ Data___/___/_
      __'
[35]  a[63;]←80↑'Curso, série e turno_____________________________'
[36]  a[66;]←80↑'Resposta_____________________'
[37]  a[69;]←80↑'Assinatura do aluno_____________________'
[38]  a[70;]←80↑'\end{verbatim} \end{document}'
[39]  lixo←(70 80↑a)ΔFM'c:\apl2\brilha.tex'
[40]  lixo←ΔFM'c:\apl2\brilhar.res'
[41]  r←r,'-',,lixo
[42]  lixo←r ΔFM'c:\apl2\brilhar.res'
[43]  'gravado c:\apl2\brilha.tex. Resposta em c:\apl2\brilhar.res'
-------------------------------------------------------------
[ 0]  cavaleiroe07a n;aaa;acuja;esse;f;lixo1;quais;relat;resp;x;xk;xx;ylu;zz
[ 1]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 2]  FOLHALAe07←ajusta80 FOLHALAe07
[ 3]  relat←ΔFM'c:\apl2\VIVOBLO1'
[ 4]  xk←1
[ 5] testa:→(xk>n)/fim
[ 6]  esse←89 80⍴' '
[ 7]  f←FOLHALAe07
[ 8]  esse[1;⍳⍴x]←x←' ---- Cavaleiros da Tavola Redonda --- '
[ 9]  esse[3;]←80↑4 2⍕1.01
[10]  esse[88;⍳8]←'@000000@'
[11] inica:
[12]  xx←quais←¯1+4?10
[13]  ⍎'zz←gera','0'⍕xx[1]
[14]  esse[7+⍳20;]←20 80↑⊃zz[1]
[15]  resp←,⊃zz[2]
[16]  ⍎'zz←gera','0'⍕xx[2]
[17]  esse[27+⍳20;]←20 80↑⊃zz[1]
[18]  resp←resp,,⊃zz[2]
[19]  ⍎'zz←gera','0'⍕xx[3]
[20]  esse[47+⍳20;]←20 80↑⊃zz[1]
[21]  resp←resp,,⊃zz[2]
[22]  ⍎'zz←gera','0'⍕xx[4]
[23]  esse[67+⍳20;]←20 80↑⊃zz[1]
[24]  resp←resp,,⊃zz[2]
[25]  acuja←(f[;2]='#')/⍳1↑⍴f
[26]  f[acuja;⍳80]←esse[⍎,f[acuja;3 4],' ';]
[27]  ⍞←(⍕xk←xk+1),'-'
[28]  f←(((1↑⍴relat),1↓⍴f)↑relat),[1]f
[29]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'\end{document}'
[30]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'%',⍕resp
[31]  lixo1←f ΔFM'c:\apl2\CAe07a',('00'⍕xk-1),'.tex'
[32]  →testa
[33] fim:
-------------------------------------------------------------
[ 0]  k1←sim docf ja;i
[ 1] ⍝fgera uma matriz de caracteres com a ⎕CR da funcao
[ 2] ⍝rse 1 docf 'funcao' gera uma matriz simples so numerada
[ 3] ⍝rse docf 'funcao' gera a matriz com ∇ acima e abaixo
[ 4] ⍝da matriz com ou sem ∇
[ 5]  k1←⎕CR ja
```

```
[ 6]  k1←(((1↑ρk1),6)ρ' '),k1
[ 7]  i←0
[ 8] testa:→(i≥1↑ρk1)/aca
[ 9]  →(i≥10)/mai1
[10]  k1[i+1;3 4 5]←'[',(1 0⍕i),']'
[11]  →soma
[12] mai1:→(i≥100)/mai2
[13]  k1[i+1;2 3 4 5]←'[',(2 0⍕i),']'
[14]  →soma
[15] mai2:k1[i+1;1 2 3 4 5]←'[',(3 0⍕i),']'
[16] soma:→(i=i←i+1)/testa
[17] aca:
[18]  →(0≠⎕NC'sim')/0
[19]  k1←((1,1↓ρk1)ρ1000↑'     ∇'),[1]k1
[20]  k1←k1,[1](1,1↓ρk1)ρ1000↑'     ∇'
------------------------------------------------------------
[ 0]  r←eprimo x;y;d
[ 1]  y←⌈x*0.5
[ 2]  d←2
[ 3]  r←1
[ 4] t1:→(d>y)/aca
[ 5]  →(0=d|x)/naoe
[ 6]  d←d+1
[ 7]  →t1
[ 8] aca:→0
[ 9] naoe:r←0
[10]  →0
------------------------------------------------------------
[ 0]  euler33a;n;d;f;i;nx;dx
[ 1]  n←10
[ 2] t1:→(n>99)/fim
[ 3]  d←10
[ 4] t2:→(d>99)/zica
[ 5]  →(n>d)/ufa
[ 6]  f←n÷d
[ 7]  i←1
[ 8] loop:→(i>9)/ufa
[ 9]  nx←i retirar33 n
[10]  dx←i retirar33 d
[11]  →((dx=0)∨(nx=0))/inca
[12]  →((n=nx)∧(d=dx))/inca
[13]  →(f=nx÷dx)/sim
[14] inca:i←i+1
[15]  →loop
[16] ufa:d←d+1
[17]  →t2
[18] zica:n←n+1
[19]  →t1
[20] fim:
[21]  →0
[22] sim:
[23]  n,d,i,nx,dx
[24]  i←i+1
[25]  →loop
------------------------------------------------------------
[ 0]  euler34;i;s;a1;v
[ 1]  i←3
[ 2]  s←0
[ 3] t1:→(i>999999)/fim
[ 4]  a1←⍕i
[ 5]  v←⍎((2×ρa1)ρ1 0)⍀a1
[ 6]  →(i=+/FAT34[v+1])/sim
[ 7] nao:i←i+1
```

```
[ 8]  →t1
[ 9] sim:
[10]  i
[11]  s←s+i
[12]  i←i+1
[13]  →t1
[14] fim:s
-------------------------------------------------------------
[ 0]  euler35a;p;i;t;b;j;soma
[ 1]  p←(PRIMO<1000000)/PRIMO
[ 2]  soma←4
[ 3]  p←4↓p
[ 4]  i←1
[ 5] t1:→(i>ρp)/fim
[ 6] sim:t←ρb←⍎p[i]
[ 7]  j←1
[ 8] t2:→(j≥t)/aca
[ 9]  →((⍪jθb)∈p)/sm
[10]  →nao
[11] sm:j←j+1
[12]  →t2
[13] aca:soma←soma+1
[14]  'p=',⍎p[i]
[15]  i←i+1
[16]  →t1
[17] nao:
[18]  i←i+1
[19]  →(0≠10000|i)/t1
[20]  i
[21]  →t1
[22] fim:soma
-------------------------------------------------------------
[ 0]  euler36a b1;x;som;xa;xb
[ 1]  x←1
[ 2]  som←0
[ 3] t1:
[ 4]  →(0≠100000|x)/ufa
[ 5]  x
[ 6] ufa:
[ 7]  →(x≥1000000)/fim
[ 8]  →(∧/(xa)=(θxa←⍎x))/pald
[ 9]  x←x+1
[10]  →t1
[11] pald:xb←((⌊1+b1⊛x)ρb1)⊤x
[12]  →(∧/xb=θxb)/mesmo
[13]  x←x+1
[14]  →t1
[15] mesmo:som←som+x
[16]  x,xb
[17]  x←x+1
[18]  →t1
[19] fim:som
-------------------------------------------------------------
[ 0]  euler37a;qt;i;cara;tam;carac;j;som
[ 1]  qt←0
[ 2]  som←0
[ 3]  i←5
[ 4] t1:→(qt≥11)/fim
[ 5]  cara←PRIMO[i]
[ 6]  tam←ρcarac←⍎cara
[ 7]  j←1
[ 8] t2:→(j≥tam)/ufa
[ 9]  →(((⍪j↓carac)∈PRIMO)∧((⍪(-j)↓carac)∈PRIMO))/sub
```

```
[10]  i←i+1
[11]  →t1
[12] sub:j←j+1
[13]  →t2
[14] ufa:
[15]  PRIMO[i]
[16]  som←som+PRIMO[i]
[17]  qt←qt+1
[18]  i←i+1
[19]  →t1
[20] fim:som
------------------------------------------------------------
[ 0]  euler40a;i;x
[ 1]  x←''
[ 2]  i←1
[ 3] t1:→(2000000<⍴x)/fim
[ 4]  x←x,⍕i
[ 5]  i←i+1
[ 6]  →t1
[ 7] fim:
[ 8]  '1,10,100,1000,10000,100000,1400000'
[ 9]  x[1],x[10],x[100],x[1000],x[10000],x[100000],x[1400000]
[10]  ×/⍎x[1],' ',x[10],' ',x[100],' ',x[1000],' ',x[10000],' ',x[100000],' ',x[1400000]
[11]  '1,10,100,1000,10000,100000,1500000'
[12]  x[1],x[10],x[100],x[1000],x[10000],x[100000],x[1500000]
[13]  ×/⍎x[1],' ',x[10],' ',x[100],' ',x[1000],' ',x[10000],' ',x[100000],' ',x[1500000]
[14]  '1,10,100,1000,10000,100000,1600000'
[15]  x[1],x[10],x[100],x[1000],x[10000],x[100000],x[1600000]
[16]  ×/⍎x[1],' ',x[10],' ',x[100],' ',x[1000],' ',x[10000],' ',x[100000],' ',x[1600000]
[17]  '1,10,100,1000,10000,100000,1700000'
[18]  x[1],x[10],x[100],x[1000],x[10000],x[100000],x[1700000]
[19]  ×/⍎x[1],' ',x[10],' ',x[100],' ',x[1000],' ',x[10000],' ',x[100000],' ',x[1700000]
[20]  '1,10,100,1000,10000,100000,1800000'
[21]  x[1],x[10],x[100],x[1000],x[10000],x[100000],x[1800000]
[22]  ×/⍎x[1],' ',x[10],' ',x[100],' ',x[1000],' ',x[10000],' ',x[100000],' ',x[1800000]
[23]  '1,10,100,1000,10000,100000,1900000'
[24]  x[1],x[10],x[100],x[1000],x[10000],x[100000],x[1900000]
[25]  ×/⍎x[1],' ',x[10],' ',x[100],' ',x[1000],' ',x[10000],' ',x[100000],' ',x[1900000]
------------------------------------------------------------
[ 0]  euler41a;x;a1;u;q
[ 1] ⍝ note que nao pode ser n=9, ja que somando os digitos de tal numero
[ 2] ⍝ obtem-se 45, logo o cara e divisivel por 4.
[ 3] ⍝ idem para n=8.
[ 4] ⍝ Assim, comeca-se com o maior pandigital n=1..7 que e este aqui:
[ 5]  x←7654321
[ 6]  q←0
[ 7] t1:
[ 8]  →(q>6)/0
[ 9]  →(x<1)/fim
[10]  a1←⍕x
[11]  u←¯1↑a1
[12]  →((u='1')∨(u='3')∨(u='7'))/continua1
[13]  x←x-1
[14]  →t1
[15] continua1:
[16]  →(('1'∈a1)∧('2'∈a1)∧('3'∈a1)∧('4'∈a1)∧('5'∈a1)∧('6'∈a1)∧('7'∈a1))/continua2
[17]  x←x-1
[18]  →t1
[19] continua2:
[20]  →(eprimo x)/achei
[21]  x←x-1
[22]  →t1
[23] achei:x
```

```
[24]  q←q+1
[25]  x←x-1
[26]  →t1
[27] fim:
------------------------------------------------------------
[ 0]  euler44a;n;sp;p;j;k;dif;som
[ 1]  n←6
[ 2]  sp←((1×(3×1)-1)÷2),((2×(3×2)-1)÷2),((3×(3×3)-1)÷2),((4×(3×4)-1)÷2)
[ 3]  sp←sp,((5×(3×5)-1)÷2)
[ 4] t1:→(0≠100|n)/ufa
[ 5]  n
[ 6] ufa:
[ 7]  p←((n×(3×n)-1)÷2),(((n+1)×(3×n+1)-1)÷2)
[ 8]  sp←sp,p
[ 9]  j←⌊0.5×⍴sp
[10] ⍝t2:→(j<1)/fi1
[11]  k←j-1
[12] t3:→(k<1)/fi2
[13]  dif←sp[j]-sp[k]
[14]  som←sp[j]+sp[k]
[15]  →((dif∈sp)∧(som∈sp))/achei
[16]  k←k-1
[17]  →t3
[18] fi2:⍝j←j-1
[19] ⍝ →t2
[20] fi1:n←n+2
[21]  →t1
[22] achei:dif,j,k
------------------------------------------------------------
[ 0]  euler45a;i;h;p;t
[ 1]  i←144
[ 2] t1:
[ 3]  h←i×(2×i)-1
[ 4]  p←(1+(1+24×h)*0.5)÷6
[ 5]  →(p≠⌊p)/soma
[ 6]  t←(¯1+(1+8×h)*0.5)÷2
[ 7]  →(t≠⌊t)/soma
[ 8]  ('H=',⍕h),(' P=',⍕p),(' T=',⍕t),' i=',⍕i
[ 9]  →0
[10] soma:i←i+1
[11]  →t1
------------------------------------------------------------
[ 0]  euler46a;n;p;q;j;k
[ 1]  n←9
[ 2] t1:→(n>⍴PRIMO)/fim
[ 3]  q←(QUA<n)/QUA
[ 4]  p←(PRIMO<n)/PRIMO
[ 5]  →(n∈PRIMO)/achou
[ 6]  j←⍴q
[ 7] t2:→(j<1)/ula
[ 8]  k←⍴p
[ 9] t3:→(k<1)/xoc
[10]  →(n=q[j]+p[k])/achou
[11]  k←k-1
[12]  →t3
[13] xoc:
[14]  j←j-1
[15]  →t2
[16] achou:n←n+2
[17]  →t1
[18] ula:n
[19]  n←n+2
[20]  →t1
```

```
[21] fim:'deu xabu'
------------------------------------------------------------
[ 0]  euler48_2a x;i;r;x1
[ 1]  x1←((1↑⍴x),¯10)↑x
[ 2]  i←1
[ 3]  r←'0000000000'
[ 4] t1:→((i≠901)∧(i≠921)∧(i≠941)∧(i≠961)∧(i≠981)∧(i≠991))/conta
[ 5]  (i-1),r
[ 6] conta:
[ 7]  →(i>999)/aca
[ 8]  r←r soma48 x1[i;]
[ 9]  i←i+1
[10]  →t1
[11] aca:r
------------------------------------------------------------
[ 0]  euler48a lim;i
[ 1]  x←(lim,12)⍴' '
[ 2]  i←1
[ 3] t1:→(i>lim)/fim
[ 4]  x[i;]←i pot48(⍳i)
[ 5]  i←i+1
[ 6]  →(0≠10|i)/t1
[ 7]  i
[ 8]  →t1
[ 9] fim:
------------------------------------------------------------
[ 0]  r←gera0;te;re;xa;aa
[ 1]  r←2⍴0
[ 2]  te←20 80⍴' '
[ 3]  te[⍳aa←1↑⍴TF0;]←TF0←ajusta80 TF0
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80⍴80↑'a menor fraç⍀~ao em valor absoluto.'
[12]  re←19.95
[13]  →ju
[14] eum:
[15]  te[aa+1;]←1 80⍴80↑'a segunda menor fraç⍀~ao em valor absoluto.'
[16]  re←16.64
[17]  →ju
[18] edo:
[19]  te[aa+1;]←1 80⍴80↑'a terceira menor fraç⍀~ao em valor absoluto.'
[20]  re←26.65
[21]  →ju
[22] etr:
[23]  te[aa+1;]←1 80⍴80↑'a maior fraç⍀~ao em valor absoluto.'
[24]  re←49.98
[25]  →ju
[26] equ:
[27]  te[aa+1;]←1 80⍴80↑'a soma dos 4 numeradores.'
[28]  re←110
[29]  →ju
[30] eci:
[31]  te[aa+1;]←1 80⍴80↑'a soma dos 4 denominadores.'
[32]  re←322
[33]  →ju
[34] ju:
[35]  r[1]←⊂te
[36]  r[2]←⊂re
```

```
------------------------------------------------------------
[ 0]  r←gera1;te;re;xa;aa
[ 1]  r←2ρ0
[ 2]  te←20 80ρ' '
[ 3]  te[⍳aa←1↑ρTF1;]←TF1←ajusta80 TF1
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80ρ80↑'Quantos primos circulares há entre 100.000 e'
[12]  te[aa+2;]←1 80ρ80↑'1.000.000 ?'
[13]  re←12
[14]  →ju
[15] eum:
[16]  te[aa+1;]←1 80ρ80↑'Quantos primos circulares há entre 50.000 e'
[17]  te[aa+2;]←1 80ρ80↑'900.000 ?'
[18]  re←11
[19]  →ju
[20] edo:
[21]  te[aa+1;]←1 80ρ80↑'Quantos primos circulares menores que 1.000.000 '
[22]  te[aa+2;]←1 80ρ80↑'terminam pelo dígito 7 (sete) ?'
[23]  re←9
[24]  →ju
[25] etr:
[26]  te[aa+1;]←1 80ρ80↑'Quantos primos circulares menores que 1.000.000 '
[27]  te[aa+2;]←1 80ρ80↑'têm pelo menos um dígito 1 ?'
[28]  re←40
[29]  →ju
[30] equ:
[31]  te[aa+1;]←1 80ρ80↑'Quantos primos circulares menores que 1.000.000'
[32]  te[aa+2;]←1 80ρ80↑'sto maiores que 300.000 ?'
[33]  re←10
[34]  →ju
[35] eci:
[36]  te[aa+1;]←1 80ρ80↑'Quantos primos circulares há entre 1.000.000 e'
[37]  te[aa+2;]←1 80ρ80↑'200.000 ?'
[38]  re←10
[39]  →ju
[40] ju:
[41]  r[1]←⊂te
[42]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera2;te;re;xa;aa
[ 1]  r←2ρ0
[ 2]  te←20 80ρ' '
[ 3]  te[⍳aa←1↑ρTF2;]←TF2←ajusta80 TF2
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80ρ80↑'A outra base é a base 3 (três).'
[12]  re←1342501
[13]  →ju
[14] eum:
[15]  te[aa+1;]←1 80ρ80↑'A outra base é a base 4 (quatro).'
[16]  re←739646
[17]  →ju
```

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[18] edo:
[19]  te[aa+1;]←1 80⍴80↑'A outra base é a base 5 (cinco).'
[20]  re←37793
[21]  →ju
[22] etr:
[23]  te[aa+1;]←1 80⍴80↑'A outra base é a base 6 (seis).'
[24]  re←2043967
[25]  →ju
[26] equ:
[27]  te[aa+1;]←1 80⍴80↑'A outra base é a base 7 (sete).'
[28]  re←83072
[29]  →ju
[30] eci:
[31]  te[aa+1;]←1 80⍴80↑'A outra base é a base 8 (oito).'
[32]  re←1651182
[33]  →ju
[34] ju:
[35]  r[1]←⊂te
[36]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera3;te;re;xa;aa
[ 1]  r←2⍴0
[ 2]  te←20 80⍴' '
[ 3]  te[⍳aa←1↑⍴TF3;]←TF3←ajusta80 TF3
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80⍴80↑'a soma dos 3 maiores primos truncáveis da direita para'
[12]  te[aa+2;]←1 80⍴80↑'a esquerda e da esquerda para a direita.'
[13]  re←746331
[14]  →ju
[15] eum:
[16]  te[aa+1;]←1 80⍴80↑'a soma dos 2 maiores primos truncáveis da direita para'
[17]  te[aa+2;]←1 80⍴80↑'a esquerda e da esquerda para a direita.'
[18]  re←743194
[19]  →ju
[20] edo:
[21]  te[aa+1;]←1 80⍴80↑'a soma do maior e do menor primos truncáveis da direita'
[22]  te[aa+2;]←1 80⍴80↑'para a esquerda e da esquerda para a direita.'
[23]  re←739397+23
[24]  →ju
[25] etr:
[26]  te[aa+1;]←1 80⍴80↑'a soma dos 4 maiores primos truncáveis da direita para'
[27]  te[aa+2;]←1 80⍴80↑'a esquerda e da esquerda para a direita.'
[28]  re←747128
[29]  →ju
[30] equ:
[31]  te[aa+1;]←1 80⍴80↑'a soma dos 5 maiores primos truncáveis da direita para'
[32]  te[aa+2;]←1 80⍴80↑'a esquerda e da esquerda para a direita.'
[33]  re←747501
[34]  →ju
[35] eci:
[36]  te[aa+1;]←1 80⍴80↑'a soma dos 6 maiores primos truncáveis da direita para'
[37]  te[aa+2;]←1 80⍴80↑'a esquerda e da esquerda para a direita.'
[38]  re←747818
[39]  →ju
[40] ju:
[41]  r[1]←⊂te
[42]  r[2]←⊂re
```

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------------------------------------------------------------
[ 0]  r←gera4;te;re;xa;aa
[ 1]  r←2⍴0
[ 2]  te←20 80⍴' '
[ 3]  te[⍳aa←1↑⍴TF4;]←TF4←ajusta80 TF4
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80⍴80↑'$$d_1 \times d_{10} \times d_{100} \times d_{1000} \times  '
[12]  te[aa+2;]←1 80⍴80↑'d_{10000} \times d_{100000} \times d_{1400000} $$  '
[13]  re←1050
[14]  →ju
[15] eum:
[16]  te[aa+1;]←1 80⍴80↑'$$d_1 \times d_{10} \times d_{100} \times d_{1000} \times  '
[17]  te[aa+2;]←1 80⍴80↑'d_{10000} \times d_{100000} \times d_{1500000} $$  '
[18]  re←1680
[19]  →ju
[20] edo:
[21]  te[aa+1;]←1 80⍴80↑'$$d_1 \times d_{10} \times d_{100} \times d_{1000} \times  '
[22]  te[aa+2;]←1 80⍴80↑'d_{10000} \times d_{100000} \times d_{1600000} $$  '
[23]  re←420
[24]  →ju
[25] etr:
[26]  te[aa+1;]←1 80⍴80↑'$$d_1 \times d_{10} \times d_{100} \times d_{1000} \times  '
[27]  te[aa+2;]←1 80⍴80↑'d_{10000} \times d_{100000} \times d_{1700000} $$  '
[28]  re←1050
[29]  →ju
[30] equ:
[31]  te[aa+1;]←1 80⍴80↑'$$d_1 \times d_{10} \times d_{100} \times d_{1000} \times  '
[32]  te[aa+2;]←1 80⍴80↑'d_{10000} \times d_{100000} \times d_{1800000} $$  '
[33]  re←1680
[34]  →ju
[35] eci:
[36]  te[aa+1;]←1 80⍴80↑'$$d_1 \times d_{10} \times d_{100} \times d_{1000} \times  '
[37]  te[aa+2;]←1 80⍴80↑'d_{10000} \times d_{100000} \times d_{1900000} $$  '
[38]  re←1630
[39]  →ju
[40] ju:
[41]  r[1]←⊂te
[42]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera5;te;re;xa;aa;bb
[ 1]  r←2⍴0
[ 2]  te←20 80⍴' '
[ 3]  te[⍳aa←1↑⍴TF5;]←TF5←ajusta80 TF5
[ 4]  xa←?6
[ 5]  bb←7652413 7642513 7641253 7625341 7625143 7624531 7621543
[ 6]  →(1=xa)/eum
[ 7]  →(2=xa)/edo
[ 8]  →(3=xa)/etr
[ 9]  →(4=xa)/equ
[10]  →(5=xa)/eci
[11] ese:
[12]  te[aa+1;]←1 80⍴80↑'dos dois maiores primos pandigitais de $n$ dígitos.'
[13]  re←+/2↑bb
[14]  →ju
[15] eum:
[16]  te[aa+1;]←1 80⍴80↑'dos três maiores primos pandigitais de $n$ dígitos.'
[17]  re←+/3↑bb
```

```
[18]  →ju
[19] edo:
[20]  te[aa+1;]←1 80⍴80↑'dos quatro maiores primos pandigitais de $n$ dígitos.'
[21]  re←+/4↑bb
[22]  →ju
[23] etr:
[24]  te[aa+1;]←1 80⍴80↑'dos cinco maiores primos pandigitais de $n$ dígitos.'
[25]  re←+/5↑bb
[26]  →ju
[27] equ:
[28]  te[aa+1;]←1 80⍴80↑'dos seis maiores primos pandigitais de $n$ dígitos.'
[29]  re←+/6↑bb
[30]  →ju
[31] eci:
[32]  te[aa+1;]←1 80⍴80↑'dos sete maiores primos pandigitais de $n$ dígitos.'
[33]  re←+/7↑bb
[34]  →ju
[35] ju:
[36]  r[1]←⊂te
[37]  r[2]←⊂re
-------------------------------------------------------------
[ 0]  r←gera6;te;re;xa;aa
[ 1]  r←2⍴0
[ 2]  te←20 80⍴' '
[ 3]  te[⍳aa←1↑⍴TF6;]←TF6←ajusta80 TF6
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80⍴80↑'|P_k-P_j|$? (note que $M=D$).'
[12]  re←5482660
[13]  →ju
[14] eum:
[15]  te[aa+1;]←1 80⍴80↑'|j-k|$?'
[16]  re←1147
[17]  →ju
[18] edo:
[19]  te[aa+1;]←1 80⍴80↑'j \times k$ ?'
[20]  re←2210340
[21]  →ju
[22] etr:
[23]  te[aa+1;]←1 80⍴80↑'P_k + P_j$?'
[24]  re←8602840
[25]  →ju
[26] equ:
[27]  te[aa+1;]←1 80⍴80↑'P_k+P_j-(j+k)$ ?'
[28]  re←8599653
[29]  →ju
[30] eci:
[31]  te[aa+1;]←1 80⍴80↑'j+k$?'
[32]  re←3187
[33]  →ju
[34] ju:
[35]  r[1]←⊂te
[36]  r[2]←⊂re
-------------------------------------------------------------
[ 0]  r←gera7;te;re;xa;aa
[ 1]  r←2⍴0
[ 2]  te←20 80⍴' '
[ 3]  te[⍳aa←1↑⍴TF7;]←TF7←ajusta80 TF7
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[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80ρ80↑'$H_{k+1}$ ?'
[12]  re←1533887578
[13]  →ju
[14] eum:
[15]  te[aa+1;]←1 80ρ80↑'$i+j+k$?'
[16]  re←115055
[17]  →ju
[18] edo:
[19]  te[aa+1;]←1 80ρ80↑'$H_{k-1}$?'
[20]  re←1533666036
[21]  →ju
[22] etr:
[23]  te[aa+1;]←1 80ρ80↑'$T_{i-1}$?'
[24]  re←1533721420
[25]  →ju
[26] equ:
[27]  te[aa+1;]←1 80ρ80↑'$P_{j-1}$?'
[28]  re←1533680876
[29]  →ju
[30] eci:
[31]  te[aa+1;]←1 80ρ80↑'$T_{i+1}$?'
[32]  re←1533832191
[33]  →ju
[34] ju:
[35]  r[1]←⊂((aa+2),80)↑te
[36]  r[2]←⊂re
-------------------------------------------------------------
[ 0]  r←gera8;te;re;xa;aa
[ 1]  r←2ρ0
[ 2]  te←20 80ρ' '
[ 3]  te[⍳aa←1↑ρTF8;]←TF8←ajusta80 TF8
[ 4]  xa←?4
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8] equ:
[ 9]  te[aa+1;]←1 80ρ80↑'Qual a soma desses números ?'
[10]  re←5777+5993
[11]  →ju
[12] eum:
[13]  te[aa+1;]←1 80ρ80↑'Quantos sto os números ?'
[14]  re←2
[15]  →ju
[16] edo:
[17]  te[aa+1;]←1 80ρ80↑'Qual o produto entre os números ?'
[18]  re←5777×5993
[19]  →ju
[20] etr:
[21]  te[aa+1;]←1 80ρ80↑'Qual a diferença entre o maior e o menor ?'
[22]  re←5993-5777
[23]  →ju
[24] ju:
[25]  r[1]←⊂((aa+1),80)↑te
[26]  r[2]←⊂re
-------------------------------------------------------------
[ 0]  r←gera9;te;re;xa;aa
```

```
[ 1]  r←2⍴0
[ 2]  te←20 80⍴' '
[ 3]  te[⍳aa←1↑⍴TF9;]←TF9←ajusta80 TF9
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80⍴80↑'$1^1+2^2+3^3+...+900^{900}$.'
[12]  re←1142829280
[13]  →ju
[14] eum:
[15]  te[aa+1;]←1 80⍴80↑'$1^1+2^2+3^3+...+920^{920}$.'
[16]  re←1629421404
[17]  →ju
[18] edo:
[19]  te[aa+1;]←1 80⍴80↑'$1^1+2^2+3^3+...+940^{940}$.'
[20]  re←2303176008
[21]  →ju
[22] etr:
[23]  te[aa+1;]←1 80⍴80↑'$1^1+2^2+3^3+...+960^{960}$.'
[24]  re←5372876292
[25]  →ju
[26] equ:
[27]  te[aa+1;]←1 80⍴80↑'$1^1+2^2+3^3+...+980^{980}$.'
[28]  re←7534201456
[29]  →ju
[30] eci:
[31]  te[aa+1;]←1 80⍴80↑'$1^1+2^2+3^3+...+990^{990}$.'
[32]  re←1106777733
[33]  →ju
[34] ju:
[35]  r[1]←⊂((aa+1),80)↑te
[36]  r[2]←⊂re
-------------------------------------------------------------
[ 0]  simnao listaeu ws;a;a;aa;b;i;k;lixo;n;r
[ 1] ⍝ lista os 10 exercícios deste ws
[ 2]  k←0 80⍴' '
[ 3]  →(simnao=0)/oba
[ 4]  k←9 80⍴' '
[ 5]  k[1;]←80↑'\documentclass{article}'
[ 6]  k[2;]←80↑'\usepackage[pc850]{inputenc}'
[ 7]  k[3;]←80↑'\usepackage[table]{xcolor}'
[ 8]  k[4;]←80↑'\usepackage{graphicx}'
[ 9]  k[5;]←80↑'\usepackage[dvips]{geometry}'
[10]  k[6;]←80↑'\geometry{a4paper,left=0.7in,right=0.5in,top=0.7in,bottom=1in}'
[11]  k[7;]←80↑'\begin{document} \large \setlength{\parindent}{0pt}'
[12]  k[8;]←80↑'\section*{Algoritmos selecionados}'
[13]  k[9;]←80↑'Por P. Kantek, com auxílio do site projecteuler.net\\*'
[14] oba:n←0
[15] t1:→(n>9)/fim
[16]  b←⍎'gera','0'⍕n
[17]  i←20 80↑⊃b[1]
[18]  i←(80≠+/[2]i=' ')/[1]i
[19]  k←k,[1]i
[20]  k←k,[1]1 80⍴80↑'(Workspace = ',(8↑ws),' Função = ',(2 0⍕n+1),')\\[2cm]'
[21]  n←n+1
[22]  →t1
[23] fim:
[24]  →(simnao=0)/ufa
[25]  k←k,[1]1 80⍴80↑'\end{document}'
```

```
[26] ufa:lixo←k ΔFM aa←'c:\apl2\leu',ws[4+ι3],'.tex'
[27]  'gravado ',aa
-------------------------------------------------------------
[ 0]  rr←a mult48 b;a1;b1;r;i;vai;temp
[ 1]  a1←¯3↑'00',a
[ 2]  b1←¯12↑(12ρ'0'),b
[ 3]  r←4 12ρ' '
[ 4]  i←12
[ 5]  vai←0
[ 6] t1:→(i<2)/fim1
[ 7]  temp←vai+(±a1[3])×±b1[i]
[ 8]  →(temp>9)/foi1
[ 9]  r[1;i]←1 0⍕temp
[10]  vai←0
[11]  i←i-1
[12]  →t1
[13] foi1:
[14]  r[1;i]←1 0⍕10|temp
[15]  vai←⌊temp÷10
[16]  i←i-1
[17]  →t1
[18] fim1:
[19]  i←12
[20]  r[2;12]←'0'
[21]  vai←0
[22] t2:→(i<2)/fim2
[23]  temp←vai+(±a1[2])×±b1[i]
[24]  →(temp>9)/foi2
[25]  r[2;i-1]←1 0⍕temp
[26]  vai←0
[27]  i←i-1
[28]  →t2
[29] foi2:
[30]  r[2;i-1]←1 0⍕10|temp
[31]  vai←⌊temp÷10
[32]  i←i-1
[33]  →t2
[34] fim2:
[35]  i←12
[36]  r[3;11 12]←'0'
[37]  vai←0
[38] t3:→(i<3)/fim3
[39]  temp←vai+(±a1[1])×±b1[i]
[40]  →(temp>9)/foi3
[41]  r[3;i-2]←1 0⍕temp
[42]  vai←0
[43]  i←i-1
[44]  →t3
[45] foi3:
[46]  r[3;i-2]←1 0⍕10|temp
[47]  vai←⌊temp÷10
[48]  i←i-1
[49]  →t3
[50] fim3:
[51]  i←12
[52]  vai←0
[53] t31:→(i<2)/ufa
[54]  temp←vai+(±r[1;i])+(±r[2;i])+±r[3;i]
[55]  →(temp>9)/cri
[56]  r[4;i]←1 0⍕temp
[57]  vai←0
[58]  i←i-1
[59]  →t31
```

```
[60] cri:→(temp>19)/gru
[61]  r[4;i]←1 0⍕temp-10
[62]  vai←1
[63]  i←i-1
[64]  →t31
[65] gru:
[66]  r[4;i]←1 0⍕temp-20
[67]  vai←2
[68]  i←i-1
[69]  →t31
[70] ufa:rr←r[4;]
[71]  →0
-------------------------------------------------------------
[0]  r←a pot48 b;ba
[1]  ba←⍎b
[2]  a←⍕a
[3]  r←'1'
[4] t1:→(ba=0)/fim
[5]  r←a mult48 r
[6]  ba←ba-1
[7]  →t1
[8] fim:
-------------------------------------------------------------
[0]  r←i retirar33 n;a1;b1
[1]  a1←⍕n
[2]  b1←~a1∈⍕i
[3]  →(0=+/b1)/edois
[4]  r←⍎b1/a1
[5]  →0
[6] edois:r←⍎1 0/a1
-------------------------------------------------------------
[ 0]  r←a soma48 b;a1;b1;temp;vai;i
[ 1]  r←10⍴'0'
[ 2]  vai←0
[ 3]  i←10
[ 4] vorta:→(i<1)/fim
[ 5]  temp←vai+(⍎a[i])+⍎b[i]
[ 6]  →(temp>9)/foi
[ 7]  r[i]←1 0⍕temp
[ 8]  vai←0
[ 9]  →soma
[10] foi:r[i]←1 0⍕temp-10
[11]  vai←1
[12] soma:i←i-1
[13]  →vorta
[14] fim:
-------------------------------------------------------------
[ 0]  opesq vivoe07a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;quais;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLe07   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAe07←ajusta80 FOLHALAe07
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAe07)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 5⍴0
```

```
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←89 80⍴' '
[16]  f←FOLHALAe07
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[88;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[89;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←quais←¯1+4?10
[35]  ⍎'zz←gera','0'⍕xx[1]
[36]  esse[7+⍳20;]←20 80↑⊃zz[1]
[37]  resp←resp,,⊃zz[2]
[38]  ⍎'zz←gera','0'⍕xx[2]
[39]  esse[27+⍳20;]←20 80↑⊃zz[1]
[40]  resp←resp,,⊃zz[2]
[41]  ⍎'zz←gera','0'⍕xx[3]
[42]  esse[47+⍳20;]←20 80↑⊃zz[1]
[43]  resp←resp,,⊃zz[2]
[44]  ⍎'zz←gera','0'⍕xx[4]
[45]  esse[67+⍳20;]←20 80↑⊃zz[1]
[46]  resp←resp,,⊃zz[2]
[47]  resu←resu,[1]1 5⍴resp
[48]  acuja←(f[;2]='#')/⍳1↑⍴f
[49]  f[acuja;⍳80]←esse[⍎,f[acuja;3 4],' ';]
[50]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[51]  ⎕←(⍕xk←xk+1),'-'
[52]  →testa
[53] fim:upag←(1 0+⍴f)⍴' '
[54]  →(1=≡n)/elafa
[55]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[56]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[57]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯'-'edit(lixo1←7 0 25 0 16 0 16 0 16 0)⍕resu
[58]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[59]  →terminando
[60] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[61] elafa:aaa←(ylu[;⍳36],'¯'-'edit 20 0⍕0 1↓resu)
[62] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[63]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[64]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[65] terminando:
[66]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[67]  relat[1↑⍴relat;;]←upag
[68]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[69] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[70]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[71]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[72]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivoe09

```
[ 0]  data brilha n;a;lixo;b;r
[ 1] ⍝ gera o formulario da sexta brilhante com o programa n deste ws
[ 2]  a←100 80⍴' '
[ 3]  a[1;]←80↑'\documentclass{article}'
[ 4]  a[2;]←80↑'\usepackage[pc850]{inputenc}'
[ 5]  a[3;]←80↑'\usepackage[table]{xcolor}'
[ 6]  a[4;]←80↑'\usepackage{graphicx}'
[ 7]  a[5;]←80↑'\usepackage[dvips]{geometry}'
[ 8]  a[6;]←80↑'\geometry{a4paper,left=0.7in,right=0.5in,top=0.7in,bottom=1in}'
[ 9]  a[7;]←80↑'\begin{document} \large \setlength{\parindent}{0pt}'
[10]  a[8;]←80↑'\section*{projeto SEXTA BRILHANTE}'
[11]  a[9;]←80↑'Um desafio para as cabeças brilhantes da UP\\[1cm]'
[12]  a[11;]←80↑'Desafio do dia ',data
[13] ⍝ a[12;]←80↑'{ \huge '
[14]  b←⍎'gera','0'⍕n
[15]  a[12+⍳20;]←20 80↑⊃b[1]
[16]  r←⍕⊃b[2]
[17]  r
[18]  a[34;]←80↑'\subsubsection*{Regras}'
[19]  a[36;]←80↑'1. Um novo desafio é proposto a cada sexta feira, sempre das 18h00'
[20]  a[37;]←80↑'às 19h00, na sala 42 do Bloco Vermelho.'
[21]  a[39;]←80↑'2. Estão convidados todos os alunos de EC e BSI da Universidade'
[22]  a[40;]←80↑'Positivo.'
[23]  a[42;]←80↑'3. A entrega do desafio é a devolução desta folha com o resultado'
[24]  a[43;]←80↑'e a identificação do autor da solução.'
[25]  a[45;]←80↑'4. Ao achar a solução, por favor mantenha-a secreta, para preservar'
[26]  a[46;]←80↑'o salutar clima de disputa do desafio.'
[27]  a[48;]←80↑'5. Como é muito difícil (impossível ?) acertar na primeira tentativa'
[28]  a[49;]←80↑'você pode apresentar informalmente sua solução e perguntar se ela'
[29]  a[50;]←80↑'está ou não correta, ANTES de entregar formalmente a resposta.'
[30]  a[52;]←80↑'6. Dúvidas ou esclarecimentos: ehamerski@gmail.com ou pkantek@up.com.br.'
[31]  a[54;]←80↑'7. A entrega deve ser feita pessoalmente aos prof. Hamerski ou P.Kantek.'
[32]  a[56;]←80↑'\vspace*{2cm}'
[33]  a[58;]←80↑'\begin{verbatim}'
[34]  a[60;]←80↑'Aluno_____________________________________________________ Data___/___/_
      __'
[35]  a[63;]←80↑'Curso, série e turno_____________________________'
[36]  a[66;]←80↑'Resposta_____________________________'
[37]  a[69;]←80↑'Assinatura do aluno_____________________'
[38]  a[70;]←80↑'\end{verbatim} \end{document}'
[39]  lixo←(70 80↑a)⎕NFM'c:\apl2\brilha.tex'
[40]  lixo←⎕NFM'c:\apl2\brilhar.res'
[41]  r←r,'-',,lixo
[42]  lixo←r ⎕NFM'c:\apl2\brilhar.res'
[43]  'gravado c:\apl2\brilha.tex. Resposta em c:\apl2\brilhar.res'
------------------------------------------------------------
[ 0]  cavaleiroe09a n;aaa;acuja;esse;f;lixo1;quais;relat;resp;x;xk;xx;ylu;zz
[ 1]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 2]  FOLHALAe09←ajusta80 FOLHALAe09
[ 3]  relat←⎕NFM'c:\apl2\VIVOBLO1'
[ 4]  xk←1
[ 5] testa:→(xk>n)/fim
[ 6]  esse←89 80⍴' '
[ 7]  f←FOLHALAe09
[ 8]  esse[1;⍳⍴x]←x←' ----- Cavaleiros da Tavola Redonda --- '
[ 9]  esse[88;⍳8]←'@000000@'
[10] inica:
[11]  xx←quais←¯1+4?10
[12]  ⍎'zz←gera','0'⍕xx[1]
[13]  esse[7+⍳20;]←20 80↑⊃zz[1]
[14]  resp←,⊃zz[2]
```

```
[15]  ⍝'zz←gera','0'⍕xx[2]
[16]  esse[27+⍳20;]←20 80↑⊃zz[1]
[17]  resp←resp,,⊃zz[2]
[18]  ⍝'zz←gera','0'⍕xx[3]
[19]  esse[47+⍳20;]←20 80↑⊃zz[1]
[20]  resp←resp,,⊃zz[2]
[21]  ⍝'zz←gera','0'⍕xx[4]
[22]  esse[67+⍳20;]←20 80↑⊃zz[1]
[23]  resp←resp,,⊃zz[2]
[24]  acuja←(f[;2]='#')/⍳1↑⍴f
[25]  f[acuja;⍳80]←esse[⍝,f[acuja;3 4],' ';]
[26]  ⎕←(⍕xk←xk+1),'-'
[27]  f←(((1↑⍴relat),1↓⍴f)↑relat),[1]f
[28]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'\end{document}'
[29]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'%',⍕resp
[30]  lixo1←f ⍎FM'c:\apl2\CAe09a',('00'⍕xk-1),'.tex'
[31]  →testa
[32] fim:
-------------------------------------------------------------
[ 0]  r←ccicl55 i;cic;j;ii
[ 1]  cic←1
[ 2]  j←¯80↑'0'
[ 3]  ii←80 0⍕i
[ 4] t1:→(cic≥100)/neg
[ 5]  j←⊖ii
[ 6]  j←trim j
[ 7]  ii←trim ii
[ 8]  ii←ii soma55 j
[ 9] ⍎ 'ii=',ii,'   j=',j
[10]  →(ii igual⍝a55⊖ii)/pos
[11]  cic←cic+1
[12]  →t1
[13] neg:r←-1
[14]  →0
[15] pos:r←cic
-------------------------------------------------------------
[0]  r←a contmesmdig b;a1;b1
[1]  a1←⍕a
[2]  b1←⍕b
[3]  r←(∧/a1∈b1)∧(∧/b1∈a1)
-------------------------------------------------------------
[ 0]  k1←sim docf ja;i
[ 1] ⍎fgera uma matriz de caracteres com a ⎕CR da funcao
[ 2] ⍎rse 1 docf 'funcao' gera uma matriz simples so numerada
[ 3] ⍎rse docf 'funcao' gera a matriz com ∇ acima e abaixo
[ 4] ⍎da matriz com ou sem ∇
[ 5]  k1←⎕CR ja
[ 6]  k1←(((1↑⍴k1),6)⍴' '),k1
[ 7]  i←0
[ 8] testa:→(i≥1↑⍴k1)/aca
[ 9]  →(i≥10)/mai1
[10]  k1[i+1;3 4 5]←'[',(1 0⍕i),']'
[11]  →soma
[12] mai1:→(i≥100)/mai2
[13]  k1[i+1;2 3 4 5]←'[',(2 0⍕i),']'
[14]  →soma
[15] mai2:k1[i+1;1 2 3 4 5]←'[',(3 0⍕i),']'
[16] soma:→(i=i←i+1)/testa
[17] aca:
[18]  →(0≠⎕NC'sim')/0
[19]  k1←((1,1↓⍴k1)⍴1000↑'     ∇'),[1]k1
[20]  k1←k1,[1](1,1↓⍴k1)⍴1000↑'     ∇'
-------------------------------------------------------------
```

```
[ 0]  r←eprimo x;y;d
[ 1]  y←⌈x*0.5
[ 2]  d←2
[ 3]  r←1
[ 4] t1:→(d>y)/aca
[ 5]  →(0=d|x)/naoe
[ 6]  d←d+1
[ 7]  →t1
[ 8] aca:→0
[ 9] naoe:r←0
[10]  →0
------------------------------------------------------------
[ 0]  r←eprimo2 x;y;d
[ 1]  y←⌈x*0.5
[ 2]  d←3
[ 3]  r←1
[ 4]  →(x=2)/aca
[ 5]  →(0=2|x)/naoe
[ 6] t1:→(d>y)/aca
[ 7]  →(0=d|x)/naoe
[ 8]  d←d+2
[ 9]  →t1
[10] aca:→0
[11] naoe:r←0
[12]  →0
------------------------------------------------------------
[ 0]  moedas euler31a valor;aaa;b;b1;c;c1;ct;d;d1;e;e1;f;f1;g;g1;h;h1;w1;w2;w3;w4;w5;w6;w7
[ 1]  b←moedas[1] ⋄ c←moedas[2] ⋄ d←moedas[3] ⋄ e←moedas[4] ⋄ f←moedas[5]
[ 2]  g←moedas[6] ⋄ h←moedas[7]
[ 3] ⍝ chamada:   1050   100 50 25 10 5 1  euler31a 490
[ 4]  ct←0 ⍝ era 1 por causa da moeda de 2L
[ 5]  b1←0 ⋄ w1←valor÷b ⋄ w2←valor÷c ⋄ w3←valor÷d ⋄ w4←valor÷e
[ 6]  w5←valor÷f ⋄ w6←valor÷g ⋄ w7←valor÷h
[ 7] t1:→(b1>w1)/fim ⍝ valor÷b  = era 2
[ 8]  c1←0
[ 9] t2:→(c1>w2)/c4 ⍝ valor÷c = era 4
[10]  d1←0
[11] t3:→(d1>w3)/d4 ⍝ valor÷d = era 10
[12]  e1←0
[13] t4:→(e1>w4)/e4 ⍝ valor÷e          = era 20
[14]  f1←0
[15] t5:→(f1>w5)/f4 ⍝ valor÷f           = era 40
[16]  g1←0
[17] t6:→(g1>w6)/g4 ⍝ valor÷g          = era 100
[18]  h1←0
[19] t7:→(h1>w7)/h4 ⍝ valor÷h          = era 200
[20]  →(valor<aaa←(b1×b)+(c1×c)+(d1×d)+(e1×e)+(f1×f)+(g1×g)+h1)/h4
[21]  →(valor≠aaa)/nex
[22] ⍝ ct,b,c,d,e,f,g,h
[23]  ct←ct+1
[24] nex:
[25]  h1←h1+1
[26]  →t7
[27] h4:
[28]  g1←g1+1
[29]  →t6
[30] g4:
[31]  f1←f1+1
[32]  →t5
[33] f4:
[34]  e1←e1+1
[35]  →t4
[36] e4:
```

```
[37]  d1←d1+1
[38]  →t3
[39] d4:
[40]  c1←c1+1
[41]  →t2
[42] c4:
[43]  b1←b1+1
[44]  →t1
[45] fim:ct
------------------------------------------------------------
[ 0]  euler43a;i;quem;a1;b1;b2;c1
[ 1]  i←3460000000
[ 2]  quem←⍳0
[ 3] t1:
[ 4]  →(0≠10000000|i)/ikj
[ 5]  i,quem
[ 6] ikj:
[ 7]  →(i>9876543210)/fim
[ 8]  a1←⍕i
[ 9]  →((a1[6]≠'0')∧(a1[6]≠'5'))/soma
[10]  →(0≠2|⍎a1[4])/soma
[11]  →(~'0'∈a1)/soma
[12]  →(~'1'∈a1)/soma
[13]  →(~'2'∈a1)/soma
[14]  →(~'3'∈a1)/soma
[15]  →(~'4'∈a1)/soma
[16]  →(~'5'∈a1)/soma
[17]  →(~'6'∈a1)/soma
[18]  →(~'7'∈a1)/soma
[19]  →(~'8'∈a1)/soma
[20]  →(~'9'∈a1)/soma
[21]  →(0≠17|⍎a1[8 9 10])/soma
[22]  →(0≠13|⍎a1[7 8 9])/soma
[23]  →(0≠11|⍎a1[6 7 8])/soma
[24]  →(0≠7|⍎a1[5 6 7])/soma
[25]  →(0≠5|⍎a1[4 5 6])/soma
[26]  →(0≠3|⍎a1[3 4 5])/soma
[27]  →(0≠2|⍎a1[2 3 4])/soma
[28]  quem←quem,i
[29] soma:i←i+1
[30]  →t1
[31] fim:quem
[32] ⍝ sao 6 os numeros:
[33] ⍝ +/1406357289 1430952867 1460357289
[34] ⍝ +/ 4106357289 4130952867 4160357289
[35] ⍝ resposta 16695334890
------------------------------------------------------------
[ 0]  euler47a;k;difs
[ 1]  tb←4 4⍴0
[ 2]  tb[1;]←4↑fatprim47 640
[ 3]  tb[2;]←4↑fatprim47 641
[ 4]  tb[3;]←4↑fatprim47 642
[ 5]  tb[4;]←4↑fatprim47 643
[ 6]  k←644
[ 7] t1:→(k>5000000)/fim
[ 8]  tb[1+4|k;]←4↑fatprim47 k
[ 9]  difs←,tb
[10]  difs←difs[⍋difs]
[11]  →((0=+/difs=0)∧(0=+/difs=1⌽difs))/achou
[12]  k←k+1
[13]  →t1
[14] fim:
[15]  →0
```

```
[16] achou:k
------------------------------------------------------------
[ 0]  euler49a;x;i;y;a1;v;v1;h1;h2;j;k;virgs;avir
[ 1]  x←10000ρ0
[ 2]  i←1000
[ 3]  y←(PRIMO<10000)/PRIMO
[ 4] t1:→(i>9999)/fim
[ 5]  →(x[i]=1)/soma
[ 6]  a1←⍕i
[ 7]  v←i,(⍪a1[1 2 4 3]),(⍪a1[1 3 2 4]),(⍪a1[1 3 4 2]),(⍪a1[1 4 2 3]),(⍪a1[1 4 3 2])
[ 8]  v←v,(⍪a1[2 1 3 4]),(⍪a1[2 1 4 3]),(⍪a1[2 3 1 4]),(⍪a1[2 3 4 1]),(⍪a1[2 4 1 3])(⍪a1[2
       4 3 1])
[ 9]  v←v,(⍪a1[3 1 2 4]),(⍪a1[3 1 4 2]),(⍪a1[3 2 1 4]),(⍪a1[3 2 4 1]),(⍪a1[3 4 1 2])(⍪a1[3
       4 2 1])
[10]  v←v,(⍪a1[4 1 2 3]),(⍪a1[4 1 3 2]),(⍪a1[4 2 1 3]),(⍪a1[4 2 3 1]),(⍪a1[4 3 1 2])(⍪a1[4
       3 2 1])
[11]  v←tiradups v
[12]  x[v]←1
[13]  v1←(v∈y)/v
[14]  →(4>ρv1)/soma
[15]  v1←v1[⍋v1]
[16]  →(1000>v1[1])/soma
[17]  virgs←⍳0
[18]  j←ρv1
[19] t3:→(j<1)/trata
[20]  k←j-1
[21] t4:→(k<1)/oka
[22]  virgs←virgs,v1[j]-v1[k]
[23]  k←k-1
[24]  →t4
[25] oka:j←j-1
[26]  →t3
[27] trata:avir←tiradups virgs
[28]  →((ρavir)=ρvirgs)/soma
[29] ⍝ v1,(ρavir),ρ(virgs)
[30] ⍝  (v1=(v1[1]+v1[ρv1])÷2)/v1
[31]  (v1≠(v1[2]+v1[¯1+ρv1])÷2)/v1
[32] soma:i←i+1
[33]  →t1
[34] fim:
------------------------------------------------------------
[ 0]  euler50a;x;i;k;som;j;MAI;pmai
[ 1]  x←PRIMO[168+⍳78330]  ⍝ primos entre 1000 e 1000000
[ 2] ⍝ x←PRIMO[⍳168]
[ 3]  i←1
[ 4]  MAI←-999999
[ 5] t1:
[ 6]  →((x[i]≠400009)∧(x[i]≠500009)∧(x[i]≠600011)∧(x[i]≠700001)∧(x[i]≠800011)∧(x[i]≠900001
       ))/hy
[ 7]  ' i,MAI,pmai,x[i]=',⍕i,MAI,pmai,x[i]
[ 8] hy:
[ 9]  →(i>ρx)/fim
[10]  k←1
[11] t15:
[12]  j←k
[13]  som←0
[14] t2:
[15]  som←som+PRIMO[j]
[16]  →(som=x[i])/chegou
[17]  →(som>x[i])/mais
[18]  j←j+1
[19]  →t2
[20] chegou:
```

```
[21]  →((1+j-k)<MAI)/denovo
[22]  MAI←1+j-k
[23]  pmai←x[i]
[24] denovo:i←i+1
[25]  →t1
[26] mais:k←k+1
[27] ⍝ →(PRIMO[k]>x[i]÷2)/denovo
[28]  →(k>20)/denovo
[29]  →t15
[30] fim:MAI,pmai
-------------------------------------------------------------
[ 0]  euler52a;i;i2;i3;i4;i5;i6
[ 1]  i←1000000
[ 2] t1:→(i>10000000)/0
[ 3] ⍝ i2←i×2
[ 4] ⍝ →(~i contmesmdig i2)/soma
[ 5]  i3←i×3
[ 6]  →(~i contmesmdig i3)/soma
[ 7] ⍝ i4←i×4
[ 8] ⍝ →(~i contmesmdig i4)/soma
[ 9]  i5←i×5
[10]  →(~i contmesmdig i5)/soma
[11]  i6←i×6
[12]  →(~i contmesmdig i6)/soma
[13]  i
[14] soma:i←i+1
[15]  →t1
-------------------------------------------------------------
[ 0]  euler55a lim;i;ct;wt
[ 1]  i←12
[ 2]  ct←0
[ 3] t1:→(i>lim)/fim
[ 4]  wt←ccicl55 i ⍝ volta o numero de ciclos ate o palindromo ou -1
[ 5]  →(wt>0)/pula
[ 6]  ct←ct+1
[ 7] pula:i←i+1
[ 8]  →t1
[ 9] fim:ct
-------------------------------------------------------------
[ 0]  euler56a lim;i;j;aa;ct;k;max
[ 1]  max←-999999
[ 2]  i←1
[ 3] t1:→(i>lim-1)/fim
[ 4]  i
[ 5]  j←1
[ 6] t2:→(j>lim-1)/incra
[ 7]  aa←1↓(⍕i)pot56⍕j
[ 8]  ct←0
[ 9]  k←1
[10] t3:→(k>⍴aa)/ufa
[11]  ct←ct+⍎aa[k]
[12]  k←k+1
[13]  →t3
[14] ufa:→(ct<max)/volta
[15]  max←ct
[16] volta:j←j+1
[17]  →t2
[18] incra:i←i+1
[19]  →t1
[20] fim:max
-------------------------------------------------------------
[ 0]  euler58_2a;ant1;ant2;ant3;ant4;tam;nump;tp;pd1;pd2;pd3;pd4;cic;quais;x1;x2;x3;x4;pan
      t1;pant2;pant3;pant4
```

```
[ 1] ⍝ d1←1 3 13 31
[ 2]  x1←x2←x3←x4←0
[ 3] ⍝ d2←5 17 37
[ 4] ⍝ d3←7 21 43
[ 5] ⍝ d4←9 25 49
[ 6]  tam←7
[ 7]  nump←8
[ 8]  tp←13
[ 9]  ant1←31
[10]  pant1←13
[11]  ant2←37
[12]  pant2←17
[13]  ant3←43
[14]  pant3←21
[15]  ant4←49
[16]  pant4←25
[17]  qt←0.13
[18] t1:→((nump÷tp)<qt)/fim
[19] ⍝ tam,nump,tp,(nump÷tp),x1,x2,x3,x4
[20]  pd1←8+ant1-pant1
[21]  x1←ant1+pd1
[22]  pant1←ant1
[23]  ant1←x1
[24]  pd2←8+ant2-pant2
[25]  x2←ant2+pd2
[26]  pant2←ant2
[27]  ant2←x2
[28]  pd3←8+ant3-pant3
[29]  x3←ant3+pd3
[30]  pant3←ant3
[31]  ant3←x3
[32]  nump←nump+eprimo2 x1
[33]  nump←nump+eprimo2 x2
[34]  nump←nump+eprimo2 x3
[35]  tp←tp+4
[36]  tam←tam+2
[37]  →t1
[38] fim:qt,tam
[39]  qt←qt-0.005
[40]  →t1
------------------------------------------------------------
[  0]  r←euler61_2a ind;f;v5;v4;i;j;v6;v3;v2;t1;t2;t3;t4;t5;t6;t7;v1;var
[  1]  r←0 40⍴' '
[  2]  var←6 5⍴'TRIA QUAD PENTAHEXA HEPTAOCTA '
[  3] ⍝          12345678901234567890123456789O
[  4]  ⍞'v1←',var[ind[1];]
[  5]  ⍞'v2←',var[ind[2];]
[  6]  ⍞'v3←',var[ind[3];]
[  7]  ⍞'v4←',var[ind[4];]
[  8]  ⍞'v5←',var[ind[5];]
[  9]  ⍞'v6←',var[ind[6];]
[ 10] inicio:
[ 11]  t1←0 8⍴' '
[ 12]  i←1
[ 13] m1:→(i>1↑⍴v6)/aca1
[ 14]  f←⍞v6[i;3 4]
[ 15]  j←1
[ 16] w1:→(j>1↑⍴v1)/ufa1
[ 17]  →(f≠⍞v1[j;1 2])/ss1
[ 18]  t1←t1,[1]1 8⍴v6[i;],v1[j;]
[ 19] ss1:j←j+1
[ 20]  →w1
[ 21] ufa1:
```

```
[ 22]  i←i+1
[ 23]  →m1
[ 24] aca1:
[ 25] ⍝ 't1='
[ 26] ⍝ t1
[ 27]  i←1
[ 28]  t2←0 12⍴' '
[ 29] m2:→(i>1↑⍴t1)/aca2
[ 30]  f←⍎t1[i;7 8]
[ 31]  j←1
[ 32] w2:→(j>1↑⍴v2)/ufa2
[ 33]  →(f≠⍎v2[j;1 2])/ss2
[ 34]  t2←t2,[1]1 12⍴t1[i;],v2[j;]
[ 35] ss2:j←j+1
[ 36]  →w2
[ 37] ufa2:i←i+1
[ 38]  →m2
[ 39] aca2:
[ 40] ⍝ 't2='
[ 41] ⍝ t2
[ 42]  t3←0 16⍴0
[ 43]  i←1
[ 44] m3:→(i>1↑⍴t2)/aca3
[ 45]  f←⍎t2[i;11 12]
[ 46]  j←1
[ 47] w3:→(j>1↑⍴v3)/ufa3
[ 48]  →(f≠⍎v3[j;1 2])/ss3
[ 49]  t3←t3,[1]1 16⍴t2[i;],v3[j;]
[ 50] ss3:j←j+1
[ 51]  →w3
[ 52] ufa3:i←i+1
[ 53]  →m3
[ 54] aca3:
[ 55] ⍝ 't3='
[ 56] ⍝ t3
[ 57]  t4←0 20⍴0
[ 58]  i←1
[ 59] m4:→(i>1↑⍴t3)/aca4
[ 60]  f←⍎t3[i;15 16]
[ 61]  j←1
[ 62] w4:→(j>1↑⍴v4)/ufa4
[ 63]  →(f≠⍎v4[j;1 2])/ss4
[ 64]  t4←t4,[1]1 20⍴t3[i;],v4[j;]
[ 65] ss4:j←j+1
[ 66]  →w4
[ 67] ufa4:i←i+1
[ 68]  →m4
[ 69] aca4:
[ 70] ⍝ 't4='
[ 71] ⍝ t4
[ 72]  t5←0 24⍴0
[ 73]  i←1
[ 74] m5:→(i>1↑⍴t4)/aca5
[ 75]  f←⍎t4[i;19 20]
[ 76]  j←1
[ 77] w5:→(j>1↑⍴v5)/ufa5
[ 78]  →(f≠⍎v5[j;1 2])/ss5
[ 79]  t5←t5,[1]1 24⍴t4[i;],v5[j;]
[ 80] ss5:j←j+1
[ 81]  →w5
[ 82] ufa5:i←i+1
[ 83]  →m5
[ 84] aca5:
```

```
[ 85] ⍝ 't5='
[ 86] ⍝ t5
[ 87]  i←1
[ 88]  t6←0 28⍴0
[ 89] m6:→(i>1↑⍴t5)/aca6
[ 90]  f←⍋t5[i;23 24]
[ 91]  j←1
[ 92] w6:→(j>1↑⍴v6)/ufa6
[ 93]  →(f≠⍋v6[j;1 2])/ss6
[ 94]  t6←t6,[1]1 28⍴t5[i;],v6[j;]
[ 95] ss6:j←j+1
[ 96]  →w6
[ 97] ufa6:i←i+1
[ 98]  →m6
[ 99] aca6:
[100] ⍝ 't6='
[101] ⍝ t6
[102]  i←1
[103] t88:→(i>1↑⍴t6)/fik
[104]  →((⍋t6[i;1 2 3 4])≠⍋t6[i;25 26 27 28])/sok
[105]  r←r,[1]1 40⍴t6[i;],2 0⍕ind
[106] sok:i←i+1
[107]  →t88
[108] fik:
------------------------------------------------------------
[ 0]  euler61_3a;i;zz
[ 1]  R61←0 6⍴0
[ 2]  ''perm61⍳6
[ 3]  i←1
[ 4] t1:→(i>720)/0
[ 5]  zz←euler61_2a R61[i;]
[ 6]  →(0=1↑⍴zz)/somk
[ 7]  i
[ 8]  zz
[ 9]  '-----------------'
[10] somk:
[11]  i←i+1
[12]  →t1
------------------------------------------------------------
[ 0]  euler61a;x;n;octa;hepta;hexa;penta;quad;tria
[ 1]  x←19
[ 2]  octa←⍳0
[ 3] t1:
[ 4]  n←x×(3×x)-2
[ 5]  →(n>9999)/fim
[ 6]  octa←octa,n
[ 7]  x←x+1
[ 8]  →t1
[ 9] fim:
[10]  x←1
[11]  hepta←⍳0
[12] t2:
[13]  n←(x×(5×x)-3)÷2
[14]  →(n>9999)/fim2
[15]  →(n<1000)/soma1
[16]  hepta←hepta,n
[17] soma1:x←x+1
[18]  →t2
[19] fim2:
[20]  hexa←⍳0
[21]  x←1
[22] t3:
[23]  n←x×(2×x)-1
```

```
[24]  →(n>9999)/fim3
[25]  →(n<1000)/soma2
[26]  hexa←hexa,n
[27] soma2:x←x+1
[28]  →t3
[29] fim3:
[30]  penta←⍳0
[31]  x←1
[32] t4:
[33]  n←(x×(3×x)-1)÷2
[34]  →(n>9999)/fim4
[35]  →(n<1000)/soma3
[36]  penta←penta,n
[37] soma3:
[38]  x←x+1
[39]  →t4
[40] fim4:
[41]  quad←⍳0
[42]  x←1
[43] t5:
[44]  n←x*2
[45]  →(n>9999)/fim5
[46]  →(n<1000)/soma4
[47]  quad←quad,n
[48] soma4:
[49]  x←x+1
[50]  →t5
[51] fim5:
[52]  tria←⍳0
[53]  x←1
[54] t6:
[55]  n←(x×x+1)÷2
[56]  →(n>9999)/fim6
[57]  →(n<1000)/soma5
[58]  tria←tria,n
[59] soma5:
[60]  x←x+1
[61]  →t6
[62] fim6:
[63]  TRIA←4 0⍉((⍴tria),1)⍴tria
[64]  QUAD←4 0⍉((⍴quad),1)⍴quad
[65]  PENTA←4 0⍉((⍴penta),1)⍴penta
[66]  HEXA←4 0⍉((⍴hexa),1)⍴hexa
[67]  HEPTA←4 0⍉((⍴hepta),1)⍴hepta
[68]  OCTA←4 0⍉((⍴octa),1)⍴octa
-------------------------------------------------------------
[ 0]  r←fatprim47 c;c1;x;i;r;j;p
[ 1]  c1←c
[ 2]  x←(c≥PRIMO)/PRIMO
[ 3]  r←''
[ 4]  i←1
[ 5] t1:
[ 6]  p←1
[ 7] t2:→(1=c1)/acabou
[ 8]  →(0=x[i]|c1)/sim
[ 9]  →(p≠1)/voltou
[10]  i←i+1
[11]  →t1
[12] voltou:r←r,p
[13]  i←i+1
[14]  →t1
[15] sim:
[16]  c1←c1÷x[i]
```

```
[17]  p←p×x[i]
[18]  →t2
[19] acabou:
[20]  →(p=1)/0
[21]  r←r,p
-------------------------------------------------------------
[ 0]  r←gera0;te;re;xa;aa
[ 1]  r←2ρ0
[ 2]  te←20 80ρ' '
[ 3]  te[⍳aa←1↑ρTF0;]←TF0←ajusta80 TF0
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80ρ80↑'o menor deles.'
[12]  re←2969
[13]  →ju
[14] eum:
[15]  te[aa+1;]←1 80ρ80↑'o número que está no meio (nem o maior, nem o menor).'
[16]  re←6299
[17]  →ju
[18] edo:
[19]  te[aa+1;]←1 80ρ80↑'o maior deles.'
[20]  re←9629
[21]  →ju
[22] etr:
[23]  te[aa+1;]←1 80ρ80↑'a diferença constante, entre 2 deles.'
[24]  re←3330
[25]  →ju
[26] equ:
[27]  te[aa+1;]←1 80ρ80↑'a soma dos dois maiores.'
[28]  re←15928
[29]  →ju
[30] eci:
[31]  te[aa+1;]←1 80ρ80↑'a soma dos dois menores.'
[32]  re←9268
[33]  →ju
[34] ju:
[35]  r[1]←⊂te
[36]  r[2]←⊂re
-------------------------------------------------------------
[ 0]  r←gera1;te;re;xa;aa
[ 1]  r←2ρ0
[ 2]  te←20 80ρ' '
[ 3]  te[⍳aa←1↑ρTF1;]←TF1←ajusta80 TF1
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80ρ80↑'$N<400000$.'
[12]  re←398771  ⍝ comprimento 358
[13]  →ju
[14] eum:
[15]  te[aa+1;]←1 80ρ80↑'$N<500000$.'
[16]  re←499607  ⍝ 393
[17]  →ju
[18] edo:
```

```
[19]  te[aa+1;]←1 80ρ80↑'$N<600000$.'
[20]  re←590819  ⍝ 427
[21]  →ju
[22] etr:
[23]  te[aa+1;]←1 80ρ80↑'$N<700000$.'
[24]  re←697591  ⍝ 461
[25]  →ju
[26] equ:
[27]  te[aa+1;]←1 80ρ80↑'$N<800000$.'
[28]  re←796307  ⍝ 489
[29]  →ju
[30] eci:
[31]  te[aa+1;]←1 80ρ80↑'$N<900000$.'
[32]  re←868151 ⍝ 512
[33]  →ju
[34] ju:
[35]  r[1]←⊂te
[36]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera2;te;re;xa;aa
[ 1]  r←2ρ0
[ 2]  te←20 80ρ' '
[ 3]  te[⍳aa←1↑ρTF2;]←TF2←ajusta80 TF2
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80ρ80↑'Ache a soma dos dois números $x$, abaixo de 1.000.000, que'
[12]  te[aa+2;]←1 80ρ80↑'têm $2x$ e $3x$ contendo os mesmos dígitos.'
[13]  re←142857+285714
[14]  →ju
[15] eum:
[16]  te[aa+1;]←1 80ρ80↑'Ache o maior número $x$, acima de 1.000.000 e abaixo '
[17]  te[aa+2;]←1 80ρ80↑'de 10.000.000, que tem $2x$, $3x$  e $6x$ contendo '
[18]  te[aa+3;]←1 80ρ80↑'os mesmos dígitos.'
[19]  re←7142857
[20]  →ju
[21] edo:
[22]  te[aa+1;]←1 80ρ80↑'Ache o menor número $x$, acima de 1.000.000 e abaixo '
[23]  te[aa+2;]←1 80ρ80↑'de 10.000.000, que tem $2x$, $3x$  e $6x$ contendo '
[24]  te[aa+3;]←1 80ρ80↑'os mesmos dígitos.'
[25]  re←1428570
[26]  →ju
[27] etr:
[28]  te[aa+1;]←1 80ρ80↑'Ache a soma dos números $x_i$, acima de 1.000.000 e abaixo '
[29]  te[aa+2;]←1 80ρ80↑'de 10.000.000, que tem $2x$, $3x$, $4x$, $5x$ e $6x$ contendo'
[30]  te[aa+3;]←1 80ρ80↑'os mesmos dígitos.'
[31]  re←1428570+1429857
[32]  →ju
[33] equ:
[34]  te[aa+1;]←1 80ρ80↑'Ache o maior número $x$, acima de 1.000.000 e abaixo '
[35]  te[aa+2;]←1 80ρ80↑'de 10.000.000, que tem $2x$, $3x$, $4x$, $5x$ e $6x$ contendo '
[36]  te[aa+3;]←1 80ρ80↑'os mesmos dígitos.'
[37]  re←1429857
[38]  →ju
[39] eci:
[40]  te[aa+1;]←1 80ρ80↑'Ache a quantidade de números $x_i$, entre 1.000.000 e'
[41]  te[aa+2;]←1 80ρ80↑'10.000.000, que tem $2x$, $3x$ e $6x$ contendo '
[42]  te[aa+3;]←1 80ρ80↑'os mesmos dígitos.'
[43]  re←5
```

```
[44]  →ju
[45] ju:
[46]  r[1]←⊂te
[47]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera3;te;re;xa;aa
[ 1]  r←2ρ0
[ 2]  te←20 80ρ' '
[ 3]  te[⍳aa←1↑ρTF3;]←TF3←ajusta80 TF3
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80ρ80↑'abaixo de 9800 ?'
[12]  re←239
[13]  →ju
[14] eum:
[15]  te[aa+1;]←1 80ρ80↑'abaixo de 9500 ?'
[16]  re←224
[17]  →ju
[18] edo:
[19]  te[aa+1;]←1 80ρ80↑'abaixo de 9000 ?'
[20]  re←204
[21]  →ju
[22] etr:
[23]  te[aa+1;]←1 80ρ80↑'abaixo de 8500 ?'
[24]  re←174
[25]  →ju
[26] equ:
[27]  te[aa+1;]←1 80ρ80↑'abaixo de 8000 ?'
[28]  re←153
[29]  →ju
[30] eci:
[31]  te[aa+1;]←1 80ρ80↑'abaixo de 7500 ?'
[32]  re←135
[33]  →ju
[34] ju:
[35]  r[1]←⊂te
[36]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera4;te;re;xa;aa
[ 1]  r←2ρ0
[ 2]  te←20 80ρ' '
[ 3]  te[⍳aa←1↑ρTF4;]←TF4←ajusta80 TF4
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80ρ80↑'$a,b < 99$'
[12]  re←970
[13]  →ju
[14] eum:
[15]  te[aa+1;]←1 80ρ80↑'$a,b < 98$'
[16]  re←945
[17]  →ju
[18] edo:
[19]  te[aa+1;]←1 80ρ80↑'$a,b < 97$'
```

```
[20]  re←928
[21]  →ju
[22] etr:
[23]  te[aa+1;]←1 80ρ80↑'$a,b < 96$'
[24]  re←911
[25]  →ju
[26] equ:
[27]  te[aa+1;]←1 80ρ80↑'$a,b < 95$'
[28]  re←909
[29]  →ju
[30] eci:
[31]  te[aa+1;]←1 80ρ80↑'$a,b < 94$'
[32]  re←883
[33]  →ju
[34] ju:
[35]  r[1]←⊂te
[36]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera5;te;re;xa;aa;bb
[ 1]  r←2ρ0
[ 2]  te←20 80ρ' '
[ 3]  te[⍳aa←1↑ρTF5;]←TF5←ajusta80 TF5
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80ρ80↑'o valor de 4 Reais ?'
[12]  re←38835
[13]  →ju
[14] eum:
[15]  te[aa+1;]←1 80ρ80↑'o valor de 4 Reais e 50 centavos ?'
[16]  re←63190
[17]  →ju
[18] edo:
[19]  te[aa+1;]←1 80ρ80↑'o valor de 4 Reais e 60 centavos ?'
[20]  re←69275
[21]  →ju
[22] etr:
[23]  te[aa+1;]←1 80ρ80↑'o valor de 4 Reais e 70 centavos ?'
[24]  re←75800
[25]  →ju
[26] equ:
[27]  te[aa+1;]←1 80ρ80↑'o valor de 4 Reais e 80 centavos ?'
[28]  re←82825
[29]  →ju
[30] eci:
[31]  te[aa+1;]←1 80ρ80↑'o valor de 4 Reais e 90 centavos ?'
[32]  re←90350
[33]  →ju
[34] ju:
[35]  r[1]←⊂te
[36]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera6;te;re;xa;aa
[ 1]  r←2ρ0
[ 2]  te←20 80ρ' '
[ 3]  te[⍳aa←1↑ρTF6;]←TF6←ajusta80 TF6
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
```

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[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80ρ80↑'13 ⍀% ?'
[12]  re←3593
[13]  →ju
[14] eum:
[15]  te[aa+1;]←1 80ρ80↑'12.5 ⍀% ?'
[16]  re←5001
[17]  →ju
[18] edo:
[19]  te[aa+1;]←1 80ρ80↑'12 ⍀% ?'
[20]  re←6523
[21]  →ju
[22] etr:
[23]  te[aa+1;]←1 80ρ80↑'11.5 ⍀% ?'
[24]  re←8315
[25]  →ju
[26] equ:
[27]  te[aa+1;]←1 80ρ80↑'11 ⍀% ?'
[28]  re←12201
[29]  →ju
[30] eci:
[31]  te[aa+1;]←1 80ρ80↑'10.5 ⍀% ?'
[32]  re←17287
[33]  →ju
[34] ju:
[35]  r[1]←⊂te
[36]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera7;te;re;xa;aa
[ 1]  r←2ρ0
[ 2]  te←20 80ρ' '
[ 3]  te[⍳aa←1↑ρTF7;]←TF7←ajusta80 TF7
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80ρ80↑'qual o maior dos números.'
[12]  re←4160357289
[13]  →ju
[14] eum:
[15]  te[aa+1;]←1 80ρ80↑'a soma dos dois maiores números.'
[16]  re←+/4130952867 4160357289
[17]  →ju
[18] edo:
[19]  te[aa+1;]←1 80ρ80↑'a soma dos 3 maiores números.'
[20]  re←+/4106357289 4130952867 4160357289
[21]  →ju
[22] etr:
[23]  te[aa+1;]←1 80ρ80↑'a soma do maior e do menor dos números achados.'
[24]  re←+/1406357289 4160357289
[25]  →ju
[26] equ:
[27]  te[aa+1;]←1 80ρ80↑'a soma dos 5 maiores números achados.'
[28]  re←+/1406357289 1430952867 1460357289 4106357289 4130952867 4160357289
[29]  →ju
[30] eci:
[31]  te[aa+1;]←1 80ρ80↑'a diferença entre o maior e o menor dos números achados.'
```

```
[32]  re←4160357289-1406357289
[33]  →ju
[34] ju:
[35]  r[1]←⊂((aa+2),80)↑te
[36]  r[2]←⊂re
-------------------------------------------------------------
[ 0]  r←gera8;te;re;xa;aa
[ 1]  r←2ρ0
[ 2]  te←20 80ρ' '
[ 3]  te[⍳aa←1↑ρTF8;]←TF8←ajusta80 TF8
[ 4]  xa←?5
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80ρ80↑'qual o produto dos dois maiores fatores primos do menor número ?'
[12]  re←×/13 491
[13]  →ju
[14] eci:
[15]  te[aa+1;]←1 80ρ80↑'qual o maior fator primo encontrado (nos 4 números) ?'
[16]  re←677
[17]  →ju
[18] equ:
[19]  te[aa+1;]←1 80ρ80↑'qual o maior fator primo do terceiro número (o 1. é o menor) ?'
[20]  re←83
[21]  →ju
[22] eum:
[23]  te[aa+1;]←1 80ρ80↑'qual o maior fator primo do segundo número (o 1. é o menor) ?'
[24]  re←47
[25]  →ju
[26] edo:
[27]  te[aa+1;]←1 80ρ80↑'qual o maior fator primo do primeiro (o menor) número ?'
[28]  re←491
[29]  →ju
[30] etr:
[31]  te[aa+1;]←1 80ρ80↑'qual o produto dos dois maiores fatores do segundo número (o 1. é
       o menor) ?'
[32]  re←×/31 47
[33]  →ju
[34] ju:
[35]  r[1]←⊂((aa+1),80)↑te
[36]  r[2]←⊂re
-------------------------------------------------------------
[ 0]  r←gera9;te;re;xa;aa
[ 1]  r←2ρ0
[ 2]  te←20 80ρ' '
[ 3]  te[⍳aa←1↑ρTF9;]←TF9←ajusta80 TF9
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80ρ80↑'a soma do pentagonal e do quadrado.'
[12]  re←+/2882 5625
[13]  →ju
[14] eum:
[15]  te[aa+1;]←1 80ρ80↑'a soma do pentagonal e do heptagonal.'
[16]  re←+/2882 2512
[17]  →ju
```

```
[18] edo:
[19]  te[aa+1;]←1 80⍴80↑'a soma do pentagonal, do quadrado e do heptagonal.'
[20]  re←+/2882 5625 2512
[21]  →ju
[22] etr:
[23]  te[aa+1;]←1 80⍴80↑'a soma do heptagonal e do octagonal.'
[24]  re←+/2512 1281
[25]  →ju
[26] equ:
[27]  te[aa+1;]←1 80⍴80↑'a soma do quadrado e do octagonal.'
[28]  re←+/5625 1281
[29]  →ju
[30] eci:
[31]  te[aa+1;]←1 80⍴80↑'a soma do pentagonal, do heptagonal e do octagonal.'
[32]  re←+/2882 2512 1281
[33]  →ju
[34] ju:
[35]  r[1]←⊂((aa+1),80)↑te
[36]  r[2]←⊂re
-------------------------------------------------------------
[ 0]  r←a igualа55 b;aa;bb;igual;i
[ 1]  aa←' 0'edit ¯80↑a
[ 2]  bb←' 0'edit ¯80↑b
[ 3]  igual←1
[ 4]  i←80
[ 5] t1:→(i<1)/fim
[ 6]  →(aa[i]=bb[i])/soma
[ 7]  igual←0
[ 8]  i←0
[ 9]  →t1
[10] soma:
[11]  i←i-1
[12]  →t1
[13] fim:r←igual
-------------------------------------------------------------
[ 0]  simnao listaeu ws;a;a;aa;b;i;k;lixo;n;r
[ 1] ⍝ lista os 10 exercícios deste ws
[ 2]  k←0 80⍴' '
[ 3]  →(simnao=0)/oba
[ 4]  k←9 80⍴' '
[ 5]  k[1;]←80↑'\documentclass{article}'
[ 6]  k[2;]←80↑'\usepackage[pc850]{inputenc}'
[ 7]  k[3;]←80↑'\usepackage[table]{xcolor}'
[ 8]  k[4;]←80↑'\usepackage{graphicx}'
[ 9]  k[5;]←80↑'\usepackage[dvips]{geometry}'
[10]  k[6;]←80↑'\geometry{a4paper,left=0.7in,right=0.5in,top=0.7in,bottom=1in}'
[11]  k[7;]←80↑'\begin{document} \large \setlength{\parindent}{0pt}'
[12]  k[8;]←80↑'\section*{Algoritmos selecionados}'
[13]  k[9;]←80↑'Por P. Kantek, com auxílio do site projecteuler.net\\*'
[14] oba:n←0
[15] t1:→(n>9)/fim
[16]  b←⍎'gera','0'⍕n
[17]  i←20 80↑⊃b[1]
[18]  i←(80≠+/[2]i=' ')/[1]i
[19]  k←k,[1]i
[20]  k←k,[1]1 80⍴80↑'(Workspace = ',(8↑ws),' Função = ',(2 0⍕n+1),')\\[2cm]'
[21]  n←n+1
[22]  →t1
[23] fim:
[24]  →(simnao=0)/ufa
[25]  k←k,[1]1 80⍴80↑'\end{document}'
[26] ufa:lixo←k ⎕FM aa←'c:\apl2\leu',ws[4+⍳3],'.tex'
[27]  'gravado ',aa
```

```
------------------------------------------------------------
[ 0]  rr←a mult56 b;a1;b1;r;i;vai;temp
[ 1]  →(3=+/'100'=3↑a)/cem
[ 2]  a1←¯2↑'00',a
[ 3]  b1←¯210↑(210ρ'0'),b
[ 4]  r←3 210ρ' '
[ 5]  i←210
[ 6]  vai←0
[ 7] t1:→(i<2)/fim1
[ 8]  temp←vai+(⍎a1[2])×⍎b1[i]
[ 9]  →(temp>9)/foi1
[10]  r[1;i]←1 0⍕temp
[11]  vai←0
[12]  i←i-1
[13]  →t1
[14] foi1:
[15]  r[1;i]←1 0⍕10|temp
[16]  vai←⌊temp÷10
[17]  i←i-1
[18]  →t1
[19] fim1:
[20]  i←210
[21]  r[2;210]←'0'
[22]  vai←0
[23] t2:→(i<2)/fim2
[24]  temp←vai+(⍎a1[1])×⍎b1[i]
[25]  →(temp>9)/foi2
[26]  r[2;i-1]←1 0⍕temp
[27]  vai←0
[28]  i←i-1
[29]  →t2
[30] foi2:
[31]  r[2;i-1]←1 0⍕10|temp
[32]  vai←⌊temp÷10
[33]  i←i-1
[34]  →t2
[35] fim2:i←210
[36]  vai←0
[37] t3:→(i<2)/ufa
[38]  temp←vai+(⍎r[1;i])+⍎r[2;i]
[39]  →(temp>9)/cri
[40]  r[3;i]←1 0⍕temp
[41]  vai←0
[42]  i←i-1
[43]  →t3
[44] cri:
[45]  r[3;i]←1 0⍕temp-10
[46]  vai←1
[47]  i←i-1
[48]  →t3
[49] ufa:rr←r[3;]
[50]  →0
[51] cem:
[52]  rr←(¯208↑(210ρ'0'),b),'00'
------------------------------------------------------------
[ 0]  a perm61 x;i;alfa
[ 1]  →(1=ρ,x)/oba
[ 2]  i←1
[ 3] t1:→(i>ρx)/0
[ 4]  alfa←(ρx)ρ1
[ 5]  alfa[i]←0
[ 6]  (a,x[i])perm61 alfa/x
[ 7]  i←i+1
```

```
[ 8]  →t1
[ 9] oba:
[10]  R61←R61,[1]1 6⍴a,x
-------------------------------------------------------------
[0]  r←a pot56 b;ba
[1]  ba←⍎b
[2]  a←⍕a
[3]  r←'1'
[4] t1:→(ba=0)/fim
[5]  r←a mult56 r
[6]  ba←ba-1
[7]  →t1
[8] fim:
-------------------------------------------------------------
[ 0]  r←a soma55 b;rr;aa;bb;i;vaium;temp
[ 1]  rr←80⍴' '
[ 2]  aa←' 0'edit ¯80↑a
[ 3]  bb←' 0'edit ¯80↑b
[ 4]  i←80
[ 5]  vaium←0
[ 6] t1:→(i<1)/fim
[ 7]  temp←vaium+(⍎aa[i])+⍎bb[i]
[ 8]  →(temp<10)/ok
[ 9]  temp←temp-10
[10]  vaium←1
[11]  →junta
[12] ok:vaium←0
[13] junta:rr[i]←1 0⍕temp
[14]  i←i-1
[15]  →t1
[16] fim:r←(+/∧⍀rr='0')↓rr
-------------------------------------------------------------
[0]  r←tiradups x
[1]  r←((x⍳x)=⍳⍴x)/x
-------------------------------------------------------------
[ 0]  opesq vivoe09a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;quais;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLe09   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAe09←ajusta80 FOLHALAe09
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAe09)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 5⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←89 80⍴' '
[16]  f←FOLHALAe09
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
```

```
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[88;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[89;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←quais←¯1+4?10
[35]  ⍝'zz←gera','0'⍕xx[1]
[36]  esse[7+⍳20;]←20 80↑⊃zz[1]
[37]  resp←resp,,⊃zz[2]
[38]  ⍝'zz←gera','0'⍕xx[2]
[39]  esse[27+⍳20;]←20 80↑⊃zz[1]
[40]  resp←resp,,⊃zz[2]
[41]  ⍝'zz←gera','0'⍕xx[3]
[42]  esse[47+⍳20;]←20 80↑⊃zz[1]
[43]  resp←resp,,⊃zz[2]
[44]  ⍝'zz←gera','0'⍕xx[4]
[45]  esse[67+⍳20;]←20 80↑⊃zz[1]
[46]  resp←resp,,⊃zz[2]
[47]  resu←resu,[1]1 5⍴resp
[48]  acuja←(f[;2]='#')/⍳1↑⍴f
[49]  f[acuja;⍳80]←esse[⍝,f[acuja;3 4],' ';]
[50]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[51]  ⍞←(⍕xk←xk+1),'-'
[52]  →testa
[53] fim:upag←(1 0+⍴f)⍴' '
[54]  →(1=≡n)/elafa
[55]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[56]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[57]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯'-'edit(lixo1←7 0 25 0 16 0 16 0 16 0)⍕resu
[58]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[59]  →terminando
[60] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[61] elafa:aaa←(ylu[;⍳36],'¯'-'edit 20 0⍕0 1↓resu)
[62] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[63]  lixonol←aaa ⍙FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[64]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[65] terminando:
[66]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[67]  relat[1↑⍴relat;;]←upag
[68]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[69] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[70]  lixonol←lixonol ⍙FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[71]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[72]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivoe11

```
[0]  AVISO
[1]  'Tem uma encrenca aqui: onde est~ao os arquivo suxxx.txt do sudoku :  ??'
------------------------------------------------------------
[ 0]  r←EPOSSIVEL x;k;l;c;sg
[ 1]  k←x[1] ⋄ l←x[2] ⋄ c←x[3]
[ 2]  →(~k∈M[l;])/bl1
[ 3]  r←0
[ 4]  →0
[ 5] bl1:→(~k∈M[;c])/bl2
[ 6]  r←0
[ 7]  →0
```

```
[ 8] bl2:sg←SUBGRUPO l,c
[ 9]  →(~k∈(,M)[sg])/bl3
[10]  r←0
[11]  →0
[12] bl3:r←1
-------------------------------------------------------------
[ 0]  r←OPROXIMO x;l;c
[ 1]  l←x[1] ⋄ c←x[2]
[ 2]  →((l>9)∨(c>9))/lixo
[ 3]  c←c+1
[ 4] s1:→(c>9)/somal
[ 5]  →(M[l;c]≠0)/somac
[ 6]  r←l,c
[ 7]  →0
[ 8] somac:c←c+1
[ 9]  →s1
[10] somal:c←1
[11]  l←l+1
[12]  →s1
[13] lixo:'deu xabu'
-------------------------------------------------------------
[ 0]  r←SUBGRUPO x;l;c
[ 1]  l←x[1] ⋄ c←x[2]
[ 2]  →(((l=1)∨(l=2)∨(l=3))∧((c=1)∨(c=2)∨(c=3)))/q1
[ 3]  →(((l=1)∨(l=2)∨(l=3))∧((c=4)∨(c=5)∨(c=6)))/q2
[ 4]  →(((l=1)∨(l=2)∨(l=3))∧((c=7)∨(c=8)∨(c=9)))/q3
[ 5]  →(((l=4)∨(l=5)∨(l=6))∧((c=1)∨(c=2)∨(c=3)))/q4
[ 6]  →(((l=4)∨(l=5)∨(l=6))∧((c=4)∨(c=5)∨(c=6)))/q5
[ 7]  →(((l=4)∨(l=5)∨(l=6))∧((c=7)∨(c=8)∨(c=9)))/q6
[ 8]  →(((l=7)∨(l=8)∨(l=9))∧((c=1)∨(c=2)∨(c=3)))/q7
[ 9]  →(((l=7)∨(l=8)∨(l=9))∧((c=4)∨(c=5)∨(c=6)))/q8
[10]  →(((l=7)∨(l=8)∨(l=9))∧((c=7)∨(c=8)∨(c=9)))/q9
[11] q1:r←1 2 3 10 11 12 19 20 21
[12]  →0
[13] q2:r←4 5 6 13 14 15 22 23 24
[14]  →0
[15] q3:r←7 8 9 16 17 18 25 26 27
[16]  →0
[17] q4:r←28 29 30 37 38 39 46 47 48
[18]  →0
[19] q5:r←31 32 33 40 41 42 49 50 51
[20]  →0
[21] q6:r←34 35 36 43 44 45 52 53 54
[22]  →0
[23] q7:r←55 56 57 64 65 66 73 74 75
[24]  →0
[25] q8:r←58 59 60 67 68 69 76 77 78
[26]  →0
[27] q9:r←61 62 63 70 71 72 79 80 81
-------------------------------------------------------------
[ 0]  r←SUDOKUa x;l;c;k;resp;l1;c1
[ 1]  resp←0
[ 2]  l←x[1] ⋄ c←x[2]
[ 3] ⍝ →(l>3)/feio
[ 4] ⍝ se a linha acima for comentada o programa vai ate o fim...
[ 5]  k←1
[ 6] volta:
[ 7]  resp←0
[ 8]  →(~EPOSSIVEL k,l,c)/somak
[ 9]  M[l;c]←k
[10] ⍝ →((l=9)∧(c=9))/fechou  -------------- alteracao -------------
[11]  →((l=9)∧(~0∈c↓M[l;]))/fechou
[12]  (l1 c1)←OPROXIMO l,c
```

```
[13]  resp←SUDOKUa l1,c1
[14]  →(resp=999)/feio
[15]  →(resp=1)/conta
[16]  M[l1;c1]←0
[17]  →somak
[18] fechou:resp←1
[19] somak:k←k+1
[20] conta:→((k≤9)∧(resp≠1))/volta
[21] acabou:r←resp
[22]  →0
[23] feio:r←999
------------------------------------------------------------
[0]  r←areatr102 x;z;r1;r2
[1]  z←3 3⍴x[1],x[2],1,x[3],x[4],1,x[5],x[6],1
[2]  r1←(z[1;1]×z[2;2]×z[3;3])+(z[1;3]×z[2;1]×z[3;2])+(z[1;2]×z[2;3]×z[3;1])
[3]  r2←(z[1;3]×z[2;2]×z[3;1])+(z[1;2]×z[2;1]×z[3;3])+(z[1;1]×z[2;3]×z[3;2])
[4]  r←0.5×r1-r2
------------------------------------------------------------
[ 0]  r←bounce x;z;i;asc;des;tam
[ 1] ⍝ devolve 1 se o x for bounce, 0 senao
[ 2]  r←0
[ 3]  tam←1+⌊10⍟x
[ 4]  z←(tam⍴10)⊤x
[ 5]  asc←1
[ 6]  i←1
[ 7] t1:→(i≥⍴z)/f6
[ 8]  asc←asc∧z[i+1]≥z[i]
[ 9]  i←i+1
[10]  →t1
[11] f6:
[12]  des←1
[13]  i←1
[14] t2:→(i≥⍴z)/f7
[15]  des←des∧z[i+1]≤z[i]
[16]  i←i+1
[17]  →t2
[18] f7:r←(asc=0)∧(des=0)
------------------------------------------------------------
[ 0]  data brilha n;a;lixo;b;r
[ 1] ⍝ gera o formulario da sexta brilhante com o programa n deste ws
[ 2]  a←100 80⍴' '
[ 3]  a[1;]←80↑'\documentclass{article}'
[ 4]  a[2;]←80↑'\usepackage[pc850]{inputenc}'
[ 5]  a[3;]←80↑'\usepackage[table]{xcolor}'
[ 6]  a[4;]←80↑'\usepackage{graphicx}'
[ 7]  a[5;]←80↑'\usepackage[dvips]{geometry}'
[ 8]  a[6;]←80↑'\geometry{a4paper,left=0.7in,right=0.5in,top=0.7in,bottom=1in}'
[ 9]  a[7;]←80↑'\begin{document} \large \setlength{\parindent}{0pt}'
[10]  a[8;]←80↑'\section*{projeto SEXTA BRILHANTE}'
[11]  a[9;]←80↑'Um desafio para as cabeças brilhantes da UP\\[1cm]'
[12]  a[11;]←80↑'Desafio do dia ',data
[13] ⍝ a[12;]←80↑'{ \huge '
[14]  b←⍎'gera','0'⍕n
[15]  a[12+⍳20;]←20 80↑⊃b[1]
[16]  r←⍕⊃b[2]
[17]  r
[18]  a[34;]←80↑'\subsubsection*{Regras}'
[19]  a[36;]←80↑'1. Um novo desafio é proposto a cada sexta feira, sempre das 18h00'
[20]  a[37;]←80↑'às 19h00, na sala 42 do Bloco Vermelho.'
[21]  a[39;]←80↑'2. Estão convidados todos os alunos de EC e BSI da Universidade'
[22]  a[40;]←80↑'Positivo.'
[23]  a[42;]←80↑'3. A entrega do desafio é a devolução desta folha com o resultado'
[24]  a[43;]←80↑'e a identificação do autor da solução.'
```

```
[25]  a[45;]←80↑'4. Ao achar a soluçto, por favor mantenha-a secreta, para preservar'
[26]  a[46;]←80↑'o salutar clima de disputa do desafio.'
[27]  a[48;]←80↑'5. Como é muito difícil (impossível ?) acertar na primeira tentativa'
[28]  a[49;]←80↑'você pode apresentar informalmente sua soluçto e perguntar se ela'
[29]  a[50;]←80↑'está ou nto correta, ANTES de entregar formalmente a resposta.'
[30]  a[52;]←80↑'6. Dúvidas ou esclarecimentos: ehamerski@gmail.com ou pkantek@up.com.br.'
[31]  a[54;]←80↑'7. A entrega deve ser feita pessoalmente aos prof. Hamerski ou P.Kantek.'
[32]  a[56;]←80↑'\vspace*{2cm}'
[33]  a[58;]←80↑'\begin{verbatim}'
[34]  a[60;]←80↑'Aluno_____________________________________________________ Data___/___/_
      __'
[35]  a[63;]←80↑'Curso, série e turno_____________________________'
[36]  a[66;]←80↑'Resposta_____________________________'
[37]  a[69;]←80↑'Assinatura do aluno_____________________'
[38]  a[70;]←80↑'\end{verbatim} \end{document}'
[39]  lixo←(70 80↑a)⍎FM'c:\apl2\brilha.tex'
[40]  lixo←⍎FM'c:\apl2\brilhar.res'
[41]  r←r,'-',,lixo
[42]  lixo←r ⍎FM'c:\apl2\brilhar.res'
[43]  'gravado c:\apl2\brilha.tex. Resposta em c:\apl2\brilhar.res'
-------------------------------------------------------------
[ 0]  cavaleiroe11a n;aaa;acuja;esse;f;lixo1;quais;relat;resp;x;xk;xx;ylu;zz
[ 1]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 2]  FOLHALAe11←ajusta80 FOLHALAe11
[ 3]  relat←⍎FM'c:\apl2\VIVOBLO1'
[ 4]  xk←1
[ 5] testa:→(xk>n)/fim
[ 6]  esse←89 80⍴' '
[ 7]  f←FOLHALAe11
[ 8]  esse[1;⍳⍴x]←x←' ---- Cavaleiros da Tavola Redonda --- '
[ 9]  esse[3;]←80↑4 2⍕1.01
[10]  esse[88;⍳8]←'@000000@'
[11] inica:
[12]  xx←quais←¯1+4?10
[13]  ⍎'zz←gera','0'⍕xx[1]
[14]  esse[7+⍳20;]←20 80↑⊃zz[1]
[15]  resp←,⊃zz[2]
[16]  ⍎'zz←gera','0'⍕xx[2]
[17]  esse[27+⍳20;]←20 80↑⊃zz[1]
[18]  resp←resp,,⊃zz[2]
[19]  ⍎'zz←gera','0'⍕xx[3]
[20]  esse[47+⍳20;]←20 80↑⊃zz[1]
[21]  resp←resp,,⊃zz[2]
[22]  ⍎'zz←gera','0'⍕xx[4]
[23]  esse[67+⍳20;]←20 80↑⊃zz[1]
[24]  resp←resp,,⊃zz[2]
[25]  acuja←(f[;2]='#')/⍳1↑⍴f
[26]  f[acuja;⍳80]←esse[⍎,f[acuja;3 4],' ';]
[27]  ⎕←(⍕xk←xk+1),'-'
[28]  f←(((1↑⍴relat),1↓⍴f)↑relat),[1]f
[29]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'\end{document}'
[30]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'%',⍕resp
[31]  lixo1←f ⍎FM'c:\apl2\CAe11a',('00'⍕xk-1),'.tex'
[32]  →testa
[33] fim:
-------------------------------------------------------------
[ 0]  r←a diomais104 b;base;tam;i;vaium;parc
[ 1]  a←,a ⋄ b←,b ⋄ base←10
[ 2]  tam←1+(⍴a)⌈⍴b
[ 3]  a←(-tam)↑(tam⍴'0'),a
[ 4]  b←(-tam)↑(tam⍴'0'),b
[ 5]  r←tam⍴' '
[ 6]  i←tam
```

```
[ 7]  vaium←0
[ 8] t1:→(i<1)/fim
[ 9]  parc←vaium+(⍎a[i])+⍎b[i]
[10]  vaium←0
[11]  →(parc<base)/ok
[12]  vaium←1
[13]  parc←parc-base
[14] ok:r[i]←1 0⍕parc
[15]  i←i-1
[16]  →t1
[17] fim:→(r[1]≠'0')/0
[18]  r←1↓r
------------------------------------------------------------
[ 0]  k1←sim docf ja;i
[ 1] ⍝fgera uma matriz de caracteres com a ⎕CR da funcao
[ 2] ⍝rse 1 docf 'funcao' gera uma matriz simples so numerada
[ 3] ⍝rse docf 'funcao' gera a matriz com ∇ acima e abaixo
[ 4] ⍝da matriz com ou sem ∇
[ 5]  k1←⎕CR ja
[ 6]  k1←(((1↑⍴k1),6)⍴' '),k1
[ 7]  i←0
[ 8] testa:→(i≥1↑⍴k1)/aca
[ 9]  →(i≥10)/mai1
[10]  k1[i+1;3 4 5]←'[',(1 0⍕i),']'
[11]  →soma
[12] mai1:→(i≥100)/mai2
[13]  k1[i+1;2 3 4 5]←'[',(2 0⍕i),']'
[14]  →soma
[15] mai2:k1[i+1;1 2 3 4 5]←'[',(3 0⍕i),']'
[16] soma:→(i=i←i+1)/testa
[17] aca:
[18]  →(0≠⎕NC'sim')/0
[19]  k1←((1,1↓⍴k1)⍴1000↑'     ∇'),[1]k1
[20]  k1←k1,[1](1,1↓⍴k1)⍴1000↑'     ∇'
------------------------------------------------------------
[ 0]  r←eprimo2 x;y;d
[ 1]  y←⌈x*0.5
[ 2]  d←3
[ 3]  r←1
[ 4]  →(x=2)/aca
[ 5]  →(0=2|x)/naoe
[ 6] t1:→(d>y)/aca
[ 7]  →(0=d|x)/naoe
[ 8]  d←d+2
[ 9]  →t1
[10] aca:→0
[11] naoe:r←0
[12]  →0
------------------------------------------------------------
[ 0]  r←euler102a nn;x;i;ctd;y;tot;a1;a2;a3;lixo
[ 1]  x←⍎FM'c:\apl2\euler102_tri.txt'
[ 2]  i←1
[ 3]  ctd←0
[ 4]  x←x[1,2,698?1000;]
[ 5]  lixo←x ⍎FM'c:\apl2\tr',('000'⍕nn),'.txt'
[ 6] t1:→(i>700)/fim
[ 7]  y←⍎'-¯'edit x[i;]
[ 8]  tot←|areatr102 y
[ 9]  a1←|areatr102 y[1 2],0 0,y[5 6]
[10]  a2←|areatr102 y[1 2 3 4],0 0
[11]  a3←|areatr102 0 0,y[3 4 5 6]
[12] ⍝ i,tot,(a1+a2+a3),a1,a2,a3,y
[13]  →(tot≠a1+a2+a3)/pula
```

```
[14]  ctd←ctd+1
[15] pula:i←i+1
[16]  →t1
[17] fim:r←ctd
------------------------------------------------------------
[ 0]  euler104a;a;b;i;re;r;x
[ 1]  ⎕PP←16
[ 2]  a←1
[ 3]  b←1
[ 4]  i←2
[ 5] t1:r←1000000000|a+b
[ 6]  i←i+1
[ 7]  re←⍕r
[ 8]  →(('1'∈re)∧('2'∈re)∧('3'∈re)∧('4'∈re)∧('5'∈re)∧('6'∈re)∧('7'∈re)∧('8'∈re)∧('9'∈re))/
      esim
[ 9] vorta:
[10]  a←b
[11]  b←r
[12]  →t1
[13] esim:
[14]  x←fibo104f i
[15]  i,r,x
[16]  →(('1'∈x)∧('2'∈x)∧('3'∈x)∧('4'∈x)∧('5'∈x)∧('6'∈x)∧('7'∈x)∧('8'∈x)∧('9'∈x))/ufa
[17]  →vorta
[18] ufa:i
------------------------------------------------------------
[ 0]  euler112a lim;x;ctb;perc
[ 1] ⍝ lim=0.99 para reproduzir o exemplo do euler
[ 2]  x←1
[ 3]  ctb←0
[ 4] t1:
[ 5]  ctb←ctb+bounce x
[ 6]  perc←ctb÷x
[ 7]  →(perc≥lim)/ufa
[ 8]  x←x+1
[ 9]  →t1
[10] ufa:x,perc
------------------------------------------------------------
[ 0]  euler122a xx;aa;cand;i;ind;j;onde;prof;prox;px;seq;velho;x;r
[ 1]  x←1000 17⍴0
[ 2]  x[1;]←1 ¯1 0 0,13⍴0 ⍝ chave, &pai, qtdade de ciclos, 0=fechado, ¯1=aberto
[ 3]  x[2;]←2 1 1 ¯1 1,12⍴0
[ 4]  prox←3
[ 5] ⍝ ta dando erro no 77 (1-2-3-5-7-14-19-38-76-77) e o menor e
[ 6] ⍝ 1-2-4-8-9-17-34-43-77: da um a menos. Idem para o 154 (que pega
[ 7] ⍝ carona no 77). A solucao para este erro e guardar todos os minimos
[ 8] ⍝ e nao so o primeiro.
[ 9] t1:⍝→(prox>990)/acabou
[10]  →(xx=+/(⍳xx)∈x[;1])/acabou
[11]  velho←cand←1↑(x[;4]=¯1)/⍳1000
[12] ⍝ 'velho=',⍕velho
[13]  prof←x[velho;3]
[14] ⍝ 'prof=',⍕prof
[15]  seq←⍳0
[16] aba:→(0=⍴seq)/fr
[17]  →(seq[⍴seq]=1)/ter
[18] fr:seq←seq,x[cand;1]
[19]  cand←x[cand;2]
[20]  →aba
[21] ter:
[22] ⍝ 'seq=',⍕seq
[23]  ind←⍴seq
[24] f4:→(0=ind)/lk
```

```
[25]  →(1=v/aa←(seq[1]+seq[ind])=x[;1])/pula
[26]  x[prox;]←((seq[1]+seq[ind]),velho,(prof+1),¯1),(12↑seq),ind
[27]  prox←prox+1
[28]  →ikj
[29] pula:
[30]  onde←aa/⍳1↑⍴x                  ⍝ so para ter certeza
[31]  →(x[onde;3]≤prof+1)/ikj        ⍝ que a logica esta certa
[32]  'olha aqui ',⍕onde,prox        ⍝ ele nao entra aqui
[33] ikj:                            ⍝ nenhuma vez
[34]  ind←ind-1
[35]  →f4
[36] lk:x[velho;4]←88 ⍝ era 0
[37]  →t1
[38] acabou:r←x[⍳prox-1;]
[39] ⍝ r aqui tem todos os nodos da arvore
[40]  r←(r[;1]∈⍳xx)/[1]r
[41] ⍝ r agora tem so os nodos que interessa
[42]  +/r[;3]
-------------------------------------------------------------
[ 0]  euler234a n;semi;lps;ups;ct
[ 1]  ct←0
[ 2]  semi←0
[ 3] t1:→(n<4)/fim
[ 4]  lps←⌊n*0.5
[ 5]  ups←⌈n*0.5
[ 6] t2:→(eprimo2 lps)/ac5
[ 7]  lps←lps-1
[ 8]  →t2
[ 9] ac5:→(eprimo2 ups)/ac7
[10]  ups←ups+1
[11]  →ac5
[12] ac7:→((0=ups|n)∧(0≠lps|n))/sim
[13]  →((0≠ups|n)∧(0=lps|n))/sim
[14] nao:n←n-1
[15]  →t1
[16] sim:semi←semi+n
[17]  ct←ct+1
[18]  n←n-1
[19]  →t1
[20] fim:semi,ct
-------------------------------------------------------------
[ 0]  euler63a;x;y;z;k;w;ct
[ 1]  ct←1
[ 2]  x←1
[ 3] t1:→(x>1000)/fim
[ 4]  y←1
[ 5] t2:
[ 6]  z←40 0⍕k←x*y
[ 7]  w←(z≠' ')/z
[ 8]  →(y≠⍴w)/volta
[ 9] ⍝
[10]  ct,x,y,w,⍴w
[11]  ct←ct+1
[12]  y←y+1
[13]  →t2
[14] volta:
[15]  x←x+1
[16]  →t1
[17] fim:
-------------------------------------------------------------
[ 0]  euler87a lim;p12;p13;p14;i;j;k;aa;e1;e2;a1;qual;so
[ 1] ⍝ este cara precisa 40MB de workspace. Chamar:
[ 2] ⍝ apl2win -ws 40M numa janela DOS
```

```
[ 3]  qual←(lim÷8)⍴0
[ 4]  p14←p13←p12←PRIMO[⍳908]
[ 5]  p12←p12*2
[ 6]  p13←p13*3
[ 7]  p14←p14*4
[ 8]  p12←(p12<lim)/p12
[ 9]  p13←(p13<lim)/p13
[10]  p14←(p14<lim)/p14
[11]  i←1
[12] t1:→(i>⍴p14)/fim
[13]  j←1
[14] t2:→(j>⍴p13)/fi8
[15]  k←1
[16] t3:→(k>⍴p12)/fi9
[17]  →(lim<aa←p12[k]+p13[j]+p14[i])/fi9
[18] ⍝ p12[k],p13[j],p14[i],aa
[19]  e1←1+⌊aa÷8
[20]  e2←1+8|aa
[21]  a1←2 2 2 2 2 2 2 2⍴qual[e1]
[22]  a1[e2]←1
[23]  qual[e1]←2 2 2 2 2 2 2 2⊥a1
[24] oba:k←k+1
[25]  →t3
[26] fi9:
[27]  j←j+1
[28]  →t2
[29] fi8:
[30]  i←i+1
[31]  →t1
[32] fim:
[33]  i←1
[34]  so←0
[35] t6:→(i>⍴qual)/fim9
[36]  so←so++/2 2 2 2 2 2 2 2⍴qual[i]
[37]  i←i+1
[38]  →t6
[39] fim9:so
-------------------------------------------------------------
[ 0]  euler92a;c;ctd
[ 1]  c←1
[ 2]  ctd←0
[ 3] t1:→(c≥10000000)/aca
[ 4]  →(0≠1000000|c)/ufa
[ 5]  c,ctd
[ 6] ufa:
[ 7]  →(1=onde92 c)/soma
[ 8]  c←c+1
[ 9]  →t1
[10] soma:
[11]  ctd←ctd+1
[12]  c←c+1
[13]  →t1
[14] aca:ctd
-------------------------------------------------------------
[ 0]  euler96;x;ma;j;ctd;lixo;k
[ 1]  R96←50⍴0
[ 2]  x←⎕FM'f:\p\apl2\euler96_sud.txt'
[ 3]  ctd←0
[ 4]  x←50 10 9⍴x
[ 5]  j←1
[ 6]  M96←50 9 9⍴0
[ 7] viv:→(j>50)/fim
[ 8]  M←M96[j;;]←9 9⍴⍎(162⍴1 0)\,x[j;1+⍳9;⍳9]
```

```
[ 9]  'M antes ',⍕j
[10]  M
[11]  k←1
[12] ufa:→(M[1;k]=0)/achou
[13]  k←k+1
[14]  →ufa
[15] achou:
[16]  SUDOKUa 1,k
[17]  'M depois '
[18]  M
[19]  '----------------'
[20]  lixo←⍬
[21]  R96[j]←+/100 10 1×M[1;1 2 3]
[22]  j←j+1
[23]  →viv
[24] fim:
[25]  ctd
------------------------------------------------------------
[0]  r←euler96a nn;x;ma;j;ctd;lixo;k;xy;ijs
[1]  x←ΔFM'f:\p\apl2\euler96_sud.txt'
[2]  ctd←0
[3]  x←50 10 9⍴x
[4]  x←x[ijs←1,29?50;;]
[5]  xy←300 9⍴x
[6]  lixo←xy ΔFM'f:\p\apl2\su',('000'⍕nn),'.txt'
[7]  r←+/R96[ijs]
------------------------------------------------------------
[ 0]  r←euler99a nn;x;y;z;i;c;MAX;IMAX;lixo;za
[ 1]  x←ΔFM'c:\apl2\euler99_be.txt'
[ 2]  y←⍎¯1↓,x,','
[ 3]  z←1000 2⍴y
[ 4]  z←z[1 2,598?1000;]
[ 5]  za←10 0⍕z
[ 6]  lixo←za ΔFM'c:\apl2\be',('000'⍕nn),'.txt'
[ 7]  i←1
[ 8]  MAX←-999999
[ 9] t1:→(i>600)/fim
[10]  c←z[i;2]×⊗z[i;1]
[11]  →(c<MAX)/soma
[12]  MAX←c
[13]  IMAX←i
[14] soma:i←i+1
[15]  →t1
[16] fim:r←IMAX
------------------------------------------------------------
[0]  r←fibo104f n;g;t
[1]  g←0.5×1+5*0.5
[2]  t←(n×10⊗g)+10⊗1÷5*0.5
[3]  r←9↑⍕(10*12)×10*t-⌊t
------------------------------------------------------------
[ 0]  r←gera0;te;re;xa;aa
[ 1]  r←2⍴0
[ 2]  te←20 80⍴' '
[ 3]  te[⍳aa←1↑⍴TF0;]←TF0←ajusta80 TF0
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80⍴80↑'10000 ?'
[12]  re←1134942
```

```
[13]  →ju
[14] eum:
[15]  te[aa+1;]←1 80⍴80↑'11000 ?'
[16]  re←1282398
[17]  →ju
[18] edo:
[19]  te[aa+1;]←1 80⍴80↑'12000 ?'
[20]  re←1443714
[21]  →ju
[22] etr:
[23]  te[aa+1;]←1 80⍴80↑'13000 ?'
[24]  re←1631961
[25]  →ju
[26] equ:
[27]  te[aa+1;]←1 80⍴80↑'14000 ?'
[28]  re←1848193
[29]  →ju
[30] eci:
[31]  te[aa+1;]←1 80⍴80↑'15000 ?'
[32]  re←2065999
[33]  →ju
[34] ju:
[35]  r[1]←⊂te
[36]  r[2]←⊂re
-------------------------------------------------------------
[ 0]  r←gera1;te;re;xa;aa
[ 1]  r←2⍴0
[ 2]  te←20 80⍴' '
[ 3]  te[⍳aa←1↑⍴TF1;]←TF1←ajusta80 TF1
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80⍴80↑'$1 ↘le k ↘le 65$.'
[12]  re←381
[13]  →ju
[14] eum:
[15]  te[aa+1;]←1 80⍴80↑'$1 ↘le k ↘le 69$.'
[16]  re←411
[17]  →ju
[18] edo:
[19]  te[aa+1;]←1 80⍴80↑'$1 ↘le k ↘le 71$.'
[20]  re←428
[21]  →ju
[22] etr:
[23]  te[aa+1;]←1 80⍴80↑'$1 ↘le k ↘le 72$.'
[24]  re←435
[25]  →ju
[26] equ:
[27]  te[aa+1;]←1 80⍴80↑'$1 ↘le k ↘le 74$.'
[28]  re←451
[29]  →ju
[30] eci:
[31]  te[aa+1;]←1 80⍴80↑'$1 ↘le k ↘le 76$.'
[32]  re←467
[33]  →ju
[34] ju:
[35]  r[1]←⊂te
[36]  r[2]←⊂re
-------------------------------------------------------------
```

```
[ 0]  r←gera2;nn;te;re;xa;aa
[ 1]  nn←RESP
[ 2]  r←2ρ0
[ 3]  te←20 80ρ' '
[ 4]  te[⍳aa←1↑⍴TF2;]←TF2←ajusta80 TF2
[ 5]  te[6;22+⍳3]←'000'⍕nn
[ 6]  re←euler99a nn
[ 7] ju:
[ 8]  r[1]←⊂te
[ 9]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera3;te;re;xa;aa
[ 1]  r←2ρ0
[ 2]  te←20 80ρ' '
[ 3]  te[⍳aa←1↑⍴TF3;]←TF3←ajusta80 TF3
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80ρ80↑'87⍀% ?'
[12]  re←16447
[13]  →ju
[14] eum:
[15]  te[aa+1;]←1 80ρ80↑'80⍀% ?'
[16]  re←4770
[17]  →ju
[18] edo:
[19]  te[aa+1;]←1 80ρ80↑'85⍀% ?'
[20]  re←13087
[21]  →ju
[22] etr:
[23]  te[aa+1;]←1 80ρ80↑'90⍀% ?'
[24]  re←21780
[25]  →ju
[26] equ:
[27]  te[aa+1;]←1 80ρ80↑'95⍀% ?'
[28]  re←63720
[29]  →ju
[30] eci:
[31]  te[aa+1;]←1 80ρ80↑'92⍀% ?'
[32]  re←31525
[33]  →ju
[34] ju:
[35]  r[1]←⊂te
[36]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera4;nn;te;re;xa;aa
[ 1]  nn←RESP
[ 2]  r←2ρ0
[ 3]  te←20 80ρ' '
[ 4]  te[⍳aa←1↑⍴TF4;]←TF4←ajusta80 TF4
[ 5]  te[7;17+⍳3]←'000'⍕nn
[ 6]  re←euler102a nn
[ 7] ju:
[ 8]  r[1]←⊂te
[ 9]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera5;nn;te;re;xa;aa
[ 1]  nn←RESP
[ 2]  r←2ρ0
```

```
[ 3]  te←20 80ρ' '
[ 4]  te[⍳⍴TF5;]←TF5←ajusta80 TF5
[ 5]  te[13;17+⍳3]←'000'⍕nn
[ 6]  re←euler96a nn
[ 7] ju:
[ 8]  r[1]←⊂te
[ 9]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera6;te;re;xa;aa
[ 1]  r←2ρ0
[ 2]  te←20 80ρ' '
[ 3]  te[⍳⍴TF6;]←TF6←ajusta80 TF6
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80ρ80↑'Considere $N=5000000$.'
[12]  re←4295843
[13]  →ju
[14] eum:
[15]  te[aa+1;]←1 80ρ80↑'Considere $N=6000000$.'
[16]  re←5156797
[17]  →ju
[18] edo:
[19]  te[aa+1;]←1 80ρ80↑'Considere $N=4000000$.'
[20]  re←3435996
[21]  →ju
[22] etr:
[23]  te[aa+1;]←1 80ρ80↑'Considere $N=3000000$.'
[24]  re←2576139
[25]  →ju
[26] equ:
[27]  te[aa+1;]←1 80ρ80↑'Considere $N=2000000$.'
[28]  re←1717994
[29]  →ju
[30] eci:
[31]  te[aa+1;]←1 80ρ80↑'Considere $N=7000000$.'
[32]  re←6015132
[33]  →ju
[34] ju:
[35]  r[1]←⊂te
[36]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera7;te;re;xa;aa
[ 1]  r←2ρ0
[ 2]  te←20 80ρ' '
[ 3]  te[⍳⍴TF7;]←TF7←ajusta80 TF7
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80ρ80↑'Considere $N=10.000.000$.'
[12]  re←256629
[13]  →ju
[14] eum:
[15]  te[aa+1;]←1 80ρ80↑'Considere $N=12.000.000$.'
[16]  re←296186
```

```
[17]  →ju
[18] edo:
[19]  te[aa+1;]←1 80⍴80↑'Considere $N=14.000.000$.'
[20]  re←343604
[21]  →ju
[22] etr:
[23]  te[aa+1;]←1 80⍴80↑'Considere $N=16.000.000$.'
[24]  re←389982
[25]  →ju
[26] equ:
[27]  te[aa+1;]←1 80⍴80↑'Considere $N=18.000.000$.'
[28]  re←432296
[29]  →ju
[30] eci:
[31]  te[aa+1;]←1 80⍴80↑'Considere $N=15.000.000$.'
[32]  re←367842
[33]  →ju
[34] ju:
[35]  r[1]←⊂((aa+2),80)↑te
[36]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera8;te;re;xa;aa
[ 1]  r←2⍴0
[ 2]  te←20 80⍴' '
[ 3]  te[⍳aa←1↑⍴TF8;]←TF8←ajusta80 TF8
[ 4]  xa←?5
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80⍴80↑'Quantos dígitos tem o 49$^o$ número com esta característica ?'
[12]  re←21
[13]  →ju
[14] eci:
[15]  te[aa+1;]←1 80⍴80↑'Quantos dígitos tem o 48$^o$ número com esta característica ?'
[16]  re←20
[17]  →ju
[18] equ:
[19]  te[aa+1;]←1 80⍴80↑'Quantos dígitos tem o 46$^o$ número com esta característica ?'
[20]  re←18
[21]  →ju
[22] eum:
[23]  te[aa+1;]←1 80⍴80↑'Quantos dígitos tem o 47$^o$ número com esta característica ?'
[24]  re←19
[25]  →ju
[26] edo:
[27]  te[aa+1;]←1 80⍴80↑'Quantos dígitos tem o 45$^o$ número com esta característica ?'
[28]  re←17
[29]  →ju
[30] etr:
[31]  te[aa+1;]←1 80⍴80↑'Quantos dígitos tem o 44$^o$ número com esta característica ?'
[32]  re←16
[33]  →ju
[34] ju:
[35]  r[1]←⊂((aa+1),80)↑te
[36]  r[2]←⊂re
------------------------------------------------------------
[ 0]  r←gera9;te;re;xa;aa
[ 1]  r←2⍴0
[ 2]  te←20 80⍴' '
[ 3]  te[⍳aa←1↑⍴TF9;]←TF9←ajusta80 TF9
```

```
[ 4]  xa←?6
[ 5]  →(1=xa)/eum
[ 6]  →(2=xa)/edo
[ 7]  →(3=xa)/etr
[ 8]  →(4=xa)/equ
[ 9]  →(5=xa)/eci
[10] ese:
[11]  te[aa+1;]←1 80⍴80↑'b. Tem seus primeiros 3 dígitos valendo 231. Ache $k$.'
[12]  re←51973
[13]  →ju
[14] eum:
[15]  te[aa+1;]←1 80⍴80↑'b. Tem seus primeiros 3 dígitos valendo 600. Ache $k$.'
[16]  re←67952
[17]  →ju
[18] edo:
[19]  te[aa+1;]←1 80⍴80↑'b. Tem seus primeiros 3 dígitos valendo 444. Ache $k$.'
[20]  re←78196
[21]  →ju
[22] etr:
[23]  te[aa+1;]←1 80⍴80↑'b. Tem seus primeiros 3 dígitos valendo 100. Ache $k$.'
[24]  re←40784
[25]  →ju
[26] equ:
[27]  te[aa+1;]←1 80⍴80↑'b. Tem seus primeiros 3 dígitos valendo 285. Ache $k$.'
[28]  re←57696
[29]  →ju
[30] eci:
[31]  te[aa+1;]←1 80⍴80↑'b. Tem seus primeiros 3 dígitos valendo 204. Ache $k$.'
[32]  re←78826
[33]  →ju
[34] ju:
[35]  r[1]←⊂((aa+1),80)↑te
[36]  r[2]←⊂re
-------------------------------------------------------------
[ 0]  simnao listaeu ws;a;a;aa;b;i;k;lixo;n;r
[ 1] ⍝ lista os 10 exercícios deste ws
[ 2]  k←0 80⍴' '
[ 3]  →(simnao=0)/oba
[ 4]  k←9 80⍴' '
[ 5]  k[1;]←80↑'\documentclass{article}'
[ 6]  k[2;]←80↑'\usepackage[pc850]{inputenc}'
[ 7]  k[3;]←80↑'\usepackage[table]{xcolor}'
[ 8]  k[4;]←80↑'\usepackage{graphicx}'
[ 9]  k[5;]←80↑'\usepackage[dvips]{geometry}'
[10]  k[6;]←80↑'\geometry{a4paper,left=0.7in,right=0.5in,top=0.7in,bottom=1in}'
[11]  k[7;]←80↑'\begin{document} \large \setlength{\parindent}{0pt}'
[12]  k[8;]←80↑'\section*{Algoritmos selecionados}'
[13]  k[9;]←80↑'Por P. Kantek, com auxílio do site projecteuler.net\\*'
[14] oba:n←0
[15] t1:→(n>9)/fim
[16]  b←⍎'gera','0'⍕n
[17]  i←20 80↑⊃b[1]
[18]  i←(80≠+/[2]i=' ')/[1]i
[19]  k←k,[1]i
[20]  k←k,[1]1 80⍴80↑'(Workspace = ',(8↑ws),' Função = ',(2 0⍕n+1),')\\[2cm]'
[21]  n←n+1
[22]  →t1
[23] fim:
[24]  →(simnao=0)/ufa
[25]  k←k,[1]1 80⍴80↑'\end{document}'
[26] ufa:lixo←k ⎕NFM aa←'c:\apl2\leu',ws[4+⍳3],'.tex'
[27]  'gravado ',aa
-------------------------------------------------------------
```

```
[ 0]  r←onde92 x;z;i;som
[ 1] ⍝ devolve 1 se x→89 e 0 se x→1
[ 2] t0:
[ 3]  z←,⍎x
[ 4]  som←0
[ 5]  i←1
[ 6] t1:→(i>⍴z)/fim
[ 7]  som←som+(⍎z[i])*2
[ 8]  i←i+1
[ 9]  →t1
[10] fim:→(som=89)/aca89
[11]  →(som=1)/aca1
[12]  x←som
[13]  →t0
[14] aca1:r←0
[15]  →0
[16] aca89:r←1
[17]  →0
------------------------------------------------------------
[0]  r←tiradups x
[1]  r←((x⍳x)=⍳⍴x)/x
------------------------------------------------------------
[ 0]  opesq vivoe11a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;quais;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLe11   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAe11←ajusta80 FOLHALAe11
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAe11)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 5⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←89 80⍴' '
[16]  f←FOLHALAe11
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.01
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎RESP←resp←xk),' ',opesq
[31]  esse[88;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[89;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←quais←¯1+4?10
[35]  ⍎'zz←gera','0'⍎xx[1]
[36]  esse[7+⍳20;]←20 80↑⊃zz[1]
[37]  resp←resp,,⊃zz[2]
[38]  ⍎'zz←gera','0'⍎xx[2]
```

```
[39]  esse[27+⍳20;]←20 80⍴⊃zz[1]
[40]  resp←resp,,⊃zz[2]
[41]  ⍝'zz←gera','0'⍕xx[3]
[42]  esse[47+⍳20;]←20 80⍴⊃zz[1]
[43]  resp←resp,,⊃zz[2]
[44]  ⍝'zz←gera','0'⍕xx[4]
[45]  esse[67+⍳20;]←20 80⍴⊃zz[1]
[46]  resp←resp,,⊃zz[2]
[47]  resu←resu,[1]1 5⍴resp
[48]  acuja←(f[;2]='#')/⍳1↑⍴f
[49]  f[acuja;⍳80]←esse[⍝,f[acuja;3 4],' ';]
[50]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[51]  ⍞←(⍕xk←xk+1),'-'
[52]  →testa
[53] fim:upag←(1 0+⍴f)⍴' '
[54]  →(1=≡n)/elafa
[55]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[56]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[57]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯'-'edit(lixo1←7 0 25 0 16 0 16 0 16 0)⍕resu
[58]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[59]  →terminando
[60] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[61] elafa:aaa←(ylu[;⍳36],'¯'-'edit 20 0⍕0 1↓resu)
[62] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[63]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[64]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴paaa),' linhas e ',(⍕1↓⍴paaa),' colunas'
[65] terminando:
[66]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[67]  relat[1↑⍴relat;;]←upag
[68]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[69] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[70]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[71]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[72]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivoe99

```
[ 0]  opesq vivoe99a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivoe99 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PLe99   '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[22]  esse[1;]←80↑dhx[1;]
[23]  esse[2;]←80↑dhx[2;]
[24]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[25]  esse[4;]←80↑ylu[xk;⍳6]
[26] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[27]  →(36=1↓⍴ylu)/zebra
[28]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[29]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[30]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[31]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[32]  →maiszebra
[33] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAh07←ajusta80 FOLHALAh07
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAh07)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←9 80⍴' '
[16]  f←FOLHALAh07
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[8;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[9;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  acuja←(f[;2]='#')/⍳1↑⍴f
[35]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[36]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[37]  ⍞←(⍎xk←xk+1),'-'
[38]  →testa
[39] fim:
[40] elafa:'nao tem arquivo GPA'
[41] terminando:
[42]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[43]  lixonol[1↑⍴lixonol;]←80↑'\end{document}'
[44]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[45]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[46]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivoh08

```
[ 0]  opesq vivoh08a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLh08   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAh08←ajusta80 FOLHALAh08
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAh08)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
```

```
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←11 80⍴' '
[16]  f←FOLHALAh08
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.06
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[10;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[11;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  esse[8;]←1 80⍴80↑,maqs[?1↑⍴maqs;]
[35]  esse[9;]←1 80⍴80↑,maqpeq[?1↑⍴maqpeq;]
[36]  acuja←(f[;2]='#')/⍳1↑⍴f
[37]  f[acuja;⍳80]←esse[⍤,f[acuja;3 4],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[39]  ⍞←(⍕xk←xk+1),'-'
[40]  →testa
[41] fim:
[42] elafa:'nao tem arquivo GPA'
[43] terminando:
[44]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[45]  lixonol[1↑⍴lixonol;]←80↑'⍀end{document}'
[46]  lixonol←lixonol ⎕FM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[47]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[48]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivoh16

```
[ 0]  opesq vivoh16a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLh16   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAh16←ajusta80 FOLHALAh16
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAh16)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←14 80⍴' '
[16]  f←FOLHALAh16
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
```

```
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[13;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[14;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  esse[7+⍳5;]←5 80↑SITES[5?1↑⍴SITES;]
[35]  resu←resu,[1]1 3⍴resp
[36]  acuja←(f[;2]='#')/⍳1↑⍴f
[37]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[39]  ⍞←(⍕xk←xk+1),'-'
[40]  →testa
[41] fim:
[42] elafa:'nao tem arquivo GPA'
[43] terminando:
[44]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[45]  lixonol[1↑⍴lixonol;]←80↑'⍀end{document}'
[46]  lixonol←lixonol ⍙FM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.tex'
[47]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[48]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivoh20

```
[ 0]  opesq vivoh20a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLh20   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⍙FM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAh20←ajusta80 FOLHALAh20
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAh20)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⍙FM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALAh20
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
```

```
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  esse[8;]←1 80⍴80↑,TEMAS[?1↑⍴TEMAS;]
[35]  resu←resu,[1]1 3⍴resp
[36]  acuja←(f[;2]='#')/⍳1↑⍴f
[37]  f[acuja;⍳80]←esse[⍤,f[acuja;3 4],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[39]  ⍞←(⍕xk←xk+1),'-'
[40]  →testa
[41] fim:
[42] elafa:'nao tem arquivo GPA'
[43] terminando:
[44]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[45]  lixonol[1↑⍴lixonol;]←80↑'⍀end{document}'
[46]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍵∧⍷⍵EVENTO=' ')/EVENTO),'.tex'
[47]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[48]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivoh22

```
[ 0]  opesq vivoh22a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLh22   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAh22←ajusta80 FOLHALAh22
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAh22)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALAh22
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  esse[8;]←1 80⍴80↑,TEMAS[?1↑⍴TEMAS;]
```

```
[35]  resu←resu,[1]1 3⍴resp
[36]  acuja←(f[;2]='#')/⍳1↑⍴f
[37]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[39]  ⍞←(⍕xk←xk+1),'-'
[40]  →testa
[41] fim:
[42] elafa:'nao tem arquivo GPA'
[43] terminando:
[44]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[45]  lixonol[1↑⍴lixonol;]←80↑'\end{document}'
[46]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[47]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[48]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivoh24

```
[ 0]  opesq vivoh24a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLh24   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAh24←ajusta80 FOLHALAh24
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAh24)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALAh24
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  esse[8;]←1 80⍴80↑,TEMAS[?1↑⍴TEMAS;]
[35]  resu←resu,[1]1 3⍴resp
[36]  acuja←(f[;2]='#')/⍳1↑⍴f
[37]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[39]  ⍞←(⍕xk←xk+1),'-'
[40]  →testa
[41] fim:
```

```
[42] elafa:'nao tem arquivo GPA'
[43] terminando:
[44]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[45]  lixonol[1↑⍴lixonol;]←80↑'\end{document}'
[46]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵=' ')/EVENTO),'.tex'
[47]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[48]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivoh26

```
[ 0]  opesq vivoh26a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLh26   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAh26←ajusta80 FOLHALAh26
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAh26)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALAh26
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  esse[8;]←1 80⍴80↑,TEMAS[?1↑⍴TEMAS;]
[35]  resu←resu,[1]1 3⍴resp
[36]  acuja←(f[;2]='#')/⍳1↑⍴f
[37]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[39]  ⍞←(⍎xk←xk+1),'-'
[40]  →testa
[41] fim:
[42] elafa:'nao tem arquivo GPA'
[43] terminando:
[44]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[45]  lixonol[1↑⍴lixonol;]←80↑'\end{document}'
[46]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵=' ')/EVENTO),'.tex'
[47]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[48]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
```

```
------------------------------------------------------------
```

vivoh28

```
[0]  AVISO
[1]  'a resposta da ultima questao esta em RESPO'
------------------------------------------------------------
[ 0]  D←S DISPLAY A;⎕IO;R;C;HL;HC;HT;HB;VL;VB;V;W;N;B
[ 1] ⍝ Display a general array in pictorial form
[ 2] ⍝  Normal call is monadic.  Dyadic call used only in
[ 3] ⍝    recursion to specify display rank, shape, and depth.
[ 4]  ⎕IO←0
[ 5]  ⍎(0=⎕NC'S')/'S←⍴A'
[ 6]  R←↑⍴,S                    ⍝ Pseudo rank
[ 7]  C←'┐┌└┘'                  ⍝ UR, UL, LL, and LR corners
[ 8]  HL←'─'                    ⍝ Horizontal line
[ 9]  HC←HL,'⊖→',HL,'~+∈'       ⍝ Horizontal borders
[10]  HT←HC[(0<R)×1+0<↑¯1↑,S]
[11] ⍝W←,0≡¨↑0⍴⊂(1⌈⍴A)↑A
[12]  HB←HC[3+3⌊('2×~A≡⍷A'⎕EA'1+↑∈0×(1⌈×/⍴A)↑,A')+3×1<⍴⍴S]
[13]  VL←'│'                    ⍝ Vertical line
[14]  VB←VL,'⍬↓'                ⍝ Vertical border
[15]  V←VB[(1<R)×1+0<¯1↑¯1↓,S]
[16]  ⍎(0∈⍴A)/'A←(1⌈⍴A)⍴⊂↑A'   ⍝ Show prototype of empties
[17]  →(1<≡A)/GEN
[18]  →(2<⍴⍴A)/D3
[19]  D←⍷A                      ⍝ Simple arrays
[20]  W←1↑⍴D←(¯2↑1 1,⍴D)⍴D
[21]  N←¯1+1↓⍴D
[22]  →(0=⍴⍴A)/SS
[23]  D←(C[1],V,((W-1)⍴VL),C[2]),((HT,N⍴HL),[0]D,[0]HB,N⍴HL),C[0],(W⍴VL),C[3]
[24]  →0
[25] SS:HB←((0 ' ')=↑0⍴⊂A)/' -'
[26]  D←' ',(' ',[0]D,[0]HB,N⍴' '),' '
[27]  →0
[28] GEN:D←⍷DISPLAY¨A           ⍝ Enclosed arrays
[29]  N←D∨.≠' '
[30]  D←(N∨~1⍬N)⌿D
[31]  D←(∨⌿~'  '∈D)/D
[32]  D←((1,⍴S)⍴S)DISPLAY D
[33]  →(2≥⍴,S)↓D3E,0
[34] D3:D←0 ¯1↓0 1↓⍷⊂A          ⍝ Multi-dimensional arrays
[35]  W←1↑⍴D
[36]  N←¯1+1↓⍴D
[37]  D←(C[1],V,((W-1)⍴VL),C[2]),((HT,N⍴HL),[0]D,[0]HB,N⍴HL),C[0],(W⍴VL),C[3]
[38] D3E:N←¯2+⍴,S
[39]  V←C[N⍴1],[0]VB[1+0<¯2↓,S],[0](((¯3+↑⍴D),N)⍴VL),[0]C[N⍴2]
[40]  D←V,D
[41] ⍝¶⍝ APL2/6000 FKEY verification tag - DO NOT REMOVE, MUST BE LAST LINE
------------------------------------------------------------
[ 0]  r←quem achah28 depara;de;i;j;k;onde;para;existente;qtos
[ 1]  existente←0
[ 2]  de←,⊃depara[1] ⋄ para←,⊃depara[2]
[ 3]  i←1 ⋄ r←((1↑⍴quem),200)⍴' '
[ 4] t1:→(i>1↑⍴quem)/fim
[ 5]  →(0=∨/onde←de∈quem[i;])/naotem
[ 6]  j←1 ⋄ k←1
[ 7] t2:→(k>⍴quem[i;])/acabou
[ 8]  →(onde[k]=0)/soma
[ 9]  qtos←0
[10] hy:
[11]  r[i;j]←quem[i;k]
```

```
[12]  k←k+1
[13]  j←j+1
[14]  qtos←qtos+1
[15]  →(k>1↓⍴quem)/deuzebra
[16]  →((quem[i;k]=' ')∧(qtos>7))/obaa
[17]  →hy
[18] obaa:r[i;(j-1)+⍳⍴para]←para
[19]  existente←1
[20]  j←j+⍴para
[21] ⍝ k←k+⍴de
[22]  de←(⍴de)⍴'a'
[23]  →t2
[24] soma:r[i;j]←quem[i;k]
[25]  k←k+1
[26]  →(j=j←j+1)/t2
[27] naotem:r[i;]←200↑quem[i;]
[28] acabou:→(i=i←i+1)/t1
[29] fim:→(existente=1)/okok
[30] deuzebra:
[31]  r←-1
[32]  →0
[33] okok:
[34]  r←trim4 r
-------------------------------------------------------------
[ 0]  r←geracasoh28 erro;antes;depois;i;iq;qe;qs;qual;quantos;r1;r2;tabe;tabs;x
[ 1] ⍝ ' a resposta correta esta em RESPO'
[ 2]  i←1
[ 3] t2:→(i>QUANTOS)/oba
[ 4]  ⍎('ht','00'⍕i),'←trim4 ','ht','00'⍕i
[ 5]  i←i+1
[ 6]  →t2
[ 7] oba:
[ 8]  qual←?QUANTOS
[ 9]  x←⍎'ht','00'⍕qual
[10]  →(erro=1)/eum  ⍝ tag escrita errada
[11]  →(erro=2)/edois  ⍝ empty tag com terminador
[12]  →(erro=3)/etres  ⍝ falta terminador em tag nao empty
[13]  →(erro=4)/equatro ⍝fechar uma tag antes de abrir
[14]  →0
[15] eum:
[16]  antes←'<html> <head> <title> <body> <ol> <ul> <li> <img </html> </head> '
[17]  antes←antes,'</title> </body> </ol> </ul> <p> <br> <i> </i> <b> </b> '
[18]  antes←antes,'<tt> </tt> <u> </u> <strike> </strike> <big> </big> <small> </small>'
[19]  depois←'<htm> <haed> <tittle> <bdy> <uol> <oul> <il> <igm </hmtl> </haed> '
[20]  depois←depois,'</tile> </bdoy> </ool> </uul> <pp> <brr> <ii> </iz> <bb> </ib> '
[21]  depois←depois,'<t> </t> <uu> </uu> <strik> </strie> <bi> </bg> <smal> </smal>'
[22]  tabe←sent2vec antes
[23]  tabs←sent2vec depois
[24] denovo1:
[25]  qe←tabe[iq←?⍴tabe]
[26]  qs←tabs[iq]
[27]  r←x replaceh28(⊃qe)(⊃qs)
[28]  →(0=⍴⍴r)/denovo1
[29]  RESPO←1,qe,qs
[30]  →fimm
[31] edois:
[32]  antes←'<li> <img <p> <br>'
[33]  depois←'</li> </img> </p> </br>'
[34]  tabe←sent2vec antes
[35]  tabs←sent2vec depois
[36] denovo2:
[37]  qe←tabe[iq←?⍴tabe]
[38]  qs←tabs[iq]
```

```
[39]  r←x achah28(⊃qe)(⊃qs)
[40]  →(0=ρρr)/denovo2
[41]  RESPO←2,qe,qs
[42]  →fimm
[43] etres:
[44]  antes←'</html> </head> </title> </body> </ol> </ul> </i> </b> '
[45]  antes←antes,'</tt> </u> </strike> </big> </small>'
[46]  tabe←sent2vec antes
[47] denovo3:
[48]  qe←tabe[iq←?ρtabe]
[49]  r←x replaceh28(⊃qe)('')
[50]  →(0=ρρr)/denovo3
[51]  RESPO←3,qe
[52]  →fimm
[53] equatro:
[54]  antes←'<head> <title> <body> <ol> <ul> <i> <b> <tt> <u> <strike> <big> '
[55]  depois←'</head> </title> </body> </ol> </ul> </i> </b> </tt> </u> </strike> </big> '
[56]  tabe←sent2vec antes
[57]  tabs←sent2vec depois
[58] denovo4:
[59]  qe←tabe[iq←?ρtabe]
[60]  qs←tabs[iq]
[61]  r1←x replaceh28(⊃qe)('aaa')
[62]  →(0=ρρr1)/denovo4
[63]  r2←r1 replaceh28(⊃qs)(⊃qe)
[64]  r←r2 replaceh28('aaa')(⊃qs)
[65]  RESPO←4,qe,qs
[66]  →fimm
[67] fimm:
------------------------------------------------------------
[ 0]  geraquestao300
[ 1]  ' Nesta quest↖~ao, vai-se apresentar um pequeno texto escrito em HTML contendo'
[ 2]  ' erros formais. Pode ser uma tag escrita errada (como ↖verb+<htl>+ ao'
[ 3]  ' invés de ↖verb+<html>+) ou pode ser a invers↖~ao entre fechamento e abertura'
[ 4]  ' como em ↖verb+<↖title> Alo vocês <title>+). Voc↖^e deve localizar e '
[ 5]  ' identificar claramente os erros.'
[ 6]  '↖begin{verbatim}'
[ 7]  geracasoh28(1,4)[?2]
[ 8]  '↖end{verbatim}'
[ 9]  ' a resposta e '
[10]  RESPO
------------------------------------------------------------
[ 0]  r←quem replaceh28 depara;de;i;j;k;onde;para;existente
[ 1]  existente←0
[ 2]  de←,⊃depara[1] ⋄ para←,⊃depara[2]
[ 3]  i←1 ⋄ r←((1↑ρquem),200)ρ' '
[ 4] t1:→(i>1↑ρquem)/fim
[ 5]  →(0=∨/onde←de⍷quem[i;])/naotem
[ 6]  j←1 ⋄ k←1
[ 7] t2:→(k>ρquem[i;])/acabou
[ 8]  →(onde[k]=0)/soma
[ 9]  r[i;(j-1)+⍳ρpara]←para
[10]  existente←1
[11]  j←j+ρpara
[12]  k←k+ρde
[13]  de←(ρde)ρ'a'
[14]  →t2
[15] soma:r[i;j]←quem[i;k]
[16]  k←k+1
[17]  →(j=j←j+1)/t2
[18] naotem:r[i;]←200↑quem[i;]
[19] acabou:→(i=i←i+1)/t1
[20] fim:→(existente=1)/okok
```

```
[21]  r←-1
[22]  →0
[23] okok:
[24]  r←trim4 r
-------------------------------------------------------------
[0]  r←sent2vec C
[1]  r←(C≠' ')⊂C
-------------------------------------------------------------
[0]  r←trim4 x;z
[1] ⍝f corta as colunas direitas que sao brancos
[2]  →(2≠⍴⍴x)/erro
[3]  z←+/[1]x=' '
[4]  r←(z≠1↑⍴x)/[2]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
-------------------------------------------------------------
[0]  r←vec2sent vv
[1]  r←⍷' ',¨vv
-------------------------------------------------------------
[ 0]  opesq vivoh28a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;qual;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLh28   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAh28←ajusta80 FOLHALAh28
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAh28)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 7⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←99 80⍴' '
[16]  f←FOLHALAh28
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[98;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[99;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  qual←?4
[35]  esse[7+⍳15;]←15 80↑geracasoh28 qual
[36]  resp←resp,qual
[37]  qual←?4
[38]  esse[22+⍳15;]←15 80↑geracasoh28 qual
[39]  resp←resp,qual
[40]  qual←?4
[41]  esse[37+⍳15;]←15 80↑geracasoh28 qual
```

```
[42]  resp←resp,qual
[43]  qual←?4
[44]  esse[52+⍳15;]←15 80↑geracasoh28 qual
[45]  resp←resp,qual
[46]  qual←?4
[47]  esse[67+⍳15;]←15 80↑geracasoh28 qual
[48]  resp←resp,qual
[49]  qual←?4
[50]  esse[82+⍳15;]←15 80↑geracasoh28 qual
[51]  resp←resp,qual
[52]  resu←resu,[1]1 7⍴resp
[53]  acuja←(f[;2]='#')/⍳1↑⍴f
[54]  f[acuja;⍳80]←esse[⌸,f[acuja;3 4],' ';]
[55]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[56]  ⎕←(⍕xk←xk+1),'-'
[57]  →testa
[58] fim:upag←(1 0+⍴f)⍴' '
[59]  →(1=≡n)/elafa
[60]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[61]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[62]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 8 0 3 0 3 0 3 0 3 0 3 0)⍕resu
[63]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[64]  →terminando
[65] elafa:aaa←(ylu[;⍳36],3 0⍕0 1↓resu)
[66]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[67]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[68] terminando:
[69]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[70]  relat[1↑⍴relat;;]←upag
[71]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[72]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[73]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[74]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivoh29

```
[ 0]  opesq vivoh29a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;inds;lixo1;lixonol;nomes;ql39;
      qlinha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLh29   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAh29←ajusta80 FOLHALAh29
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAh29)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←11 80⍴' '
[16]  f←FOLHALAh29
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
```

```
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[10;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[11;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  inds←2?1↑⍴ESTILOS
[35]  esse[8;]←1 80⍴80↑,ESTILOS[inds[1];]
[36]  esse[9;]←1 80⍴80↑,ESTILOS[inds[2];]
[37]  resu←resu,[1]1 3⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⍞←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:
[44] elafa:'nao tem arquivo GPA'
[45] terminando:
[46]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[47]  lixonol[1↑⍴lixonol;]←80↑'\end{document}'
[48]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[49]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[50]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivoh30

```
[ 0]  opesq vivoh30a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLh30   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAh30←ajusta80 FOLHALAh30
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAh30)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALAh30
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
```

```
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  esse[8;]←1 80⍴80↑,TEMAS[?1↑⍴TEMAS;]
[35]  resu←resu,[1]1 3⍴resp
[36]  acuja←(f[;2]='#')/⍳1↑⍴f
[37]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[39]  ⍞←(⍕xk←xk+1),'-'
[40]  →testa
[41] fim:
[42] elafa:'nao tem arquivo GPA'
[43] terminando:
[44]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[45]  lixonol[1↑⍴lixonol;]←80↑'⍀end{document}'
[46]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍵∧⍷⍵EVENTO=' ')/EVENTO),'.tex'
[47]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[48]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivoh32

```
[ 0]  opesq vivoh32a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLh32   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAh32←ajusta80 FOLHALAh32
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAh32)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALAh32
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  esse[8;]←1 80⍴80↑,TEMAS[?1↑⍴TEMAS;]
```

```
[35]  resu←resu,[1]1 3⍴resp
[36]  acuja←(f[;2]='#')/⍳1↑⍴f
[37]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[39]  ⍞←(⍕xk←xk+1),'-'
[40]  →testa
[41] fim:
[42] elafa:'nao tem arquivo GPA'
[43] terminando:
[44]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[45]  lixonol[1↑⍴lixonol;]←80↑'\end{document}'
[46]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[47]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[48]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivoh34

```
[ 0]  opesq vivoh34a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLh34   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAh34←ajusta80 FOLHALAh34
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAh34)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALAh34
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  esse[8;]←1 80⍴80↑,TEMAS[?1↑⍴TEMAS;]
[35]  resu←resu,[1]1 3⍴resp
[36]  acuja←(f[;2]='#')/⍳1↑⍴f
[37]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[39]  ⍞←(⍕xk←xk+1),'-'
[40]  →testa
[41] fim:
```

```
[42] elafa:'nao tem arquivo GPA'
[43] terminando:
[44]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[45]  lixonol[1↑⍴lixonol;]←80↑'\end{document}'
[46]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[47]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[48]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivoh35

```
[0]  AVISO
[1]  'Atencao: para este WS ficar bacana, mas BACANA mesmo, preciso concluir'
[2]  'a funcao gerah35, no final, onde o HTML vai ser gerado, mais ou menos'
[3]  'como o site www.tablesgenerator.com...'
[4]  ''
[5]  ' veja exemplos do que e esperado em f:\p\n\h35\exemplo* '
-------------------------------------------------------------
[  0]  re←gerah35 qtd;qual;i;j;quald;p;r;h
[  1] ⍝ gera uma tabela 4x4, contendo qtd spans (qtd<24)
[  2] vorta:qual←,qtd?24
[  3]  qual←qual[⍋qual]
[  4] ⍝ validacao dos numeros gerados
[  5]  quald←qual[1],qual,qual[⍴qual]
[  6]  j←2
[  7] t0:→(j≥⍴quald)/zero
[  8] ⍝→((quald[j+1]=quald[j]+3)∨(quald[j+1]=quald[j]+4)∨(quald[j-1]=quald[j]-4)∨(quald[j-1
      ]=quald[j]-3))/deuxabu
[  9]  →((quald[j]+3)∈quald)/deuxabu
[ 10]  →((quald[j]+4)∈quald)/deuxabu
[ 11]  →((quald[j]-3)∈quald)/deuxabu
[ 12]  →((quald[j]-4)∈quald)/deuxabu
[ 13]  j←j+1
[ 14]  →t0
[ 15] deuxabu:
[ 16] ⍝ ⍞←'o'
[ 17]  →vorta
[ 18] zero:
[ 19] ⍝ quald
[ 20]  r←9 17⍴' '
[ 21]  p←9 9⍴'x'
[ 22]  r[1 3 5 7 9;]←'-'
[ 23]  r[;1 5 9 13 17]←'|'
[ 24]  r[1 3 5 7 9;1 5 9 13 17]←'+'
[ 25]  r[2;3]←'A' ⋄ r[2;7]←'B' ⋄ r[2;11]←'C' ⋄ r[2;15]←'D'
[ 26]  r[4;3]←'E' ⋄ r[4;7]←'F' ⋄ r[4;11]←'G' ⋄ r[4;15]←'H'
[ 27]  r[6;3]←'I' ⋄ r[6;7]←'J' ⋄ r[6;11]←'K' ⋄ r[6;15]←'L'
[ 28]  r[8;3]←'M' ⋄ r[8;7]←'N' ⋄ r[8;11]←'O' ⋄ r[8;15]←'P'
[ 29]  i←1
[ 30] t1:→(i>qtd)/fim
[ 31]  →(qual[i]=1)/e1
[ 32]  →(qual[i]=2)/e2
[ 33]  →(qual[i]=3)/e3
[ 34]  →(qual[i]=4)/e4
[ 35]  →(qual[i]=5)/e5
[ 36]  →(qual[i]=6)/e6
[ 37]  →(qual[i]=7)/e7
[ 38]  →(qual[i]=8)/e8
[ 39]  →(qual[i]=9)/e9
[ 40]  →(qual[i]=10)/e10
[ 41]  →(qual[i]=11)/e11
[ 42]  →(qual[i]=12)/e12
```

```
[ 43]  →(qual[i]=13)/e13
[ 44]  →(qual[i]=14)/e14
[ 45]  →(qual[i]=15)/e15
[ 46]  →(qual[i]=16)/e16
[ 47]  →(qual[i]=17)/e17
[ 48]  →(qual[i]=18)/e18
[ 49]  →(qual[i]=19)/e19
[ 50]  →(qual[i]=20)/e20
[ 51]  →(qual[i]=21)/e21
[ 52]  →(qual[i]=22)/e22
[ 53]  →(qual[i]=23)/e23
[ 54]  →(qual[i]=24)/e24
[ 55] e1:r[2;5]←p[2;3]←r[2;7]←' '
[ 56]  →soma
[ 57] e2:r[2;9]←p[2;5]←r[2;11]←' '
[ 58]  →soma
[ 59] e3:r[2;13]←p[2;7]←r[2;15]←' '
[ 60]  →soma
[ 61] e4:r[3;2 3 4]←p[3;2]←r[4;3]←' '
[ 62]  →soma
[ 63] e5:r[3;6 7 8]←p[3;4]←r[4;7]←' '
[ 64]  →soma
[ 65] e6:r[3;10 11 12]←p[3;6]←r[4;11]←' '
[ 66]  →soma
[ 67] e7:r[3;14 15 16]←p[3;8]←r[4;15]←' '
[ 68]  →soma
[ 69] e8:r[4;5]←p[4;3]←r[4;7]←' '
[ 70]  →soma
[ 71] e9:r[4;9]←p[4;5]←r[4;11]←' '
[ 72]  →soma
[ 73] e10:r[4;13]←p[4;7]←r[4;15]←' '
[ 74]  →soma
[ 75] e11:r[5;2 3 4]←p[5;2]←r[6;3]←' '
[ 76]  →soma
[ 77] e12:r[5;6 7 8]←p[5;4]←r[6;7]←' '
[ 78]  →soma
[ 79] e13:r[5;10 11 12]←p[5;6]←r[6;11]←' '
[ 80]  →soma
[ 81] e14:r[5;14 15 16]←p[5;8]←r[6;15]←' '
[ 82]  →soma
[ 83] e15:r[6;5]←p[6;3]←r[6;7]←' '
[ 84]  →soma
[ 85] e16:r[6;9]←p[6;5]←r[6;11]←' '
[ 86]  →soma
[ 87] e17:r[6;13]←p[6;7]←r[6;15]←' '
[ 88]  →soma
[ 89] e18:r[7;2 3 4]←p[7;2]←r[8;3]←' '
[ 90]  →soma
[ 91] e19:r[7;6 7 8]←p[7;4]←r[8;7]←' '
[ 92]  →soma
[ 93] e20:r[7;10 11 12]←p[7;6]←r[8;11]←' '
[ 94]  →soma
[ 95] e21:r[7;14 15 16]←p[7;8]←r[8;15]←' '
[ 96]  →soma
[ 97] e22:r[8;5]←p[8;3]←r[8;7]←' '
[ 98]  →soma
[ 99] e23:r[8;9]←p[8;5]←r[8;11]←' '
[100]  →soma
[101] e24:r[8;13]←p[8;7]←r[8;15]←' '
[102]  →soma
[103] soma:i←i+1
[104]  →t1
[105] fim:
```

```
[106] ⍝ agora vamos gerar o HTML...
[107]  h←10 100⍴' '
[108] ⍝...
[109]  re←2⍴' '
[110]  re[1]←⊂r
[111]  re[2]←⊂h
------------------------------------------------------------
[ 0]  geraquestaoh35;q;t;x
[ 1]  q←''''
[ 2]  'Escreva o HTML necess⍀',q,'ario para gerar uma tabela conforme o desenho'
[ 3]  'a seguir. N⍀~ao ⍀',q,'e necess⍀',q,'aria a ader⍀^encia ao padr⍀~ao HTML5'
[ 4]  '(ou seja n⍀~ao ⍀',q,'e preciso encerrar todas as tags, s⍀',q,'o as'
[ 5]  'indispens⍀',q,'aveis). A tabela a gerar ⍀',q,'e:'
[ 6]  '⍀begin{verbatim}'
[ 7]  t←1+2×?3
[ 8]  x←gerah35 t
[ 9]  ⊃x[1]
[10]  '⍀end{verbatim}'
------------------------------------------------------------
[ 0]  r←traduz des
[ 1]  r←10 75⍴' '
[ 2]  r[1;]←75↑'<table>'
[ 3]  r[2;]←75↑'<tr><td> a <td> b <td> c <td> d </tr>'
[ 4]  r[3;]←75↑'<tr><td> e <td> f <td> g <td> h </tr>'
[ 5]  r[4;]←75↑'<tr><td> i <td> j <td> k <td> l </tr>'
[ 6]  r[5;]←75↑'<tr><td> m <td> n <td> o <td> p </tr>'
[ 7]  r[6;]←75↑'</table>'
[ 8]  →((des[2;5]=' ')∧(des[2;9]=' ')∧(des[2;13]=' '))/l1tres
[ 9]  →((des[2;5]=' ')∧(des[2;9]=' '))/l1dois
[10]  →(des[2;5]=' ')/l1um
[11]  →((des[3;3]=' ')∧(des[5;3]=' ')∧(des[7;3]=' '))/c1tres
[12]  →((des[3;3]=' ')∧(des[5;3]=' '))/c1dois
[13]  →(des[3;3]=' ')/c1um
[14]  →proxima2
[15] l1tres:r[2;]←75↑'<tr><td colspan=4> a </tr>'
[16]  →proxima2
[17] l1dois:r[2;]←75↑'<tr><td colspan=3> a <td> d </tr>'
[18]  →proxima2
[19] l1um:r[2;]←75↑'<tr><td colspan=2> a <td> c <td> d </tr>'
[20]  →proxima2
[21] c1tres:r[2;]←75↑'<tr><td rowspan=4> a <td> b <td> c <td> d </tr>'
[22]  →proxima2
[23] c1dois:r[2;]←75↑'<tr><td rowspan=3> a <td> b <td> c <td> d </tr>'
[24]  →proxima2
[25] c1um:r[2;]←75↑'<tr><td rowspan=2> a <td> b <td> c <td> d </tr>'
[26]  →proxima2
[27] proxima2: ⍝ segunda celula
------------------------------------------------------------
[ 0]  opesq vivoh35a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLh35   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAh35←ajusta80 FOLHALAh35
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAh35)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
```

```
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←36 80⍴' '
[16]  f←FOLHALAh35
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[35;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[36;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerah35 3
[35]  esse[7+⍳9;]←9 80↑⊃xx[1]
[36] ⍝resp←resp,,xx[2 3;5]
[37]  xx←gerah35 5
[38]  esse[16+⍳9;]←9 80↑⊃xx[1]
[39] ⍝resp←resp,,xx[2 3;5]
[40]  xx←gerah35 7
[41]  esse[25+⍳9;]←9 80↑⊃xx[1]
[42] ⍝resp←resp,,xx[2 3;5]
[43]  resu←resu,[1]1 3⍴resp
[44]  acuja←(f[;2]='#')/⍳1↑⍴f
[45]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[46]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[47]  ⍞←(⍕xk←xk+1),⎕TC[2]
[48]  →testa
[49] fim:upag←(1 0+⍴f)⍴' '
[50]  →(1=≡n)/elafa
[51]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[52]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[53]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍕resu
[54]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[55]  →terminando
[56] elafa:aaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[57]  lixonol←aaa ⎕FM('c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.gpa')
[58]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[59] terminando:
[60]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[61]  relat[1↑⍴relat;;]←upag
[62]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[63]  lixonol←lixonol ⎕FM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.tex'
[64]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[65]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivoh36

```
[ 0]  opesq vivoh36a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
```

```
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLh36   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAh36←ajusta80 FOLHALAh36
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAh36)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALAh36
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  esse[8;]←1 80⍴80↑,TEMAS[?1↑⍴TEMAS;]
[35]  resu←resu,[1]1 3⍴resp
[36]  acuja←(f[;2]='#')/⍳1↑⍴f
[37]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[39]  ⍞←(⍕xk←xk+1),'-'
[40]  →testa
[41] fim:
[42] elafa:'nao tem arquivo GPA'
[43] terminando:
[44]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[45]  lixonol[1↑⍴lixonol;]←80↑'\end{document}'
[46]  lixonol←lixonol ΔFM'c:\apl2\',((~⍬∧\⍬EVENTO=' ')/EVENTO),'.tex'
[47]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[48]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivoh38

```
[ 0]  opesq vivoh38a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLh38   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
```

```
[10]  FOLHALAh38←ajusta80 FOLHALAh38
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAh38)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALAh38
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  esse[8;]←1 80⍴80↑,TEMAS[?1↑⍴TEMAS;]
[35]  resu←resu,[1]1 3⍴resp
[36]  acuja←(f[;2]='#')/⍳1↑⍴f
[37]  f[acuja;⍳80]←esse[⌽,f[acuja;3 4],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[39]  ⍞←(⍕xk←xk+1),'-'
[40]  →testa
[41] fim:
[42] elafa:'nao tem arquivo GPA'
[43] terminando:
[44]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[45]  lixonol[1↑⍴lixonol;]←80↑'\end{document}'
[46]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[47]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[48]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivoh40

```
[ 0]  opesq vivoh40a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLh40   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAh40←ajusta80 FOLHALAh40
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAh40)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALAh40
```

```
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.07
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  esse[8;]←1 80⍴80↑,TEMAS[?1↑⍴TEMAS;]
[35]  resu←resu,[1]1 3⍴resp
[36]  acuja←(f[;2]='#')/⍳1↑⍴f
[37]  f[acuja;⍳80]←esse[⌽,f[acuja;3 4],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[39]  ⎕←(⍕xk←xk+1),'-'
[40]  →testa
[41] fim:
[42] elafa:'nao tem arquivo GPA'
[43] terminando:
[44]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[45]  lixonol[1↑⍴lixonol;]←80↑'⍀end{document}'
[46]  lixonol←lixonol ⍙FM'c:⍀apl2⍀',((~⍬∧⍀⍬EVENTO=' ')/EVENTO),'.tex'
[47]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[48]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivoh50

```
[ 0]  exemplosh50;r;lixo
[ 1] ⍝ esta funcao imprime todos os exercicios do banco de dados
[ 2]  EXEMPLOSh50←ajusta80 EXEMPLOSh50
[ 3]  r←ajusta80 ⍙FM'c:⍀apl2⍀VIVOBLO1'
[ 4]  r←r,[1]1 80⍴80↑'⍀section*{Exemplos de h50}'
[ 5]  r←r,[1]EXEMPLOSh50
[ 6]  r←r,[1]1 80⍴80↑'⍀end{document}'
[ 7]  lixo←r ⍙FM'c:⍀apl2⍀exemh50.tex'
[ 8]  'Salvo em c:⍀apl2⍀ com o nome de exemh50.tex'
------------------------------------------------------------
[ 0]  r←geradirt x;lin;i;tam
[ 1]  r←(((+/(,x[;1])='%')÷3),20)⍴' '
[ 2]  tam←0
[ 3]  lin←1
[ 4]  i←1
[ 5] t1:→(i>1↑⍴x)/fim
[ 6]  →((x[i;1]='%')∧(x[i;2]='i'))/comeca
[ 7]  →((x[i;1]='%')∧(x[i;2]='f'))/termina
[ 8]  →((x[i;1]='%')∧(x[i;2]='r'))/resposta
[ 9]  tam←tam+1
[10]  i←i+1
[11]  →t1
[12] comeca:r[lin;⍳3]←x[i;3 4 5]
[13]  r[lin;5+⍳5]←5 0⍕i
[14]  tam←0
[15]  i←i+1
```

```
[16]  →t1
[17] resposta:r[lin;10+⍳5]←5 0⍕tam
[18]  i←i+1
[19]  →t1
[20] termina:r[lin;15+⍳5]←5 0⍕i-1
[21]  lin←lin+1
[22]  i←i+1
[23]  →t1
[24] fim:
------------------------------------------------------------
[ 0]  r←gerah50 n;x;quais;i;y;resps;defs
[ 1]  DEFIh50←ajusta80 DEFIh50
[ 2]  x←geradirt DEFIh50
[ 3]  y←((1↑⍴x),4)⍴⍕,x,' '
[ 4]  quais←n?1↑⍴y
[ 5]  resps←''
[ 6]  defs←0 80⍴' '
[ 7]  i←1
[ 8] t1:→(i>n)/fim
[ 9]  defs←defs,[1]DEFIh50[y[quais[i];2]+⍳y[quais[i];3];]
[10]  resps←resps,' | ',trim DEFIh50[y[quais[i];4];]
[11]  i←i+1
[12]  →t1
[13] fim:r←2⍴0
[14]  r[1]←⊂defs
[15]  r[2]←⊂1↓resps
[16] ⍝'Tamanho ',⍕1↑⍴r
------------------------------------------------------------
[ 0]  r←y geraquestoes x;i
[ 1] ⍝ x e o texto DEFIxxx e y e o numero inicial da questao gerada no GIZ
[ 2]  r←0 75⍴' '
[ 3]  i←1
[ 4] t1:→(i>1↑⍴x)/fimesmo
[ 5]  →((x[i;1]='%')∧(x[i;2]='i'))/comeca
[ 6]  i←i+1
[ 7]  →t1
[ 8] comeca:
[ 9]  r←r,[1]1 75⍴75↑'$QE',(5 0⍕y),'307      1des:que faz CSS ?'
[10]  i←i+1
[11] vol1:
[12]  →((x[i;1]='%')∧(x[i;2]='r'))/respos
[13]  r←r,[1]1 75⍴75↑x[i;]
[14]  i←i+1
[15]  →vol1
[16] respos:
[17]  r←r,[1]1 75⍴75↑'$QR',(5 0⍕y),'307'
[18]  i←i+1
[19] vol2:
[20]  →((x[i;1]='%')∧(x[i;2]='f'))/termin
[21]  r←r,[1]1 75⍴75↑x[i;]
[22]  i←i+1
[23]  →vol2
[24] termin:
[25]  y←y+1
[26]  i←i+1
[27]  →(i>1↑⍴x)/fimesmo
[28]  →((x[i;1]='%')∧(x[i;2]='i'))/comeca
[29]  →termin
[30] fimesmo:
------------------------------------------------------------
[ 0]  todosh50;r;lixo
[ 1] ⍝ esta funcao imprime todos os exercicios do banco de dados
[ 2]  DEFIh50←ajusta80 DEFIh50
```

```
[ 3]  r←ajusta80 ΔFM'c:\apl2\VIVOBLO1'
[ 4]  r←r,[1]1 80ρ80↑'\section*{Listagem de todos os problemas de h50}'
[ 5]  r←r,[1]1 80ρ80↑'\begin{enumerate}'
[ 6]  r←r,[1]DEFIh50
[ 7]  r←r,[1]1 80ρ80↑'\end{enumerate}'
[ 8]  r←r,[1]1 80ρ80↑'\end{document}'
[ 9]  lixo←r ΔFM'c:\apl2\todosh50.tex'
[10]  'Salvo em c:\apl2\ com o nome de todosh50.tex'
-------------------------------------------------------------
[ 0]  opesq vivoh50a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLh50   '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAh50←80 ajusta FOLHALAh50
[11]  relat←((2+1↑ρylu),1 30+ρFOLHALAh50)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 254ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←37 80ρ' '
[16]  f←FOLHALAh50
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.06
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑ρf),4)ρ'\#05')/⍳1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[36;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[37;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  esse[8;]←1 80ρ80↑,TEMAS[?1↑ρTEMAS;]
[35]  xx←gerah50 2
[36]  →(27≥1↑ρ⊃xx[1])/blz88
[37]  ⍞←'o'
[38]  →inica
[39] blz88:
[40]  esse[8+⍳27;]←27 80↑⊃xx[1]
[41]  resp←(3 0⍎resp),':',250↑⊃xx[2]
[42]  resu←resu,[1]1 254ρresp
[43]  acuja←(f[;2]='#')/⍳1↑ρf
[44]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[45]  relat[1+xk;;]←(((ρf)+0 30)↑f),[1](1,30+1↓ρf)ρ200↑'\clearpage'
[46]  ⍞←(⍎xk←xk+1),'-'
[47]  →testa
[48] fim:
[49]  upag←(1 30+ρf)ρ' '
[50]  →(1=≡n)/elafa
[51]  upag[1;]←(1↓ρupag)↑'\scriptsize \begin{verbatim}'
```

```
[52]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO,'  so os primeiros 110
       bytes'
[53]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),110)↑resu
[54]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[55]  →terminando
[56] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[57]  lixonol←aaa ∆FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[58]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[59] terminando:
[60]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[61]  relat[1↑⍴relat;;]←upag
[62]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[63]  lixonol←lixonol ∆FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[64]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[65]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivoh52

```
[ 0]  exemplosh52;r;lixo
[ 1] ⍝ esta funcao imprime todos os exercicios do banco de dados
[ 2]  EXEMPLOSh52←ajusta80 EXEMPLOSh52
[ 3]  r←ajusta80 ∆FM'c:\apl2\VIVOBLO1'
[ 4]  r←r,[1]1 80⍴80↑'\section*{Exemplos de h52}'
[ 5]  r←r,[1]EXEMPLOSh52
[ 6]  r←r,[1]1 80⍴80↑'\end{document}'
[ 7]  lixo←r ∆FM'c:\apl2\exemh52.tex'
[ 8]  'Salvo em c:\apl2\ com o nome de exemh52.tex'
------------------------------------------------------------
[ 0]  r←geradirt x;lin;i;tam
[ 1]  r←(((+/(,x[;1])='%')÷3),20)⍴' '
[ 2]  tam←0
[ 3]  lin←1
[ 4]  i←1
[ 5] t1:→(i>1↑⍴x)/fim
[ 6]  →((x[i;1]='%')∧(x[i;2]='i'))/comeca
[ 7]  →((x[i;1]='%')∧(x[i;2]='f'))/termina
[ 8]  →((x[i;1]='%')∧(x[i;2]='r'))/resposta
[ 9]  tam←tam+1
[10]  i←i+1
[11]  →t1
[12] comeca:r[lin;⍳3]←x[i;3 4 5]
[13]  r[lin;5+⍳5]←5 0⍕i
[14]  tam←0
[15]  i←i+1
[16]  →t1
[17] resposta:r[lin;10+⍳5]←5 0⍕tam
[18]  i←i+1
[19]  →t1
[20] termina:r[lin;15+⍳5]←5 0⍕i-1
[21]  lin←lin+1
[22]  i←i+1
[23]  →t1
[24] fim:
------------------------------------------------------------
[ 0]  r←gerah52 n;x;quais;i;y;resps;defs
[ 1]  DEFIh52←ajusta80 DEFIh52
[ 2]  x←geradirt DEFIh52
[ 3]  y←((1↑⍴x),4)⍴⍪,x,' '
[ 4]  quais←n?1↑⍴y
[ 5]  resps←''
[ 6]  defs←0 80⍴' '
```

```
[ 7]  i←1
[ 8] t1:→(i>n)/fim
[ 9]  defs←defs,[1]DEFIh52[y[quais[i];2]+⍳y[quais[i];3];]
[10]  resps←resps,' | ',trim DEFIh52[y[quais[i];4];]
[11]  i←i+1
[12]  →t1
[13] fim:r←2⍴0
[14]  r[1]←⊂defs
[15]  r[2]←⊂1↓resps
[16] ⍝'Tamanho ',⍕1↑⍴r
------------------------------------------------------------
[ 0]  r←y geraquestoes x;i
[ 1] ⍝ x e o texto DEFIxxx e y e o numero inicial da questao gerada no GIZ
[ 2]  r←0 75⍴' '
[ 3]  i←1
[ 4] t1:→(i>1↑⍴x)/fimesmo
[ 5]  →((x[i;1]='%')∧(x[i;2]='i'))/comeca
[ 6]  i←i+1
[ 7]  →t1
[ 8] comeca:
[ 9]  r←r,[1]1 75⍴75↑'$QE',(5 0⍕y),'307      1des:que faz CSS ?'
[10]  i←i+1
[11] vol1:
[12]  →((x[i;1]='%')∧(x[i;2]='r'))/respos
[13]  r←r,[1]1 75⍴75↑x[i;]
[14]  i←i+1
[15]  →vol1
[16] respos:
[17]  r←r,[1]1 75⍴75↑'$QR',(5 0⍕y),'307'
[18]  i←i+1
[19] vol2:
[20]  →((x[i;1]='%')∧(x[i;2]='f'))/termin
[21]  r←r,[1]1 75⍴75↑x[i;]
[22]  i←i+1
[23]  →vol2
[24] termin:
[25]  y←y+1
[26]  i←i+1
[27]  →(i>1↑⍴x)/fimesmo
[28]  →((x[i;1]='%')∧(x[i;2]='i'))/comeca
[29]  →termin
[30] fimesmo:
------------------------------------------------------------
[ 0]  todosh52;r;lixo
[ 1] ⍝ esta funcao imprime todos os exercicios do banco de dados
[ 2]  DEFIh52←ajusta80 DEFIh52
[ 3]  r←ajusta80 ⎕FM'c:\apl2\VIVOBLO1'
[ 4]  r←r,[1]1 80⍴80↑'\section*{Listagem de todos os problemas de h52}'
[ 5]  r←r,[1]1 80⍴80↑'\begin{enumerate}'
[ 6]  r←r,[1]DEFIh52
[ 7]  r←r,[1]1 80⍴80↑'\end{enumerate}'
[ 8]  r←r,[1]1 80⍴80↑'\end{document}'
[ 9]  lixo←r ⎕FM'c:\apl2\todosh52.tex'
[10]  'Salvo em c:\apl2\ com o nome de todosh52.tex'
------------------------------------------------------------
[ 0]  opesq vivoh52a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLh52   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
```

```
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAh52←ajusta80 FOLHALAh52
[11]  relat←((2+1↑⍴ylu),1 30+⍴FOLHALAh52)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 254⍴''
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←37 80⍴' '
[16]  f←FOLHALAh52
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[36;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[37;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  esse[8;]←1 80⍴80↑,TEMAS[?1↑⍴TEMAS;]
[35]  xx←gerah52 2
[36]  →(27≥1↑⍴⊃xx[1])/blz88
[37]  ⍞←'o'
[38]  →inica
[39] blz88:
[40]  esse[8+⍳27;]←27 80↑⊃xx[1]
[41]  resp←(3 0⍕resp),':',250↑⊃xx[2]
[42]  resu←resu,[1]1 254⍴resp
[43]  acuja←(f[;2]='#')/⍳1↑⍴f
[44]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[45]  relat[1+xk;;]←(((⍴f)+0 30)↑f),[1](1,30+1↓⍴f)⍴200↑'⍀clearpage'
[46]  ⍞←(⍕xk←xk+1),'-'
[47]  →testa
[48] fim:
[49]  upag←(1 30+⍴f)⍴' '
[50]  →(1=≡n)/elafa
[51]  upag[1;]←(1↓⍴upag)↑'⍀scriptsize ⍀begin{verbatim}'
[52]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO,'  so os primeiros 110
       bytes'
[53]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),110)↑resu
[54]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[55]  →terminando
[56] elafa:
[57]  aaa←(ylu[;⍳36],0 4↓resu)
[58]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.gpa')
[59]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[60] terminando:
[61]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[62]  relat[1↑⍴relat;;]←upag
[63]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[64]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.tex'
[65]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivoh54

```
[ 0]  opesq vivoh54a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLh54   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAh54←ajusta80 FOLHALAh54
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAh54)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALAh54
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  esse[8;]←1 80⍴80↑,TEMAS[?1↑⍴TEMAS;]
[35]  resu←resu,[1]1 3⍴resp
[36]  acuja←(f[;2]='#')/⍳1↑⍴f
[37]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[39]  ⍞←(⍎xk←xk+1),'-'
[40]  →testa
[41] fim:
[42] elafa:'nao tem arquivo GPA'
[43] terminando:
[44]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[45]  lixonol[1↑⍴lixonol;]←80↑'\end{document}'
[46]  lixonol←lixonol ΔFM'c:\apl2\',((~⍬∧\⍬EVENTO=' ')/EVENTO),'.tex'
[47]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[48]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivoh60

```
[0]  AVISO
[1]  'Veja em f:\p\n\h60 o arquivo h60_apre.pdf que e uma apresentacao'
[2]  'as cartelas de referencia estao em f:\p\n\h92'
------------------------------------------------------------
[ 0]  opesq vivoh60a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
```

```
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLh60   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAh60←ajusta80 FOLHALAh60
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAh60)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALAh60
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  esse[8;]←1 80⍴80↑,TEMAS[?1↑⍴TEMAS;]
[35]  resu←resu,[1]1 3⍴resp
[36]  acuja←(f[;2]='#')/⍳1↑⍴f
[37]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[39]  ⍞←(⍕xk←xk+1),'-'
[40]  →testa
[41] fim:
[42] elafa:'nao tem arquivo GPA'
[43] terminando:
[44]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[45]  lixonol[1↑⍴lixonol;]←80↑'\end{document}'
[46]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[47]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[48]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivoh63

```
[0]  AVISO
[1]  'olhe a cartela de JS em f:\p\infoland\carte\cartejs.pdf'
------------------------------------------------------------
[ 0]  opesq vivoh63a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
```

```
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLh63   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAh63←ajusta80 FOLHALAh63
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAh63)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALAh63
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.06
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  esse[8;]←1 80⍴80↑,TEMAS[?1↑⍴TEMAS;]
[35]  resu←resu,[1]1 3⍴resp
[36]  acuja←(f[;2]='#')/⍳1↑⍴f
[37]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[39]  ⍞←(⍕xk←xk+1),'-'
[40]  →testa
[41] fim:
[42] elafa:'nao tem arquivo GPA'
[43] terminando:
[44]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[45]  lixonol[1↑⍴lixonol;]←80↑'\end{document}'
[46]  lixonol←lixonol ΔFM'c:\apl2\',((~⍬∧\⍬EVENTO=' ')/EVENTO),'.tex'
[47]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[48]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivoh66

```
[ 0]  opesq vivoh66a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLh66   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
```

```
[10]  FOLHALAh66←ajusta80 FOLHALAh66
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAh66)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALAh66
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.06
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  esse[8;]←1 80⍴80↑,TEMAS[?1↑⍴TEMAS;]
[35]  resu←resu,[1]1 3⍴resp
[36]  acuja←(f[;2]='#')/⍳1↑⍴f
[37]  f[acuja;⍳80]←esse[⌽,f[acuja;3 4],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[39]  ⍞←(⍕xk←xk+1),'-'
[40]  →testa
[41] fim:
[42] elafa:'nao tem arquivo GPA'
[43] terminando:
[44]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[45]  lixonol[1↑⍴lixonol;]←80↑'\end{document}'
[46]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[47]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[48]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivoh69

```
[ 0]  opesq vivoh69a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLh69   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAh69←ajusta80 FOLHALAh69
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAh69)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALAh69
```

```
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  esse[8;]←1 80⍴80↑,TEMAS[?1↑⍴TEMAS;]
[35]  resu←resu,[1]1 3⍴resp
[36]  acuja←(f[;2]='#')/⍳1↑⍴f
[37]  f[acuja;⍳80]←esse[⌽,f[acuja;3 4],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[39]  ⍞←(⍕xk←xk+1),'-'
[40]  →testa
[41] fim:
[42] elafa:'nao tem arquivo GPA'
[43] terminando:
[44]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[45]  lixonol[1↑⍴lixonol;]←80↑'⍀end{document}'
[46]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.tex'
[47]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[48]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivoh72

```
[ 0]  opesq vivoh72a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLh72   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAh72←ajusta80 FOLHALAh72
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAh72)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALAh72
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
```

```
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  esse[8;]←1 80⍴80↑,TEMAS[?1↑⍴TEMAS;]
[35]  resu←resu,[1]1 3⍴resp
[36]  acuja←(f[;2]='#')/⍳1↑⍴f
[37]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[39]  ⎕←(⍕xk←xk+1),'-'
[40]  →testa
[41] fim:
[42] elafa:'nao tem arquivo GPA'
[43] terminando:
[44]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[45]  lixonol[1↑⍴lixonol;]←80↑'\end{document}'
[46]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[47]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[48]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivoh75

```
[ 0]  opesq vivoh75a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLh75   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAh75←ajusta80 FOLHALAh75
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAh75)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALAh75
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
```

```
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  esse[8;]←1 80⍴80↑,TEMAS[?1↑⍴TEMAS;]
[35]  resu←resu,[1]1 3⍴resp
[36]  acuja←(f[;2]='#')/⍳1↑⍴f
[37]  f[acuja;⍳80]←esse[⌽,f[acuja;3 4],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[39]  ⎕←(⍕xk←xk+1),'-'
[40]  →testa
[41] fim:
[42] elafa:'nao tem arquivo GPA'
[43] terminando:
[44]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[45]  lixonol[1↑⍴lixonol;]←80↑'\end{document}'
[46]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[47]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[48]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivoh90

```
[ 0]  opesq vivoh90a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLh90   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAh90←ajusta80 FOLHALAh90
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAh90)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALAh90
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  esse[8;]←1 80⍴80↑,TEMAS[?1↑⍴TEMAS;]
[35]  resu←resu,[1]1 3⍴resp
[36]  acuja←(f[;2]='#')/⍳1↑⍴f
[37]  f[acuja;⍳80]←esse[⌽,f[acuja;3 4],' ';]
```

```
[38]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'⍀clearpage'
[39]  ⍞←(⍕xk←xk+1),'-'
[40]  →testa
[41] fim:
[42] elafa:'nao tem arquivo GPA'
[43] terminando:
[44]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[45]  lixonol[1↑ρlixonol;]←80↑'⍀end{document}'
[46]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[47]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[48]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivok01

```
[ 0]  opesq vivok01a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLk01   '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAk01←ajusta80 FOLHALAk01
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALAk01)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←12 80ρ' '
[16]  f←FOLHALAk01
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑ρf),4)ρ'⍀#05')/⍳1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34] ⍝ xx←geracaso
[35] ⍝ esse[7+⍳3;]←3 80↑acertaca xx
[36] ⍝ resp←resp,,xx[2 3;5]
[37]  resu←resu,[1]1 3ρresp
[38]  acuja←(f[;2]='#')/⍳1↑ρf
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'⍀clearpage'
[41]  ⍞←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+ρf)ρ' '
[44]  →(1=≡n)/elafa
```

```
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍕resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[51]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivok04

```
[0]  AVISO
[1]  'Note que os exercicios contemplam apenas 2->10 e 10->2'
[2]  'de inteiros e nao inteiros'
[3]  ''
[4]  'eles nao contemplam conversao de 8 e 16'
[5]  'nem somas e subtracoes nestas bases. VER ISTO NA TEORIA ANTES'
[6]  'DE ENTREGAR AS FOLHAS - fonte cap. 1 fdo Idoeta'
------------------------------------------------------------
[ 0]  cavaleiro039a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinha
      ;relat;resp;resu;upag;x;xixo;xk;xx;ylu;zz
[ 1]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 2]  FOLHALA039←ajusta80 FOLHALA039
[ 3]  relat←⎕FM'c:\apl2\VIVOBLO1'
[ 4]  xk←1
[ 5] testa:→(xk>n)/fim
[ 6]  esse←32 80⍴' '
[ 7]  f←FOLHALA039
[ 8]  esse[1;⍳⍴x]←x←'-- Cavaleiros da Tavola Redonda'
[ 9]  esse[3;]←80↑4 2⍕VERSAOa←1.2
[10]  esse[31;⍳8]←'@000000@'
[11] inica:
[12]  xx←gera2t10
[13]  esse[7+⍳8;]←8 80↑⊃xx[1]
[14]  resp←4 0⍕⊃xx[2]
[15]  xx←gera10t2
[16]  esse[15+⍳9;]←9 80↑⊃xx[1]
[17]  resp←resp,' ',2 0⍕⊃xx[2]
[18]  xx←gera2t10f
[19]  esse[24+⍳3;]←3 80↑⊃xx[1]
[20]  resp←resp,' ',11 6⍕⊃xx[2]
[21]  xx←gera10t2f
[22]  esse[27+⍳3;]←3 80↑⊃xx[1]
[23]  resp←resp,' ',2 0 2 0 2 0 2 0 3 0 2 0 2 0 2 0⍕,⊃xx[2]
[24]  acuja←(f[;2]='#')/⍳1↑⍴f
[25]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[26]  ⎕←(⍕xk←xk+1),'-'
[27]  f←(((1↑⍴relat),1↓⍴f)↑relat),[1]f
[28]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'\end{document}'
[29]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'%',resp
[30]  lixo1←f ⎕FM'c:\apl2\CA039a',('00'⍕xk-1),'.tex'
[31]  →testa
[32] fim:
------------------------------------------------------------
```

```
[ 0]  r1←gera10t2;a;r;b
[ 1]  r1←2ρ0
[ 2]  r←9 80ρ' '
[ 3]  a←50+4?50
[ 4]  a←a[⍋a]
[ 5]  b←4 8ρ0
[ 6]  r[1;]←80↑'\begin{tabular}{|p{2cm}|l|l|l|l|l|l|l|l|} \hline'
[ 7]  r[2;]←80↑'base 10&\multicolumn{8}{c|}{base 2}\\ \hline'
[ 8]  r[3;]←80↑'&&&&*&&&&\\ \hline'
[ 9]  r[4;]←(4 0⍕a[1]),76↑'&&&&&&&&\\ \hline'
[10]  b[1;]←(8ρ2)⊤a[1]
[11]  r[5;]←(4 0⍕a[2]),76↑'&&&&&&&&\\ \hline'
[12]  b[2;]←(8ρ2)⊤a[2]
[13]  r[6;]←(4 0⍕a[3]),76↑'&&&&&&&&\\ \hline'
[14]  b[3;]←(8ρ2)⊤a[3]
[15]  r[7;]←(4 0⍕a[4]),76↑'&&&&&&&&\\ \hline \hline'
[16]  b[4;]←(8ρ2)⊤a[4]
[17]  r[8;]←80↑'INDIQUE A COLUNA * &\multicolumn{8}{c|}{}\\ \hline \hline'
[18]  r[9;]←80↑'\end{tabular}'
[19]  r1[1]←⊂r
[20]  r1[2]←⊂b[;4] ⍝ja foi a b[;3] e era b[;5] e estava pegando a coluna errada.
------------------------------------------------------------
[ 0]  rx←gera10t2f;a;a1;a2;b1;b2;re;r
[ 1]  r←3 80ρ' ' ⋄ re←2 4ρ0 ⋄ rx←2ρ0
[ 2]  r[1;]←80↑'\begin{verbatim}'
[ 3]  a←(¯1+?14ρ2),0 0
[ 4]  a1←a[⍳8] ⋄ a2←a[8+⍳8]
[ 5]  b1←+/a1×2*7 6 5 4 3 2 1 0 ⋄ b2←+/a2×2*-1 2 3 4 5 6 7 8
[ 6]  r[2;]←80↑20 6⍕b1+b2
[ 7]  re[1;]←a1[7 8],a2[1 2]
[ 8]  a←(¯1+?14ρ2),0 0
[ 9]  a1←a[⍳8] ⋄ a2←a[8+⍳8]
[10]  b1←+/a1×2*7 6 5 4 3 2 1 0 ⋄ b2←+/a2×2*-1 2 3 4 5 6 7 8
[11]  r[3;]←80↑20 6⍕b1+b2
[12]  re[2;]←a1[7 8],a2[1 2]
[13]  rx[1]←⊂r
[14]  rx[2]←⊂re
------------------------------------------------------------
[ 0]  r1←gera2t10;a;r
[ 1]  r1←2ρ0
[ 2]  r←8 80ρ' '
[ 3]  a←50+4?50
[ 4]  a←a[⍋a]
[ 5]  r[1;]←80↑'\begin{tabular}{|p{2cm}|p{2cm}|} \hline'
[ 6]  r[2;]←80↑'base 2&base 10\\ \hline'
[ 7]  r[3;]←(20↑2 0⍕(8ρ2)⊤a[1]),60↑'&\\ \hline'
[ 8]  r[4;]←(20↑2 0⍕(8ρ2)⊤a[2]),60↑'&\\ \hline'
[ 9]  r[5;]←(20↑2 0⍕(8ρ2)⊤a[3]),60↑'&\\ \hline'
[10]  r[6;]←(20↑2 0⍕(8ρ2)⊤a[4]),60↑'&\\ \hline \cline{1-2}'
[11]  r[7;]←80↑'SOME OS 4 VALORES &\\ \cline{1-2} \hline'
[12]  r[8;]←80↑'\end{tabular}'
[13]  r1[1]←⊂r
[14]  r1[2]←⊂+/a
------------------------------------------------------------
[ 0]  rx←gera2t10f;a;a1;a2;b1;b2;re;r
[ 1]  r←3 80ρ' ' ⋄ re←2ρ0 ⋄ rx←2ρ0
[ 2]  r[1;]←80↑'\begin{verbatim}'
[ 3]  a←(¯1+?14ρ2),0 0
[ 4]  a1←a[⍳8] ⋄ a2←a[8+⍳8]
[ 5]  b1←+/a1×2*7 6 5 4 3 2 1 0 ⋄ b2←+/a2×2*-1 2 3 4 5 6 7 8
[ 6]  r[2;]←80↑(2 0⍕a1),',',2 0⍕a2
[ 7]  re[1]←b1+b2
[ 8]  a←(¯1+?14ρ2),0 0
```

```
[ 9]  a1←a[⍳8] ⋄ a2←a[8+⍳8]
[10]  b1←+/a1×2*7 6 5 4 3 2 1 0 ⋄ b2←+/a2×2*-1 2 3 4 5 6 7 8
[11]  r[3;]←80↑(2 0⍕a1),',',2 0⍕a2
[12]  re[2]←b1+b2
[13]  rx[1]←⊂r
[14]  rx[2]←⊂re
------------------------------------------------------------
[ 0]  opesq vivo039a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL039   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA039←ajusta80 FOLHALA039
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA039)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 58⍴' '
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←32 80⍴' '
[16]  f←FOLHALA039
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.08
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[31;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[32;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera2t10
[35]  esse[7+⍳8;]←8 80↑⊃xx[1]
[36]  resp←(3 0⍕resp),'-',4 0⍕⊃xx[2]
[37]  xx←gera10t2
[38]  esse[15+⍳9;]←9 80↑⊃xx[1]
[39]  resp←resp,' ',2 0⍕⊃xx[2]
[40]  xx←gera2t10f
[41]  esse[24+⍳3;]←3 80↑⊃xx[1]
[42]  resp←resp,' ',11 6⍕⊃xx[2]
[43]  xx←gera10t2f
[44]  esse[27+⍳3;]←3 80↑⊃xx[1]
[45]  resp←resp,' ',2 0 2 0 2 0 2 0 3 0 2 0 2 0 2 0⍕,⊃xx[2]
[46]  resu←resu,[1]1 58⍴resp
[47]  acuja←(f[;2]='#')/⍳1↑⍴f
[48]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[49]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[50]  ⍞←(⍕xk←xk+1),'-'
[51]  →testa
[52] fim:upag←(1 0+⍴f)⍴' '
[53]  →(1=≡n)/elafa
```

```
[54]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[55]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[56]  upag[2+⍳1↑⍴resu;⍳58]←resu
[57]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[58]  →terminando
[59] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[60]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[61]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[62] terminando:
[63]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[64]  relat[1↑⍴relat;;]←upag
[65]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[66]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[67]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[68]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivok04a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLk04   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAk04←ajusta80 FOLHALAk04
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAk04)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 58⍴' '
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←32 80⍴' '
[16]  f←FOLHALAk04
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.08
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[31;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[32;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera2t10
[35]  esse[7+⍳8;]←8 80↑⊃xx[1]
[36]  resp←(3 0⍕resp),'-',4 0⍕⊃xx[2]
[37]  xx←gera10t2
[38]  esse[15+⍳9;]←9 80↑⊃xx[1]
[39]  resp←resp,' ',2 0⍕⊃xx[2]
[40]  xx←gera2t10f
[41]  esse[24+⍳3;]←3 80↑⊃xx[1]
[42]  resp←resp,' ',11 6⍕⊃xx[2]
[43]  xx←gera10t2f
[44]  esse[27+⍳3;]←3 80↑⊃xx[1]
```

```
[45]  resp←resp,' ',2 0 2 0 2 0 2 0 3 0 2 0 2 0 2 0⍕,⊃xx[2]
[46]  resu←resu,[1]1 58⍴resp
[47]  acuja←(f[;2]='#')/⍳1↑⍴f
[48]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[49]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[50]  ⍞←(⍕xk←xk+1),'-'
[51]  →testa
[52] fim:upag←(1 0+⍴f)⍴' '
[53]  →(1=≡n)/elafa
[54]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[55]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[56]  upag[2+⍳1↑⍴resu;⍳58]←resu
[57]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[58]  →terminando
[59] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[60]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[61]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[62] terminando:
[63]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[64]  relat[1↑⍴relat;;]←upag
[65]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[66]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[67]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[68]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivok07

```
[ 0]  r←achav16 x;exp
[ 1]  exp←¯15+2 2 2 2 2⊥x[1+⍳5]
[ 2] ⍎ exp
[ 3]  →((exp=0)∨(exp=16))/zebra    ⍎ 0 1 1 1 1  ou 1 1 1 1 1
[ 4]  r←((-1)*x[1])×(((11⍴2)⊥1,x[6+⍳10])÷2*11)×(2*exp)
[ 5]  →0
[ 6] zebra:→(exp=16)/z2       ⍎ aqui o expoente ┤e zero
[ 7]  r←((-1)*x[1])×(((10⍴2)⊥x[6+⍳10])÷2*10)
[ 8]  →0
[ 9] z2:→(0≠∧/x[6+⍳10]=0)/z3
[10]  r←9999999999 ⍎ 'infinito'
[11]  →0
[12] z3:r←-9999999999 ⍎ 'nan'
------------------------------------------------------------
[ 0]  r←achav32 x;exp
[ 1]  exp←(8⍴2)⊥x[1+⍳8]
[ 2] ⍎ exp
[ 3]  →((exp=0)∨(exp=255))/zebra
[ 4]  r←((-1)*x[1])×(1+((23⍴2)⊥x[9+⍳23])÷2*23)×(2*exp-127)
[ 5]  →0
[ 6] zebra:→(exp=255)/z2
[ 7]  r←((-1)*x[1])×(((23⍴2)⊥x[9+⍳23])÷2*23)×(2*-126)
[ 8]  →0
[ 9] z2:→(0≠∧/x[9+⍳23]=0)/z3
[10]  r←'infinito'
[11]  →0
[12] z3:r←'nan'
------------------------------------------------------------
[0]  r←bin2dec x
[1]  r←((⍴x)⍴2)⊥x
------------------------------------------------------------
[0]  r←comp2 x
[1]  →(x[⎕IO]≠1)/erro
[2]  r←-1+((⍴x)⍴2)⊥~x
```

```
[3]  →0
[4] erro:'primeira posicao ≠ 1'
-------------------------------------------------------------
[ 0]  r←exerk07;a;ra;i
[ 1]  r←6 17⍴0
[ 2]  i←1
[ 3] t1:→(i>2)/ufa1
[ 4]  a←gera16n
[ 5]  ra←comp2 a
[ 6]  →(ra<¯9999)/t1
[ 7]  r[i;1+⍳16]←a
[ 8]  r[i;1]←ra
[ 9]  i←i+1
[10]  →t1
[11] ufa1:→(i>6)/fim
[12]  a←gera16
[13]  ra←achav16 a
[14]  →((ra<¯9999)∨(ra>9999))/ufa1
[15]  r[i;1+⍳16]←a
[16]  r[i;1]←ra
[17]  i←i+1
[18]  →ufa1
[19] fim:
-------------------------------------------------------------
[0]  r←gera16
[1]  r←¯1+?16⍴2
[2]  →(1<?4)/0
[3]  r[1]←0
-------------------------------------------------------------
[0]  r←gera16n
[1]  r←1,¯1+?15⍴2
-------------------------------------------------------------
[0]  r←gera16p
[1]  r←0,¯1+?15⍴2
-------------------------------------------------------------
[0]  gera_texto_apoio
[1]  texto_k07 ⎕FM'c:\apl2\texto_apoio_k07.tex'
[2]  'agora em \apl2\ execute pdflatex texto_apoio_k07'
[3]  ' e la vai aparecer o texto_apoio_k07.pdf que tem informacoes interessantes'
-------------------------------------------------------------
[0]  r←exp verificador num;sin;x
[1]  sin←0
[2]  x←(sin,((5⍴2)⍴exp),(10⍴2)⍴num)
[3]  r←(⍕achav16c x),'   |   ',⍕x
-------------------------------------------------------------
[ 0]  opesq vivok07a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLk07   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAk07←ajusta80 FOLHALAk07
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAk07)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 7⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←15 80⍴' '
```

```
[16]  f←FOLHALAk07
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[14;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[15;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←exerk07
[35]  esse[7+⍳6;⍳32]←(32⍴2 0)⍕xx[;1+⍳16]
[36]  resp←resp,,xx[1;1],xx[2;1],,xx[2+⍳4;1]
[37]  resu←resu,[1]1 7⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[41]  ⍞←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳75]←'¯-'edit 5 0 7 0 7 0 14 7 14 7 14 7 14 7⍕resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],6 0 6 0 14 7 14 7 14 7 14 7⍕0 1↓resu)
[51]  lixonol←aaa ⍙FM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ⍙FM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivok08

```
[0]  r←formk08 x
[1]  r←4 70⍴' '
[2]  i←1
[3] t1:→(i>4)/fim
[4]  r[i;]←70↑(⍕x[i;1]),'&',(⍕x[i;2]),'&-',(⍕|x[i;3]),'&',(⍕x[i;4]),'&',(⍕x[i;5]),'⍀⍀ ⍀hl
      ine'
[5]  i←i+1
[6]  →t1
[7] fim:
-------------------------------------------------------------
[0]  r←gerak08;ii
[1]  r←4 5⍴0
[2]  r[;1]←4+4?5
[3]  r[;2]←(3 4 5 6 3 4 5 6 3)[4?9]
```

```
[4]  r[;3]←(¯7 ¯8 ¯9)[ii←?3]
[5]  r[;4]←(7 8 9)[ii]
[6]  r[;5]←1 4ρ(?4ρ1000000)÷(1000 100 10)[?4ρ3]
-------------------------------------------------------------
[0]  prova40k08;r;i
[1]  r←0 79ρ' '
[2]  i←3372
[3] t1:→(i>3412)/fim
[4]  r←r,[1]provak08 i
[5]  i←i+1
[6]  →t1
[7] fim:r ΔFM'c:⍀apl2⍀q3372.tex'
-------------------------------------------------------------
[ 0]  r←provak08 ni;cab1;cab2;cab3;gr;m;ma;re;sg;t
[ 1] ⍝ Esta funcao gera 40 questoes teoricas sobre maquinas
[ 2] ⍝ ni←... numero inicial
[ 3]  gr←601 ⍝ grupo
[ 4]  sg←1
[ 5]  t←19 79ρ' '
[ 6]  t[1;]←79↑'Uma máquina teórica $⍀beta$ pode ser descrita por 4 números, a saber'
[ 7]  t[2;]←79↑'base, mantissa, limites inferior e superior do expoente. Por exemplo, '
[ 8]  t[3;]←79↑' $⍀beta=[8,6,-5,8]$ pode ser entendida como tendo base=8, 6 dígitos na man
      tissa'
[ 9]  t[4;]←79↑'e limites do expoente variando entre -5 e 8. Nesta quest⍀~ao, você receber
      á uma'
[10]  t[5;]←79↑'máquina assim descrita e um valor qualquer fracionário escrito em base dec
      imal.'
[11]  t[6;]←79↑'⍀begin{itemize}'
[12]  t[7;]←79↑'⍀item Primeiro, deve converter este número decimal para a máquina teórica
      '
[13]  t[8;]←79↑'descrita descobrindo o valor da mantissa na representaç⍀~ao.'
[14]  t[9;]←79↑'⍀item Depois, deve calcular o erro absoluto cometido na convers⍀~ao.'
[15]  t[10;]←79↑'⍀end{itemize}'
[16]  t[11;]←79↑'Por exemplo: se a máquina for $⍀beta=[7,4,-8,8]$ e o número a representar
       for '
[17]  t[12;]←79↑' $22.646_{10}$, ele será representado como $0.3143 ⍀times 7 ^ 2$ e '
[18]  t[13;]←79↑'a resposta será 3143 (expoente=2) com um erro absoluto de 0.0133. Para ac
      har '
[19]  t[14;]←79↑'este erro, basta reconverter o número de base 7 para base 10 e achar a '
[20]  t[15;]←79↑'diferença para o número original. Um segundo exemplo. Dada $⍀beta=[8,6,-8
      ,8]$'
[21]  m←gerak08[?4;]
[22]  re←resk08 m
[23]  ma←(⍕m[1]),', ',(⍕m[2]),', ',('¯'-'edit⍕m[3]),', ',⍕m[4]
[24]  t[16;]←79↑' e o 6045.16, a resposta seria 136351 (expoente=5) e o erro absoluto 0.03
      5.'
[25]  t[17;]←79↑'Agora, o número a converter é ',(⍕m[5]),' e a máquina é '
[26]  t[18;]←79↑' $⍀beta=[',ma,']$. Ache a mantissa e o erro absoluto.'
[27]  t[19;]←79↑'Se houver OVERFLOW ou UNDERFLOW indique o fato e daí n⍀~ao precisa conver
      ter.'
[28]  cab1←1 79ρ79↑'$QE',(5 0⍕ni),(3 0⍕gr),'     ',(2 0⍕sg),'maquina teorica'
[29]  cab2←1 79ρ79↑'$QR',(5 0⍕ni)
[30]  cab3←1 79ρ79↑(10 0⍕re[3]),'   ',⍕re[4]
[31]  r←cab1,[1]t,[1]cab2,[1]cab3
-------------------------------------------------------------
[ 0]  r←resk08 maq;pi;pf;nb;ct;hora;nu;fb;tamanho;expoente;bacana;ea;er
[ 1]  r←5ρ0
[ 2]  pi←⌊maq[5]
[ 3]  pf←maq[5]-pi
[ 4]  nb←0ρ0
[ 5] t1:nb←(maq[1]|pi),nb
[ 6]  pi←⌊pi÷maq[1]
[ 7]  →(pi=0)/oba
```

```
[ 8]  →t1
[ 9] oba:fb←0ρ0
[10]  ct←0
[11] t2:→(ct>9)/ufa
[12]  pf←pf×maq[1]
[13]  hora←⌊pf
[14]  fb←fb,hora
[15]  pf←pf-hora
[16]  ct←ct+1
[17]  →t2
[18] ufa:nu←maq[2]↑nb,fb
[19]  tamanho←ρnb
[20]  expoente←tamanho
[21]  →(expoente≥maq[3])/blz1
[22]  r[1]←¯1 ⍝ underflow
[23]  →0
[24] blz1:→(expoente≤maq[4])/blz2
[25]  r[1]←¯2 ⍝ overflow
[26]  →0
[27] blz2:r[1]←0
[28]  r[2]←⊂'0.',(1 0⍕nu),' * ',(⍕maq[1]),' ^ ',⍕expoente
[29]  bacana←+/nu×maq[1]*(-ιρnu)+expoente
[30]  ea←±10 4⍕|maq[5]-bacana
[31]  er←±10 4⍕ea÷bacana
[32]  r[3]←±1 0⍕nu
[33]  r[4]←ea
[34]  r[5]←er
------------------------------------------------------------
[ 0]  opesq vivok08a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;i;lixo1;lixonol;nomes;ql39;qli
      nha;relat;resp;resu;upag;xixo;xk;xx;ylu;yy;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLk08   '
[ 6]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕ιn
[ 9]  ylu←n grupo ylu
[10]  FOLHALAk08←ajusta80 FOLHALAk08
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALAk08)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 9ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←13 80ρ' '
[16]  f←FOLHALAk08
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;ι6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;ι4]=((1↑ρf),4)ρ'⍀#05')/ι1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+ι30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[12;ι10]←'@',esse[6;5+ι3],esse[4;1+ι5],'@'
[32]  esse[13;]←80↑esse[6;5+ι3],'-',esse[4;1+ι5],' - ',opesq[6 7],'/',opesq[9 10]
```

```
[33] inica:
[34]  xx←gerak08
[35]  i←1
[36] t5:→(i>4)/obak
[37]  yy←resk08 xx[i;]
[38]  resp←resp,yy[3 4]
[39]  i←i+1
[40]  →t5
[41] obak:
[42]  esse[7+⍳4;]←4 80↑formk08 xx
[43]  resu←resu,[1]1 9⍴resp
[44]  acuja←(f[;2]='#')/⍳1↑⍴f
[45]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[46]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[47]  ⍞←(⍕xk←xk+1),'-'
[48]  →testa
[49] fim:upag←(1 0+⍴f)⍴' '
[50]  →(1=≡n)/elafa
[51]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[52]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[53]  upag[2+⍳1↑⍴resu;⍳+/71]←(lixo1←5 0 10 0 8 4 8 0 8 4 8 0 8 4 8 0 8 4)⍕resu
[54]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[55]  →terminando
[56] elafa:aaa←(ylu[;⍳36],10 0 8 4 8 0 8 4 8 0 8 4 8 0 8 4⍕0 1↓resu)
[57]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[58]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[59] terminando:
[60]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[61]  relat[1↑⍴relat;;]←upag
[62]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[63]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[64]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[65]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivok13

```
[ 0]  AVISO
[ 1]  'Aparentemente ha um erro (ou nao conformismo) do caso 2: a funv~ao'
[ 2]  'que envolve sen e coseno. Como ela e periodica, nso intervalos dados'
[ 3]  'pode haver mais de uma raiz. Um aluno (Rodrigo Negri de Azevedo)'
[ 4]  'achou 3 raizes e as 3 estao certas. '
[ 5]  'Ou se tira esta funvao ou se estreiam os limites ou se descobre o que ha de errado'
[ 6]  ''
[ 7]  'em 19/08/18, alterei FOLHALA734 para ter exemplos em Python'
[ 8]  'a versao antiga esta em FOLHALA734free, e é fácil retroceder, basta fazer'
[ 9]  'FOLHALA734←FOLHALA734free, cuidando de salvar antes a versao Python'
[10]  ' Em 05/12/21 esta folha passou de 734 -> k13'
------------------------------------------------------------
[0]  r←FUNCA x
[1]  r←((8×0.1×x)××2×x×0.1)-7.782993
------------------------------------------------------------
[ 0]  r←ikz biss1 z;a;b;ep;f;fa;fb;fx;lixo;x
[ 1] ⍝ x[1]=a, x[2]=b, x[3]=epsilon   //// f=funcao no formato ⎕fx e nome FUNCA
[ 2]  a←z[1]
[ 3]  b←z[2]
[ 4]  ep←z[3]
[ 5]  f←2 50⍴' '
[ 6]  f[1;]←50↑'r←FUNCA x'
[ 7]  →(ikz[3]>0)/posa
[ 8] nega:
[ 9]  f[2;]←50↑'r←((',(⍕ikz[1]),'×1○x)+',(⍕ikz[2]),'×2○x)-',⍕|ikz[3]
```

```
[10]  →junta
[11] posa:
[12]  f[2;]←50↑'r←((',(⍕ikz[1]),'×10x)+',(⍕ikz[2]),'×20x)+',⍕ikz[3]
[13] junta:
[14]  lixo←⎕FX f
[15] volta:
[16]  fa←FUNCA a
[17]  fb←FUNCA b
[18]  x←(a+b)÷2
[19]  fx←FUNCA x
[20]  20 14⍕a,b,x
[21]  →(ep>|fa-fb)/acabou
[22]  →((fa×fx)<0)/eb
[23] ea:a←x
[24]  →volta
[25] eb:
[26]  b←x
[27]  →volta
[28] acabou:'O resultado e ',20 14⍕x
-------------------------------------------------------------
[ 0]  r←ikz biss2 z;a;b;ep;f;fa;fb;fx;lixo;x
[ 1] ⍝ x[1]=a, x[2]=b, x[3]=epsilon   //// f=funcao no formato ⎕fx e nome FUNCA
[ 2]  a←z[1]
[ 3]  b←z[2]
[ 4]  ep←z[3]
[ 5]  f←2 50⍴' '
[ 6]  f[1;]←50↑'r←FUNCA x'                    ⍝ 0.1×i××(k×x×0.1)
[ 7]  →(ikz[3]>0)/posa
[ 8] nega:
[ 9]  f[2;]←50↑'r←((',(⍕ikz[1]),'×0.1×x)××',(⍕ikz[2]),'×x×0.1)-',⍕|ikz[3]
[10]  →junta
[11] posa:
[12]  f[2;]←50↑'r←((',(⍕ikz[1]),'×0.1×x)××',(⍕ikz[2]),'×x×0.1)+',⍕ikz[3]
[13] junta:
[14]  lixo←⎕FX f
[15] volta:
[16]  fa←FUNCA a
[17]  fb←FUNCA b
[18]  x←(a+b)÷2
[19]  fx←FUNCA x
[20]  20 14⍕a,b,x
[21]  →(ep>|fa-fb)/acabou
[22]  →((fa×fx)<0)/eb
[23] ea:a←x
[24]  →volta
[25] eb:
[26]  b←x
[27]  →volta
[28] acabou:'O resultado e ',20 14⍕x
-------------------------------------------------------------
[ 0]  r←ikz biss3 z;a;b;ep;f;fa;fb;fx;lixo;x
[ 1] ⍝ x[1]=a, x[2]=b, x[3]=epsilon   //// f=funcao no formato ⎕fx e nome FUNCA
[ 2]  a←z[1]
[ 3]  b←z[2]
[ 4]  ep←z[3]
[ 5]  f←2 70⍴' '
[ 6]  f[1;]←70↑'r←FUNCA x'                    ⍝ 0.1×i××(k×x×0.1)
[ 7]  →(ikz[3]>0)/posa
[ 8] nega:
[ 9]  f[2;]←70↑'r←(',(⍕ikz[1]),'×x×',(⍕ikz[2]),')+(',(⍕ikz[3]),'×x×',(⍕ikz[4]),')-',0 6⍕|i
      kz[5]
[10]  →junta
[11] posa:
```

```
[12]  f[2;]←70↑'r←(',(⍕ikz[1]),'×x*',(⍕ikz[2]),')+(',(⍕ikz[3]),'×x*',(⍕ikz[4]),')+',0 6⍕ik
      z[5]
[13] junta:
[14]  lixo←⎕FX f
[15] volta:
[16]  fa←FUNCA a
[17]  fb←FUNCA b
[18]  x←(a+b)÷2
[19]  fx←FUNCA x
[20]  20 14⍕a,b,x
[21]  →(ep>|fa-fb)/acabou
[22]  →((fa×fx)<0)/eb
[23] ea:a←x
[24]  →volta
[25] eb:
[26]  b←x
[27]  →volta
[28] acabou:'O resultado e ',20 14⍕x
-------------------------------------------------------------
[ 0]  r←gerac734a;x;y;z;a;b;c
[ 1]  r←3⍴0
[ 2] mais:a←5+?22
[ 3]  b←5000+?4999
[ 4]  c←b*÷a
[ 5]  x←'$x=\sqrt[',(⍕a),']{',(⍕b),'}$'
[ 6]  z←b*÷a
[ 7]  →((⌈z)=⌊z)/mais
[ 8]  y←(⍕⌊z),' e ',⍕⌈z
[ 9]  r[1]←⊂x
[10]  r[2]←⊂y
[11]  r[3]←⊂z
-------------------------------------------------------------
[ 0]  r←gerack13a;x;y;z;a;b;c
[ 1]  r←3⍴0
[ 2] mais:a←5+?22
[ 3]  b←5000+?4999
[ 4]  c←b*÷a
[ 5]  x←'$x=\sqrt[',(⍕a),']{',(⍕b),'}$'
[ 6]  z←b*÷a
[ 7]  →((⌈z)=⌊z)/mais
[ 8]  y←(⍕⌊z),' e ',⍕⌈z
[ 9]  r[1]←⊂x
[10]  r[2]←⊂y
[11]  r[3]←⊂z
-------------------------------------------------------------
[ 0]  r←geramix1;alfa;fua;ful;i;j;k;l;lim;x
[ 1] denovo:
[ 2]  x←(?100)÷10
[ 3]  r←3⍴0
[ 4]  alfa←1+2?7
[ 5]  i←alfa[1] ⋄ k←alfa[2]
[ 6]  j←l←1
[ 7]  ful←'y=',(⍕i),'*sin(x)+',(⍕k),'*cos(x)'
[ 8]  fua←(i×1○x)+(k×2○x)
[ 9]  lim←(⌊x),⌈x
[10]  →(lim[1]≠lim[2])/oba
[11]  ⍞←'o'
[12]  →denovo
[13] oba:
[14]  →(fua<0)/menor
[15] maior:
[16]  r[1]←⊂ful,'-',(0 6⍕fua),'=0'
[17]  →junta
```

```
[18] menor:
[19]  r[1]←⊂ful,'+',(0 6⍕|fua),'=0'
[20] junta:
[21]  r[2]←⊂lim
[22]  r[3]←⊂x
------------------------------------------------------------
[ 0]  r←geramix2;alfa;fua;ful;i;j;k;l;lim;x
[ 1] denovo:
[ 2]  x←(?100)÷10
[ 3]  r←3⍴0
[ 4]  alfa←1+2?7
[ 5]  i←alfa[1] ⋄ k←alfa[2]
[ 6]  j←l←1
[ 7]  ful←'y=((',(⍕i),'*x)/10)*e^{((',(⍕k),'*x)/10)}'
[ 8]  fua←(0.1×i×x)××(k×x×0.1)
[ 9]  lim←(⌊x),⌈x
[10]  →(lim[1]≠lim[2])/oba
[11]  ⎕←'o'
[12]  →denovo
[13] oba:
[14]  →(fua<0)/menor
[15] maior:
[16]  r[1]←⊂ful,'-',(0 6⍕fua),'=0'
[17]  →junta
[18] menor:
[19]  r[1]←⊂ful,'+',(0 6⍕|fua),'=0'
[20] junta:
[21]  r[2]←⊂lim
[22]  r[3]←⊂x
------------------------------------------------------------
[ 0]  r←geramix3;alfa;fua;ful;i;j;k;l;lim;x
[ 1] denovo:
[ 2]  x←(?100)÷10
[ 3]  r←3⍴0
[ 4]  alfa←1+4?6
[ 5]  alfa←alfa[⍒alfa]
[ 6]  i←alfa[1] ⋄ j←alfa[2] ⋄ k←alfa[3] ⋄ l←alfa[4]
[ 7]  ful←'y=',(⍕i),'*x^',(⍕j),'+',(⍕k),'*x^',(⍕l)
[ 8]  fua←(i×x×j)+(k×x×l)
[ 9]  lim←(⌊x),⌈x
[10]  →(lim[1]≠lim[2])/oba
[11]  ⎕←'o'
[12]  →denovo
[13] oba:
[14]  →(fua<0)/menor
[15] maior:
[16]  r[1]←⊂ful,'-',(0 6⍕fua),'=0'
[17]  →junta
[18] menor:
[19]  r[1]←⊂ful,'+',(0 6⍕|fua),'=0'
[20] junta:
[21]  r[2]←⊂lim
[22]  r[3]←⊂x
------------------------------------------------------------
[ 0]  opesq vivok13a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLk13   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
```

```
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAk13←ajusta80 FOLHALAk13
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAk13)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 5⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←17 80⍴' '
[16]  f←FOLHALAk13
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.55
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[16;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[17;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerack13a
[35]  esse[8;]←1 80⍴80↑⊃xx[1]
[36]  esse[9;]←1 80⍴80↑⊃xx[2]
[37]  resp←resp,,⍪8 2⍕⊃xx[3]
[38]  xx←geramix1
[39]  esse[10;]←1 80⍴80↑' $',(trim⊃xx[1]),'$'
[40]  esse[11;]←1 80⍴80↑(⍕(⊃xx[2])[1]),' e ',(⍕(⊃xx[2])[2])
[41]  resp←resp,,⍪8 2⍕⊃xx[3]
[42]  xx←geramix2
[43]  esse[12;]←1 80⍴80↑' $',(trim⊃xx[1]),'$'
[44]  esse[13;]←1 80⍴80↑(⍕(⊃xx[2])[1]),' e ',(⍕(⊃xx[2])[2])
[45]  resp←resp,,⍪8 2⍕⊃xx[3]
[46]  xx←geramix3
[47]  esse[14;]←1 80⍴80↑' $',(trim⊃xx[1]),'$'
[48]  esse[15;]←1 80⍴80↑(⍕(⊃xx[2])[1]),' e ',(⍕(⊃xx[2])[2])
[49]  resp←resp,,⍪8 2⍕⊃xx[3]
[50]  resu←resu,[1]1 5⍴resp
[51]  acuja←(f[;2]='#')/⍳1↑⍴f
[52]  f[acuja;⍳80]←esse[⍪,f[acuja;3 4],' ';]
[53]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[54]  ⍞←(⍕xk←xk+1),'-'
[55]  →testa
[56] fim:upag←(1 0+⍴f)⍴' '
[57]  →(1=≡n)/elafa
[58]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[59]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[60]  upag[2+⍳1↑⍴resu;⍳41]←(lixo1←5 0 12 5 8 2 8 2 8 2)⍕resu
[61]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[62]  →terminando
[63] elafa:aaa←(ylu[;⍳36],12 5⍕0 1↓resu)
[64]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[65]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[66] terminando:
[67]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[68]  relat[1↑⍴relat;;]←upag
[69]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
```

```
[70]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[71]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[72]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivok16

```
[ 0]  opesq vivok16a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLk16   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAk16←ajusta80 FOLHALAk16
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAk16)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALAk16
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34] ⍝ xx←geracaso
[35] ⍝ esse[7+⍳3;]←3 80↑acertaca xx
[36] ⍝ resp←resp,,xx[2 3;5]
[37]  resu←resu,[1]1 3⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[41]  ⍞←(⍎xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍎resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],9 0⍎0 1↓resu)
[51]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
```

```
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivok19

```
[ 0]  r←geracaso36b;a1;a2;a3;a4;a5;a6;a7;a8;a9;aa
[ 1]  r←2 10 60⍴' '
[ 2]  a1←101+?198
[ 3]  r[1;1;]←60↑'\item $',(2 0⍕2 conv102b a1),'_{(2)}=?_{(10)}$'
[ 4]  r[2;1;]←60↑3 0⍕a1
[ 5]  a2←2100+?2899
[ 6]  r[1;2;]←60↑'\item $',('0123456789ABCDEF'[1+16 conv102b a2]),'_{(16)}=?_{(10)}$'
[ 7]  r[2;2;]←60↑4 0⍕a2
[ 8]  a3←100+?200
[ 9]  r[1;3;]←60↑'\item $',(5 0⍕a3),'_{(10)}=?_{(2)}$'
[10]  r[2;3;]←60↑1 0⍕2 conv102b a3
[11]  a4←100+?200
[12]  r[1;4;]←60↑'\item $',(5 0⍕a4),'_{(10)}=?_{(2)}$'
[13]  r[2;4;]←60↑1 0⍕2 conv102b a4
[14]  a5←1000+?9000
[15]  r[1;5;]←60↑'\item $',(5 0⍕a5),'_{(10)}=?_{(16)}$'
[16]  r[2;5;]←60↑'0123456789ABCDEF'[1+16 conv102b a5]
[17]  a6←1000+?9000
[18]  r[1;6;]←60↑'\item $',(5 0⍕a6),'_{(10)}=?_{(16)}$'
[19]  r[2;6;]←60↑'0123456789ABCDEF'[1+16 conv102b a6]
[20]  a7←(100+?500),100+?500
[21]  r[1;7;]←60↑'\item $',(1 0⍕2 conv102b a7[1]),'_{(2)}+',(1 0⍕2 conv102b a7[2]),'_{(2)}
      =?_{(2)}$'
[22]  r[2;7;]←60↑1 0⍕2 conv102b a7[1]+a7[2]
[23]  a8←(100+?500),100+?500
[24]  r[1;8;]←60↑'\item $',(1 0⍕2 conv102b a8[1]),'_{(2)}+',(1 0⍕2 conv102b a8[2]),'_{(2)}
      =?_{(2)}$'
[25]  r[2;8;]←60↑1 0⍕2 conv102b a8[1]+a8[2]
[26]  a9←(1000+?9000),1000+?9000
[27]  r[1;9;]←60↑'\item $',('0123456789ABCDEF'[1+16 conv102b a9[1]]),'_{(16)}+',('01234567
      89ABCDEF'[1+16 conv102b a9[2]]),'_{(16)}=?_{(16)}$'
[28]  r[2;9;]←60↑('0123456789ABCDEF'[1+16 conv102b a9[1]+a9[2]])
[29]  aa←(1000+?9000),1000+?9000
[30]  r[1;10;]←60↑'\item $',('0123456789ABCDEF'[1+16 conv102b aa[1]]),'_{(16)}+',('0123456
      789ABCDEF'[1+16 conv102b aa[2]]),'_{(16)}=?_{(16)}$'
[31]  r[2;10;]←60↑('0123456789ABCDEF'[1+16 conv102b aa[1]+aa[2]])
-------------------------------------------------------------
[ 0]  r←geracrq;x;y;z;a;b;c
[ 1]  r←3⍴0
[ 2] mais:a←3+?4
[ 3]  b←5000+?5999
[ 4]  c←b*÷a
[ 5]  x←'$x=\sqrt[',(⍕a),']{',(⍕b),'}$'
[ 6]  z←b*÷a
[ 7]  →((⌈z)=⌊z)/mais
[ 8]  y←(⍕⌊z),' e ',⍕⌈z
[ 9]  r[1]←⊂x
[10]  r[2]←⊂y
[11]  r[3]←⊂z
-------------------------------------------------------------
[ 0]  r←gerak19j;a;b;c;aa;i
```

```
[ 1]  a←1+3?8
[ 2]  b←3 3⍴1+?9⍴8
[ 3]  i←1
[ 4] t1:→(i>3)/oba
[ 5]  b[i;i]←b[i;i]++/b[i;]
[ 6]  i←i+1
[ 7]  →t1
[ 8] oba:
[ 9]  c←+/b×3 3⍴a
[10]  r←2⍴0
[11]  r[2]←⊂a
[12]  aa←3 70⍴' '
[13]  aa[1;]←70↑' $',(⍕b[1;1]),'x+$&$',(⍕b[1;2]),'y+$&$',(⍕b[1;3]),'z=$&$',(⍕c[1]),'$⍤⍤*'
[14]  aa[2;]←70↑' $',(⍕b[2;1]),'x+$&$',(⍕b[2;2]),'y+$&$',(⍕b[2;3]),'z=$&$',(⍕c[2]),'$⍤⍤*'
[15]  aa[3;]←70↑' $',(⍕b[3;1]),'x+$&$',(⍕b[3;2]),'y+$&$',(⍕b[3;3]),'z=$&$',(⍕c[3]),'$⍤⍤*'
[16]  r[1]←⊂3 70⍴aa
------------------------------------------------------------
[ 0]  r←gerak19prova1;a;b;c;aa;i
[ 1]  a←(1 2 3 4 5 6)[3?6]
[ 2]  b←3 3⍴1+?9⍴7
[ 3]  i←1
[ 4]  c←+/b×3 3⍴a
[ 5]  r←2⍴0
[ 6]  r[2]←⊂a
[ 7]  aa←3 70⍴' '
[ 8]  aa[1;]←70↑' $',(⍕b[1;1]),'x+$&$',(⍕b[1;2]),'y+$&$',(⍕b[1;3]),'z=$&$',(⍕c[1]),'$⍤⍤'
[ 9]  aa[2;]←70↑' $',(⍕b[2;1]),'x+$&$',(⍕b[2;2]),'y+$&$',(⍕b[2;3]),'z=$&$',(⍕c[2]),'$⍤⍤'
[10]  aa[3;]←70↑' $',(⍕b[3;1]),'x+$&$',(⍕b[3;2]),'y+$&$',(⍕b[3;3]),'z=$&$',(⍕c[3]),'$⍤⍤'
[11]  r[1]←⊂3 70⍴aa
------------------------------------------------------------
[ 0]  r←gerak19prova2;a;b;c;aa;i
[ 1]  a←(1 2 3 4 5 6)[3?6]
[ 2]  b←3 3⍴1+?9⍴7
[ 3]  i←1
[ 4] t1:→(i>3)/oba
[ 5]  b[i;i]←b[i;i]++/b[i;]
[ 6]  i←i+1
[ 7]  →t1
[ 8] oba:
[ 9]  c←+/b×3 3⍴a
[10]  r←2⍴0
[11]  r[2]←⊂a
[12]  aa←3 70⍴' '
[13]  aa[1;]←70↑' $',(⍕b[1;1]),'x+$&$',(⍕b[1;2]),'y+$&$',(⍕b[1;3]),'z=$&$',(⍕c[1]),'$⍤⍤'
[14]  aa[2;]←70↑' $',(⍕b[2;1]),'x+$&$',(⍕b[2;2]),'y+$&$',(⍕b[2;3]),'z=$&$',(⍕c[2]),'$⍤⍤'
[15]  aa[3;]←70↑' $',(⍕b[3;1]),'x+$&$',(⍕b[3;2]),'y+$&$',(⍕b[3;3]),'z=$&$',(⍕c[3]),'$⍤⍤'
[16]  r[1]←⊂3 70⍴aa
------------------------------------------------------------
[ 0]  r←gerak19q;a;b;c;aa;v
[ 1]  a←1+3?8
[ 2]  v←(1+?8),1+⍳8
[ 3]  v←v[9?9]
[ 4] mais:b←3 3⍴v
[ 5]  c←+/b×3 3⍴a
[ 6]  r←2⍴0
[ 7]  r[2]←⊂a
[ 8]  aa←3 70⍴' '
[ 9]  aa[1;]←70↑' $',(⍕b[1;1]),'x+$&$',(⍕b[1;2]),'y+$&$',(⍕b[1;3]),'z=$&$',(⍕c[1]),'$⍤⍤*'
[10]  aa[2;]←70↑' $',(⍕b[2;1]),'x+$&$',(⍕b[2;2]),'y+$&$',(⍕b[2;3]),'z=$&$',(⍕c[2]),'$⍤⍤*'
[11]  aa[3;]←70↑' $',(⍕b[3;1]),'x+$&$',(⍕b[3;2]),'y+$&$',(⍕b[3;3]),'z=$&$',(⍕c[3]),'$⍤⍤*'
[12]  r[1]←⊂3 70⍴aa
------------------------------------------------------------
[ 0]  r←geraquestaoprova1;zz;u;i;alfa
```

```
[ 1]  zz←0 78⍴' '
[ 2]  u←3080
[ 3]  i←1
[ 4] t1:→(i>50)/fim
[ 5]  zz←zz,[1]1 78⍴78↑'$QE',(5 0⍕u),'550      1S.L.=Gauss ou LU'
[ 6]  zz←zz,[1]1 78⍴78↑'Dado o sistema linear:\\*'
[ 7]  zz←zz,[1]1 78⍴78↑'\begin{tabular}{cccc}'
[ 8]  alfa←gera737prova1
[ 9]  zz←zz,[1]3 78↑' ',⊃alfa[1]
[10]  zz←zz,[1]1 78⍴78↑'\end{tabular}\\*'
[11]  zz←zz,[1]1 78⍴78↑'Resolva-o usando o método que quiser: Escalonado de Gauss, LU ou J
      acobi.'
[12]  zz←zz,[1]1 78⍴78↑'(Obs: antes de escolher Jacobi, veja se há convergência. Se n↑o ho
      uver,'
[13]  zz←zz,[1]1 78⍴78↑'n↑o escolha este método). '
[14]  zz←zz,[1]1 78⍴78↑'Indique QUAL o método escolhido e mostre TODOS os cálculos.'
[15]  zz←zz,[1]1 78⍴78↑'Para seu governo: as raizes s↑o inteiras, positivas e menores que
      10.'
[16]  zz←zz,[1]1 78⍴78↑'$QR',(5 0⍕u)
[17]  zz←zz,[1]1 78⍴78↑⍕⊃alfa[2]
[18]  u←u+1
[19]  i←i+1
[20]  →t1
[21] fim:r←zz
-------------------------------------------------------------
[ 0]  r←geraquestaoprova2;zz;u;i;alfa
[ 1]  zz←0 78⍴' '
[ 2]  u←3130
[ 3]  i←1
[ 4] t1:→(i>50)/fim
[ 5]  zz←zz,[1]1 78⍴78↑'$QE',(5 0⍕u),'555      1S.L.=Jacobi'
[ 6]  zz←zz,[1]1 78⍴78↑'Dado o sistema linear:\\*'
[ 7]  zz←zz,[1]1 78⍴78↑'\begin{tabular}{cccc}'
[ 8]  alfa←gera737prova2
[ 9]  zz←zz,[1]3 78↑' ',⊃alfa[1]
[10]  zz←zz,[1]1 78⍴78↑'\end{tabular}\\*'
[11]  zz←zz,[1]1 78⍴78↑'Resolva-o usando o método de Jacobi.'
[12]  zz←zz,[1]1 78⍴78↑'(Obs: Veja se há convergência. Se n↑o houver, você foi sorteado, g
      anhou'
[13]  zz←zz,[1]1 78⍴78↑'a quest↑o...). '
[14]  zz←zz,[1]1 78⍴78↑'Mostre TODOS os cálculos.'
[15]  zz←zz,[1]1 78⍴78↑'Para seu governo: as raizes s↑o inteiras, positivas e menores que
      10.'
[16]  zz←zz,[1]1 78⍴78↑'$QR',(5 0⍕u)
[17]  zz←zz,[1]1 78⍴78↑⍕⊃alfa[2]
[18]  u←u+1
[19]  i←i+1
[20]  →t1
[21] fim:r←zz
-------------------------------------------------------------
[ 0]  opesq vivok19a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLk19   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAk19←ajusta80 FOLHALAk19
```

```
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAk19)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⍙FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 11⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←20 80⍴' '
[16]  f←FOLHALAk19
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑'4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[19;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[20;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracrq
[35]  esse[8;]←80↑⊃xx[1]
[36]  esse[9;]←80↑⊃xx[2]
[37]  resp←resp,,⊃xx[3]
[38]  xx←gerak19q
[39]  esse[9+⍳3;]←3 80↑⊃xx[1]
[40]  resp←resp,,⊃xx[2]
[41]  xx←gerak19q
[42]  esse[12+⍳3;]←3 80↑⊃xx[1]
[43]  resp←resp,,⊃xx[2]
[44]  xx←gerak19j
[45]  esse[15+⍳3;]←3 80↑⊃xx[1]
[46]  resp←resp,,⊃xx[2]
[47]  resu←resu,[1]1 11⍴resp
[48]  acuja←(f[;2]='#')/⍳1↑⍴f
[49]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[50]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[51]  ⍞←(⍕xk←xk+1),'-'
[52]  →testa
[53] fim:upag←(1 0+⍴f)⍴' '
[54]  →(1=≡n)/elafa
[55]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[56]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[57]  upag[2+⍳1↑⍴resu;⍳+/48]←(5 0 10 4 5 0 3 0 3 0 5 0 3 0 3 0 5 0 3 0 3 0)⍕resu
[58]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[59]  →terminando
[60] elafa:aaa←(ylu[;⍳36],(10 4 5 0 3 0 3 0 5 0 3 0 3 0 5 0 3 0 3 0)⍕0 1↓resu)
[61]  lixonol←aaa ⍙FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[62]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[63] terminando:
[64]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[65]  relat[1↑⍴relat;;]←upag
[66]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[67]  lixonol←lixonol ⍙FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[68]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[69]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivok22

```
[ 0]  r←acerk22xy a;i;j;zz
[ 1]  r←((¯1+1↑⍴a),80)⍴' '
[ 2]  i←1
[ 3] t1:→(i>1↑⍴r)/fim
[ 4]  j←1
[ 5]  zz←''
[ 6] t2:→(j>1+1↑⍴r)/oba
[ 7]  zz←zz,(⍕a[i;j]),'&'
[ 8]  j←j+1
[ 9]  →t2
[10] oba:
[11]  r[i;]←80↑(¯1↓zz),'↚↚'
[12]  i←i+1
[13]  →t1
[14] fim:
------------------------------------------------------------
[ 0]  r←gerasist n;x;i
[ 1]  x←(-⌊n÷2)+n?n+3
[ 2]  x[(x=0)/⍳⍴x]←n+4
[ 3]  r←((n+1),n+1)⍴0
[ 4]  i←1
[ 5] t1:→(i>n)/fim
[ 6]  r[i;⍳n]←?n⍴n+2
[ 7]  r[i;n+1]←+/r[i;⍳n]×x
[ 8]  i←i+1
[ 9]  →t1
[10] fim:r[i;⍳n]←x
------------------------------------------------------------
[ 0]  opesq vivok22 n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinha
      ;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLk22  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:↚apl2↚',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAk22←ajusta80 FOLHALAk22
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAk22)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:↚apl2↚VIVOBLO1'
[13]  xk←1 ⋄ resu←0 12⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←20 80⍴' '
[16]  f←FOLHALAk22
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOx←1.06
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'↚#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
```

```
[31]  esse[19;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[20;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerasist 5
[35]  esse[7+⍳5;]←acerk22y xx
[36]  resp←resp,,xx[6;⍳5]
[37]  xx←gerasist 6
[38]  esse[12+⍳6;]←acerk22y xx
[39]  resu←resu,[1]1 12⍴resp,,xx[7;⍳6]
[40]  acuja←(f[;2]='#')/⍳1↑⍴f
[41]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[42]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[43]  ⎕←(⍕xk←xk+1),'-'
[44]  →testa
[45] fim:upag←(1 0+⍴f)⍴' '
[46]  →(1=≡n)/elafa
[47]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[48]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[49]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←5 0 12 0 4 0 4 0 4 0 4 0 10 0 4 0 4 0 4 0 4
       0 4 0)⍕resu
[50]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[51]  →terminando
[52] elafa:aaa←(ylu[;⍳36],'¯-'edit 4 0 4 0 4 0 4 0 4 0 10 0 4 0 4 0 4 0 4 0 4 0⍕0 1↓resu)
[53]  lixonol←aaa ⍙FM('c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.gpa')
[54]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[55] terminando:
[56]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[57]  relat[1↑⍴relat;;]←upag
[58]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[59]  lixonol←lixonol ⍙FM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.tex'
[60]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[61]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[ 0]  opesq vivok22a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLk22  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⍙FM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAk22←ajusta80 FOLHALAk22
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAk22)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⍙FM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 12⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←20 80⍴' '
[16]  f←FOLHALAk22
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOx←1.06
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
```

```
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[19;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[20;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerasist 5
[35]  esse[7+⍳5;]←acerk22xy xx
[36]  resp←resp,,xx[6;⍳5]
[37]  xx←gerasist 6
[38]  esse[12+⍳6;]←acerk22xy xx
[39]  resu←resu,[1]1 12⍴resp,,xx[7;⍳6]
[40]  acuja←(f[;2]='#')/⍳1↑⍴f
[41]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[42]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[43]  ⎕←(⍕xk←xk+1),'-'
[44]  →testa
[45] fim:upag←(1 0+⍴f)⍴' '
[46]  →(1=≡n)/elafa
[47]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[48]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[49]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←5 0 12 0 4 0 4 0 4 0 4 0 10 0 4 0 4 0 4 0 4
       0 4 0)⍕resu
[50]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[51]  →terminando
[52] elafa:aaa←(ylu[;⍳36],'¯-'edit 4 0 4 0 4 0 4 0 4 0 10 0 4 0 4 0 4 0 4 0 4 0⍕0 1↓resu)
[53]  lixonol←aaa ⍙FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[54]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[55] terminando:
[56]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[57]  relat[1↑⍴relat;;]←upag
[58]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[59]  lixonol←lixonol ⍙FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[60]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[61]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivok25

```
[0]  acer735xy
-------------------------------------------------------------
[ 0]  r←acerk25xy a;i;j;zz
[ 1]  r←((¯1+1↑⍴a),80)⍴' '
[ 2]  i←1
[ 3] t1:→(i>1↑⍴r)/fim
[ 4]  j←1
[ 5]  zz←''
[ 6] t2:→(j>1+1↑⍴r)/oba
[ 7]  zz←zz,(⍕a[i;j]),'&'
[ 8]  j←j+1
[ 9]  →t2
[10] oba:
[11]  r[i;]←80↑(¯1↓zz),'\\'
[12]  i←i+1
[13]  →t1
[14] fim:
-------------------------------------------------------------
[ 0]  r←gerasist n;x;i
[ 1]  x←(-⌊n÷2)+n?n+3
[ 2]  x[(x=0)/⍳⍴x]←n+4
[ 3]  r←((n+1),n+1)⍴0
[ 4]  i←1
```

```
[ 5] t1:→(i>n)/fim
[ 6]  r[i;ɪn]←?nρn+2
[ 7]  r[i;n+1]←+/r[i;ɪn]×x
[ 8]  i←i+1
[ 9]  →t1
[10] fim:r[i;ɪn]←x
------------------------------------------------------------
[ 0]  opesq vivok25a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLk25  '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎ɪn
[ 9]  ylu←n grupo ylu
[10]  FOLHALAk25←ajusta80 FOLHALAk25
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALAk25)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 6ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←14 80ρ' '
[16]  f←FOLHALAk25
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOy←1.05
[20]  esse[4;]←80↑ylu[xk;ɪ6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;ɪ4]=((1↑ρf),4)ρ'\#05')/ɪ1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+ɪ30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[13;ɪ10]←'@',esse[6;5+ɪ3],esse[4;1+ɪ5],'@'
[32]  esse[14;]←80↑esse[6;5+ɪ3],'-',esse[4;1+ɪ5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerasist 5
[35]  esse[7+ɪ5;]←acerk25xy xx
[36]  resu←resu,[1]1 6ρresp,,xx[6;ɪ5]
[37]  acuja←(f[;2]='#')/ɪ1↑ρf
[38]  f[acuja;ɪ80]←esse[⍋,f[acuja;3 4],' ';]
[39]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\clearpage'
[40]  ⍞←(⍎xk←xk+1),'-'
[41]  →testa
[42] fim:upag←(1 0+ρf)ρ' '
[43]  →(1=≡n)/elafa
[44]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[45]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[46]  upag[2+ɪ1↑ρresu;ɪ+/lixo1]←'¯-'edit(lixo1←5 0 12 0 4 0 4 0 4 0 4 0)⍎resu
[47]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[48]  →terminando
[49] elafa:aaa←(ylu[;ɪ36],'¯-'edit 4 0⍎0 1↓resu)
[50]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[51]  '!!!!!  Arquivo GPA com ',(⍎1↑ρaaa),' linhas e ',(⍎1↓ρaaa),' colunas'
[52] terminando:
[53]  upag[1↑ρupag;]←(1↓ρupag)↑'\end{document}'
```

```
[54]  relat[1↑⍴relat;;]←upag
[55]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[56]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍬∧⍀⍬EVENTO=' ')/EVENTO),'.tex'
[57]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[58]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivok28

```
[ 0]  r←formatak28 x;z;i
[ 1]  r←3⍴0
[ 2]  z←5 70⍴' '
[ 3]  i←1
[ 4] t1:→(i>5)/fim
[ 5]  z[i;]←70↑(⍕x[i;1]),'&',(⍕x[i;2]),'&',(⍕x[i;3]),'&',(⍕x[i;4]),'&',(⍕x[i;5]),'⍀⍀'
[ 6]  i←i+1
[ 7]  →t1
[ 8] fim:r[1]←⊂z
[ 9]  r[2]←⊂70↑(⍕x[1;6]),', ',(⍕x[2;6]),', ',(⍕x[3;6]),', ',(⍕x[4;6]),', ',(⍕x[5;6]),'⍀⍀'
[10]  r[3]←⊂x[6;2],x[6;3],x[6;4],x[6;5],x[6;6]
-------------------------------------------------------------
[ 0]  r←gerabrutok28 n;x;m;i;re;max;vv;aux
[ 1]  m←(n,n)⍴(n*2)?10+n*2
[ 2]  i←1
[ 3] t0:→(i>n)/oba
[ 4]  →((2×m[i;i])>+/m[i;])/ok
[ 5]  m[i;i]←m[i;i]+?9
[ 6]  →t0
[ 7] ok:
[ 8]  i←i+1
[ 9]  →t0
[10] oba:
[11] mais:x←(⌊n÷2)+n?n×3
[12]  →(0∈x)/mais
[13]  i←1
[14]  re←n⍴0
[15] t1:→(i>n)/fim
[16]  re[i]←+/m[i;]×x
[17]  i←i+1
[18]  →t1
[19] fim:
[20]  r←m,(n,1)⍴re
[21]  r←r,[1]0,x
-------------------------------------------------------------
[ 0]  r←gerasistk28 n;i;resultado;ti;x;s;s1
[ 1] inica:x←(n,n)⍴(n*2)?(n+1)*2
[ 2]  i←1
[ 3] t1:→(i>n)/ufa
[ 4]  x[i;i]←x[i;i]+5+?5
[ 5]  i←i+1
[ 6]  →t1
[ 7] ufa:
[ 8]  resultado←(⌊n÷2)+(n?n+10)
[ 9]  →(0∈resultado)/inica
[10]  i←1
[11] t2:→(i>n)/oza
[12]  →(((+/x[i;])-x[i;i])>x[i;i])/zebra
[13]  i←i+1
[14]  →t2
[15] zebra:⎕←'*'
[16]  →inica
[17] oza:
```

```
[18] ⍝ resolvendo o sistema
[19]  i←1
[20]  ti←n⍴0
[21] t4:→(i>n)/poa
[22]  ti[i]←+/resultado×x[i;]
[23]  i←i+1
[24]  →t4
[25] poa:x←x,[2](n,1)⍴ti
[26]  X←x
[27]  i←1
[28] t3:→(i>n)/oka
[29]  x[i;]←x[i;]÷x[i;i]
[30]  i←i+1
[31]  →t3
[32] oka:
[33]  Y←x
[34]  s←,x[;1+n]
[35]  r←(n,1)⍴s
[36]  i←1
[37] t5:→(i>10)/finzao
[38]  s1←s resolve736 x
[39]  r←r,[2](n,1)⍴s1
[40]  s←s1
[41]  i←i+1
[42]  →t5
[43] finzao:
-------------------------------------------------------------
[ 0]  r←s resolve736 x;n;q;i
[ 1]  n←1↑⍴x
[ 2]  q←(n,n)⍴0,n⍴1
[ 3]  r←n⍴0
[ 4]  i←1
[ 5] t1:→(i>1↑⍴x)/fim
[ 6]  r[i]←x[i;1+n]++/(s×q[i;])×(-x[i;⍳n]×q[i;])
[ 7]  i←i+1
[ 8]  →t1
[ 9] fim:
-------------------------------------------------------------
[ 0]  r←s resolvek28 x;n;q;i
[ 1]  n←1↑⍴x
[ 2]  q←(n,n)⍴0,n⍴1
[ 3]  r←n⍴0
[ 4]  i←1
[ 5] t1:→(i>1↑⍴x)/fim
[ 6]  r[i]←x[i;1+n]++/(s×q[i;])×(-x[i;⍳n]×q[i;])
[ 7]  i←i+1
[ 8]  →t1
[ 9] fim:
-------------------------------------------------------------
[ 0]  opesq vivok28f n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])×2.22335473
[ 5]  EVENTO←'PLk28f  '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAk28f←ajusta80 FOLHALAk28f
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAk28f)⍴' '
```

```
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 6⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←15 80⍴' '
[16]  f←FOLHALAk28f
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[14;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[15;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←formatak28 gerabrutok28 5
[35]  esse[7+⍳5;]←5 80↑⊃xx[1]
[36]  esse[13;]←80↑⊃xx[2]
[37]  resu←resu,[1]1 6⍴resp,⊃xx[3]
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⍞←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←5 0 9 0 4 0 4 0 4 0 4 0)⍕resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],'¯-'edit 4 0⍕0 1↓resu)
[51]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴paaa),' linhas e ',(⍕1↓⍴paaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[ 0]  opesq vivok28p n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.26358473
[ 5]  EVENTO←'PLk28p  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAk28p←ajusta80 FOLHALAk28p
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAk28p)⍴' '
```

```
[12]  relat[1;;]←(1↓⍴relat)↑⍪FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 6⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←15 80⍴' '
[16]  f←FOLHALAk28p
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[14;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[15;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←formatak28 gerabrutok28 5
[35]  esse[7+⍳5;]←5 80↑⊃xx[1]
[36]  esse[13;]←80↑⊃xx[2]
[37]  resu←resu,[1]1 6⍴resp,⊃xx[3]
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⌽,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⍞←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←5 0 9 0 4 0 4 0 4 0 4 0)⍕resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],'¯-'edit 4 0⍕0 1↓resu)
[51]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴paaa),' linhas e ',(⍕1↓⍴paaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivok31

```
[0]  r←formatk31 x;c;r1;r2
[1]  c←1↓⍴x
[2]  r←2⍴0
[3]  r1←(c,70)⍴' '
[4]  r1[;⍳13+5×c]←'¯-'edit(5 0⍕(c,c)↑x),13 0⍕(c,1)⍴x[c+1;]
[5]  r2←x[c+2;]
[6]  r[1]←⊂r1
[7]  r[2]←⊂r2
------------------------------------------------------------
[ 0]  r←a gaussseidl b;d;f;g;i;j;k;s;xn;xv
```

```
[ 1]  d←s←i←f←g←(⍴a)⍴0
[ 2]  j←1
[ 3] t1:→(j>1↑⍴a)/conta
[ 4]  k←1
[ 5] t2:→(k>1↓⍴a)/cresce
[ 6]  →(j<k)/menor
[ 7]  →(j>k)/maior
[ 8]  d[j;k]←a[j;k]
[ 9]  →soma
[10] menor:s[j;k]←a[j;k]
[11]  →soma
[12] maior:i[j;k]←a[j;k]
[13] soma:k←k+1
[14]  →t2
[15] cresce:j←j+1
[16]  →t1
[17] conta:f←d+i
[18]  f←⌹f
[19]  f←f+.×b
[20]  g←-d+i
[21]  g←⌹g
[22]  g←g+.×s
[23]  xn←(1↑⍴a)⍴0
[24]  xv←(⍴xn)⍴1
[25] t3:→(0.00002≥⌈/|xn-xv)/acabou
[26]  '-------------- erro=',10 6∓⌈/|xn-xv
[27]  xv←xn
[28]  xn←(g+.×xv)+f
[29]  xn
[30]  →t3
[31] acabou:r←xn
------------------------------------------------------------
[ 0]  r←gerak31 n;a;i;x;b
[ 1]  a←(n,n)⍴((n*2)?n*2)-⌊(n*2)÷2
[ 2]  i←1
[ 3] t1:→(i>1↑⍴a)/aca
[ 4]  a[i;i]←(×a[i;i])×(|a[i;i])++/|a[i;]
[ 5]  i←i+1
[ 6]  →t1
[ 7] aca:
[ 8]  x←n?3×n
[ 9]  x←x×(⍴x)↑×¯100+?100⍴400
[10]  b←+/a×(⍴a)⍴x
[11]  r←(a,[1]b),[1]x
------------------------------------------------------------
[ 0]  r←a relaxacao b;ind;j;k;novo;quem;re;xv
[ 1]  xv←(1↑⍴a)⍴0
[ 2]  quem←1
[ 3] t1:
[ 4]  re←(1↑⍴a)⍴0
[ 5]  j←1
[ 6] t2:→(j>1↑⍴a)/conta
[ 7]  k←1
[ 8] t3:→(k>1↓⍴a)/soma
[ 9]  re[j]←re[j]+a[j;k]×xv[k]
[10]  k←k+1
[11]  →t3
[12] soma:re[j]←re[j]-b[j]
[13]  j←j+1
[14]  →t2
[15] conta:quem←⌈/|re
[16]  →(quem<0.00001)/acabou
[17]  ind←(|re)⍳|quem
```

```
[18]  novo←0
[19]  k←1
[20] t4:→(k>1↑⍴a)/oba
[21]  →(k=ind)/pula
[22]  novo←novo-a[ind;k]×xv[k]
[23] pula:k←k+1
[24]  →t4
[25] oba:novo←novo+b[ind]
[26]  xv[ind]←novo÷a[ind;ind]
[27]  xv
[28]  →t1
[29] acabou:r←xv
-------------------------------------------------------------
[ 0]  opesq vivok31a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLk31   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAk31←ajusta80 FOLHALAk31
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAk31)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 5⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←23 80⍴' '
[16]  f←FOLHALAk31
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[22;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[23;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerak31 6
[35]  zz←formatk31 xx
[36]  esse[7+⍳6;]←6 80↑⊃zz[1]
[37]  resp←resp,(,⊃zz[2])[3 4]
[38]  xx←gerak31 8
[39]  zz←formatk31 xx
[40]  esse[13+⍳8;]←8 80↑⊃zz[1]
[41]  resp←resp,(,⊃zz[2])[5 6]
[42]  resu←resu,[1]1 5⍴resp
[43]  acuja←(f[;2]='#')/⍳1↑⍴f
[44]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[45]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[46]  ⍞←(⍎xk←xk+1),'-'
[47]  →testa
```

```
[48] fim:upag←(1 0+ρf)ρ' '
[49]  →(1=≡n)/elafa
[50]  upag[1;]←(1↓ρupag)↑'⍀begin{verbatim}'
[51]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[52]  upag[2+⍳1↑ρresu;⍳+/lixo1]←'¯-'edit(lixo1←5 0 10 0 4 0 7 0 4 0)⍒resu
[53]  upag[3+1↑ρresu;]←(1↓ρupag)↑'⍀end{verbatim}'
[54]  →terminando
[55] elafa:aaa←(ylu[;⍳36],9 0⍒0 1↓resu)
[56]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.gpa')
[57]  '!!!!!  Arquivo GPA com ',(⍒1↑ρaaa),' linhas e ',(⍒1↓ρaaa),' colunas'
[58] terminando:
[59]  upag[1↑ρupag;]←(1↓ρupag)↑'⍀end{document}'
[60]  relat[1↑ρrelat;;]←upag
[61]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[62]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.tex'
[63]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[64]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivok34

```
[0]  AVISO
[1]  'no diretorio ⍀p⍀n⍀744⍀f744.py tem o modulo f744.py que endereca a solucao'
[2]  'desta folha usando python'
[3]  'tem tambem o sistlin1.pdf que mostra em outros ambientes...'
------------------------------------------------------------
[ 0]  r←acerta744_2 x;rx;i
[ 1]  r←2ρ0
[ 2]  rx←6 75ρ' '
[ 3]  i←1
[ 4] t1:→(i>5)/fi
[ 5]  rx[i;]←75↑(⍒x[i;1]),'&',(⍒x[i;2]),'&',(⍒x[i;3]),'&',(⍒x[i;4]),'&',(⍒x[i;5]),'⍀⍀ ⍀hli
      ne'
[ 6]  i←i+1
[ 7]  →t1
[ 8] fi:rx[6;]←75↑(⍒x[1;6]),'&',(⍒x[2;6]),'&',(⍒x[3;6]),'&',(⍒x[4;6]),'&',(⍒x[5;6]),'⍀⍀ ⍀h
      line'
[ 9]  r[1]←⊂rx
[10]  r[2]←⊂,x[;7]
------------------------------------------------------------
[ 0]  r←acertak34_1 x;rx
[ 1]  r←2ρ0
[ 2]  rx←5 75ρ' '
[ 3]  rx[1;]←75↑(6 2⍒x[1;5]),'&',(6 2⍒x[2;5]),'&',(6 2⍒x[3;5]),'&',(6 2⍒x[4;5]),'⍀⍀ ⍀hline
      '
[ 4]  rx[2;]←75↑(6 1⍒x[1;1]),'&',(6 1⍒x[1;2]),'&',(6 1⍒x[1;3]),'&',(6 1⍒x[1;4]),'⍀⍀ ⍀hline
      '
[ 5]  rx[3;]←75↑(6 1⍒x[2;1]),'&',(6 1⍒x[2;2]),'&',(6 1⍒x[2;3]),'&',(6 1⍒x[2;4]),'⍀⍀ ⍀hline
      '
[ 6]  rx[4;]←75↑(6 1⍒x[3;1]),'&',(6 1⍒x[3;2]),'&',(6 1⍒x[3;3]),'&',(6 1⍒x[3;4]),'⍀⍀ ⍀hline
      '
[ 7]  rx[5;]←75↑(6 1⍒x[4;1]),'&',(6 1⍒x[4;2]),'&',(6 1⍒x[4;3]),'&',(6 1⍒x[4;4]),'⍀⍀ ⍀hline
      '
[ 8]  r[1]←⊂rx
[ 9]  r[2]←⊂,x[;6]
------------------------------------------------------------
[ 0]  r←acertak34_2 x;rx;i
[ 1]  r←2ρ0
[ 2]  rx←6 75ρ' '
[ 3]  i←1
[ 4] t1:→(i>5)/fi
[ 5]  rx[i;]←75↑(⍒x[i;1]),'&',(⍒x[i;2]),'&',(⍒x[i;3]),'&',(⍒x[i;4]),'&',(⍒x[i;5]),'⍀⍀ ⍀hli
```

```
      ne'
[ 6]  i←i+1
[ 7]  →t1
[ 8] fi:rx[6;]←75↑(⍕x[1;6]),'&',(⍕x[2;6]),'&',(⍕x[3;6]),'&',(⍕x[4;6]),'&',(⍕x[5;6]),'\\ \h
      line'
[ 9]  r[1]←⊂rx
[10]  r[2]←⊂,x[;7]
-----------------------------------------------------------
[0]  r←acertak34_3 x;rx
[1]  r←2ρ0
[2]  rx←3 75ρ' '
[3]  rx[1;]←75↑(⍕x[1]),'&',(⍕x[2]),'&',(⍕x[3]),'&',(⍕x[4]),'&',(⍕x[5]),'\\ \hline'
[4]  rx[2;]←75↑(⍕x[6]),'&',(⍕x[7]),'&',(⍕x[8]),'&',(⍕x[9]),'&',(⍕x[10]),'\\ \hline'
[5]  rx[3;]←75↑(⍕x[11]),'&',(⍕x[12]),'&',(⍕x[13]),'&',(⍕x[14]),'&xxx\\ \hline'
[6]  r[1]←⊂rx
[7]  r[2]←⊂,⍤9 2⍕x[14+⍳5]
-----------------------------------------------------------
[0]  r←acertak34_4 x;rx
[1]  r←2ρ0
[2]  rx←2 75ρ' '
[3]  rx[1;]←75↑(⍕x[7;1]),'&',(⍕x[7;2]),'&',(⍕x[7;3]),'&',(⍕x[7;4]),'\\ \hline'
[4]  rx[2;]←75↑(⍕x[7;5]),'&',(⍕x[7;6]),'&',(⍕x[8;1]),'&',(⍕x[8;2]),'\\ \hline'
[5]  r[1]←⊂rx
[6]  r[2]←⊂,x[⍳6;7]
-----------------------------------------------------------
[0]  r←acertak34_5 x;rx
[1]  rx←4 75ρ' '
[2]  rx[1;]←75↑(8 0⍕x[1;4]),'&',(8 0⍕x[2;4]),'&',(8 0⍕x[3;4]),'\\ \hline'
[3]  rx[2;]←75↑(⍕x[1;1]),'&',(⍕x[1;2]),'&',(⍕x[1;3]),'\\ \hline'
[4]  rx[3;]←75↑(⍕x[2;1]),'&',(⍕x[2;2]),'&',(⍕x[2;3]),'\\ \hline'
[5]  rx[4;]←75↑(⍕x[3;1]),'&',(⍕x[3;2]),'&',(⍕x[3;3]),'\\ \hline'
[6]  r←2ρ0
[7]  r[1]←⊂rx
[8]  r[2]←⊂⍤10 2⍕x[;5]
-----------------------------------------------------------
[0]  begin
-----------------------------------------------------------
[ 0]  r←a fatLU b;t;i;j;k;x;y;L;pivot;avelho
[ 1]  avelho←a
[ 2]  r←5ρ0
[ 3]  t←1↑ρa
[ 4]  x←y←tρ0
[ 5]  L←(t,t)ρ1,tρ0
[ 6]  i←1
[ 7] t1:→(i>t)/uf1
[ 8]  j←i+1
[ 9] t2:→(j>t)/uf2
[10]  pivot←a[j;i]÷a[i;i]
[11]  L[j;i]←pivot
[12]  k←1
[13] t3:→(k>t)/uf3
[14]  a[j;k]←a[j;k]-pivot×a[i;k]
[15]  k←k+1
[16]  →t3
[17] uf3:
[18]  j←j+1
[19]  →t2
[20] uf2:
[21]  i←i+1
[22]  →t1
[23] uf1:
[24]  y[1]←b[1]
[25]  i←2
```

```
[26] t4:→(i>t)/uf4
[27]  y[i]←b[i]
[28]  j←1
[29] t5:→(j≥i)/uf5
[30]  y[i]←y[i]-L[i;j]×y[j]
[31]  j←j+1
[32]  →t5
[33] uf5:
[34]  i←i+1
[35]  →t4
[36] uf4:
[37]  x[t]←y[t]÷a[t;t]
[38]  i←t
[39] t6:→(i<1)/uf6
[40]  x[i]←y[i]
[41]  j←i+1
[42] t7:→(j>t)/uf7
[43]  x[i]←x[i]-a[i;j]×x[j]
[44]  j←j+1
[45]  →t7
[46] uf7:x[i]←x[i]÷a[i;i]
[47]  i←i-1
[48]  →t6
[49] uf6:
[50]  r[1]←⊂avelho,[2](t,1)⍴b
[51]  r[2]←⊂L
[52]  r[3]←⊂a
[53]  r[4]←⊂y
[54]  r[5]←⊂x
-------------------------------------------------------------
[ 0]  r←gerak34_1;ro;v;ti;i;rx
[ 1]  ro←(4?50)÷10
[ 2]  v←4 4⍴(10+16?100)÷10
[ 3]  ti←4⍴0
[ 4]  i←1
[ 5] t0:→(i>4)/fim
[ 6]  ti[i]←+/v[i;]×ro
[ 7]  i←i+1
[ 8]  →t0
[ 9] fim:r←(v,[2]4 1⍴ti),[2]4 1⍴ro
-------------------------------------------------------------
[0]  r←gerak34_2;z;t;sol;ti
[1]  z←?5⍴20
[2]  t←5 5⍴¯1+?25⍴10
[3]  sol←⌹t
[4]  ti←+/[2]sol×5 5⍴z
[5]  r←t,[2](5 1⍴ti),[2]5 1⍴z
-------------------------------------------------------------
[ 0]  r←gerak34_3;x;y;co;ti;a;b;c;d;e;f;g;h;i;j;k;l;z;w;resposta
[ 1]  x←12?20
[ 2]  y←10×2?8
[ 3]  co←5 5⍴0
[ 4]  ti←5⍴0
[ 5]  a←x[1]
[ 6]  b←x[2]
[ 7]  c←x[3]
[ 8]  d←x[4]
[ 9]  e←x[5]
[10]  f←x[6]
[11]  g←x[7]
[12]  h←x[8]
[13]  i←x[9]
[14]  j←x[10]
```

```
[15]  k←x[11]
[16]  l←x[12]
[17]  z←y[1]
[18]  w←y[2]
[19]  co[1;1]←a+f
[20]  co[1;3]←-l
[21]  ti[1]←e×z
[22]  co[2;1]←f
[23]  co[2;2]←-d+g+i
[24]  co[3;2]←i ⍝ era c
[25]  co[3;3]←-l+j
[26]  ti[3]←-k×w
[27]  co[4;2]←g
[28]  co[4;3]←j
[29]  co[4;4]←-h
[30]  co[4;5]←c
[31]  co[5;1]←a
[32]  co[5;2]←d
[33]  co[5;5]←-b+c
[34]  resposta←ti⌹co
[35]  r←x,y,resposta
-------------------------------------------------------------
[ 0]  r←gerak34_4;x;y;A;B;C;D;E;F;G;H;m;u;res
[ 1] ⍝ →vai
[ 2]  x←5×?6⍴8
[ 3]  y←50×?6
[ 4] vai:
[ 5]  A←x[1] ⋄ B←x[2] ⋄ C←x[3] ⋄ D←x[4]
[ 6]  E←x[5] ⋄ F←x[6] ⋄ G←y
[ 7]  m←6 6⍴0
[ 8]  m[1;]←1 1 1 0 0 0
[ 9]  m[2;]←0 ¯1 0 1 ¯1 0
[10]  m[3;]←0 0 ¯1 0 0 1
[11]  m[4;]←0 0 0 0 1 ¯1
[12]  m[5;]←0,E,(-B),0,(-D),(-C)
[13]  m[6;]←A,(-E),0,(-F),0 0
[14]  u←0 0 0 0,0,G
[15]  res←u⌹m
[16]  r←(m,[2]6 1⍴⍤1,10 2⍉res),[1]2 7⍴(x,0),y,0,6⍴0
-------------------------------------------------------------
[ 0]  r←gerak34_5;x;y;z;rr;bb;vv;respo
[ 1] novo:
[ 2]  rr←3 3⍴0
[ 3]  x←25+?15
[ 4]  y←25+?20
[ 5]  z←100-x+y
[ 6]  rr[1;]←x,y,z
[ 7]  x←25+?15
[ 8]  y←25+?20
[ 9]  z←100-x+y
[10]  rr[2;]←x,y,z
[11]  x←25+?15
[12]  y←25+?20
[13]  z←100-x+y
[14]  rr[3;]←x,y,z
[15]  respo←5000+3?5000
[16]  vv←+/[2](3 3⍴respo)×(⍉rr)×0.01
[17]  r←rr,[2](3 1⍴vv),[2]3 1⍴respo
-------------------------------------------------------------
[ 0]  prova40k34;r;i
[ 1]  r←0 79⍴' '
[ 2]  i←3763
[ 3] t1:→(i>3802)/fim
```

```
[ 4]  r←r,[1]provak34a i
[ 5]  i←i+1
[ 6]  →t1
[ 7] fim:
[ 8] t2:→(i>3842)/mesmo
[ 9]  r←r,[1]provak34b i
[10]  i←i+1
[11]  →t2
[12] mesmo:
[13]  r ΔFM'c:\apl2\q3763.tex'
-------------------------------------------------------------
[ 0]  prova40k34c;r;i
[ 1]  r←0 79⍴' '
[ 2]  i←3843
[ 3] t1:→(i>3882)/fim
[ 4]  r←r,[1]provak34c i
[ 5]  i←i+1
[ 6]  →t1
[ 7] fim:
[ 8] t2:→(i>3922)/mesmo
[ 9]  r←r,[1]provak34d i
[10]  i←i+1
[11]  →t2
[12] mesmo:
[13]  r ΔFM'c:\apl2\q3843.tex'
-------------------------------------------------------------
[ 0]  r←provak34a ni;gr;sg;t;m1;m2;lc;m1f;m2f;ll;cc;resp1;resp2;cab1;cab2;cab3
[ 1] ⍝ ni←3763
[ 2] ⍝ Esta funcao gera 40 questoes sobre M.I.
[ 3] ⍝ ni←... numero inicial
[ 4]  gr←561 ⍝ grupo
[ 5]  sg←1
[ 6]  t←20 79⍴' '
[ 7]  t[1;]←79↑'A seguir, você terá 2 matrizes, sendo uma inversa da outra. Em 2 posiç\~oe
      s'
[ 8]  t[2;]←79↑'aparecem as variáveis $x$ e $y$. Você deve descobrir seus valores.'
[ 9] denovo:m1←5 5⍴?25⍴8
[10]  '→denovo'⎕EA'm2←⌹m1'
[11]  lc←?5
[12]  m1f←3 0⍕m1
[13]  m1f[lc;3×lc]←'x'
[14]  resp1←m1[lc;lc]
[15] mais1:ll←?5 ⋄ cc←?5
[16]  →((ll=lc)∨(cc=lc))/mais1
[17]  →(m2[ll;cc]=0)/denovo
[18]  m1f[ll;3×cc]←'y'
[19]  resp2←m1[ll;cc]
[20]  t[3;]←79↑'\begin{verbatim}-------------- matriz A ------------'
[21]  t[4 5 6 7 8;]←5 79↑m1f
[22]  t[10;]←79↑'-------------- matriz inversa de A ------------'
[23]  t[11 12 13 14 15;]←5 79↑'  -10.055'⍕m2
[24]  t[16;]←79↑'\end{verbatim}\\Responda aqui:\\*'
[25]  t[17;]←79↑'\begin{tabular}{|p{3cm}|p{3cm}|} \hline'
[26]  t[18;]←79↑'x & y\\ '
[27]  t[19;]←79↑'& \\ \hline'
[28]  t[20;]←79↑'\end{tabular}'
[29]  cab1←1 79⍴79↑'$QE',(5 0⍕ni),(3 0⍕gr),'     ',(2 0⍕sg),'MI 5 x 5'
[30]  cab2←1 79⍴79↑'$QR',(5 0⍕ni)
[31]  cab3←1 79⍴79↑(⍕resp1),'   ',⍕resp2
[32]  r←cab1,[1]t,[1]cab2,[1]cab3
-------------------------------------------------------------
[ 0]  r←provak34b ni;b;cab1;cab2;cab3;gr;m1;m2;resp1;resp2;sg;t;x
[ 1] ⍝ Esta funcao gera 40 questoes sobre M.I. e solucao de sistema linear
```

```
[ 2]  gr←562 ⍝ grupo
[ 3]  sg←1
[ 4]  t←25 79⍴' '
[ 5]  t[1;]←79↑'Suponha um sistema linear de 5 equaç⍀~oes e 5 incógnitas.'
[ 6]  t[2;]←79↑'S⍀~ao dadas a matriz aumentada do sistema e a matriz inversa da'
[ 7]  t[3;]←79↑'matriz dos coeficientes do sistema. Ache as incógnitas através'
[ 8]  t[4;]←79↑'da express⍀~ao $x=A^{-1}.b$. Mostre todos os cálculos na folha.'
[ 9] denovo:m1←5 5⍴?25⍴9
[10]  '→denovo'⎕EA'm2←⍕m1'
[11]  →((99<⌈/,m2)∨(¯99>⌊/,m2))/denovo
[12]  x←¯5+?5⍴14
[13]  b←+/[2]m1×5 5⍴x
[14]  t[5;]←79↑'Matriz extendida'
[15]  t[6;]←79↑' $$⍀left(⍀begin{array}{ccccccc}'
[16]  t[7;]←79↑(⍕m1[1;1]),'&',(⍕m1[1;2]),'&',(⍕m1[1;3]),'&',(⍕m1[1;4]),'&',(⍕m1[1;5]),'&|&
      ',(⍕b[1]),'⍀⍀'
[17]  t[8;]←79↑(⍕m1[2;1]),'&',(⍕m1[2;2]),'&',(⍕m1[2;3]),'&',(⍕m1[2;4]),'&',(⍕m1[2;5]),'&|&
      ',(⍕b[2]),'⍀⍀'
[18]  t[9;]←79↑(⍕m1[3;1]),'&',(⍕m1[3;2]),'&',(⍕m1[3;3]),'&',(⍕m1[3;4]),'&',(⍕m1[3;5]),'&|&
      ',(⍕b[3]),'⍀⍀'
[19]  t[10;]←79↑(⍕m1[4;1]),'&',(⍕m1[4;2]),'&',(⍕m1[4;3]),'&',(⍕m1[4;4]),'&',(⍕m1[4;5]),'&|
      &',(⍕b[4]),'⍀⍀'
[20]  t[11;]←79↑(⍕m1[5;1]),'&',(⍕m1[5;2]),'&',(⍕m1[5;3]),'&',(⍕m1[5;4]),'&',(⍕m1[5;5]),'&|
      &',(⍕b[5]),'⍀⍀'
[21]  t[12;]←79↑'⍀end{array}⍀right)$$'
[22]  t[13;]←79↑'E a correspondente matriz inversa da matriz dos coeficientes:'
[23]  t[14;]←79↑'⍀begin{verbatim}'
[24]  t[15 16 17 18 19;]←5 79↑'  -10.055'⍕m2
[25]  t[20;]←79↑'⍀end{verbatim}'
[26]  t[21;]←79↑'Responda aqui:⍀⍀*'
[27]  t[22;]←79↑'⍀begin{tabular}{|p{1cm}|p{1cm}|p{1cm}|p{1cm}|p{1cm}|} ⍀hline'
[28]  t[23;]←79↑' $x_1$&$x_2$&$x_3$&$x_4$&$x_5$⍀⍀ '
[29]  t[24;]←79↑'&&&& ⍀⍀ ⍀hline'
[30]  t[25;]←79↑'⍀end{tabular}'
[31]  t←'¯-'edit t
[32]  cab1←1 79⍴79↑'$QE',(5 0⍕ni),(3 0⍕gr),'     ',(2 0⍕sg),'solucao sist via MI'
[33]  cab2←1 79⍴79↑'$QR',(5 0⍕ni)
[34]  cab3←1 79⍴79↑5 0⍕x
[35]  r←cab1,[1]t,[1]cab2,[1]cab3
-------------------------------------------------------------
[ 0]  r←provak34c ni;gr;sg;t;m1;m2;lc;m1f;m2f;ll;cc;resp1;resp2;cab1;cab2;cab3
[ 1] ⍝ Esta funcao gera 40 questoes sobre M.I.
[ 2] ⍝ ni←... numero inicial
[ 3]  gr←563 ⍝ grupo
[ 4]  sg←1
[ 5]  t←27 79⍴' '
[ 6]  t[1;]←79↑'A seguir, você terá 3 matrizes, a primeira, uma matriz aumentada de um '
[ 7]  t[2;]←79↑'sistema linear. A segunda, a matriz $L$ e a terceira a matriz $U$.'
[ 8]  t[3;]←79↑'Lembrando que $L.U=A$. Como o sistema original é $A.x=b$, e daqui'
[ 9]  t[4;]←79↑' $LU.x=b$ e daqui $L.y=b$ e depois $U.x=y$. Você deve calcular os'
[10]  t[5;]←79↑'quatro valores de $y$ e os quatro de $x$, respondendo no local.'
[11] denovo:m1←4 5⍴?25⍴12
[12]  '→denovo'⎕EA'm2←⍕m1[;⍳4]'
[13]  '→denovo'⎕EA'lc←m1[;⍳4]fatLU m1[;5]'
[14]  →((99<⌈/,⊃lc[4])∨(¯99>⌊/,⊃lc[4]))/denovo
[15]  →((99<⌈/,⊃lc[5])∨(¯99>⌊/,⊃lc[5]))/denovo
[16]  m1f←6 0 6 0 6 0 6 0 10 0⍕m1
[17]  m1f[;29]←'|'
[18]  t[6;]←79↑'⍀begin{verbatim}-------- matriz aumentada -----'
[19]  t[6+⍳4;]←4 79↑m1f
[20]  t[11;]←79↑'--------- matriz L ---------'
[21]  t[12 13 14 15;]←4 79↑('  -110.055'⍕⊃lc[2])
[22]  t[16;]←79↑'-----------matriz U ----------'
```

```
[23]  t[17 18 19 20;]←4 79↑('  -110.055'⍕⊃lc[3])
[24]  t[21;]←79↑'\end{verbatim}'
[25]  t[22;]←79↑'Responda aqui:\\*'
[26]  t[23;]←79↑'\begin{tabular}{|p{1cm}|p{1cm}|p{1cm}|p{1cm}||p{1cm}|p{1cm}'
[27]  t[24;]←79↑'|p{1cm}|p{1cm}|} \hline'
[28]  t[25;]←79↑' $y_1$&$y_2$&$y_3$&$y_4$&$x_1$&$x_2$&$x_3$&$x_4$\\  '
[29]  t[26;]←79↑'&&&&&&&\\ \hline'
[30]  t[27;]←79↑'\end{tabular}'
[31]  cab1←1 79⍴79↑'$QE',(5 0⍕ni),(3 0⍕gr),'     ',(2 0⍕sg),'LU, achar x e y'
[32]  cab2←1 79⍴79↑'$QR',(5 0⍕ni)
[33]  cab3←1 79⍴79↑('y=','  -110.055'⍕⊃lc[4])
[34]  cab3←cab3,[1]1 79⍴79↑('x=','  -110.055'⍕⊃lc[5])
[35]  r←cab1,[1]t,[1]cab2,[1]cab3
------------------------------------------------------------
[ 0]  r←provak34d ni;gr;sg;t;m1;m2;lc;m1f;m2f;ll;cc;resp1;resp2;cab1;cab2;cab3;lixo
[ 1] ⍝ Esta funcao gera 40 questoes sobre M.I.
[ 2] ⍝ ni←... numero inicial
[ 3]  gr←564 ⍝ grupo
[ 4]  sg←1
[ 5]  t←18 79⍴' '
[ 6]  t[1;]←79↑'A seguir, você terá a matriz $A$ de um '
[ 7]  t[2;]←79↑'sistema linear. Deve calcular as matrizes $L$ e $U$.'
[ 8]  t[3;]←79↑'Lembrando que $L.U=A$. Para efeito de correç\~ao'
[ 9]  t[4;]←79↑'apresente apenas a terceira linha de $L$ e a terceira de $U$'
[10] denovo:m1←4 5⍴?25⍴12
[11]  '→denovo'⎕EA'm2←⌹m1[;⍳4]'
[12]  lc←m1[;⍳4]fatLU m1[;5]
[13]  →((99<⌈/,⊃lc[4])∨(¯99>⌊/,⊃lc[4]))/denovo
[14]  →((99<⌈/,⊃lc[5])∨(¯99>⌊/,⊃lc[5]))/denovo
[15]  m1f←6 0 6 0 6 0 6 0⍕m1[;⍳4]
[16]  t[5;]←79↑'\begin{verbatim}'
[17]  t[6;]←79↑'-------- matriz A -------'
[18]  t[6+⍳4;]←4 79↑m1f
[19]  t[11;]←79↑'\end{verbatim}\\Responda aqui:\\*'
[20]  t[12;]←79↑'\begin{tabular}{|p{1cm}|p{1cm}|p{1cm}|p{1cm}||p{1cm}|p{1cm}'
[21]  t[13;]←79↑'|p{1cm}|p{1cm}|} \hline'
[22]  t[14;]←79↑' $L[3,1]$&$L{3,2]$&$L[3,3]$&$L[3,4]$&$U[3,1]$&$U[3,2]$'
[23]  t[15;]←79↑'&$U[3,3]$&$U[3,4]$\\ \hline  '
[24]  t[16;]←79↑'&&1&0&0&0&& \\ '
[25]  t[17;]←79↑'&&&&&&&\\ \hline'
[26]  t[18;]←79↑'\end{tabular}'
[27]  cab1←1 79⍴79↑'$QE',(5 0⍕ni),(3 0⍕gr),'     ',(2 0⍕sg),'Dado A, achar L[3] e U[3]'
[28]  cab2←1 79⍴79↑'$QR',(5 0⍕ni)
[29]  lixo←'  -110.055'⍕⊃lc[2]
[30]  cab3←1 79⍴79↑'L=',lixo[3;]
[31]  lixo←'  -110.055'⍕⊃lc[3]
[32]  cab3←cab3,[1]1 79⍴79↑'U=',lixo[3;]
[33]  r←cab1,[1]t,[1]cab2,[1]cab3
------------------------------------------------------------
[ 0]  opesq vivo744a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;yy;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PL744   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALA744←ajusta80 FOLHALA744
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA744)⍴' '
```

```
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 6⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←34 80⍴' '
[16]  f←FOLHALA744
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.03
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[33;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[34;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gera744_1
[35]  ULT_1←yy←acerta744_1 xx
[36]  esse[7+⍳5;]←5 80↑⊃yy[1]
[37]  esse[28;]←80↑7 1⍕1↑⊃yy[2]
[38]  resp←resp,,¯1↑⊃yy[2]
[39]  xx←gera744_2
[40]  ULT_2←yy←acerta744_2 xx
[41]  esse[12+⍳6;]←6 80↑⊃yy[1]
[42]  esse[29;]←80↑6 0⍕1↑⊃yy[2]
[43]  resp←resp,,¯1↑⊃yy[2]
[44]  xx←gera744_3
[45]  ULT_3←yy←acerta744_3 xx
[46]  esse[18+⍳3;]←3 80↑⊃yy[1]
[47]  esse[30;]←80↑9 2⍕1↑⊃yy[2]
[48]  resp←resp,,¯1↑⊃yy[2]
[49]  xx←gera744_4
[50]  ULT_4←yy←acerta744_4 xx
[51]  esse[22 23;]←2 80↑⊃yy[1]
[52]  esse[31;]←80↑10 2⍕1↑⊃yy[2]
[53]  resp←resp,,¯1↑⊃yy[2]
[54]  xx←gera744_5
[55]  ULT_5←yy←acerta744_5 xx
[56]  esse[23+⍳4;]←4 80↑⊃yy[1]
[57]  esse[32;]←80↑10 0⍕1↑⊃yy[2]
[58]  resp←resp,,¯1↑⊃yy[2]
[59]  resu←resu,[1]1 6⍴resp
[60]  acuja←(f[;2]='#')/⍳1↑⍴f
[61]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[62]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[63]  ⎕←(⍕xk←xk+1),'-'
[64]  →testa
[65] fim:upag←(1 0+⍴f)⍴' '
[66]  →(1=≡n)/elafa
[67]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[68]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[69]  upag[2+⍳1↑⍴presu;⍳55]←'¯-'edit 5 0 10 2 10 0 10 2 10 2 10 0⍕resu
[70]  upag[3+1↑⍴presu;]←(1↓⍴upag)↑'\end{verbatim}'
[71]  →terminando
[72] elafa:aaa←(ylu[;⍳36],'¯-'edit 10 2 10 0 10 2 10 2 10 0⍕0 1↓resu)
[73]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[74]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
```

```
[75] terminando:
[76]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[77]  relat[1↑⍴relat;;]←upag
[78]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[79]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.tex'
[80]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[81]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[ 0]  opesq vivok34a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;yy;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLk34   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAk34←ajusta80 FOLHALAk34
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAk34)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 6⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←34 80⍴' '
[16]  f←FOLHALAk34
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.03
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[33;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[34;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerak34_1
[35]  ULT_1←yy←acertak34_1 xx
[36]  esse[7+⍳5;]←5 80↑⊃yy[1]
[37]  esse[28;]←80↑7 1⍎1↑⊃yy[2]
[38]  resp←resp,,¯1↑⊃yy[2]
[39]  xx←gerak34_2
[40]  ULT_2←yy←acertak34_2 xx
[41]  esse[12+⍳6;]←6 80↑⊃yy[1]
[42]  esse[29;]←80↑6 0⍎1↑⊃yy[2]
[43]  resp←resp,,¯1↑⊃yy[2]
[44]  xx←gerak34_3
[45]  ULT_3←yy←acertak34_3 xx
[46]  esse[18+⍳3;]←3 80↑⊃yy[1]
[47]  esse[30;]←80↑9 2⍎1↑⊃yy[2]
[48]  resp←resp,,¯1↑⊃yy[2]
[49]  xx←gerak34_4
[50]  ULT_4←yy←acertak34_4 xx
[51]  esse[22 23;]←2 80↑⊃yy[1]
[52]  esse[31;]←80↑10 2⍎1↑⊃yy[2]
```

```
[53]  resp←resp,,¯1↑⊃yy[2]
[54]  xx←gerak34_5
[55]  ULT_5←yy←acertak34_5 xx
[56]  esse[23+⍳4;]←4 80↑⊃yy[1]
[57]  esse[32;]←80↑10 0⍕1↑⊃yy[2]
[58]  resp←resp,,¯1↑⊃yy[2]
[59]  resu←resu,[1]1 6⍴resp
[60]  acuja←(f[;2]='#')/⍳1↑⍴f
[61]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[62]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[63]  ⍞←(⍕xk←xk+1),'-'
[64]  →testa
[65] fim:upag←(1 0+⍴f)⍴' '
[66]  →(1=≡n)/elafa
[67]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[68]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[69]  upag[2+⍳1↑⍴resu;⍳55]←'¯-'edit 5 0 10 2 10 0 10 2 10 2 10 0⍕resu
[70]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[71]  →terminando
[72] elafa:aaa←(ylu[;⍳36],'¯-'edit 10 2 10 0 10 2 10 2 10 0⍕0 1↓resu)
[73]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[74]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[75] terminando:
[76]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[77]  relat[1↑⍴relat;;]←upag
[78]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[79]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[80]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[81]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivok37

```
[0]  r←achalc pixel
[1]  r←(1+⌊(pixel-1)÷8),1+8|pixel-1
------------------------------------------------------------
[ 0]  r←criamatcoef;distancia;idi;ipi;irot;m;rotacao;rr;rr1;vetdis
[ 1] ⍝ cria a matriz de coeficientes para o sistema linear da tomografia
[ 2] ⍝ 17 x 9 x 64 = 19 rotacoes, 9 raios e 64 pixels na imagem.
[ 3]  m←17 10 64⍴0
[ 4]  irot←1
[ 5] t1:→(irot>17)/fim
[ 6] ⍝------------------inicio do ciclo ----------------------
[ 7]  rotacao←3○(○90-irot×5)÷180
[ 8]  rr←retapi rotacao
[ 9]  distancia←(rr,1)dp 0,0
[10]  vetdis←distancia÷⍳10
[11]  idi←1
[12] t2:→(idi>10)/oba
[13]  rr1←vetdis[idi]reper rotacao
[14]  ipi←1
[15] t3:→(ipi>64)/oga
[16]  m[irot;idi;ipi]←ipi distpix ipi est4p rr1
[17]  ipi←ipi+1
[18]  →t3
[19] oga:idi←idi+1
[20]  →t2
[21] oba:irot←irot+1
[22]  →t1
[23] fim:r←m
------------------------------------------------------------
[ 0]  r←p distpix pts;l;c;lc;p1;p2;p3;p4;ap1;ap2;ap3;ap4;quais
```

```
[ 1] ⍝ acha uma possivel distancia dentro do pixel (coeficiente do sistlin)
[ 2]  lc←achalc p
[ 3]  l←lc[1]
[ 4]  c←lc[2]
[ 5]  p1←pts[1;]
[ 6]  p2←pts[2;]
[ 7]  p3←pts[3;]
[ 8]  p4←pts[4;]
[ 9] ⍝analise de p1:
[10]  ap1←((p1[1]≥((c-1)÷8))∧(p1[1]≤(c÷8)))∧((p1[2]≥((l-1)÷8))∧(p1[2]≤l÷8))
[11]  ap2←((p2[1]≥((c-1)÷8))∧(p2[1]≤(c÷8)))∧((p2[2]≥((l-1)÷8))∧(p2[2]≤l÷8))
[12]  ap3←((p3[1]≥((c-1)÷8))∧(p3[1]≤(c÷8)))∧((p3[2]≥((l-1)÷8))∧(p3[2]≤l÷8))
[13]  ap4←((p4[1]≥((c-1)÷8))∧(p4[1]≤(c÷8)))∧((p4[2]≥((l-1)÷8))∧(p4[2]≤l÷8))
[14]  quais←(ap1,ap2,ap3,ap4)/⍳4
[15]  →(2≠⍴quais)/zero
[16]  r←pts[quais[1];]dp pts[quais[2];]
[17]  →0
[18] zero:r←0
-------------------------------------------------------------
[0]  r←a dp b
[1] ⍝ devolve a distancia pitagorica entre o ponto a e o ponto b
[2]  r←(((a[1]-b[1])*2)+((a[2]-b[2])*2))*0.5
-------------------------------------------------------------
[ 0]  r←p est4p ab;lc;p1;p2;p3;p4;l;c
[ 1]  lc←achalc p
[ 2]  l←lc[1]
[ 3]  c←lc[2]
[ 4] ⍝neste ponto reta superior→y=l÷8, inferior→y=(l-1)÷8, esq→x=(c-1)÷8 dir→x=c÷8
[ 5]  p1←((((l-1)÷8)-ab[2])÷ab[1]),(l-1)÷8  ⍝ mantem y
[ 6]  p2←(((l÷8)-ab[2])÷ab[1]),l÷8          ⍝ mantem y
[ 7]  p3←((c-1)÷8),(ab[1]×((c-1)÷8))+ab[2]        ⍝ mantem x
[ 8]  p4←(c÷8),(ab[1]×c÷8)+ab[2]              ⍝ mantem x
[ 9]  r←4 2⍴p1,p2,p3,p4
-------------------------------------------------------------
[0]  r←geracasok37;c;cs
[1]  c←8 8⍴¯1+?64⍴2
[2]  cs←+/[2]COEF×170 64⍴c
[3]  r←2⍴0
[4]  r[1]←⊂'0.00000 '⍪170 1⍴cs
[5]  r[2]←⊂,c[⍳4;8]
-------------------------------------------------------------
[0]  r←geracoef;xx
[1]  xx←((170×4),16)⍴COEF
[2]  xx←(128⍴'0.00000 ')⍪xx
[3]  xx ⎕FM'c:\apl2\F745COEF.myd'
[4]  'arquivo gerado em c:\apl2\F645COEF.myd'
-------------------------------------------------------------
[ 0]  preenchepontos;ct;lin;col
[ 1]  PONTOS←64 4 2⍴0
[ 2]  ct←1
[ 3]  lin←0
[ 4] t1:→(lin≥8)/fim
[ 5]  col←0
[ 6] t2:→(col≥8)/oba
[ 7]  PONTOS[ct;1;]←(col×0.125),lin×0.125
[ 8]  PONTOS[ct;2;]←(0.125+col×0.125),lin×0.125
[ 9]  PONTOS[ct;3;]←(0.125+col×0.125),0.125+lin×0.125
[10]  PONTOS[ct;4;]←(col×0.125),0.125+lin×0.125
[11]  ct←ct+1
[12]  col←col+1
[13]  →t2
[14] oba:
[15]  lin←lin+1
```

```
[16]  →t1
[17] fim:
------------------------------------------------------------
[0]  r←d reper a;x;y
[1]  x←((d*2)÷(1+a*2))*0.5
[2]  y←x×a
[3]  r←x,y
------------------------------------------------------------
[0]  r←retapi a
[1] ⍝ devolve o ponto de interseccao da reta y=ax com a reta y=1
[2]  r←÷a
------------------------------------------------------------
[ 0]  opesq vivok37a n;CORRECAO;EVENTO;QUIPN;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39
      ;qlinha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3]  QUIPN←'000'
[ 4] qveio:
[ 5]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 6]  EVENTO←'PLk37   '
[ 7]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ QUIPN←n[3 4 5]
[ 9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[10]  ylu←n grupo ylu
[11]  FOLHALAk37←ajusta80 FOLHALAk37
[12]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAk37)⍴' '
[13]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[14]  xk←1 ⋄ resu←0 5⍴0
[15] testa:→(xk>1↑⍴ylu)/fim
[16]  esse←10 80⍴' '
[17]  f←FOLHALAk37
[18]  esse[1;]←80↑dhx[1;]
[19]  esse[2;]←80↑dhx[2;]
[20]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[21]  esse[4;]←80↑ylu[xk;⍳6]
[22]  →(36=1↓⍴ylu)/zebra
[23]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[24]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[25]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[26]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[27]  →maiszebra
[28] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[32]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] inica:
[35]  esse[8;]←1 80⍴80↑'Fk3',QUIPN,('00'⍕xk),'.myd'
[36]  xx←geracasok37  ⍝ xx e uma matriz 170 1⍴ contendo coficientes
[37]  lixonol←(⊃xx[1])ΔFM'c:\apl2\Fk3',QUIPN,('00'⍕xk),'.myd'
[38]  resp←resp,,⊃xx[2]
[39]  resu←resu,[1]1 5⍴resp
[40]  acuja←(f[;2]='#')/⍳1↑⍴f
[41]  f[acuja;⍳80]←esse[≢,f[acuja;3 4],' ';]
[42]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[43]  ⍞←(⍕xk←xk+1),'-'
[44]  →testa
[45] fim:upag←(1 0+⍴f)⍴' '
[46]  →(1=≡n)/elafa
[47]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[48]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
```

```
[49]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 6 0 2 0 2 0 2 0)⍪resu
[50]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[51]  →terminando
[52] elafa:aaa←(ylu[;⍳36],3 0⍪0 1↓resu)
[53]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[54]  '!!!!!  Arquivo GPA com ',(⍪1↑⍴aaa),' linhas e ',(⍪1↓⍴aaa),' colunas'
[55] terminando:
[56]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[57]  relat[1↑⍴relat;;]←upag
[58]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[59]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[60]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[61]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivok40

```
[ 0]  r←gerak40 n;ad1;ad2;mu1;mu2;nev1;nev2;rs;z
[ 1] novo:mu1←20+?20
[ 2]  ad1←10+?30
[ 3]  mu2←40+?60
[ 4]  ad2←40+?50
[ 5]  nev1←¯10+?(⍴n)⍴20
[ 6]  nev2←¯10+?(⍴n)⍴20
[ 7]  rs←(n,2)⍴0
[ 8]  rs[;1]←nev1+ad1+mu1×⍳n
[ 9]  rs[;2]←±10 1⍪(nev2+ad2+mu2×⍳n)*1+(⍳n)÷n×2
[10]  r←2⍴0
[11]  r[1]←⊂rs
[12]  →(1=?2)/cara
[13]  z←rs[1↑⍴rs;1]+40+?70
[14]  →(z∈rs[;1])/novo
[15]  r[2]←⊂z
[16]  →0
[17] cara:
[18]  z←(?10)+⌊(rs[1;1]+rs[1↑⍴rs;1])÷2
[19]  →(z∈rs[;1])/novo
[20]  r[2]←⊂z
[21]  →0
-------------------------------------------------------------
[ 0]  r←intpol qa;a;aa;i;j;n;passo;pivo;q;x;y
[ 1]  aa←⊃qa[1]
[ 2]  q←⊃qa[2]
[ 3] ⍝ a matriz de n linhas e 2 colunas (x, y). q é o ponto a estimar
[ 4]  n←1↑⍴aa
[ 5]  →(2≠⍴⍴aa)/erro
[ 6]  a←(n,n)⍴0
[ 7]  i←1
[ 8] t1:→(i>n)/fin
[ 9]  a[i;]←aa[i;1]*(⍳n)-1
[10]  i←i+1
[11]  →t1
[12] fin:Av←a
[13]  y←,aa[;2]
[14]  Yv←y
[15]  passo←1
[16] t2:→(passo>n-1)/u1
[17]  i←passo+1
[18] t3:→(i>n)/u2
[19]  pivo←a[i;passo]÷a[passo;passo]
[20]  j←1
[21] t4:→(j>n)/u3
```

```
[22]  a[i;j]←a[i;j]-pivo×a[passo;j]
[23]  j←j+1
[24]  →t4
[25] u3:y[i]←y[i]-pivo×y[passo]
[26]  i←i+1
[27]  →t3
[28] u2:
[29]  passo←passo+1
[30]  →t2
[31] u1:
[32]  x←nρ0
[33]  x[n]←y[n]÷a[n;n]
[34]  i←n-1
[35] t5:→(i<1)/u5
[36]  x[i]←y[i]
[37]  j←i+1
[38] t6:→(j>n)/u6
[39]  x[i]←x[i]-a[i;j]×x[j]
[40]  j←j+1
[41]  →t6
[42] u6:x[i]←x[i]÷a[i;i]
[43]  i←i-1
[44]  →t5
[45] u5:
[46]  i←1
[47]  r←0
[48] t7:→(i>n)/u8
[49]  r←r+x[i]×q*i-1
[50]  i←i+1
[51]  →t7
[52] u8:
[53]  An←a
[54]  Yn←y
[55]  X←x
[56]  →0
[57] erro:'deu xabu'
-------------------------------------------------------------
[ 0]  r←q intpolnt aa;a;i;j;n;passo;pivo;x;y
[ 1] ⍝aa←⊃qa[1]
[ 2] ⍝q←⊃qa[2]
[ 3] ⍝ a matriz de n linhas e 2 colunas (x, y). q é o ponto a estimar
[ 4]  n←1↑⍴aa
[ 5]  →(2≠⍴⍴aa)/erro
[ 6]  a←(n,n)ρ0
[ 7]  i←1
[ 8] t1:→(i>n)/fin
[ 9]  a[i;]←aa[i;1]*(⍳n)-1
[10]  i←i+1
[11]  →t1
[12] fin:Av←a
[13]  y←,aa[;2]
[14]  Yv←y
[15]  passo←1
[16] t2:→(passo>n-1)/u1
[17]  i←passo+1
[18] t3:→(i>n)/u2
[19]  pivo←a[i;passo]÷a[passo;passo]
[20]  j←1
[21] t4:→(j>n)/u3
[22]  a[i;j]←a[i;j]-pivo×a[passo;j]
[23]  j←j+1
[24]  →t4
[25] u3:y[i]←y[i]-pivo×y[passo]
```

```
[26]  i←i+1
[27]  →t3
[28] u2:
[29]  passo←passo+1
[30]  →t2
[31] u1:
[32]  x←nρ0
[33]  x[n]←y[n]÷a[n;n]
[34]  i←n-1
[35] t5:→(i<1)/u5
[36]  x[i]←y[i]
[37]  j←i+1
[38] t6:→(j>n)/u6
[39]  x[i]←x[i]-a[i;j]×x[j]
[40]  j←j+1
[41]  →t6
[42] u6:x[i]←x[i]÷a[i;i]
[43]  i←i-1
[44]  →t5
[45] u5:
[46]  i←1
[47]  r←0
[48] t7:→(i>n)/u8
[49]  r←r+x[i]×q*i-1
[50]  i←i+1
[51]  →t7
[52] u8:
[53]  An←a
[54]  Yn←y
[55]  X←x
[56]  →0
[57] erro:'deu xabu'
-------------------------------------------------------------
[0]  limpa;lixo
[1]  lixo←⎕EX 5 2ρ'AnAvYnYvX '
-------------------------------------------------------------
[ 0]  opesq vivok40f n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLk40f  '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAk40f←ajusta80 FOLHALAk40f
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALAk40f)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 5ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←31 80ρ' '
[16]  f←FOLHALAk40f
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑ρf),4)ρ'⍀#05')/⍳1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
```

```
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[30;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[31;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerak40 2
[35]  esse[7+⍳2;]←2 80↑⍕⊃xx[1]
[36]  esse[10;]←1 80⍴80↑⍕⊃xx[2]
[37]  resp←resp,,⍪10 1⍕intpol xx
[38]  xx←gerak40 3
[39]  esse[10+⍳3;]←3 80↑⍕⊃xx[1]
[40]  esse[14;]←1 80⍴80↑⍕⊃xx[2]
[41]  resp←resp,,⍪10 1⍕intpol xx
[42]  xx←gerak40 5
[43]  esse[14+⍳5;]←5 80↑⍕⊃xx[1]
[44]  esse[20;]←1 80⍴80↑⍕⊃xx[2]
[45]  resp←resp,,⍪10 1⍕intpol xx
[46]  xx←gerak40 8
[47]  esse[20+⍳8;]←8 80↑⍕⊃xx[1]
[48]  esse[29;]←1 80⍴80↑⍕⊃xx[2]
[49]  resp←resp,,⍪10 1⍕intpol xx
[50]  resu←resu,[1]1 5⍴resp
[51]  acuja←(f[;2]='#')/⍳1↑⍴f
[52]  f[acuja;⍳80]←esse[⍪,f[acuja;3 4],' ';]
[53]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[54]  ⍞←(⍕xk←xk+1),'-'
[55]  →testa
[56] fim:upag←(1 0+⍴f)⍴' '
[57]  →(1=≡n)/elafa
[58]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[59]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[60]  upag[2+⍳1↑⍴resu;⍳¯4++/lixo1]←(lixo1←5 0 10 1 10 1 10 1 10 1)⍕resu
[61]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[62]  →terminando
[63] elafa:aaa←(ylu[;⍳36],10 1⍕0 1↓resu)
[64]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[65]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[66] terminando:
[67]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[68]  relat[1↑⍴relat;;]←upag
[69]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[70]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[71]  limpa
[72]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivok40p n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLk40p  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAk40p←ajusta80 FOLHALAk40p
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAk40p)⍴' '
```

```
[12]  relat[1;;]←(1↓⍴relat)↑⍙FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 5⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←31 80⍴' '
[16]  f←FOLHALAk40p
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOp←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[30;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[31;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerak40 2
[35]  esse[7+⍳2;]←2 80↑⍕⊃xx[1]
[36]  esse[10;]←1 80⍴80↑⍕⊃xx[2]
[37]  resp←resp,,⍪10 1⍕intpol xx
[38]  xx←gerak40 3
[39]  esse[10+⍳3;]←3 80↑⍕⊃xx[1]
[40]  esse[14;]←1 80⍴80↑⍕⊃xx[2]
[41]  resp←resp,,⍪10 1⍕intpol xx
[42]  xx←gerak40 5
[43]  esse[14+⍳5;]←5 80↑⍕⊃xx[1]
[44]  esse[20;]←1 80⍴80↑⍕⊃xx[2]
[45]  resp←resp,,⍪10 1⍕intpol xx
[46]  xx←gerak40 8
[47]  esse[20+⍳8;]←8 80↑⍕⊃xx[1]
[48]  esse[29;]←1 80⍴80↑⍕⊃xx[2]
[49]  resp←resp,,⍪10 1⍕intpol xx
[50]  resu←resu,[1]1 5⍴resp
[51]  acuja←(f[;2]='#')/⍳1↑⍴f
[52]  f[acuja;⍳80]←esse[⍪,f[acuja;3 4],' ';]
[53]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[54]  ⍞←(⍕xk←xk+1),'-'
[55]  →testa
[56] fim:upag←(1 0+⍴f)⍴' '
[57]  →(1=≡n)/elafa
[58]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[59]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[60]  upag[2+⍳1↑⍴resu;⍳¯4++/lixo1]←(lixo1←5 0 10 1 10 1 10 1 10 1)⍕resu
[61]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[62]  →terminando
[63] elafa:aaa←(ylu[;⍳36],10 1⍕0 1↓resu)
[64]  lixonol←aaa ⍙FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[65]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[66] terminando:
[67]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[68]  relat[1↑⍴relat;;]←upag
[69]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[70]  lixonol←lixonol ⍙FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[71]  limpa
[72]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivok43

```
[ 0]  r←gerak43 n;x;y;del;zz
[ 1]  n←n+1
[ 2] novo:
[ 3]  x←(0.01×10+?90)+⍳n
[ 4]  x←x+0.01×(?n⍴10)
[ 5]  y←⍳n
[ 6]  del←(0.001×?1000)+⍳n
[ 7]  y←del*y
[ 8]  →((⌈/y)<1000000)/ok33
[ 9]  ⍞←'∘'
[10]  →novo
[11] ok33:
[12]  y←⍟20 1⍭y
[13]  r←3⍴0
[14]  r[1]←⊂1↓x
[15]  r[2]←⊂1↓y
[16]  r[3]←(0.01×n+?n)+(0.001×?1000)+((2×x[1])+x[⍴x])÷2
[17]  →((r[3]≥x[1])∧(r[3]≤x[⍴x]))/buba
[18]  ⍞←'⊗'
[19]  →novo
[20] buba:
[21]  zz←lagra r
[22]  →(zz>0)/viva
[23]  ⍞←'o'
[24]  →novo
[25] viva:
------------------------------------------------------------
[ 0]  r←intpol qa;a;aa;i;j;n;passo;pivo;q;x;y
[ 1]  aa←⊃qa[1]
[ 2]  q←⊃qa[2]
[ 3] ⍝ a matriz de n linhas e 2 colunas (x, y). q é o ponto a estimar
[ 4]  n←1↑⍴aa
[ 5]  →(2≠⍴⍴aa)/erro
[ 6]  a←(n,n)⍴0
[ 7]  i←1
[ 8] t1:→(i>n)/fin
[ 9]  a[i;]←aa[i;1]*(⍳n)-1
[10]  i←i+1
[11]  →t1
[12] fin:Av←a
[13]  y←,aa[;2]
[14]  Yv←y
[15]  passo←1
[16] t2:→(passo>n-1)/u1
[17]  i←passo+1
[18] t3:→(i>n)/u2
[19]  pivo←a[i;passo]÷a[passo;passo]
[20]  j←1
[21] t4:→(j>n)/u3
[22]  a[i;j]←a[i;j]-pivo×a[passo;j]
[23]  j←j+1
[24]  →t4
[25] u3:y[i]←y[i]-pivo×y[passo]
[26]  i←i+1
[27]  →t3
[28] u2:
[29]  passo←passo+1
[30]  →t2
[31] u1:
[32]  x←n⍴0
[33]  x[n]←y[n]÷a[n;n]
```

```
[34]  i←n-1
[35] t5:→(i<1)/u5
[36]  x[i]←y[i]
[37]  j←i+1
[38] t6:→(j>n)/u6
[39]  x[i]←x[i]-a[i;j]×x[j]
[40]  j←j+1
[41]  →t6
[42] u6:x[i]←x[i]÷a[i;i]
[43]  i←i-1
[44]  →t5
[45] u5:
[46]  i←1
[47]  r←0
[48] t7:→(i>n)/u8
[49]  r←r+x[i]×q*i-1
[50]  i←i+1
[51]  →t7
[52] u8:
[53]  An←a
[54]  Yn←y
[55]  X←x
[56]  →0
[57] erro:'deu xabu'
-------------------------------------------------------------
[ 0]  r←q intpolntlixo aa;a;i;j;n;passo;pivo;x;y
[ 1] ⍝aa←⊃qa[1]
[ 2] ⍝q←⊃qa[2]
[ 3] ⍝ a matriz de n linhas e 2 colunas (x, y). q é o ponto a estimar
[ 4]  n←1↑⍴aa
[ 5]  →(2≠⍴⍴aa)/erro
[ 6]  a←(n,n)⍴0
[ 7]  i←1
[ 8] t1:→(i>n)/fin
[ 9]  a[i;]←aa[i;1]*(⍳n)-1
[10]  i←i+1
[11]  →t1
[12] fin:Av←a
[13]  y←,aa[;2]
[14]  Yv←y
[15]  passo←1
[16] t2:→(passo>n-1)/u1
[17]  i←passo+1
[18] t3:→(i>n)/u2
[19]  pivo←a[i;passo]÷a[passo;passo]
[20]  j←1
[21] t4:→(j>n)/u3
[22]  a[i;j]←a[i;j]-pivo×a[passo;j]
[23]  j←j+1
[24]  →t4
[25] u3:y[i]←y[i]-pivo×y[passo]
[26]  i←i+1
[27]  →t3
[28] u2:
[29]  passo←passo+1
[30]  →t2
[31] u1:
[32]  x←n⍴0
[33]  x[n]←y[n]÷a[n;n]
[34]  i←n-1
[35] t5:→(i<1)/u5
[36]  x[i]←y[i]
[37]  j←i+1
```

```
[38] t6:→(j>n)/u6
[39]  x[i]←x[i]-a[i;j]×x[j]
[40]  j←j+1
[41]  →t6
[42] u6:x[i]←x[i]÷a[i;i]
[43]  i←i-1
[44]  →t5
[45] u5:
[46]  i←1
[47]  r←0
[48] t7:→(i>n)/u8
[49]  r←r+x[i]×q*i-1
[50]  i←i+1
[51]  →t7
[52] u8:
[53]  An←a
[54]  Yn←y
[55]  X←x
[56]  →0
[57] erro:'deu xabu'
-------------------------------------------------------------
[ 0]  r←lagra z;a;b;x;w;i;px;zica
[ 1]  a←⊃z[1]
[ 2]  b←⊃z[2]
[ 3]  x←⊃z[3]
[ 4]  w←((2+⍴a),(2+⍴a))⍴0
[ 5]  w[2+⍳⍴a;1]←a
[ 6]  w[1;]←0,a,0
[ 7]  w[2;1]←x
[ 8]  w[2;1+⍳⍴a]←w[2;1]-a
[ 9]  i←3
[10] t1:→(i>1↑⍴w)/fim
[11]  w[i;1+⍳⍴a]←w[i;1]-w[1;1+⍳⍴a]
[12]  i←i+1
[13]  →t1
[14] fim:
[15]  i←2
[16] t2:→(i>1↑⍴w)/fin7
[17]  w[i;1↓⍴w]←×/(w[i;1+⍳⍴a]≠0)/w[i;1+⍳⍴a]
[18]  i←i+1
[19]  →t2
[20] fin7:
[21]  px←0
[22]  i←1
[23] t3:→(i>⍴b)/oka
[24]  zica←b[i]×(w[2;1↓⍴w]÷w[2;1+i])÷w[2+i;1↓⍴w]
[25]  px←px+zica
[26] ⍝ zica
[27]  i←i+1
[28]  →t3
[29] oka:
[30]  r←px
[31]  W←w
-------------------------------------------------------------
[0]  r←tiraduplo V
[1]  r←((V⍳V)=⍳⍴V)/V                  ⍝ Unique.  Drop duplicates from vector.
-------------------------------------------------------------
[ 0]  opesq vivok43f n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
```

```
[ 5]  EVENTO←'PLk43f  '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAk43f←ajusta80 FOLHALAk43f
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAk43f)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 4⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←18 80⍴' '
[16]  f←FOLHALAk43f
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOf←1.06
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[17;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[18;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerak43 3
[35]  esse[8;]←1 80⍴80↑⍎⊃xx[1]
[36]  esse[9;]←1 80⍴80↑⍎⊃xx[2]
[37]  esse[10;]←1 80⍴80↑⍎⊃xx[3]
[38]  resp←resp,,lagra xx
[39]  xx←gerak43 3+?3
[40]  esse[11;]←1 80⍴80↑⍎⊃xx[1]
[41]  esse[12;]←1 80⍴80↑⍎⊃xx[2]
[42]  esse[13;]←1 80⍴80↑⍎⊃xx[3]
[43]  resp←resp,,lagra xx
[44]  xx←gerak43 3+?3
[45]  esse[14;]←1 80⍴80↑⍎⊃xx[1]
[46]  esse[15;]←1 80⍴80↑⍎⊃xx[2]
[47]  esse[16;]←1 80⍴80↑⍎⊃xx[3]
[48]  resp←resp,,lagra xx
[49]  resu←resu,[1]1 4⍴resp
[50]  acuja←(f[;2]='#')/⍳1↑⍴f
[51]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[52]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[53]  ⍞←(⍎xk←xk+1),'-'
[54]  →testa
[55] fim:upag←(1 0+⍴f)⍴' '
[56]  →(1=≡n)/elafa
[57]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[58]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[59]  upag[2+⍳1↑⍴resu;⍳+/53]←(lixo1←5 0 16 2 16 2 16 2)⍎resu
[60]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[61]  →terminando
[62] elafa:aaa←(ylu[;⍳36],16 2⍎0 1↓resu)
[63]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[64]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[65] terminando:
[66]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
```

```
[67]  relat[1↑⍴relat;;]←upag
[68]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[69]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[70]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[71]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[ 0]  opesq vivok43p n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLk43p  '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAk43p←ajusta80 FOLHALAk43p
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAk43p)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 4⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←18 80⍴' '
[16]  f←FOLHALAk43p
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOp←1.06
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[17;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[18;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerak43 3
[35]  esse[8;]←1 80⍴80↑⍎⊃xx[1]
[36]  esse[9;]←1 80⍴80↑⍎⊃xx[2]
[37]  esse[10;]←1 80⍴80↑⍎⊃xx[3]
[38]  resp←resp,,lagra xx
[39]  xx←gerak43 3+?3
[40]  esse[11;]←1 80⍴80↑⍎⊃xx[1]
[41]  esse[12;]←1 80⍴80↑⍎⊃xx[2]
[42]  esse[13;]←1 80⍴80↑⍎⊃xx[3]
[43]  resp←resp,,lagra xx
[44]  xx←gerak43 3+?3
[45]  esse[14;]←1 80⍴80↑⍎⊃xx[1]
[46]  esse[15;]←1 80⍴80↑⍎⊃xx[2]
[47]  esse[16;]←1 80⍴80↑⍎⊃xx[3]
[48]  resp←resp,,lagra xx
[49]  resu←resu,[1]1 4⍴resp
[50]  acuja←(f[;2]='#')/⍳1↑⍴f
[51]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[52]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[53]  ⍞←(⍎xk←xk+1),'-'
[54]  →testa
```

```
[55] fim:upag←(1 0+ρf)ρ' '
[56]  →(1=≡n)/elafa
[57]  upag[1;]←(1↓ρupag)↑'⍀begin{verbatim}'
[58]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[59]  upag[2+ι1↑ρresu;ι+/53]←(lixo1←5 0 16 2 16 2 16 2)⍕resu
[60]  upag[3+1↑ρresu;]←(1↓ρupag)↑'⍀end{verbatim}'
[61]  →terminando
[62] elafa:aaa←(ylu[;ι36],16 2⍕0 1↓resu)
[63]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍬∧⍀⍬EVENTO=' ')/EVENTO),'.gpa')
[64]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[65] terminando:
[66]  upag[1↑ρupag;]←(1↓ρupag)↑'⍀end{document}'
[67]  relat[1↑ρrelat;;]←upag
[68]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[69]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍬∧⍀⍬EVENTO=' ')/EVENTO),'.tex'
[70]  lixonol←□EX 2 10ρ'quantos   matriz    '
[71]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivok46

```
[ 0]  r←gerak46 n;x;y;del;zz
[ 1]  n←n+1
[ 2] novo:
[ 3]  x←(0.01×10+?90)+ιn
[ 4]  x←x+0.01×(?nρ10)
[ 5]  y←ιn
[ 6]  del←(0.001×?1000)+ιn
[ 7]  y←del*y
[ 8]  →((⌈/y)<1000000)/ok33
[ 9]  ⍞←'∘'
[10]  →novo
[11] ok33:
[12]  y←⍬20 1⍕y
[13]  r←3ρ0
[14]  r[1]←⊂1↓x
[15]  r[2]←⊂1↓y
[16]  r[3]←(0.01×n+?n)+(0.001×?1000)+((2×x[1])+x[ρx])÷2
[17]  →((r[3]≥x[1])∧(r[3]≤x[ρx]))/buba
[18]  ⍞←'⊗'
[19]  →novo
[20] buba:
[21]  zz←lagra r
[22]  →(zz>0)/viva
[23]  ⍞←'o'
[24]  →novo
[25] viva:
------------------------------------------------------------
[ 0]  r←lagra z;a;b;x;w;i;px;zica
[ 1]  a←⊃z[1]
[ 2]  b←⊃z[2]
[ 3]  x←⊃z[3]
[ 4]  w←((2+ρa),(2+ρa))ρ0
[ 5]  w[2+ιρa;1]←a
[ 6]  w[1;]←0,a,0
[ 7]  w[2;1]←x
[ 8]  w[2;1+ιρa]←w[2;1]-a
[ 9]  i←3
[10] t1:→(i>1↑ρw)/fim
[11]  w[i;1+ιρa]←w[i;1]-w[1;1+ιρa]
[12]  i←i+1
[13]  →t1
```

```
[14] fim:
[15]  i←2
[16] t2:→(i>1↑ρw)/fin7
[17]  w[i;1↓ρw]←×/(w[i;1+ιρa]≠0)/w[i;1+ιρa]
[18]  i←i+1
[19]  →t2
[20] fin7:
[21]  px←0
[22]  i←1
[23] t3:→(i>ρb)/oka
[24]  zica←b[i]×(w[2;1↓ρw]÷w[2;1+i])÷w[2+i;1↓ρw]
[25]  px←px+zica
[26] ⍝ zica
[27]  i←i+1
[28]  →t3
[29] oka:
[30]  r←px
[31]  W←w
-------------------------------------------------------------
[ 0]  r←novok46;coef;x;y;i;xint;grau;coefa;qual
[ 1]  grau←3+1?2
[ 2] denovo:
[ 3]  coef←¯7+grau?15
[ 4]  →(0∈coef)/denovo
[ 5]  coefa←⊖coef
[ 6]  qual←1+?3
[ 7]  x←grau?10
[ 8]  x←x[⍋x]
[ 9]  xint←?10
[10]  →(xint∈x)/denovo
[11]  y←grauρ0
[12]  i←1
[13]  COEF←coef
[14] t1:→(i>grau)/deu
[15]  →(grau=5)/p5
[16]  y[i]←(coef[1]×x[i]*3)+(coef[2]×x[i]*2)+(coef[3]×x[i])+coef[4]
[17]  →soma
[18] p5:
[19]  y[i]←(coef[1]×x[i]*4)+(coef[2]×x[i]*3)+(coef[3]×x[i]*2)+(coef[4]×x[i])+coef[5]
[20] soma:
[21]  i←i+1
[22]  →t1
[23] deu:
[24]  r←4ρ0
[25]  r[1]←⊂x
[26]  r[2]←⊂y
[27]  r[3]←⊂'$x^',(⍕qual),'$'
[28]  r[4]←⊂coefa[qual]
-------------------------------------------------------------
[ 0]  opesq vivok46a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLk46  '
[ 6]  dhx←2 10ρ('05/05/0005'⍎⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍕ιn
[ 9]  ylu←n grupo ylu
[10]  FOLHALAk46←ajusta80 FOLHALAk46
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALAk46)ρ' '
```

```
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 4⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←18 80⍴' '
[16]  f←FOLHALAk46
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.02
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[17;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[18;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←novok46
[35]  esse[8;]←1 80⍴80↑'¯-'edit⍕⊃xx[1]
[36]  esse[9;]←1 80⍴80↑'¯-'edit⍕⊃xx[2]
[37]  esse[10;]←1 80⍴80↑⊃xx[3]
[38]  resp←resp,,⊃xx[4]
[39]  xx←gerak46 3+?2
[40]  esse[11;]←1 80⍴80↑'¯-'edit⍕⊃xx[1]
[41]  esse[12;]←1 80⍴80↑'¯-'edit⍕⊃xx[2]
[42]  esse[13;]←1 80⍴80↑'¯-'edit⍕⊃xx[3]
[43]  resp←resp,,lagra xx
[44]  xx←novok46
[45]  esse[14;]←1 80⍴80↑'¯-'edit⍕⊃xx[1]
[46]  esse[15;]←1 80⍴80↑'¯-'edit⍕⊃xx[2]
[47]  esse[16;]←1 80⍴80↑⊃xx[3]
[48]  resp←resp,,⊃xx[4]
[49]  resu←resu,[1]1 4⍴resp
[50]  acuja←(f[;2]='#')/⍳1↑⍴f
[51]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[52]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[53]  ⎕←(⍕xk←xk+1),'-'
[54]  →testa
[55] fim:upag←(1 0+⍴f)⍴' '
[56]  →(1=≡n)/elafa
[57]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[58]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[59]  upag[2+⍳1↑⍴resu;⍳+/53]←'¯-'edit(lixo1←5 0 16 0 16 2 16 0)⍕resu
[60]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[61]  →terminando
[62] elafa:aaa←(ylu[;⍳36],'¯-'edit 16 0 16 2 16 0⍕0 1↓resu)
[63]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[64]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[65] terminando:
[66]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[67]  relat[1↑⍴relat;;]←upag
[68]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[69]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[70]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[71]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivok49

```
[ 0]  r←gerak49;coef;x;fx;i;⎕IO;j;resu;xint;alfa1;alfa2;alfa3;alfa4
[ 1]  ⎕IO←0
[ 2] denovo:
[ 3]  COEF←coef←(¯4+?10),(¯4+?8),(¯4+?10),(¯4+?10),(¯4+?10)
[ 4]  →(0∈coef)/denovo
[ 5]  x←¯3+6?9
[ 6]  x←x[⍋x]
[ 7]  xint←x[3]
[ 8]  x←x[0 1 2],x[4 5]
[ 9]  fx←5⍴0
[10]  i←0
[11] t1:→(i≥5)/aca
[12]  fx[i]←+/coef×x[i]*4 3 2 1 0
[13]  i←i+1
[14]  →t1
[15] aca:
[16]  resu←x newton fx
[17] ⍝ calculo do macete:
[18]  alfa1←resu[0;4]+resu[0;5]×xint-resu[3;0]
[19]  alfa2←resu[0;3]+alfa1×xint-resu[2;0]
[20]  alfa3←resu[0;2]+alfa2×xint-resu[1;0]
[21]  alfa4←resu[0;1]+alfa3×xint-resu[0;0]
[22]  r←5⍴0
[23]  r[0]←⊂resu
[24]  r[1]←⊂xint
[25]  r[2]←⊂+/coef×xint*4 3 2 1 0
[26]  r[3]←⊂coef
[27]  r[4]←⊂alfa1,alfa2,alfa3,alfa4
------------------------------------------------------------
[ 0]  r←a newton b;resu;j;i;⎕IO
[ 1]  ⎕IO←0
[ 2]  resu←((⍴a),1+⍴a)⍴0
[ 3]  resu[;0]←a  ⍝ era x
[ 4]  resu[;1]←b ⍝ era fx
[ 5]  j←2
[ 6] t2:→(j≥1+1↑⍴a)/ufa
[ 7]  i←0
[ 8] t3:→(i≥((1+1↑⍴a)-j))/oba3
[ 9]  resu[i;j]←(resu[i+1;j-1]-resu[i;j-1])÷resu[i+j+¯1;0]-resu[i;0]
[10]  i←i+1
[11]  →t3
[12] oba3:
[13]  j←j+1
[14]  →t2
[15] ufa:r←resu
------------------------------------------------------------
[ 0]  r←a newton_ext b;resu;j;i;⎕IO;alfa1;alfa2;alfa3;alfa4;xint
[ 1]  ⎕IO←0
[ 2]  'Informe o valor de xint'
[ 3]  xint←⎕
[ 4]  resu←((⍴a),1+⍴a)⍴0
[ 5]  resu[;0]←a  ⍝ era x
[ 6]  resu[;1]←b ⍝ era fx
[ 7]  j←2
[ 8] t2:→(j≥1+1↑⍴a)/ufa
[ 9]  i←0
[10] t3:→(i≥((1+1↑⍴a)-j))/oba3
[11]  resu[i;j]←(resu[i+1;j-1]-resu[i;j-1])÷resu[i+j+¯1;0]-resu[i;0]
[12]  i←i+1
[13]  →t3
[14] oba3:
```

```
[15]  j←j+1
[16]  →t2
[17] ufa:r←resu
[18]  alfa1←resu[0;4]+resu[0;5]×xint-resu[3;0]
[19]  alfa2←resu[0;3]+alfa1×xint-resu[2;0]
[20]  alfa3←resu[0;2]+alfa2×xint-resu[1;0]
[21]  alfa4←resu[0;1]+alfa3×xint-resu[0;0]
[22]  'valores de alfa1,2... ',⍕alfa1,alfa2,alfa3,alfa4
------------------------------------------------------------
[0]  vars
------------------------------------------------------------
[ 0]  opesq vivok49a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLk49  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAk49←ajusta80 FOLHALAk49
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAk49)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 5⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALAk49
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.02
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerak49
[35]  esse[8;]←80↑'¯'-'edit 3 0⍕,(⊃xx[1])[;1]
[36]  esse[9;]←80↑'¯'-'edit 7 0⍕,(⊃xx[1])[;2]
[37]  esse[10;]←80↑'¯'-'edit⍕⊃xx[2]
[38]  resp←resp,((⊃xx[1])[1 2;5]),((⊃xx[4])[2]),(⊃xx[5])[3]
[39]  resu←resu,[1]1 5⍴resp
[40]  acuja←(f[;2]='#')/⍳1↑⍴f
[41]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[42]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[43]  ⍞←(⍕xk←xk+1),'-'
[44]  →testa
[45] fim:upag←(1 0+⍴f)⍴' '
[46]  →(1=≡n)/elafa
[47]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[48]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[49]  upag[2+⍳1↑⍴resu;⍳+/37]←'¯'-'edit(lixo1←5 0 16 0 3 0 5 0 8 0)⍕resu
```

```
[50]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[51]  →terminando
[52] elafa:aaa←(ylu[;⍳32],'¯-'edit 16 0 3 0 5 0 8 0⍕0 1↓resu)
[53]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.gpa')
[54]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[55] terminando:
[56]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[57]  relat[1↑⍴relat;;]←upag
[58]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[59]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.tex'
[60]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[61]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivok52

```
[ 0]  r←gerak52;coef;x;fx;i;⎕IO;j;resu;xint;alfa1;alfa2;alfa3;alfa4
[ 1]  ⎕IO←0
[ 2] denovo:
[ 3]  COEF←coef←(¯4+?10),(¯4+?8),(¯4+?10),(¯4+?10),(¯4+?10)
[ 4]  →(0∈coef)/denovo
[ 5]  x←(1 1 1 0.5 0.5)[?5]×(?3)+⍳5
[ 6]  xint←x[1+?4]+0.1+0.1×?7
[ 7]  fx←5⍴0
[ 8]  i←0
[ 9] t1:→(i≥5)/aca
[10]  fx[i]←+/coef×x[i]*4 3 2 1 0
[11]  i←i+1
[12]  →t1
[13] aca:
[14]  resu←x newgreg fx
[15]  r←4⍴0
[16]  r[0]←⊂resu
[17]  r[1]←⊂xint
[18]  r[2]←⊂+/coef×xint*4 3 2 1 0
[19]  r[3]←⊂coef
-------------------------------------------------------------
[ 0]  r←a newgreg b;i;j;⎕IO
[ 1]  ⎕IO←1
[ 2]  r←((⍴a),1+⍴a)⍴0
[ 3]  r[;1]←a
[ 4]  r[;2]←b
[ 5]  j←3
[ 6] t1:→(j>1↓⍴r)/fim
[ 7]  i←(⍴a)+2-j
[ 8] t2:→(i<1)/ufa
[ 9]  r[i;j]←r[i+1;j-1]-r[i;j-1]
[10]  i←i-1
[11]  →t2
[12] ufa:j←j+1
[13]  →t1
[14] fim:
-------------------------------------------------------------
[0]  vars
-------------------------------------------------------------
[ 0]  opesq vivok52a n;CORRECAO;EVENTO;aa;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;ql
      inha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLk52  '
```

```
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAk52←ajusta80 FOLHALAk52
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAk52)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALAk52
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.02
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerak52
[35]  aa←,(⊃xx[1])[;1]
[36]  esse[8;]←80↑'¯-'edit(⍕aa[1]),'&',(⍕aa[2]),'&',(⍕aa[3]),'&',(⍕aa[4]),'&',(⍕aa[5]),'\\
      \hline'
[37]  aa←,(⊃xx[1])[;2]
[38]  esse[9;]←80↑'¯-'edit(⍕aa[1]),'&',(⍕aa[2]),'&',(⍕aa[3]),'&',(⍕aa[4]),'&',(⍕aa[5]),'\\
      '
[39]  esse[10;]←80↑'¯-'edit⍕⊃xx[2]
[40]  resp←resp,,(⊃xx[3]),(⊃xx[1])[1;5]
[41]  resu←resu,[1]1 3⍴resp
[42]  acuja←(f[;2]='#')/⍳1↑⍴f
[43]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[44]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[45]  ⍞←(⍕xk←xk+1),'-'
[46]  →testa
[47] fim:upag←(1 0+⍴f)⍴' '
[48]  →(1=≡n)/elafa
[49]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[50]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[51]  upag[2+⍳1↑⍴resu;⍳+/31]←'¯-'edit(lixo1←5 0 16 4 10 2)⍕resu
[52]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[53]  →terminando
[54] elafa:aaa←(ylu[;⍳26],'¯-'edit 16 4 10 2⍕0 1↓resu)
[55]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[56]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[57] terminando:
[58]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[59]  relat[1↑⍴relat;;]←upag
[60]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[61]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[62]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[63]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
```

vivok55

```
[ 0]  r←gerak55 n;x;y;del;zz
[ 1]  n←n+1
[ 2] novo:
[ 3]  x←(0.01×10+?90)+⍳n
[ 4]  x←x+0.01×(?n⍴10)
[ 5]  y←⍳n
[ 6]  del←(0.001×?1000)+⍳n
[ 7]  y←del*y
[ 8]  →((⌈/y)<1000000)/ok33
[ 9]  ⍞←'∘'
[10]  →novo
[11] ok33:
[12]  y←⍟20 1⍕y
[13]  r←3⍴0
[14]  r[1]←⊂1↓x
[15]  r[2]←⊂1↓y
[16]  r[3]←(0.01×n+?n)+(0.001×?1000)+((2×x[1])+x[⍴x])÷2
[17]  →((r[3]≥x[1])∧(r[3]≤x[⍴x]))/buba
[18]  ⍞←'⊗'
[19]  →novo
[20] buba:
[21]  zz←lagra r
[22]  →(zz>0)/viva
[23]  ⍞←'o'
[24]  →novo
[25] viva:
------------------------------------------------------------
[0]  r←gerax01
[1]  r←(?9)÷10
------------------------------------------------------------
[0]  r←gerax02;z
[1]  r←3⍴0
[2]  r[1]←⊂z←(1.2+(?10)÷10),(1.9+(?10)÷10),(-2.2+(?10)÷10),(-1.2+(?15)÷10),2.4+(?10)÷10
[3]  r[2]←⊂'¯-'edit'$f(x)$&',(⍕z[1]),'&',(⍕z[2]),'&',(⍕z[3]),'&',(⍕z[4]),'&',(⍕z[5]),'⍀⍀
      ⍀hline'
[4]  r[3]←⊂0.15+(?20)÷200
------------------------------------------------------------
[ 0]  r←gerax03;x;y;z;w
[ 1]  x←94 205 371+0.1×(¯4+?10),(¯4+?10),(¯4+?10)
[ 2]  y←929 902 860+(¯4+?10),(¯4+?10),(¯4+?10)
[ 3]  z←240+(¯10+?20)
[ 4]  r←3⍴0
[ 5]  r[1]←⊂2 3⍴x,y
[ 6]  w←2 50⍴' '
[ 7]  w[1;]←50↑(⍕x[1]),'$∧o$C&',(⍕x[2]),'$∧o$C&',(⍕x[3]),'$∧o$C⍀⍀ ⍀hline'
[ 8]  w[2;]←50↑(⍕y[1]),'$kg/m∧3$&',(⍕y[2]),'$kg/m∧3$&',(⍕y[3]),'$kg/m∧3$⍀⍀ ⍀hline'
[ 9]  r[2]←⊂w
[10]  r[3]←⊂z
------------------------------------------------------------
[ 0]  r←gerax04;z;y;w;aa
[ 1] ini:
[ 2]  z←1480 1230 980 730 490+?5⍴50
[ 3]  y←32 23 13 8 6+?5⍴5
[ 4]  r←3⍴0
[ 5]  r[1]←⊂2 5⍴z,y
[ 6]  w←2 50⍴' '
[ 7]  w[1;]←50↑(⍕z[1]),'m &',(⍕z[2]),'m &',(⍕z[3]),'m &',(⍕z[4]),'m &',(⍕z[5]),'m⍀⍀ ⍀hline
      '
[ 8]  w[2;]←50↑(⍕y[1]),'m &',(⍕y[2]),'m &',(⍕y[3]),'m &',(⍕y[4]),'m &',(⍕y[5]),'m⍀⍀ ⍀hline
      '
[ 9]  r[2]←⊂w
```

```
[10]  r[3]←⊂aa←850+10×?10
[11]  →(aaϵz)/ini
------------------------------------------------------------
[ 0]  r←gerax05;x;y;w;aa
[ 1] ini:
[ 2]  x←52 65 80 95 115+?5⍴9
[ 3]  y←14.05 13.52 13.24 12.23 11.26+0.05×?5⍴10
[ 4]  r←3⍴0
[ 5]  r[1]←⊂2 5⍴x,y
[ 6]  w←2 50⍴' '
[ 7]  w[1;]←50↑(⍕x[1]),'&',(⍕x[2]),'&',(⍕x[3]),'&',(⍕x[4]),'&',(⍕x[5]),'\\ \hline'
[ 8]  w[2;]←50↑(⍕y[1]),'&',(⍕y[2]),'&',(⍕y[3]),'&',(⍕y[4]),'&',(⍕y[5]),'\\ \hline'
[ 9]  r[2]←⊂w
[10]  aa←80+?9
[11]  →(aaϵx)/ini
[12]  r[3]←⊂aa
------------------------------------------------------------
[ 0]  r←gerax06;aa;x;y;w
[ 1] ini:
[ 2]  x←0.18 0.32 0.38 0.5 0.58 0.7+0.01×?6⍴6
[ 3]  y←0.14 0.2 0.25 0.27 0.3 0.35+0.01×?6⍴10
[ 4]  x←x[⍋x]
[ 5]  y←y[⍋y]
[ 6]  →((⍴x)≠⍴tiraduplo x)/ini
[ 7]  →((⍴y)≠⍴tiraduplo y)/ini
[ 8]  r←3⍴0
[ 9]  r[1]←⊂2 6⍴x,y
[10]  w←2 60⍴' '
[11]  w[1;]←60↑(⍕x[1]),'&',(⍕x[2]),'&',(⍕x[3]),'&',(⍕x[4]),'&',(⍕x[5]),'&',(⍕x[6]),'\\ \hl
      ine'
[12]  w[2;]←60↑(⍕y[1]),'&',(⍕y[2]),'&',(⍕y[3]),'&',(⍕y[4]),'&',(⍕y[5]),'&',(⍕y[6]),'\\ \hl
      ine'
[13]  r[2]←⊂w
[14]  aa←0.48+0.01×?6
[15]  →(aaϵx)/ini
[16]  r[3]←⊂aa
------------------------------------------------------------
[0]  r←gerax07
[1]  r←1.3+0.001×?1000
------------------------------------------------------------
[0]  r←gerax08
[1]  r←1.1+0.001×?100
------------------------------------------------------------
[ 0]  r←gerax09;x;y;z;w
[ 1]  r←2⍴0
[ 2]  x←16 18 20 21+0.1×?4⍴20
[ 3]  x←x[⍋x]
[ 4]  y←15 18 21 23+0.1×?4⍴20
[ 5]  y←y[⍋y]
[ 6]  z←16 19 20 22+0.1×?4⍴20
[ 7]  z←z[⍋z]
[ 8]  r[1]←⊂3 4⍴x,y,z
[ 9]  w←3 50⍴' '
[10]  w[1;]←50↑'1&',(⍕x[1]),'&',(⍕x[2]),'&',(⍕x[3]),'&',(⍕x[4]),'\\ \hline'
[11]  w[2;]←50↑'2&',(⍕y[1]),'&',(⍕y[2]),'&',(⍕y[3]),'&',(⍕y[4]),'\\ \hline'
[12]  w[3;]←50↑'3&',(⍕z[1]),'&',(⍕z[2]),'&',(⍕z[3]),'&',(⍕z[4]),'\\ \hline'
[13]  r[2]←⊂w
------------------------------------------------------------
[ 0]  r←gerax10;x;y;w
[ 1]  r←2⍴0
[ 2]  x←7 27 57 87 117+?5⍴7
[ 3]  y←6 25 56 98 143+?5⍴7
[ 4]  x←x[⍋x]
```

```
[ 5]  y←y[⍋y]
[ 6]  r[1]←⊂2 5⍴x,y
[ 7]  w←2 50⍴' '
[ 8]  w[1;]←50↑(⍕x[1]),'&',(⍕x[2]),'&',(⍕x[3]),'&',(⍕x[4]),'&',(⍕x[5])
[ 9]  w[2;]←50↑(⍕y[1]),'&',(⍕y[2]),'&',(⍕y[3]),'&',(⍕y[4]),'&',(⍕y[5])
[10]  r[2]←⊂w
------------------------------------------------------------
[0]  r←gerax11
[1]  r←0.34+0.001×?100
------------------------------------------------------------
[0]  r←gerax12;a
[1]  r←2⍴0
[2]  a←(111355 200777 499888 855443+?10000 50000 100000 200000),1970+?9
[3]  r[1]←⊂a
[4]  r[2]←⊂(⍕a[1]),'&',(⍕a[2]),'&',(⍕a[3]),'&',(⍕a[4]),'\\ \hline'
------------------------------------------------------------
[ 0]  r←gerax13;aa;w;x
[ 1] novo:
[ 2]  r←2⍴0
[ 3]  x←3⍴0
[ 4]  x[1]←(5 7 11 13 19)[?5]
[ 5]  x[2]←(7 8 9 11)[?4]
[ 6]  x[3]←(13 15 17 19 21 23)[?6]
[ 7]  →(aa=⌊aa←x[3]÷x[2])/novo
[ 8]  r[1]←⊂x
[ 9]  w←2 50⍴' '
[10]  w[1;]←50↑'\item $f(\frac{\pi}{',(⍕x[1]),'})$'
[11]  w[2;]←50↑'\item $f(\frac{',(⍕x[2]),'\pi}{',(⍕x[3]),'})$'
[12]  ULALA←r[2]←⊂w
------------------------------------------------------------
[0]  r←gerax14
[1]  r←0.1+0.001×?95
------------------------------------------------------------
[ 0]  r←lagra z;a;b;x;w;i;px;zica
[ 1]  a←⊃z[1]
[ 2]  b←⊃z[2]
[ 3]  x←⊃z[3]
[ 4]  w←((2+⍴a),(2+⍴a))⍴0
[ 5]  w[2+⍳⍴a;1]←a
[ 6]  w[1;]←0,a,0
[ 7]  w[2;1]←x
[ 8]  w[2;1+⍳⍴a]←w[2;1]-a
[ 9]  i←3
[10] t1:→(i>1↑⍴w)/fim
[11]  w[i;1+⍳⍴a]←w[i;1]-w[1;1+⍳⍴a]
[12]  i←i+1
[13]  →t1
[14] fim:
[15]  i←2
[16] t2:→(i>1↑⍴w)/fin7
[17]  w[i;1↓⍴w]←×/(w[i;1+⍳⍴a]≠0)/w[i;1+⍳⍴a]
[18]  i←i+1
[19]  →t2
[20] fin7:
[21]  px←0
[22]  i←1
[23] t3:→(i>⍴b)/oka
[24]  zica←b[i]×(w[2;1↓⍴w]÷w[2;1+i])÷w[2+i;1↓⍴w]
[25]  px←px+zica
[26] ⍝ zica
[27]  i←i+1
[28]  →t3
[29] oka:
```

```
[30]  r←px
[31]  W←w
-------------------------------------------------------------
[0]  r←resox01 x
[1]  r←lagra(¯1 0 1 2)(0.54 1 0.54 ¯0.416)x
-------------------------------------------------------------
[0]  r←x resox02 y
[1]  r←'¯-'edit lagra(¯2 0 1 2 3)(x)y
-------------------------------------------------------------
[0]  r←resox03 x;z
[1]  z←⊃x[1]
[2]  r←lagra(⊂z[1;]),(⊂z[2;]),⊂x[3]   ⍝ nao sera x[3] so????
-------------------------------------------------------------
[0]  r←a resox04 x
[1]  r←lagra(a[1;])(a[2;])x
-------------------------------------------------------------
[0]  r←a resox05 x
[1]  r←lagra(a[1;])(a[2;])x
-------------------------------------------------------------
[0]  r←a resox06 x
[1]  r←lagra(a[1;1+⍳4])(a[2;1+⍳4])x
-------------------------------------------------------------
[0]  r←resox07 x
[1]  r←lagra(1 1.1052 1.2214 1.3499 1.4918 1.6487)(0 0.1 0.2 0.3 0.4 0.5)x
-------------------------------------------------------------
[0]  r←resox08 x
[1]  r←lagra(0.9 1 1.1 1.2)(1∘0.9 1 1.1 1.2)x
-------------------------------------------------------------
[0]  r←resox09 x;z1;z2;z3
[1]  z1←lagra(6 8 10 12)(x[1;])9
[2]  z2←lagra(6 8 10 12)(x[2;])9
[3]  z3←lagra(6 8 10 12)(x[3;])9
[4]  r←(z1+z2+z3)÷3
-------------------------------------------------------------
[0]  r←resox10 x
[1]  r←2⍴0
[2]  r[1]←lagra(x[1;⍳4])(x[2;⍳4])45
[3]  r[2]←lagra(x[2;])(x[1;])70
-------------------------------------------------------------
[0]  r←resox11 x
[1]  r←lagra(10⍟2 2.2 2.4 2.6 2.8 3)(2 2.2 2.4 2.6 2.8 3)x
-------------------------------------------------------------
[0]  r←resox12 x
[1]  r←⌊lagra(1950 1960 1970 1980)(x[⍳4])x[5]
-------------------------------------------------------------
[0]  r←resox13 x
[1]  r←2⍴0
[2]  r[1]←lagra(○0,÷6 4 3 2)(1○○0,÷6 4 3 2)(○÷x[1])
[3]  r[2]←lagra(○0,÷6 4 3 2)(1○○0,÷6 4 3 2)(○x[2]×÷x[3])
-------------------------------------------------------------
[0]  r←resox14 x
[1]  r←lagra(0 0.2 0.4)(*0 0.2 0.4)x
-------------------------------------------------------------
[0]  r←tiraduplo V
[1]  r←((V⍳V)=⍳⍴V)/V                  ⍝ Unique.  Drop duplicates from vector.
-------------------------------------------------------------
[  0]  opesq vivok55a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;mask;nomes;ql39;
       qlinha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[  1]  →(0≠⎕NC'opesq')/qveio
[  2]  opesq←10⍴' '
[  3] qveio:
[  4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[  5]  EVENTO←'PLk55  '
```

```
[  6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
       4 5],⎕TS[6]+⎕TS[7]÷1000
[  7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[  8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[  9]  ylu←n grupo ylu
[ 10]  FOLHALAk55←ajusta80 FOLHALAk55
[ 11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAk55)⍴' '
[ 12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[ 13]  xk←1 ⋄ resu←0 17⍴0
[ 14] testa:→(xk>1↑⍴ylu)/fim
[ 15]  esse←38 80⍴' '
[ 16]  f←FOLHALAk55
[ 17]  esse[1;]←80↑dhx[1;]
[ 18]  esse[2;]←80↑dhx[2;]
[ 19]  esse[3;]←80↑4 2⍕VERSAOa←1.02
[ 20]  esse[4;]←80↑ylu[xk;⍳6]
[ 21]  →(36=1↓⍴ylu)/zebra
[ 22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[ 23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[ 24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[ 25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[ 26]  →maiszebra
[ 27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[ 28] maiszebra:
[ 29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[ 30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[ 31]  esse[37;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[ 32]  esse[38;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[ 33] inica:
[ 34]  xx←gerax01
[ 35]  esse[8;]←1 80⍴80↑⍕xx
[ 36]  resp←resp,resox01 xx  ⍝ resp com 1 1.1
[ 37]  xx←gerax02
[ 38]  esse[9;]←1 80⍴80↑⊃xx[2]
[ 39]  esse[10;]←1 80⍴80↑'$x=',(⍕xx[3]),'$'
[ 40]  resp←resp,(⊃xx[1])resox02⊃xx[3] ⍝ 1 1.1 1.1
[ 41]  xx←gerax03
[ 42]  esse[10+⍳3;]←3 80⍴(80↑'0&1&2\\ \hline'),(80↑((⊃xx[2])[1;])),80↑((⊃xx[2])[2;])
[ 43]  esse[14;]←1 80⍴80↑⍕⊃xx[3]
[ 44]  resp←resp,resox03 xx ⍝ nao sera x3[]...???   1 1.1 1.1 1.1
[ 45]  xx←gerax04
[ 46]  esse[14+⍳2;]←2 80⍴(80↑(⊃xx[2])[1;]),80↑(⊃xx[2])[2;]
[ 47]  esse[17;]←1 80⍴80↑⍕⊃xx[3]
[ 48]  resp←resp,(⊃xx[1])resox04⊃xx[3] ⍝ 1,4⍴1.1
[ 49]  xx←gerax05
[ 50]  esse[18 19 20;]←3 80⍴(80↑(⊃xx[2])[1;]),(80↑(⊃xx[2])[2;]),80↑⍕⊃xx[3]
[ 51]  resp←resp,(⊃xx[1])resox05⊃xx[3] ⍝ 1,5⍴1.1
[ 52]  xx←gerax06
[ 53]  esse[20+⍳3;]←3 80⍴(80↑(⊃xx[2])[1;]),(80↑(⊃xx[2])[2;]),80↑⍕⊃xx[3]
[ 54]  resp←resp,(⊃xx[1])resox06⊃xx[3] ⍝ 1,6⍴1.1
[ 55]  xx←gerax07
[ 56]  esse[24;]←1 80⍴80↑⍕xx
[ 57]  resp←resp,resox07 xx ⍝ 1,7⍴1.1
[ 58]  xx←gerax08
[ 59]  esse[25;]←1 80⍴80↑⍕xx
[ 60]  resp←resp,resox08 xx ⍝ 1,8⍴1.1
[ 61]  xx←gerax09
[ 62]  esse[25+⍳3;]←3 80⍴(80↑(⊃xx[2])[1;]),(80↑(⊃xx[2])[2;]),(80↑(⊃xx[2])[3;])
[ 63]  resp←resp,resox09⊃xx[1] ⍝ 1,9⍴1.1
[ 64]  xx←gerax10
[ 65]  esse[29 30;]←2 80⍴(80↑(⊃xx[2])[1;]),(80↑(⊃xx[2])[2;])
[ 66]  resp←resp,resox10⊃xx[1] ⍝ duas respostas 1,11⍴1.1
[ 67]  xx←gerax11
```

```
[ 68]  esse[31;]←1 80ρ80↑⍕xx
[ 69]  resp←resp,resox11 xx    ⍝ 1,12ρ1.1
[ 70]  xx←gerax12
[ 71]  esse[32;]←1 80ρ80↑⊃xx[2]
[ 72]  esse[33;]←1 80ρ80↑⍕(⊃xx[1])[5]
[ 73]  resp←resp,resox12⊃xx[1]  ⍝1, 13ρ1.1
[ 74]  xx←gerax13
[ 75]  esse[34 35;]←2 80ρ(80↑(⊃xx[2])[1;]),80↑(⊃xx[2])[2;]
[ 76]  resp←resp,resox13⊃xx[1] ⍝ sao 2 respostas 1,15ρ1.1
[ 77]  xx←gerax14
[ 78]  esse[36;]←1 80ρ80↑⍕xx
[ 79]  resp←resp,resox14 xx ⍝ 1 resp: 1,16ρ1.1
[ 80]  resu←resu,[1]1 17ρresp
[ 81]  acuja←(f[;2]='#')/⍳1↑ρf
[ 82]  f[acuja;⍳80]←esse[⌽,f[acuja;3 4],' ';]
[ 83]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\clearpage'
[ 84]  ⎕←(⍕xk←xk+1),'-'
[ 85]  →testa
[ 86] fim:mask←3 0 4 1 5 1 6 1 5 1 5 1 4 1 4 1 4 1 5 1 5 1 5 1 5 1 8 0 4 1 4 1 4 1
[ 87]  upag←(1 0+ρf)ρ' '
[ 88]  →(1=≡n)/elafa
[ 89]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[ 90]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[ 91]  upag[2+⍳1↑ρresu;]←'¯-'edit mask⍕resu
[ 92]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[ 93]  →terminando
[ 94] elafa:aaa←(ylu[;⍳36],'¯-'edit(2↓mask)⍕0 1↓resu)
[ 95]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[ 96]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[ 97] terminando:
[ 98]  upag[1↑ρupag;]←(1↓ρupag)↑'\end{document}'
[ 99]  relat[1↑ρrelat;;]←upag
[100]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[101]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[102]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[103]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivok58

```
[ 0]  r←gerainter n;x;y;del;zz
[ 1] ⍝ alfa[1] e quanto se deve somar ao x; alfa[2] somar ao y
[ 2]  n←n+1
[ 3] novo:
[ 4]  x←(0.1×10+?90)+⍳n
[ 5]  x←x+0.01×(?nρ10)
[ 6]  y←⍳n
[ 7]  del←(0.001×?1000)+⍳n
[ 8]  y←del*y
[ 9]  →((⌈/y)<1000000)/ok33
[10]  ⎕←'∘'
[11]  →novo
[12] ok33:
[13]  y←⌽20 1⍕y
[14]  r←3ρ0
[15]  r[1]←⊂1↓x
[16]  r[2]←⊂1↓y
[17]  r[3]←(0.01×n+?n)+(0.001×?1000)+((2×x[1])+x[ρx])÷2
[18]  →((r[3]≥x[1])∧(r[3]≤x[ρx]))/buba
[19]  ⎕←'⊗'
[20]  →novo
[21] buba:
```

```
[22]  zz←lagra r
[23]  →(zz>0)/viva
[24]  □←'o'
[25]  →novo
[26] viva:
------------------------------------------------------------
[ 0]  r←gerak58_01;a;b;c1;c2;i;p;parab;resposta;reta;sc1;sc2;tx;x;y
[ 1] novo:x←(50+10×⍳6)+?4 4 6 6 8 8
[ 2]  y←(75+9×⍳6)+?3 3 4 4 5 5
[ 3]  p←79+?30
[ 4]  →(p∈x)/novo
[ 5]  i←2
[ 6] t1:→((x[i-1]<p)∧(x[i]>p))/achei
[ 7]  i←i+1
[ 8]  →t1
[ 9] achei:
[10]  →((i≤2)∨(i≥5))/novo
[11]  a←2 2⍴1,x[i-1],1,x[i]
[12]  b←y[i-1],y[i]
[13]  reta←b⌹a
[14]  resposta←(reta[2]×p)+reta[1]
[15] ⍝---- parabola ----
[16]  c1←x[i-2],x[i-1],x[i]
[17]  c2←x[i-1],x[i],x[i+1]
[18]  sc1←+/|c1-p
[19]  sc2←+/|c2-p
[20]  →(sc1>sc2)/pega1
[21] pega2:
[22]  a←3 3⍴1,x[i-1],(x[i-1]*2),1,x[i],(x[i]*2),1,x[i+1],x[i+1]*2
[23]  b←y[i-1],y[i],y[i+1]
[24]  →junta
[25] pega1:
[26]  a←3 3⍴1,x[i-2],(x[i-2]*2),1,x[i-1],(x[i-1]*2),1,x[i],x[i]*2
[27]  b←y[i-2],y[i-1],y[i]
[28] junta:
[29]  parab←b⌹a
[30]  resposta←resposta,(parab[3]×p*2)+(parab[2]×p)+parab[1]
[31]  r←2⍴0
[32]  tx←3 75⍴' '
[33]  tx[1;]←75↑(¯1↓'000 &'⍕x),'\\ \hline'
[34]  tx[2;]←75↑(¯1↓'000 &'⍕y),'\\ \hline'
[35]  tx[3;]←75↑⍕p
[36]  r[1]←⊂tx
[37]  r[2]←⊂resposta
------------------------------------------------------------
[ 0]  r←gerak58_03;a;b;c;rr;tx;z
[ 1] novo:a←1500 1300 1100 900-?100×⍳4
[ 2]  b←100 80 70 60-?10×⍳4
[ 3]  c←800+?400
[ 4]  →(c∈a)/novo
[ 5]  z←3⍴0
[ 6]  z[1]←⊂a
[ 7]  z[2]←⊂b
[ 8]  z[3]←⊂c
[ 9]  rr←lagra z
[10]  r←2⍴0
[11]  tx←5 60⍴' '
[12]  tx[1;]←60↑(⍕a[1]),'&',(⍕b[1]),'\\ \hline'
[13]  tx[2;]←60↑(⍕a[2]),'&',(⍕b[2]),'\\ \hline'
[14]  tx[3;]←60↑(⍕a[3]),'&',(⍕b[3]),'\\ \hline'
[15]  tx[4;]←60↑(⍕a[4]),'&',(⍕b[4]),'\\ \hline'
[16]  tx[5;]←60↑⍕c
[17]  r[1]←⊂tx
```

```
[18]  r[2]←⊂rr
-------------------------------------------------------------
[ 0]  r←gerak58_04;a;b;c;rr;tx;z
[ 1] novo:a←2000 3000 4000 5000+90×?10 10 10 10
[ 2]  a←a[⍋a]
[ 3]  b←10 15 17 20+?4 4 4 4
[ 4]  b←b[⍋b]
[ 5]  c←2000+?2000
[ 6]  →(c∈a)/novo
[ 7]  z←3⍴0
[ 8]  z[1]←⊂a
[ 9]  z[2]←⊂b
[10]  z[3]←⊂c
[11]  rr←lagra z
[12]  r←2⍴0
[13]  tx←3 60⍴' '
[14]  tx[1;]←60↑(¯1↓'0000 &'⍕a),'⍀⍀ ⍀hline'
[15]  tx[2;]←60↑(¯1↓'00 &'⍕b),'⍀⍀ ⍀hline'
[16]  tx[3;]←60↑⍕c
[17]  r[1]←⊂tx
[18]  r[2]←⊂rr
-------------------------------------------------------------
[ 0]  r←gerak58_05;a;b;c;z;rr;tx;resp1;resp2;resp3;erro
[ 1] novo:a←2000 3000 4000 5000 5600+90×?10 10 10 10 10
[ 2]  a←a[⍋a]
[ 3]  b←10 15 17 20 22+?4 4 4 4 3
[ 4]  b←b[⍋b]
[ 5] ⍝caso1:
[ 6]  z←3⍴0
[ 7]  z[1]←⊂1 0 1 1 1/a
[ 8]  z[2]←⊂1 0 1 1 1/b
[ 9]  z[3]←a[2]
[10]  rr←lagra z
[11]  resp1←|rr-b[2]
[12] ⍝caso2:
[13]  z←3⍴0
[14]  z[1]←⊂1 1 0 1 1/a
[15]  z[2]←⊂1 1 0 1 1/b
[16]  z[3]←a[3]
[17]  rr←lagra z
[18]  resp2←|rr-b[3]
[19] ⍝caso3:
[20]  z←3⍴0
[21]  z[1]←⊂1 1 1 0 1/a
[22]  z[2]←⊂1 1 1 0 1/b
[23]  z[3]←a[4]
[24]  rr←lagra z
[25]  resp3←|rr-b[4]
[26]  erro←⌈/resp1,resp2,resp3
[27]  r←2⍴0
[28]  tx←2 60⍴' '
[29]  tx[1;]←60↑(¯1↓'0000 &'⍕a),'⍀⍀ ⍀hline'
[30]  tx[2;]←60↑(¯1↓'00 &'⍕b),'⍀⍀ ⍀hline'
[31]  r[1]←⊂tx
[32]  r[2]←⊂erro
-------------------------------------------------------------
[ 0]  r←gerak58_06;a;b;c;rr;tx;z;rr1;rr2
[ 1] novo:a←2000 3000 4000 5000+90×?10 10 10 10
[ 2]  a←a[⍋a]
[ 3]  b←100+10 15 17 20+?40 40 40 40
[ 4]  b←b[⍋b]
[ 5]  c←2000+?2000
[ 6]  →(c∈a)/novo
```

```
[ 7]  z←3ρ0
[ 8]  z[1]←⊂a
[ 9]  z[2]←⊂b
[10]  z[3]←⊂c
[11]  rr1←lagra z
[12]  rr2←minquad z
[13]  r←2ρ0
[14]  tx←3 60ρ' '
[15]  tx[1;]←60↑(¯1↓'0000 &'⍕a),'⍀⍀ ⍀hline'
[16]  tx[2;]←60↑(¯1↓'000 &'⍕b),'⍀⍀ ⍀hline'
[17]  tx[3;]←60↑⍕c
[18]  r[1]←⊂tx
[19]  r[2]←⊂rr1-rr2
------------------------------------------------------------
[ 0]  r←gerak58_07;a;b;c;z;rr1;rr2;tx
[ 1] novo:a←2.34234243×(100+⍳40)+?20×⍳40
[ 2]  a←a+(20ρ0),20ρ1000
[ 3]  a←a[⍋a]
[ 4]  b←1000+2.34234243×(100+⍳40)+?20×⍳40
[ 5]  b←b[⍋b]
[ 6]  c←a[1]+?⌊a[ρa]-a[1]
[ 7]  →(c∈a)/novo
[ 8]  a←⍪10 1⍕a
[ 9]  b←⍪10 2⍕b
[10]  a←5 8ρa
[11]  b←5 8ρb
[12]  tx←11 80ρ' '
[13]  tx[⍳5;]←5 80↑8 1⍕a
[14]  tx[5+⍳5;]←5 80↑8 1⍕b
[15]  tx[11;]←80↑10 1⍕c
[16]  r←tx
------------------------------------------------------------
[ 0]  r←intpolnt aa;a;i;j;n;passo;pivo;q;x;y;zaga
[ 1]  q←⊃aa[3]
[ 2]  n←1↑ρ⊃aa[1]
[ 3]  a←(n,n)ρ0
[ 4]  i←1
[ 5]  zaga←⊃aa[1]
[ 6] t1:→(i>n)/fin
[ 7]  a[i;]←zaga[i]*(⍳n)-1
[ 8]  i←i+1
[ 9]  →t1
[10] fin:
[11]  y←⊃aa[2]
[12]  passo←1
[13] t2:→(passo>n-1)/u1
[14]  i←passo+1
[15] t3:→(i>n)/u2
[16]  pivo←a[i;passo]÷a[passo;passo]
[17]  j←1
[18] t4:→(j>n)/u3
[19]  a[i;j]←a[i;j]-pivo×a[passo;j]
[20]  j←j+1
[21]  →t4
[22] u3:y[i]←y[i]-pivo×y[passo]
[23]  i←i+1
[24]  →t3
[25] u2:
[26]  passo←passo+1
[27]  →t2
[28] u1:
[29]  x←nρ0
[30]  x[n]←y[n]÷a[n;n]
```

```
[31]  i←n-1
[32] t5:→(i<1)/u5
[33]  x[i]←y[i]
[34]  j←i+1
[35] t6:→(j>n)/u6
[36]  x[i]←x[i]-a[i;j]×x[j]
[37]  j←j+1
[38]  →t6
[39] u6:x[i]←x[i]÷a[i;i]
[40]  i←i-1
[41]  →t5
[42] u5:
[43]  i←1
[44]  r←0
[45] t7:→(i>n)/u8
[46]  r←r+x[i]×q*i-1
[47]  i←i+1
[48]  →t7
[49] u8:
[50]  →0
[51] erro:'deu xabu'
-------------------------------------------------------------
[ 0]  r←lagra z;a;b;x;w;i;px;zica
[ 1]  a←⊃z[1]
[ 2]  b←⊃z[2]
[ 3]  x←⊃z[3]
[ 4]  w←((2+⍴a),(2+⍴a))⍴0
[ 5]  w[2+⍳⍴a;1]←a
[ 6]  w[1;]←0,a,0
[ 7]  w[2;1]←x
[ 8]  w[2;1+⍳⍴a]←w[2;1]-a
[ 9]  i←3
[10] t1:→(i>1↑⍴w)/fim
[11]  w[i;1+⍳⍴a]←w[i;1]-w[1;1+⍳⍴a]
[12]  i←i+1
[13]  →t1
[14] fim:
[15]  i←2
[16] t2:→(i>1↑⍴w)/fin7
[17]  w[i;1↓⍴w]←×/(w[i;1+⍳⍴a]≠0)/w[i;1+⍳⍴a]
[18]  i←i+1
[19]  →t2
[20] fin7:
[21]  px←0
[22]  i←1
[23] t3:→(i>⍴b)/oka
[24]  zica←b[i]×(w[2;1↓⍴w]÷w[2;1+i])÷w[2+i;1↓⍴w]
[25]  px←px+zica
[26] ⍝ zica
[27]  i←i+1
[28]  →t3
[29] oka:
[30]  r←px
[31]  W←w
-------------------------------------------------------------
[ 0]  r←minquad x;a;b;j;k;l;m;n
[ 1] ⍝ x[1]←⊂a; x[2]←⊂b e x[3]←⊂ponto a pesquisar
[ 2]  j←+/⊃x[1]
[ 3]  k←+/⊃x[2]
[ 4]  l←+/(⊃x[1])*2
[ 5]  m←+/(⊃x[1])×⊃x[2]
[ 6]  n←⍴⊃x[1]
[ 7]  b←((k×j)-(n×m))÷(j*2)-l×n
```

```
[ 8]  a←(k-j×b)÷n
[ 9]  r←a+b×⊃x[3]
------------------------------------------------------------
[ 0]  opesq vivok58a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLk58   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAk58←ajusta80 FOLHALAk58
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAk58)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 7⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←36 80⍴' '
[16]  f←FOLHALAk58
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.06
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[35;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[36;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerak58_01
[35]  esse[7+⍳3;]←3 80↑⊃xx[1]
[36]  resp←resp,,⊃xx[2]
[37]  xx←gerak58_03
[38]  esse[10+⍳5;]←5 80↑⊃xx[1]
[39]  resp←resp,,⊃xx[2]
[40]  xx←gerak58_04
[41]  esse[15+⍳3;]←3 80↑⊃xx[1]
[42]  resp←resp,,⊃xx[2]
[43]  xx←gerak58_05
[44]  esse[18+⍳2;]←2 80↑⊃xx[1]
[45]  resp←resp,,⊃xx[2]
[46]  xx←gerak58_06
[47]  esse[20+⍳3;]←3 80↑⊃xx[1]
[48]  resp←resp,,⊃xx[2]
[49]  xx←gerak58_07
[50]  esse[23+⍳11;]←xx
[51]  resu←resu,[1]1 7⍴resp
[52]  acuja←(f[;2]='#')/⍳1↑⍴f
[53]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[54]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[55]  ⍞←(⍎xk←xk+1),'-'
[56]  →testa
[57] fim:upag←(1 0+⍴f)⍴' '
```

```
[58]  →(1=≡n)/elafa
[59]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[60]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[61]  upag[2+⍳1↑⍴resu;⍳¯12++/lixo1]←'¯'-'edit(lixo1←5 0 10 2 10 2 10 2 10 2 10 2 10 2)⍋resu
[62]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[63]  →terminando
[64] elafa:aaa←(ylu[;⍳36],'¯'-'edit 10 2 10 2 10 2 10 2 10 2 10 2⍋0 1↓resu)
[65]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[66]  '!!!!!  Arquivo GPA com ',(⍋1↑⍴aaa),' linhas e ',(⍋1↓⍴aaa),' colunas'
[67] terminando:
[68]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[69]  relat[1↑⍴relat;;]←upag
[70]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[71]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[72]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[73]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivok61

```
[0]  r←coefajus aaa;x;y;n;d
[1]  x←aaa[1;]
[2]  y←aaa[2;]
[3]  n←((+/x×y)-+/x×y÷⍴x)*2
[4]  d←((+/x*2)-(+/(x*2)÷⍴x))×(+/y*2)-+/(y*2)÷⍴y
[5]  r←(n÷d)*0.5
-------------------------------------------------------------
[ 0]  r←geracaso;a;b;x;y;na;nb;j;k;l;m;n;y81;y82
[ 1]  a←3+?10
[ 2]  b←7-?9
[ 3]  x←((?5)×10)+10?30
[ 4]  x←x[⍋x]
[ 5]  y←a+b×x
[ 6]  y[⍳8]←y[⍳8]+5-?8⍴10
[ 7]  r←2 10⍴0
[ 8]  r[1;]←x
[ 9]  r[2;]←y
-------------------------------------------------------------
[0]  r←geraemisinfl
[1]  r←2 11⍴0
[2]  r[1;]←200+(?70×⍳11)
[3]  r[2;⍳10]←5+0.1×?14 24 25 35 36 46 57 57 58 68
-------------------------------------------------------------
[0]  r←x rcoefdet y;sxy;sx;sy;sx2;sy2
[1]  sxy←+/x×y
[2]  sx←+/x
[3]  sy←+/y
[4]  sx2←+/x*2
[5]  sy2←+/y*2
[6]  (sxy-sx×sy÷⍴x)*2
[7]  (sx2-(sx*2)÷⍴x)×(sy2-(sy*2)÷⍴x)
[8]  r←((sxy-sx×sy÷⍴x)*2)÷(sx2-(sx*2)÷⍴x)×(sy2-(sy*2)÷⍴x)
-------------------------------------------------------------
[ 0]  r←resolvecaso aaa;a;b;x;y;na;nb;j;k;l;m;n;y81;y82
[ 1]  x←aaa[1;]
[ 2]  y←aaa[2;]
[ 3]  j←+/x[⍳8]
[ 4]  k←+/y[⍳8]
[ 5]  l←+/x[⍳8]*2
[ 6]  m←+/x[⍳8]×y[⍳8]
[ 7]  n←8
[ 8]  nb←((k×j)-(n×m))÷(j*2)-l×n
```

```
[ 9]  na←(k-j×nb)÷n
[10]  y81←na+x[9]×nb
[11]  y82←na+x[10]×nb
[12]  r←5 8ρ0
[13]  r[1;]←x[⍳8]
[14]  r[2;]←y[⍳8]
[15]  r[3;1 2]←na,nb
[16]  r[4;1 2]←x[9 10]
[17]  r[5;1 2]←y81,y82
-------------------------------------------------------------
[ 0]  r←resolveeminf aaa;x;y;j;k;l;m;n;nb;na
[ 1]  x←aaa[1;⍳10]
[ 2]  y←aaa[2;⍳10]
[ 3]  j←+/x
[ 4]  k←+/y
[ 5]  l←+/x*2
[ 6]  m←+/x×y
[ 7]  n←10
[ 8]  nb←((k×j)-(n×m))÷(j*2)-l×n
[ 9]  na←(k-j×nb)÷n
[10]  r←na+aaa[1;11]×nb
-------------------------------------------------------------
[ 0]  opesq vivok61f n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;yy;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLk61f  '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAk61f←ajusta80 FOLHALAk61f
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALAk61f)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 4ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←15 80ρ' '
[16]  f←FOLHALAk61f
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.06
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑ρf),4)ρ'⍀#05')/⍳1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[14;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[15;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←resolvecaso geracaso
[35]  esse[8;]←80↑'¯-'edit 4 0⍎xx[1;]
[36]  esse[9;]←80↑'¯-'edit 4 0⍎xx[2;]
[37]  esse[10;]←80↑'¯-'edit 4 0⍎xx[4;1 2]
[38]  yy←geraemisinfl
```

```
[39]  esse[11 12;]←2 80ρ(80↑rtrim 5 0⍕yy[1;⍳10]),80↑rtrim 5 1⍕yy[2;⍳10]
[40]  esse[13;]←80↑6 0⍕yy[1;11]
[41]  resu←resu,[1]1 4ρresp,xx[5;1 2],resolveeminf yy
[42]  acuja←(f[;2]='#')/⍳1↑ρf
[43]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[44]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\clearpage'
[45]  ⍞←(⍕xk←xk+1),'-'
[46]  →testa
[47] fim:upag←(1 0+ρf)ρ' '
[48]  →(1=≡n)/elafa
[49]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[50]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[51]  upag[2+⍳1↑ρresu;⍳¯6++/lixo1]←'¯-'edit(lixo1←5 0 14 2 8 2 10 2)⍕resu
[52]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[53]  →terminando
[54] elafa:aaa←(ylu[;⍳36],'¯-'edit 12 4⍕0 1↓resu)
[55]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[56]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[57] terminando:
[58]  upag[1↑ρupag;]←(1↓ρupag)↑'\end{document}'
[59]  relat[1↑ρrelat;;]←upag
[60]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[61]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[62]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[63]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivok61p n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;yy;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLk61p  '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAk61p←ajusta80 FOLHALAk61p
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALAk61p)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 4ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←15 80ρ' '
[16]  f←FOLHALAk61p
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.06
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑ρf),4)ρ'\#05')/⍳1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[14;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[15;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←resolvecaso geracaso
```

```
[35]  esse[8;]←80↑'¯-'edit 4 0⍕xx[1;]
[36]  esse[9;]←80↑'¯-'edit 4 0⍕xx[2;]
[37]  esse[10;]←80↑'¯-'edit 4 0⍕xx[4;1 2]
[38]  yy←geraemisinfl
[39]  esse[11 12;]←2 80⍴(80↑rtrim 5 0⍕yy[1;⍳10]),80↑rtrim 5 1⍕yy[2;⍳10]
[40]  esse[13;]←80↑6 0⍕yy[1;11]
[41]  resu←resu,[1]1 4⍴resp,xx[5;1 2],resolveeminf yy
[42]  acuja←(f[;2]='#')/⍳1↑⍴f
[43]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[44]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[45]  ⍞←(⍕xk←xk+1),'-'
[46]  →testa
[47] fim:upag←(1 0+⍴f)⍴' '
[48]  →(1=≡n)/elafa
[49]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[50]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[51]  upag[2+⍳1↑⍴resu;⍳¯6++/lixo1]←'¯-'edit(lixo1←5 0 14 2 8 2 10 2)⍕resu
[52]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[53]  →terminando
[54] elafa:aaa←(ylu[;⍳36],'¯-'edit 12 4⍕0 1↓resu)
[55]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[56]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[57] terminando:
[58]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[59]  relat[1↑⍴relat;;]←upag
[60]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[61]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[62]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[63]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivok64

```
[0]  AVISO
[1]  'As duas funcoes neste WS foram definidas em [Fra07] pag 364 - exercicio 9.25'
[2]  'e estao resolvidas no pendrive do Freemat com os nomes de inttrap4 e intsimpg2'
-------------------------------------------------------------
[0]  r←geracaso741;a
[1]  a←?4
[2]  r←a,(a+?2),2+2×?3
-------------------------------------------------------------
[0]  r←geracasok64;a
[1]  a←?4
[2]  r←a,(a+?2),2+2×?3
-------------------------------------------------------------
[ 0]  r←resk64s x;h;a;b;area;i
[ 1]  a←x[1]
[ 2]  b←x[2]
[ 3] ⍝ resolve a integraçto por Trapezio simples (reta)
[ 4]  h←(b-a)÷x[3]
[ 5]  area←a××a÷2
[ 6]  i←1
[ 7] t1:→(i≥x[3])/fim
[ 8]  a←a+h
[ 9]  →(0=2|i)/d2
[10] d4:
[11]  area←area+4×a××a÷2
[12]  →j2
[13] d2:
[14]  area←area+2×a××a÷2
[15] j2:
[16]  i←i+1
```

```
[17]  →t1
[18] fim:
[19]  a←a+h
[20]  area←area+a××a÷2
[21]  area←area×h÷3
[22]  r←area
-------------------------------------------------------------
[ 0]  r←resk64t x;h;a;b;area;i
[ 1]  a←x[1]
[ 2]  b←x[2]
[ 3] ⍝ resolve a integraçto por Trapezio simples (reta)
[ 4]  h←(b-a)÷x[3]
[ 5]  area←a××a÷2
[ 6]  i←1
[ 7] t1:→(i≥x[3])/fim
[ 8]  a←a+h
[ 9]  area←area+2×a××a÷2
[10]  i←i+1
[11]  →t1
[12] fim:
[13]  a←a+h
[14]  area←area+a××a÷2
[15]  area←area×h÷2
[16]  r←area
-------------------------------------------------------------
[ 0]  opesq vivok64a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLk64  '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAk64←ajusta80 FOLHALAk64
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAk64)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALAk64
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.08
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracasok64
[35]  esse[7+⍳3;]←3 80⍴(80↑⍎xx[1]),(80↑⍎xx[2]),80↑⍎xx[3]
```

```
[36]  resp←resp,(,resk64t xx),resk64s xx
[37]  resu←resu,[1]1 3⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  □←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳¯8++/lixo1]←(lixo1←5 0 12 4 10 4)⍕resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],12 4⍕0 1↓resu)
[51]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←□EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivok67

```
[0]  r←geracasok67_1;a;b
[1]  a←?9
[2]  b←a+?9
[3]  r←2⍴0
[4]  r[1]←⊂a,b
[5]  r[2]←⊂'pol5 x←'trap746 a,b,1000
------------------------------------------------------------
[0]  r←geracasok67_2;v;del;z;re1;re2
[1]  v←1.8 2 4 4 6 4 3.6 3.4 2.8
[2]  del←0.1×¯5+?9⍴10
[3]  z←v+del
[4]  re1←'A=',(⍕z[1]),', B=',(⍕z[2]),', C=',(⍕z[3]),', D=',(⍕z[4]),','
[5]  re2←'E=',(⍕z[5]),', F=',(⍕z[6]),', G=',(⍕z[7]),', H=',(⍕z[8]),', I=',(⍕z[9])
[6]  r←2⍴0
[7]  r[1]←⊂2 80⍴(80↑re1),80↑re2
[8]  r[2]←⊂z[1]+z[9]++/z[2 3 4 5 6 7 8]×2
------------------------------------------------------------
[ 0]  r←geracasok67_34;x;y;z;w
[ 1]  x←22 25 30 35 40 44 47 52 60
[ 2]  y←¯1+?9⍴3
[ 3]  z←x+y
[ 4]  r←3⍴0
[ 5]  w←(⍕z[1]),'&',(⍕z[2]),'&',(⍕z[3]),'&',(⍕z[4]),'&',(⍕z[5])
[ 6]  w←w,'&',(⍕z[6]),'&',(⍕z[7]),'&',(⍕z[8]),'&',⍕z[9]
[ 7]  r[1]←⊂w
[ 8]  r[2]←⊂+/(5÷120)×z×1 2 2 2 2 2 2 1
[ 9]  r[3]←⊂+/(5÷180)×z×1 4 2 4 2 4 2 4 1
------------------------------------------------------------
[ 0]  r←geracasok67_5;x;y;z;vaz;re
[ 1]  x←2 2 0 2 5 8 20 12 5 10 15 7 9 20 22 10 11 8 5 5 3
[ 2]  y←¯2+?21⍴5
[ 3]  z←x+y
[ 4]  z[(z<0)/⍳21]←0
[ 5]  vaz←12⍴0
```

```
[ 6]  vaz[1]←60×+/z[1 21]
[ 7]  vaz[2]←z[2]×120
[ 8]  vaz[3]←60×+/z[3 4]
[ 9]  vaz[4]←60×+/z[5 6]
[10]  vaz[5]←60×+/z[7 8]
[11]  vaz[6]←60×+/z[9 10]
[12]  vaz[7]←z[11]×120
[13]  vaz[8]←z[12]×120
[14]  vaz[9]←60×+/z[13 14]
[15]  vaz[10]←60×+/z[15 16]
[16]  vaz[11]←60×+/z[17 18]
[17]  vaz[12]←60×+/z[19 20]
[18]  re←24×+/vaz×1,(10⍴2),1
[19]  r←2⍴0
[20]  r[1]←⊂10 0⍕21 1⍴z
[21]  r[2]←⊂re
-------------------------------------------------------------
[0]  r←geracasok67_6;z;re
[1]  z←(10+?40)÷10
[2]  re←(3÷z*3)×'pol8 x←'trap746 0,z,1000
[3]  r←2⍴0
[4]  r[1]←⊂10 1⍕z
[5]  r[2]←⊂re
-------------------------------------------------------------
[0]  r←geracasok67_7;z;p
[1]  p←60+?20
[2]  z←1+?15
[3]  r←3⍴0
[4]  r[1]←⊂⍕p
[5]  r[2]←⊂⍕z
[6]  r[3]←⊂6000+((⍕p),' pol9 x←')trap746 0,z,1000
-------------------------------------------------------------
[0]  r←pol x
[1]  r←1÷(x*2)+4
-------------------------------------------------------------
[0]  r←pol2 x
[1]  r←2○5×x
-------------------------------------------------------------
[0]  r←pol3 x
[1]  r←(x*3)+(x*2)+x+1
-------------------------------------------------------------
[0]  r←pol4 x
[1]  r←(x*2)-1
-------------------------------------------------------------
[0]  r←pol5 x
[1]  r←x××(x÷2)
-------------------------------------------------------------
[0]  r←pol6 x
[1] ⍝r←1÷(x*2)+4
[2]  r←3×1○x
-------------------------------------------------------------
[0]  r←pol7 x
[1]  r←(x*2)×(*1)*3×x
-------------------------------------------------------------
[0]  r←pol8 x
[1]  r←(x*3)÷((*1)*x)-1
-------------------------------------------------------------
[0]  r←a pol9 x
[1]  r←((9.8×a)÷12.5)×1-(*1)*(12.5×x)÷a
-------------------------------------------------------------
[0]  r←sqrt x
[1]  r←x*0.5
-------------------------------------------------------------
```

```
[ 0]  r←f trap746 limstam;a;area;b;h;i;n
[ 1] ⍝ integra pela regra dos trapezios. f=funcao a integrar e limstam[1]=a, [2]=b [3]=ntr
      ap
[ 2]  a←limstam[1]
[ 3]  b←limstam[2]
[ 4]  n←limstam[3]
[ 5]  h←(b-a)÷n
[ 6]  area←⍎f,' ',⍕a
[ 7]  i←1
[ 8] t1:→(i≥n)/fim
[ 9]  a←a+h
[10]  area←area+2×⍎f,' ',⍕a
[11]  i←i+1
[12]  →t1
[13] fim:
[14]  a←a+h
[15]  area←area+⍎f,' ',⍕a
[16]  area←area×h÷2
[17]  r←area
------------------------------------------------------------
[ 0]  r←f trapk67 limstam;a;area;b;h;i;n
[ 1] ⍝ integra pela regra dos trapezios. f=funcao a integrar e limstam[1]=a, [2]=b [3]=ntr
      ap
[ 2]  a←limstam[1]
[ 3]  b←limstam[2]
[ 4]  n←limstam[3]
[ 5]  h←(b-a)÷n
[ 6]  area←⍎f,' ',⍕a
[ 7]  i←1
[ 8] t1:→(i≥n)/fim
[ 9]  a←a+h
[10]  area←area+2×⍎f,' ',⍕a
[11]  i←i+1
[12]  →t1
[13] fim:
[14]  a←a+h
[15]  area←area+⍎f,' ',⍕a
[16]  area←area×h÷2
[17]  r←area
------------------------------------------------------------
[ 0]  opesq vivok67a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLk67   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⍙FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAk67←ajusta80 FOLHALAk67
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAk67)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⍙FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 8⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←38 80⍴' '
[16]  f←FOLHALAk67
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
```

```
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[37;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[38;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracasok67_1
[35]  esse[8;⍳2]←2 0⍕(⊃xx[1])[1]
[36]  esse[9;⍳2]←2 0⍕(⊃xx[1])[2]
[37]  resp←resp,⊃xx[2]
[38]  xx←geracasok67_2
[39]  esse[10 11;]←2 80↑⊃xx[1]
[40]  resp←resp,⊃xx[2]
[41]  xx←geracasok67_34
[42]  esse[12;]←80↑⊃xx[1]
[43]  resp←resp,⊃xx[2 3]
[44]  xx←geracasok67_5
[45]  esse[12+⍳21;]←21 80↑⊃xx[1]
[46]  resp←resp,⊃xx[2]
[47]  xx←geracasok67_6
[48]  esse[34;]←80↑⊃xx[1]
[49]  resp←resp,⊃xx[2]
[50]  xx←geracasok67_7
[51]  esse[35;]←80↑⊃xx[1]
[52]  esse[36;]←80↑⊃xx[2]
[53]  resp←resp,⊃xx[3]
[54]  resu←resu,[1]1 8⍴resp
[55]  acuja←(f[;2]='#')/⍳1↑⍴f
[56]  f[acuja;⍳80]←esse[⍪,f[acuja;3 4],' ';]
[57]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[58]  ⎕←(⍕xk←xk+1),'-'
[59]  →testa
[60] fim:upag←(1 0+⍴f)⍴' '
[61]  →(1=≡n)/elafa
[62]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[63]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[64]  upag[2+⍳1↑⍴presu;⍳68]←5 0 9 2 9 2 9 3 9 3 9 0 9 3 9 3⍕resu
[65]  upag[3+1↑⍴presu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[66]  →terminando
[67] elafa:aaa←(ylu[;⍳36],9 2 9 2 9 3 9 3 9 0 9 3 9 3⍕0 1↓resu)
[68]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[69]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[70] terminando:
[71]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[72]  relat[1↑⍴relat;;]←upag
[73]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[74]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[75]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[76]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivok80

```
[ 0]  r←a biss b;x;x1;x2;xr;i
[ 1] ⍝ a=expressao literal, b=intervalo. Calcula 4 ciclos e retorna matriz
```

```
[ 2]  r←10 2ρb,18ρ0
[ 3]  i←1
[ 4] t1:x←r[i;1]
[ 5]  x1←⍎a
[ 6]  x←r[i;2]
[ 7]  x2←⍎a
[ 8]  x←(r[i;1]+r[i;2])÷2
[ 9]  xr←⍎a
[10]  i←i+1
[11]  →(i>10)/fim
[12]  →(0≤x1×xr)/x1exr
[13]  r[i;2]←x
[14]  r[i;1]←r[i-1;1]
[15]  →t1
[16] x1exr:
[17]  r[i;1]←x
[18]  r[i;2]←r[i-1;2]
[19]  →t1
[20] fim:r←1 0↓r
[21]  r←5 2↑(ρr)ρ⍎20 3⍕,r
------------------------------------------------------------
[0]  r←a g b;inc
[1]  inc←(b-a)÷20
[2]  r←⍎20 3⍕a+(¯1+?21)×inc
------------------------------------------------------------
[ 0]  r←gerak80_1;a;b;c;res
[ 1]  a←(200+?500)÷100
[ 2]  b←a+(100+?400)÷100
[ 3]  c←6+?8
[ 4] ⍝ 'a,b,c=',⍕a,b,c
[ 5]  res←res_1 a,b,c
[ 6]  r←3ρ0
[ 7]  r[1]←⊂(⍕a),'^{','(1+\frac{x}{',(⍕b),'})}-',(⍕c)
[ 8]  r[2]←⊂'[',(0 1⍕res-0.1),',',(0 1⍕res+0.1),']'
[ 9]  r[3]←⊂res
------------------------------------------------------------
[ 0]  r←gerak80_2;a;i;x;b;inds;tab;j;lin
[ 1]  a←6 6ρ?36ρ50
[ 2]  i←1
[ 3] t1:→(i>6)/fim
[ 4]  a[i;i]←((+/[2]a)[i])+?10
[ 5]  i←i+1
[ 6]  →t1
[ 7] fim:inds←6?6
[ 8]  x←0.1×10+6?89
[ 9]  b←+/[2]a×6 6ρx
[10] ⍝ a←a[inds;]
[11] ⍝ b←b[inds]
[12]  r←3ρ0
[13]  i←1
[14]  tab←6 70ρ' '
[15] x1:→(i>6)/fc
[16]  j←1
[17]  lin←''
[18] x2:→(j>6)/ft
[19]  lin←lin,(⍕a[i;j]),'x_',(⍕j),'&+&'
[20]  j←j+1
[21]  →x2
[22] ft:
[23]  lin←(¯3↓lin),'&&'
[24]  tab[i;]←70↑(¯1↓lin),'&=&',(⍕b[i]),'\\'
[25]  i←i+1
[26]  →x1
```

```
[27] fc:r[1]←⊂tab
[28]  r[2]←⊂x
[29]  r[3]←⊂a
------------------------------------------------------------
[ 0]  r←gerak80_3;f;fx;p;i;tab
[ 1]  f←(?10),(100+?20),(300+?50),(500+?100),700+?200
[ 2]  i←1
[ 3]  p←400+?80
[ 4]  fx←5ρ0
[ 5] t1:→(i>5)/fim
[ 6]  fx[i]←f[i]×(50+?10)+?10
[ 7]  i←i+1
[ 8]  →t1
[ 9] fim:r←2ρ0
[10]  tab←5 70ρ' '
[11]  i←1
[12] t2:→(i>5)/fz
[13]  tab[i;]←70↑(⍕f[i]),'&',(⍕fx[i]),'\\'
[14]  i←i+1
[15]  →t2
[16] fz:r[1]←⊂tab
[17]  r[2]←⊂⍕p
------------------------------------------------------------
[ 0]  r←gerak80_4;a;b;c;soma
[ 1]  a←2+0.1×?9
[ 2]  b←2+0.1×?9
[ 3]  c←5+0.1×?49
[ 4]  r←3ρ0
[ 5]  r[1]←⊂'\int_0^{',(⍕a),'}',(⍕b),'(x^3-',(⍕c),'x+\frac{3}{x^2+1})dx'
[ 6]  soma←0.25×b×a*4
[ 7]  soma←soma-0.5×c×a*2
[ 8]  soma←soma+3×¯3○a
[ 9]  r[2]←⊂'[0,  ',(⍕a),']'
[10]  r[3]←⊂soma
------------------------------------------------------------
[ 0]  r←nx lagrange nfx;dif;i;j;prodx;pro;y;L;x
[ 1]  x←nfx[ρnfx]
[ 2]  nfx←¯1↓nfx
[ 3]  dif←pro←4ρ0
[ 4]  i←1
[ 5] t1:→(i>4)/oba1
[ 6]  dif[i]←x-nx[i]
[ 7]  i←i+1
[ 8]  →t1
[ 9] oba1:
[10]  prodx←1
[11]  i←1
[12] t2:→(i>4)/oba4
[13]  prodx←prodx×dif[i]
[14]  pro[i]←1
[15]  j←1
[16] t3:→(j>4)/oba3
[17]  →(j=i)/soma1
[18]  pro[i]←pro[i]×nx[i]-nx[j]
[19] soma1:j←j+1
[20]  →t3
[21] oba3:
[22]  i←i+1
[23]  →t2
[24] oba4:
[25]  y←0
[26]  i←1
[27]  r←''
```

```
[28] t5:→(i>4)/oba6
[29]  L←(prodx÷dif[i])÷pro[i]
[30]  r←r,L
[31]  y←y+nfx[i]×L
[32]  i←i+1
[33]  →t5
[34] oba6:
[35]  r←r,y
[36]  r←⍉20 3⍴r
-------------------------------------------------------------
[ 0]  r←a newgreg b;i;j;⎕IO
[ 1]  ⎕IO←1
[ 2]  r←((⍴a),1+⍴a)⍴0
[ 3]  r[;1]←a
[ 4]  r[;2]←b
[ 5]  j←3
[ 6] t1:→(j>1↓⍴r)/fim
[ 7]  i←(⍴a)+2-j
[ 8] t2:→(i<1)/ufa
[ 9]  r[i;j]←r[i+1;j-1]-r[i;j-1]
[10]  i←i-1
[11]  →t2
[12] ufa:j←j+1
[13]  →t1
[14] fim:
-------------------------------------------------------------
[ 0]  r←a newton b;resu;j;i;⎕IO
[ 1]  ⎕IO←0
[ 2]  resu←((⍴a),1+⍴a)⍴0
[ 3]  resu[;0]←a  ⍝ era x
[ 4]  resu[;1]←b ⍝ era fx
[ 5]  j←2
[ 6] t2:→(j≥1+1↑⍴a)/ufa
[ 7]  i←0
[ 8] t3:→(i≥((1+1↑⍴a)-j))/oba3
[ 9]  resu[i;j]←(resu[i+1;j-1]-resu[i;j-1])÷resu[i+j+¯1;0]-resu[i;0]
[10]  i←i+1
[11]  →t3
[12] oba3:
[13]  j←j+1
[14]  →t2
[15] ufa:r←resu
-------------------------------------------------------------
[ 0]  prova
[ 1] ⍝ 3413 prova40k80b 20
[ 2] ⍝ 3433 prova40k80b 20
[ 3] ⍝ 3453 prova40k80s 20
[ 4] ⍝ 3473 prova40k80s 20
[ 5] ⍝ 3493 prova40k80g 20
[ 6] ⍝ 3513 prova40k80g 20
[ 7] ⍝ 3533 prova40k80g 20
[ 8]  3553 prova40k80j 20
[ 9]  3573 prova40k80j 20
[10]  3593 prova40k80j 20
[11] ⍝ 3613 prova40k80l 20
[12] ⍝ 3633 prova40k80l 30
[13] ⍝ 3663 prova40k80n 20
[14] ⍝ 3683 prova40k80n 30
[15] ⍝ 3713 prova40k80ng 20
[16] ⍝ 3733 prova40k80ng 30
-------------------------------------------------------------
[ 0]  ni prova40k80b qt;x;z;i
[ 1]  x←0 79⍴' '
```

```
[ 2] ⍝ ni←3413
[ 3]  i←1
[ 4] t1:→(i>qt)/fim
[ 5]  z←provak80b ni+i-1
[ 6]  x←x,[1]z
[ 7]  i←i+1
[ 8]  →t1
[ 9] fim:x ΔFM'c:⍀apl2⍀q',⍕ni
-------------------------------------------------------------
[ 0]  ni prova40k80g qt;x;i;z
[ 1]  x←0 79⍴' '
[ 2] ⍝ ni←3493
[ 3]  i←1
[ 4] t1:→(i>qt)/fim
[ 5]  z←provak80g ni+i-1
[ 6]  x←x,[1]z
[ 7]  i←i+1
[ 8]  →t1
[ 9] fim:x ΔFM'c:⍀apl2⍀q',⍕ni
-------------------------------------------------------------
[ 0]  ni prova40k80j qt;x;i;z
[ 1]  x←0 79⍴' '
[ 2] ⍝ ni←3553
[ 3]  i←1
[ 4] t1:→(i>qt)/fim
[ 5]  z←provak80j ni+i-1
[ 6]  x←x,[1]z
[ 7]  i←i+1
[ 8]  →t1
[ 9] fim:x ΔFM'c:⍀apl2⍀q',⍕ni
-------------------------------------------------------------
[ 0]  ni prova40k80l qt;x;i;z
[ 1]  x←0 79⍴' '
[ 2] ⍝ ni←3613
[ 3]  i←1
[ 4] t1:→(i>qt)/fim
[ 5]  z←provak80l ni+i-1
[ 6]  x←x,[1]z
[ 7]  i←i+1
[ 8]  →t1
[ 9] fim:x ΔFM'c:⍀apl2⍀q',⍕ni
-------------------------------------------------------------
[ 0]  ni prova40k80n qt;x;i;z
[ 1]  x←0 79⍴' '
[ 2] ⍝ ni←3663
[ 3]  i←1
[ 4] t1:→(i>qt)/fim
[ 5]  z←provak80n ni+i-1
[ 6]  x←x,[1]z
[ 7]  i←i+1
[ 8]  →t1
[ 9] fim:x ΔFM'c:⍀apl2⍀q',⍕ni
-------------------------------------------------------------
[ 0]  ni prova40k80ng qt;x;i;z
[ 1]  x←0 79⍴' '
[ 2] ⍝ ni←3713
[ 3]  i←1
[ 4] t1:→(i>qt)/fim
[ 5]  z←provak80ng ni+i-1
[ 6]  x←x,[1]z
[ 7]  i←i+1
[ 8]  →t1
[ 9] fim:x ΔFM'c:⍀apl2⍀q',⍕ni
```

```
------------------------------------------------------------
[ 0]  ni prova40k80s qt;x;i;z
[ 1]  x←0 79⍴' '
[ 2] ⍝ ni←3453
[ 3]  i←1
[ 4] t1:→(i>qt)/fim
[ 5]  z←provak80s ni+i-1
[ 6]  x←x,[1]z
[ 7]  i←i+1
[ 8]  →t1
[ 9] fim:x ⍙FM'c:\apl2\q',⍕ni
------------------------------------------------------------
[ 0]  r←provak80b ni;t;cab1;cab2;cab3;ind;lat;int;res
[ 1]  ind←,?1↑⍴TFF
[ 2]  lat←,TFF[ind;⍳30]
[ 3]  int←⍎,TFO[ind;]
[ 4]  t←18 79⍴' '
[ 5]  t[1;]←79↑'Aplique o método da Bissecç\~ao para refinar o intervalo'
[ 6]  t[2;]←79↑' $[',(⍕int[1]),',',(⍕int[2]),']$ que contém a raiz da funç\~ao'
[ 7]  t[3;]←79↑' $$f(x)=',lat,' Você deve aplicar o método 5 vezes e '
[ 8]  t[4;]←79↑'deve preencher'
[ 9]  t[5;]←79↑'a tabela abaixo com os valores encontrados. Note que a interaç\~ao'
[10]  t[6;]←79↑'já está preenchida com os valores do intervalo '
[11]  t[7;]←79↑' $[a,b]=[',(⍕int[1]),',',(⍕int[2]),']$. Efetue os cálculos com até'
[12]  t[8;]←79↑'3 casas decimais, arredondando se for o caso. Eventuais funç\~oes'
[13]  t[9;]←79↑'trigonométricas devem ter argumento em radianos. Todos os cálculos'
[14]  t[10;]←79↑'e raciocínios devem estar presentes na soluç\~ao\\[0.5cm]'
[15]  t[11;]←79↑'\begin{tabular}{|p{1cm}|p{4cm}|p{4cm}|} \hline'
[16]  t[12;]←79↑'0&',(⍕int[1]),'&',(⍕int[2]),'\\[0.25cm] \hline'
[17]  t[13;]←79↑'1&&\\[0.25cm] \hline'
[18]  t[14;]←79↑'2&&\\[0.25cm] \hline'
[19]  t[15;]←79↑'3&&\\[0.25cm] \hline'
[20]  t[16;]←79↑'4&&\\[0.25cm] \hline'
[21]  t[17;]←79↑'5&&\\[0.25cm] \hline'
[22]  t[18;]←79↑'\end{tabular}'
[23]  cab1←1 79⍴79↑'$QE',(5 0⍕ni),'602      1','bisseccao'
[24]  cab2←1 79⍴79↑'$QR',(5 0⍕ni),'602'
[25]  res←1 79⍴79↑,((⍕(,TFF[ind;30+⍳30])biss int),'\'),'\'
[26]  r←'¯-'edit cab1,[1]t,[1]cab2,[1]res
------------------------------------------------------------
[ 0]  r←provak80g ni;c;i;t;x;rr;cab1;cab2;res
[ 1]  rr←resolsislin
[ 2]  t←25 79⍴' '
[ 3]  t[1;]←79↑'Aplique o método de eliminaç\~ao de Gauss sem pivoteamento para'
[ 4]  t[2;]←79↑'resolver o sistema linear abaixo. Preencha a primeira tabela com'
[ 5]  t[3;]←79↑'os coeficientes e os termos independentes do sistema obtido após'
[ 6]  t[4;]←79↑'todas as etapas do escalonamento. Observe que a tabela já está'
[ 7]  t[5;]←79↑'parcialmente preenchida. A segunda tabela deve ser preenchida com'
[ 8]  t[6;]←79↑'a soluç\~ao do sistema. Efetue os cálculos com até 3 casas decimais'
[ 9]  t[7;]←79↑'e arredondamento.\\[0.5cm]'
[10]  t[8;]←79↑'\begin{tabular}{lllll}'
[11]  t[8+⍳3;]←3 79↑⊃rr[1]
[12]  t[12;]←79↑'\end{tabular}\\[0.2cm]'
[13]  t[14;]←79↑'Coeficientes após o escalonamento:\\[0.2cm]'
[14]  t[15;]←79↑'\begin{tabular}{|p{1cm}|p{2cm}|p{2cm}|p{2cm}|p{2cm}|} \hline'
[15]  t[16;]←79↑' $eq_1$&&&&\\[0.25cm] \hline'
[16]  t[17;]←79↑' $eq_2$&0&&&\\[0.25cm] \hline'
[17]  t[18;]←79↑' $eq_3$&0&0&&\\[0.25cm] \hline'
[18]  t[19;]←79↑'\end{tabular}\\[0.2cm]'
[19]  t[21;]←79↑'Soluç\~ao:\\[0.2cm] \begin{tabular}{|p{2cm}|p{6cm}|} \hline'
[20]  t[22;]←79↑' $x_1=$&\\[0.25cm] \hline'
[21]  t[23;]←79↑' $x_2=$&\\[0.25cm] \hline'
[22]  t[24;]←79↑' $x_3=$&\\[0.25cm] \hline'
```

```
[23]  t[25;]←79↑'\end{tabular}'
[24]  cab1←1 79ρ79↑'$QE',(5 0⍕ni),'604      1','sist lin gauss'
[25]  cab2←1 79ρ79↑'$QR',(5 0⍕ni),'604'
[26]  res←5 79ρ' '
[27]  res[⍳3;]←3 79↑⊃rr[2]
[28]  res[5;]←79↑⊃rr[3]
[29]  r←cab1,[1]t,[1]cab2,[1]res
------------------------------------------------------------
[ 0]  r←provak80j ni;c;i;t;x;rr;cab1;cab2;res
[ 1]  rr←resoljacobi
[ 2]  t←25 79ρ' '
[ 3]  t[1;]←79↑'Aplique o método de Gauss-Jacobi para'
[ 4]  t[2;]←79↑'resolver o sistema linear abaixo. Considere como critério de '
[ 5]  t[3;]←79↑'parada $max_{1\le i \le 3}|x_i^{(k)}-x_i^{(k-1)}|<0.001$'
[ 6]  t[4;]←79↑'e como aproximaç\~ao inicial'
[ 7]  t[5;]←79↑(⊃rr[4]),'.'
[ 8]  t[6;]←79↑'Preencha a tabela abaixo com as aproximaç\~oes obtidas a cada iteraç\~ao'
[ 9]  t[7;]←79↑'do método até obter a precis\~ao pedida ou até 5 iteraç\~oes.\\[0.3cm]'
[10]  t[8;]←79↑'\begin{tabular}{lllll}'
[11]  t[8+⍳3;]←3 79↑⊃rr[1]
[12]  t[12;]←79↑'\end{tabular}\\[0.3cm]'
[13]  t[13;]←79↑'Iteraç~\~oes:\\[0.3cm]'
[14]  t[14;]←79↑'\begin{tabular}{|p{1cm}|p{2cm}|p{2cm}|p{2cm}|} \hline'
[15]  t[15;]←79↑' $it$&$x_1^{(k)}$&$x_2^{(k)}$&$x_3^{(k)}$\\[0.25cm] \hline'
[16]  t[16;]←79↑⊃rr[3]
[17]  t[17;]←79↑'1&&&\\[0.25cm] \hline'
[18]  t[18;]←79↑'2&&&\\[0.25cm] \hline'
[19]  t[19;]←79↑'3&&&\\[0.25cm] \hline'
[20]  t[20;]←79↑'4&&&\\[0.25cm] \hline'
[21]  t[21;]←79↑'5&&&\\[0.25cm] \hline'
[22]  t[22;]←79↑'\end{tabular}\\[0.3cm]'
[23]  t[23;]←79↑'Trabalhe com 3 casas decimais e arredondamento.'
[24]  t[24;]←79↑'N\~ao esqueça de olhar o critério de convergência, eventualmente'
[25]  t[25;]←79↑'tendo que trocar as linhas de posiç\~ao para atendê-lo.'
[26]  cab1←1 79ρ79↑'$QE',(5 0⍕ni),'605      1','jacobi'
[27]  cab2←1 79ρ79↑'$QR',(5 0⍕ni),'605'
[28]  r←cab1,[1]t,[1]cab2,[1]7 79↑⊃rr[2]
------------------------------------------------------------
[ 0]  r←provak80l ni;rr;t;cab1;cab2
[ 1]  rr←resollagra
[ 2]  t←19 79ρ' '
[ 3]  t[1;]←79↑'Seja $f(x)$ uma funç\~ao tabelada em 6 pontos.'
[ 4]  t[2;]←79↑'Utilizando um polinômio interpolador de Lagrange de grau 3, obtenha'
[ 5]  t[3;]←79↑'uma aproximaç\~ao para $f(',(⊃rr[1]),')$.'
[ 6]  t[4;]←79↑'Sua resposta deve mostrar os valores numéricos dos polinômios $L_k$'
[ 7]  t[5;]←79↑' com k variando entre 0 e 3.\\[0.3cm] '
[ 8]  t[6;]←79↑'\begin{tabular}{|l|l|l|l|l|l|} \hline'
[ 9]  t[7;]←79↑' $x$&',⊃rr[2]
[10]  t[8;]←79↑' $f(x)$&',⊃rr[3]
[11]  t[9;]←79↑'\end{tabular}\\[0.25cm]'
[12]  t[11;]←79↑'Preencha a tabela abaixo, trabalhando com até 3 casas e arredondamento.'
[13]  t[12;]←79↑'Escolha os 4 pontos a usar com critério.\\[0.25cm]'
[14]  t[13;]←79↑'\begin{tabular}{|p{2cm}|p{5cm}|} \hline'
[15]  t[14;]←79↑' $L_0(',(⊃rr[1]),')$&\\[0.35cm] \hline'
[16]  t[15;]←79↑' $L_1(',(⊃rr[1]),')$&\\[0.35cm] \hline'
[17]  t[16;]←79↑' $L_2(',(⊃rr[1]),')$&\\[0.35cm] \hline'
[18]  t[17;]←79↑' $L_3(',(⊃rr[1]),')$&\\[0.35cm] \hline'
[19]  t[18;]←79↑' $f(',(⊃rr[1]),')$&\\[0.35cm] \hline'
[20]  t[19;]←79↑'\end{tabular}'
[21]  cab1←1 79ρ79↑'$QE',(5 0⍕ni),'606      1','interpol. lagrange'
[22]  cab2←1 79ρ79↑'$QR',(5 0⍕ni),'606'
[23]  r←cab1,[1]t,[1]cab2,[1]1 79ρ79↑⊃rr[4]
------------------------------------------------------------
```

```
[ 0]  r←provak80n ni;rr;t;cab1;cab2;resp
[ 1]  rr←resolnewto
[ 2]  t←18 79⍴' '
[ 3]  t[1;]←79↑'Seja $f(x)$ uma funç⍀~ao tabelada em 5 pontos, como mostrado abaixo.'
[ 4]  t[2;]←79↑'Utilizando um polinômio interpolador de Newton de grau 4, obtenha'
[ 5]  t[3;]←79↑'uma aproximaç⍀~ao para $$f(','¯-'edit⍕(⊃rr[3])[1],')$$'
[ 6]  t[4;]←79↑'Sua resposta deve mostrar a express⍀~ao literal (em $(x)$) do polinômio'
[ 7]  t[5;]←79↑'e também a primeira linha da tabela de diferenças divididas.⍀⍀[0.3cm] '
[ 8]  t[6;]←79↑'⍀begin{tabular}{|l|l|l|l|l|l|} ⍀hline'
[ 9]  t[7;]←79↑' $x$&',(⊃rr[1]),'⍀⍀ ⍀hline'
[10]  t[8;]←79↑' $f(x)$&',(⊃rr[2]),'⍀⍀ ⍀hline'
[11]  t[9;]←79↑'⍀end{tabular}⍀⍀[0.25cm]'
[12]  t[11;]←79↑'Trabalhe com 1 casa decimal e arredondamento.⍀⍀[0.25cm]'
[13]  t[12;]←79↑'⍀begin{tabular}{|p{16cm}|} ⍀hline'
[14]  t[13;]←79↑'Primeira linha da tabela de diferenças divididas⍀⍀[0.35cm] ⍀hline'
[15]  t[14;]←79↑'O valor em $f(','¯-'edit⍕(⊃rr[3])[1],')$⍀⍀[0.35cm] ⍀hline'
[16]  t[15;]←79↑'A express⍀~ao literal do polinômio⍀⍀ '
[17]  t[16;]←79↑'⍀⍀[0.5cm] '
[18]  t[17;]←79↑'⍀⍀[0.5cm] ⍀hline'
[19]  t[18;]←79↑'⍀end{tabular}'
[20]  cab1←1 79⍴79↑'$QE',(5 0⍕ni),'607      1','interpol. newton'
[21]  cab2←1 79⍴79↑'$QR',(5 0⍕ni),'607'
[22]  resp←5 79⍴' '
[23]  resp[1;]←79↑'Coefs ta di di=','¯-'edit⊃rr[4]
[24]  resp[2;]←79↑'Valor f(nx)=','¯-'edit 20 1⍕(⊃rr[3])[2]
[25]  resp[2+⍳3;]←'¯-'edit 3 79↑⊃rr[5]
[26]  r←cab1,[1]t,[1]cab2,[1]resp
------------------------------------------------------------
[ 0]  r←provak80ng ni;rr;t;cab1;cab2;resp
[ 1]  rr←resolng
[ 2]  t←18 79⍴' '
[ 3]  t[1;]←79↑'Seja $f(x)$ uma funç⍀~ao tabelada em 4 pontos, como mostrado abaixo.'
[ 4]  t[2;]←79↑'Utilizando um polinômio interpolador de Newton-Gregory de grau 3,'
[ 5]  t[3;]←79↑'obtenha uma aproximaç⍀~ao para $$f(','¯-'edit⍕(⊃rr[3])[1],')$$'
[ 6]  t[4;]←79↑'Sua resposta deve mostrar a express⍀~ao literal (em $x$) do polinômio'
[ 7]  t[5;]←79↑'e também a primeira linha da tabela de diferenças ordinárias.⍀⍀[0.3cm] '
[ 8]  t[6;]←79↑'⍀begin{tabular}{|l|l|l|l|l|} ⍀hline'
[ 9]  t[7;]←79↑' $x$&',(⊃rr[1]),'⍀⍀ ⍀hline'
[10]  t[8;]←79↑' $f(x)$&',(⊃rr[2]),'⍀⍀ ⍀hline'
[11]  t[9;]←79↑'⍀end{tabular}⍀⍀[0.3cm]'
[12]  t[11;]←79↑'Trabalhe com 1 casa decimal e arredondamento.⍀⍀[0.3cm]'
[13]  t[12;]←79↑'⍀begin{tabular}{|p{15cm}|} ⍀hline'
[14]  t[13;]←79↑'Primeira linha da tabela de diferenças ordinárias⍀⍀[0.5cm] ⍀hline'
[15]  t[14;]←79↑'O valor em $f(','¯-'edit⍕(⊃rr[3])[1],')$⍀⍀[0.5cm] ⍀hline'
[16]  t[15;]←79↑'A express⍀~ao literal do polinômio⍀⍀[0.5cm]'
[17]  t[16;]←79↑'⍀⍀[0.5cm] '
[18]  t[17;]←79↑'⍀⍀[0.5cm] ⍀hline'
[19]  t[18;]←79↑'⍀end{tabular}'
[20]  cab1←1 79⍴79↑'$QE',(5 0⍕ni),'608      1','int. newton-gregory'
[21]  cab2←1 79⍴79↑'$QR',(5 0⍕ni),'608'
[22]  resp←5 79⍴' '
[23]  resp[1;]←79↑'Coefs ta di di=','¯-'edit⊃rr[4]
[24]  resp[2;]←79↑'Valor f(',('¯-'edit⍕(⊃rr[3])[1]),')=','¯-'edit 20 1⍕(⊃rr[3])[2]
[25]  resp[2+⍳3;]←'¯-'edit 3 79↑⊃rr[5]
[26]  r←cab1,[1]t,[1]cab2,[1]resp
------------------------------------------------------------
[ 0]  r←provak80s ni;t;cab1;cab2;cab3;ind;lat;int;res;reca
[ 1] novo:
[ 2]  ind←?7
[ 3]  lat←,TFF[ind;⍳30]
[ 4]  int←⍎,TFO[ind;]
[ 5]  t←19 79⍴' '
[ 6]  t[1;]←79↑'Encontre a raiz da funç⍀~ao $$f(x)=',lat
```

```
[ 7]  t[2;]←79↑' aplicando o método da Secante com aproximaç↼~oes iniciais'
[ 8]  t[3;]←79↑' $x_0=',(⍕int[1]),'$ e $x_1=',(⍕int[2]),'$.'
[ 9]  t[4;]←79↑'Preencha a tabela abaixo com os valores de $x_i$ obtidos a'
[10]  t[5;]←79↑'cada iteraç↼~ao do método até calcular 6 interaç↼~oes. Perceba'
[11]  t[6;]←79↑'que já est↼~ao preenchidos os dois primeiros valores.'
[12]  t[7;]←79↑'Efetue os cálculos com até 3 casas decimais, arredondando.'
[13]  t[8;]←79↑'Cálculos e raciocínios devem estar na soluç↼~ao.'
[14]  t[9;]←79↑'Critério de parada: $|x_i-x_{i-1}|<0.001$ (ou duas linhas iguais'
[15]  t[10;]←79↑'na tabela). Eventuais funç↼~oes'
[16]  t[11;]←79↑'trigonométricas devem ter argumento em radianos.↼↼[0.5cm]'
[17]  t[12;]←79↑'↼begin{tabular}{|p{1cm}|p{6cm}|} ↼hline'
[18]  t[13;]←79↑'0&',(⍕int[1]),'↼↼[0.25cm] ↼hline'
[19]  t[14;]←79↑'1&',(⍕int[2]),'↼↼[0.25cm] ↼hline'
[20]  t[15;]←79↑'3&↼↼[0.25cm] ↼hline'
[21]  t[16;]←79↑'4&↼↼[0.25cm] ↼hline'
[22]  t[17;]←79↑'5&↼↼[0.25cm] ↼hline'
[23]  t[18;]←79↑'6&↼↼[0.25cm] ↼hline'
[24]  t[19;]←79↑'↼end{tabular}'
[25]  cab1←1 79⍴79↑'$QE',(5 0⍕ni),'603      1','secante'
[26]  cab2←1 79⍴79↑'$QR',(5 0⍕ni),'603'
[27]  res←1 79⍴79↑,⍕reca←(,TFF[ind;30+⍳30])seca int
[28]  →(0.2>|reca[⍴reca]-reca[¯1+⍴reca])/blz
[29]  □←'o'
[30]  →novo
[31] blz:
[32]  r←'¯-'edit cab1,[1]t,[1]cab2,[1]res
-------------------------------------------------------------
[ 0]  r←res_1 k;x;i;r1;r2
[ 1]  x←10
[ 2]  i←1
[ 3] t1:
[ 4]  r1←(k[1]*(1+x÷k[2]))-k[3]
[ 5] ⍝ 'r1=',⍕r1
[ 6]  r2←(k[1]*(1+x÷k[2]))×(⊛k[1])×÷k[2]
[ 7] ⍝ 'r2=',⍕r2
[ 8]  x←x-r1÷r2
[ 9] ⍝ 'x=',⍕x
[10]  i←i+1
[11]  →((i>11)∨(r1=0))/fim
[12]  →t1
[13] fim:r←x
-------------------------------------------------------------
[ 0]  r←resoljacobi;c;cx;i;ia;inds;j;mat;matd;x;xant;xg;y
[ 1] mais:
[ 2]  x←¯10+(3?200)÷10
[ 3]  c←3 3⍴¯10+(9?200)÷10
[ 4]  c[1;1]←1.1×+/|c[1;]
[ 5]  c[2;2]←1.1×+/|c[2;]
[ 6]  c[3;3]←1.1×+/|c[3;]
[ 7]  cx←c   ⍝ sem baguncar as linhas
[ 8]  →(0∊x,,c)/mais
[ 9]  ia←i←+/(3 3⍴x)×c
[10]  →(∧/x=i⌷c)/ok   ⍝ para ter certeza de que deu certo
[11]  □←'o'
[12]  →mais
[13] ok:
[14]  i←i÷c[1;1],c[2;2],c[3;3]
[15]  c←c÷3 3⍴(3⍴c[1;1]),(3⍴c[2;2]),3⍴c[3;3]
[16]  xg←xant←x+(¯25+3?50)÷25
[17]  j←2 ⋄ y←3⍴0
[18]  matd←6 60⍴' '
[19]  matd[1;]←60↑10 3⍕xant
[20] t1:→(j>6)/fim
```

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[21]  y[1]←i[1]-(c[1;2]×xant[2])+(c[1;3]×xant[3])
[22]  y[2]←i[2]-(c[2;1]×xant[1])+(c[2;3]×xant[3])
[23]  y[3]←i[3]-(c[3;1]×xant[1])+(c[3;2]×xant[2])
[24]  matd[j;]←60↑10 3⍕y
[25]  j←j+1
[26]  xant←y
[27]  →t1
[28] fim:
[29]  matd←matd,[1]1 60⍴60↑'Resp exata=','¯'-'edit 10 3⍕x
[30]  r←4⍴0
[31]  inds←3?3
[32]  cx←cx[inds;]
[33]  ia←ia[inds]
[34]  mat←3 60⍴' '
[35]  mat[1;]←60↑(' $',⍕cx[1;1]),'x_1$&',('$',⍕cx[1;2]),'x_2$&',('$',⍕cx[1;3]),'x_3$&=&',(
      10 3⍕ia[1]),'⍀⍀'
[36]  mat[2;]←60↑(' $',⍕cx[2;1]),'x_1$&',('$',⍕cx[2;2]),'x_2$&',('$',⍕cx[2;3]),'x_3$&=&',(
      10 3⍕ia[2]),'⍀⍀'
[37]  mat[3;]←60↑(' $',⍕cx[3;1]),'x_1$&',('$',⍕cx[3;2]),'x_2$&',('$',⍕cx[3;3]),'x_3$&=&',(
      10 3⍕ia[3]),'⍀⍀'
[38]  r[1]←⊂'¯'-'edit mat
[39]  r[2]←⊂'¯'-'edit matd
[40]  r[3]←⊂'¯'-'edit'0&',(⍕xg[1]),'&',(⍕xg[2]),'&',(⍕xg[3]),'⍀⍀ ⍀hline'
[41]  r[4]←⊂'¯'-'edit' $x_1^{(0)}=',(⍕xg[1]),'$, $x_2^{(0)}=',(⍕xg[2]),'$, $x_3^{(0)}=',(⍕x
      g[3]),'$'
-------------------------------------------------------------
[ 0]  r←resollagra;L;cara;dif;escolhido;fx;i;inds;j;ju;nfx;nx;pro;prodx;rr;x;y
[ 1]  x←(¯4000+7?10000)÷100
[ 2]  fx←(¯25000+7?500000)÷100
[ 3]  x←x[⍋x]
[ 4]  fx←fx[⍋fx]
[ 5]  escolhido←1+?¯2+⍴x
[ 6]  →(escolhido=2)/dois
[ 7]  →(escolhido=3)/tres
[ 8]  →(escolhido=4)/quatro
[ 9]  →(escolhido=5)/cinco
[10]  →(escolhido=6)/seis
[11]  →erro
[12] dois:inds←1 3 4 5
[13]  →junta
[14] tres:inds←1 2 4 5
[15]  →junta
[16] quatro:inds←2 3 5 6
[17]  →junta
[18] cinco:inds←3 4 6 7
[19]  →junta
[20] seis:inds←3 4 5 7
[21] junta:nx←x[inds]
[22]  nfx←fx[inds]
[23]  cara←x[escolhido]
[24]  ju←x≠cara
[25]  x←ju/x
[26]  fx←ju/fx
[27]  rr←nx lagrange nfx,cara
[28]  r←5⍴0
[29]  r[1]←⊂'¯'-'edit⍕cara
[30]  r[2]←⊂'¯'-'edit(⍕x[1]),'&',(⍕x[2]),'&',(⍕x[3]),'&',(⍕x[4]),'&',(⍕x[5]),'&',(⍕x[6]),'⍀
      ⍀ ⍀hline'
[31]  r[3]←⊂'¯'-'edit(⍕fx[1]),'&',(⍕fx[2]),'&',(⍕fx[3]),'&',(⍕fx[4]),'&',(⍕fx[5]),'&',(⍕fx[
      6]),'⍀⍀ ⍀hline'
[32]  r[4]←⊂'¯'-'edit 11 3 11 3 11 3 11 3 20 3⍕rr
-------------------------------------------------------------
[ 0]  r←resolnewto;x;fx;tdd;pl1;pl2;pl3;nx;po
```

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[ 1]  ⍞←⎕TC[2]
[ 2]  r←5⍴0
[ 3] mais:
[ 4]  x←0.1×¯300+5?1000
[ 5]  fx←¯3000+5?10000
[ 6]  x←x[⍋x]
[ 7]  fx←fx[⍋fx]
[ 8]  nx←?100
[ 9]  →((~nx∈x)∧(nx<x[4])∧(nx>x[2])∧(1<⌊/|nx-x))/blz
[10]  ⍞←'o'
[11]  →mais
[12] blz:
[13]  tdd←x newton fx
[14]  →(0.1<|tdd[1;6])/ufa
[15]  ⍞←'⊗'
[16]  →mais
[17] ufa:
[18]  pl1←pl2←pl3←' '
[19]  r[1]←⊂'¯-'edit(⍕x[1]),'&',(⍕x[2]),'&',(⍕x[3]),'&',(⍕x[4]),'&',(⍕x[5])
[20]  r[2]←⊂'¯-'edit(⍕fx[1]),'&',(⍕fx[2]),'&',(⍕fx[3]),'&',(⍕fx[4]),'&',(⍕fx[5])
[21]  r[4]←⊂10 1↑tdd[1;2+⍳¯2+1↓⍴tdd]
[22]  tdd←5 6⍴⍪,20 1↑tdd
[23]  pl1←(⍕tdd[1;2]),'+((x-',(⍕tdd[1;1]),')*',(⍕tdd[1;3]),')+'
[24]  pl1←pl1,'((x-',(⍕tdd[1;1]),')(x-',(⍕tdd[2;1]),')*',(⍕tdd[1;4]),')+'
[25]  pl2←'((x-',(⍕tdd[1;1]),')(x-',(⍕tdd[2;1]),')(x-',(⍕tdd[3;1]),')*',(⍕tdd[1;5]),')+'
[26]  pl3←'((x-',(⍕tdd[1;1]),')(x-',(⍕tdd[2;1]),')(x-',(⍕tdd[3;1]),')(x-',(⍕tdd[4;1]),')*'
      ,(⍕tdd[1;6]),')'
[27]  r[5]←⊂3 77⍴(77↑pl1),(77↑pl2),77↑pl3
[28] ⍝ calculo do polinomio em nx
[29]  po←tdd[1;2]+(nx-tdd[1;1])×tdd[1;3]
[30]  po←po+(nx-tdd[1;1])×(nx-tdd[2;1])×tdd[1;4]
[31]  po←po+(nx-tdd[1;1])×(nx-tdd[2;1])×(nx-tdd[3;1])×tdd[1;5]
[32]  po←po+(nx-tdd[1;1])×(nx-tdd[2;1])×(nx-tdd[3;1])×(nx-tdd[4;1])×tdd[1;6]
[33]  r[3]←⊂nx,⍪20 2⍴po
------------------------------------------------------------
[ 0]  r←resolng;fx;h;nx;pl1;pl2;pl3;po;tdo;x
[ 1] ⍝ ⍞←⎕TC[2]
[ 2]  r←5⍴0
[ 3] mais:
[ 4]  x←(0.1×¯300+?1000)+(0.1×20+?80)×⍳4
[ 5]  fx←¯3000+4?10000
[ 6]  fx←fx[⍋fx]
[ 7]  nx←(⌊x[1])+?⌊x[4]-x[1]
[ 8]  →((~nx∈x)∧(nx<x[4])∧(nx>x[1])∧(1<⌊/|nx-x))/blz
[ 9]  ⍞←'o'
[10]  →mais
[11] blz:
[12]  tdo←x newgreg fx
[13]  →(0.1<|tdo[1;5])/ufa
[14]  ⍞←'⊗'
[15]  →mais
[16] ufa:
[17]  h←x[2]-x[1]
[18]  pl1←pl2←pl3←' '
[19]  r[1]←⊂'¯-'edit(⍕x[1]),'&',(⍕x[2]),'&',(⍕x[3]),'&',(⍕x[4])
[20]  r[2]←⊂'¯-'edit(⍕fx[1]),'&',(⍕fx[2]),'&',(⍕fx[3]),'&',(⍕fx[4])
[21]  r[4]←⊂10 1↑tdo[1;]
[22]  tdo←4 5⍴⍪,20 1↑tdo
[23]  pl1←(⍕tdo[1;2]),'+(((x-',(⍕tdo[1;1]),')*',(⍕tdo[1;3]),')/',(⍕h),')+'
[24]  pl2←'(((x-',(⍕tdo[1;1]),')(x-',(⍕tdo[2;1]),')*',(⍕tdo[1;4]),')/(2 * ',(⍕h),'∧2))+'
[25]  pl3←'(((x-',(⍕tdo[1;1]),')(x-',(⍕tdo[2;1]),')(x-',(⍕tdo[3;1]),')*',(⍕tdo[1;5]),')/(6
       * ',(⍕h),'∧3))'
[26]  r[5]←⊂3 77⍴(77↑pl1),(77↑pl2),77↑pl3
```

```
[27] ⍝ calculo do polinomio em nx
[28]  po←tdo[1;2]+(nx-tdo[1;1])×tdo[1;3]×÷h
[29]  po←po+(nx-tdo[1;1])×(nx-tdo[2;1])×tdo[1;4]×÷2×h*2
[30]  po←po+(nx-tdo[1;1])×(nx-tdo[2;1])×(nx-tdo[3;1])×tdo[1;5]×÷6×h*3
[31]  r[3]←⊂nx,⍎20 2⍕po
-------------------------------------------------------------
[ 0]  r←resolsislin;c;cc;cca;i;mat;matd;resp;x
[ 1] mais:
[ 2]  x←¯10+(3?200)÷10
[ 3]  c←3 3⍴¯10+(9?200)÷10
[ 4]  →(0∈x,,c)/mais
[ 5]  i←+/(3 3⍴x)×c
[ 6]  →(∧/x=i⌹c)/ok   ⍝ para ter certeza de que deu certo
[ 7]  ⎕←'o'
[ 8]  →mais
[ 9] ok:cca←cc←c,[2]3 1⍴i
[10]  cc[2;]←cc[2;]-cc[1;]×cc[2;1]÷cc[1;1]
[11]  cc[3;]←cc[3;]-cc[1;]×cc[3;1]÷cc[1;1]
[12]  cc[3;]←cc[3;]-cc[2;]×cc[3;2]÷cc[2;2]
[13]  cc←3 4⍴⍎,16 3⍕cc
[14]  r←3⍴0
[15]  mat←3 60⍴' '
[16]  mat[1;]←60↑(' $',⍕c[1;1]),'x_1$&',('$',⍕c[1;2]),'x_2$&',('$',⍕c[1;3]),'x_3$&=&',(10
      3⍕i[1]),'⍀⍀'
[17]  mat[2;]←60↑(' $',⍕c[2;1]),'x_1$&',('$',⍕c[2;2]),'x_2$&',('$',⍕c[2;3]),'x_3$&=&',(10
      3⍕i[2]),'⍀⍀'
[18]  mat[3;]←60↑(' $',⍕c[3;1]),'x_1$&',('$',⍕c[3;2]),'x_2$&',('$',⍕c[3;3]),'x_3$&=&',(10
      3⍕i[3]),'⍀⍀'
[19]  matd←3 60⍴' '
[20]  matd[1;]←60↑(10 3⍕cc[1;1]),(10 3⍕cc[1;2]),(10 3⍕cc[1;3]),(10 3⍕cc[1;4])
[21]  matd[2;]←60↑(10 3⍕cc[2;1]),(10 3⍕cc[2;2]),(10 3⍕cc[2;3]),(10 3⍕cc[2;4])
[22]  matd[3;]←60↑(10 3⍕cc[3;1]),(10 3⍕cc[3;2]),(10 3⍕cc[3;3]),(10 3⍕cc[3;4])
[23]  resp←10 3⍕x
[24]  mat←'¯'-'edit mat
[25]  matd←'¯'-'edit matd
[26]  resp←'¯'-'edit resp
[27]  r[1]←⊂mat
[28]  r[2]←⊂matd
[29]  r[3]←⊂resp
-------------------------------------------------------------
[ 0]  r←a seca b;i;x0;x1;x2;fx1;fx0;x
[ 1] ⍝ a=expressao literal, b=intervalo. Calcula 4 ciclos e retorna matriz
[ 2]  r←8⍴b,6⍴0
[ 3]  i←3
[ 4] t1:x0←r[i-2]
[ 5]  x1←r[i-1]
[ 6]  x←x0
[ 7]  fx0←⍎a
[ 8]  x←x1
[ 9]  fx1←⍎a
[10]  x2←((x0×fx1)-(x1×fx0))÷(fx1-fx0)
[11]  r[i]←x2
[12]  i←i+1
[13]  →(i>8)/fim
[14]  →t1
[15] fim:r←⍎15 3⍕,r
-------------------------------------------------------------
[ 0]  opesq vivok80a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx1;xx2;xx3;xx4;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
```

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[ 5]  EVENTO←'PLk80   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAk80←ajusta80 FOLHALAk80
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAk80)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←25 80⍴' '
[16]  f←FOLHALAk80
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[24;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[25;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx1←gerak80_1
[35]  esse[8;]←80↑'$$',(trim⊃xx1[1]),'$$'
[36]  esse[9;]←80↑⊃xx1[2]
[37] ⍝ resp←resp,,xx[2 3;5]
[38]  xx2←gerak80_2
[39]  esse[9+⍳6;]←6 80↑⊃xx2[1]
[40]  xx3←gerak80_3
[41]  esse[15+⍳5;]←5 80↑⊃xx3[1]
[42]  esse[21;]←80↑⊃xx3[2]
[43]  xx4←gerak80_4
[44]  esse[22;]←80↑'$$',(trim⊃xx4[1]),'$$'
[45]  esse[23;]←80↑⊃xx4[2]
[46]  resu←resu,[1]1 3⍴resp
[47]  acuja←(f[;2]='#')/⍳1↑⍴f
[48]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[49]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[50]  ⍞←(⍎xk←xk+1),'-'
[51]  →testa
[52] fim:upag←(1 0+⍴f)⍴' '
[53]  →(1=≡n)/elafa
[54]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[55]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[56]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍎resu
[57]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[58]  →terminando
[59] elafa:aaa←(ylu[;⍳36],9 0⍎0 1↓resu)
[60]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[61]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[62] terminando:
[63]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[64]  relat[1↑⍴relat;;]←upag
[65]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[66]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
```

```
[67]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[68]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivok90

```
[ 0]  opesq vivok90a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLk90   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAk90←ajusta80 FOLHALAk90
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAk90)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALAk90
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  acuja←(f[;2]='#')/⍳1↑⍴f
[35]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[36]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage\end{document}'
[37]  ⍞←(⍎xk←xk+1),'-'
[38]  →testa
[39] fim:
[40] terminando:
[41]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[42]  lixonol←lixonol ΔFM'c:\apl2\',((~⍬∧\⍬EVENTO=' ')/EVENTO),'.tex'
[43]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[44]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    .tex'
-------------------------------------------------------------
```

vivom02

```
[ 0]  opesq vivom02a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;num;relat
      ;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
```

```
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←8 ⋄ EVENTO←'PLm02   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALAm02←ajusta80 FOLHALAm02
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAm02)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[12]  xk←1 ⋄ resu←0 2⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←20 80⍴' '
[15]  f←FOLHALAm02
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[19;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[20;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] ini1:
[26]  esse[8;]←80↑'1'
[27]  esse[9;]←80↑'1'
[28]  esse[10;]←80↑'1'
[29]  esse[11;]←80↑'1'
[30]  esse[12;]←80↑'1'
[31]  resu←resu,[1]1 2⍴resp
[32]  acuja←(f[;2]='#')/⍳1↑⍴f
[33]  f[acuja;]←esse[⍤,f[acuja;3 4],' ';]
[34]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[35]  ⍞←(⍕xk←xk+1),'-'
[36]  →testa
[37] fim:upag←(1 0+⍴f)⍴' '
[38] ⍝⍝⍝
```

```
[2]  'olhe EMSALA'
[3]  ''
[4]  'e execute veja139'
-------------------------------------------------------------
[ 0]  r←acha pts;incr;pts2;sx;sy;ix;iy;pa;po;auxi;auxj;cima;baix;esqu;dire;i;j
[ 1]  ix←(⌊/pts[;1])⌊⌊/pts[;3]
[ 2]  iy←(⌊/pts[;2])⌊⌊/pts[;4]
[ 3]  sx←(⌈/pts[;1])⌈⌈/pts[;3]
[ 4]  sy←(⌈/pts[;2])⌈⌈/pts[;4]
[ 5]  pa←iy,sy,ix,sx
[ 6] ⍝ 'iy, sy, ix, sx = ',⍕pa
[ 7]  po←((1+2×sy-iy),(1+2×sx-ix))⍴0
[ 8]  i←1
[ 9] t1:→(i>1↑⍴pts)/fim
[10]  po←po preenche pts[i;],pa
[11]  →(i=i←i+1)/t1
[12] fim:i←2
[13] t2:→(i>1↑⍴po)/fim2
[14]  j←2
[15] t3:→(j>1↓⍴po)/fim0
[16]  auxi←i ⋄ auxj←j
[17] p1:→(i≤1)/aca1
[18]  →(po[i;j]≠0)/aca1
[19]  i←i-1
[20]  →p1
[21] aca1:cima←po[i;j]
[22]  i←auxi ⋄ j←auxj
[23] p2:→(j≤1)/aca2
[24]  →(po[i;j]≠0)/aca2
[25]  j←j-1
[26]  →p2
[27] aca2:esqu←po[i;j]
[28]  i←auxi ⋄ j←auxj
[29] p3:→(i≥1↑⍴po)/aca3
[30]  →(po[i;j]≠0)/aca3
[31]  i←i+1
[32]  →p3
[33] aca3:baix←po[i;j]
[34]  i←auxi ⋄ j←auxj
[35] p4:→(j≥1↓⍴po)/aca4
[36]  →(po[i;j]≠0)/aca4
[37]  j←j+1
[38]  →p4
[39] aca4:dire←po[i;j]
[40]  i←auxi ⋄ j←auxj
[41]  →(po[i;j]=0)/ezero
[42]  po[i;j]←esqu⌊baix⌊dire⌊cima⌊po[i;j]
[43]  →pula
[44] ezero:po[i;j]←esqu⌊baix⌊dire⌊cima
[45] pula:
[46]  →(j=j←j+2)/t3
[47] fim0:→(i=i←i+2)/t2
[48] fim2:po←((1↑⍴po)⍴0 1)/[1]po
[49]  r←((1↓⍴po)⍴0 1)/[2]po
-------------------------------------------------------------
[ 0]  r←geracaso1;lin1;lin2;lin;col;col1;col2;c1;c2;c3;c4;a;b;c;d;x;y
[ 1] denvo:r←6 5⍴0
[ 2]  lin1←1+?2
[ 3]  lin2←16+?3
[ 4]  col←8+?2
[ 5]  r[1;]←col,lin1,col,lin2,2×10+?10
[ 6]  lin←8+?2
[ 7]  col1←1+?2
```

```
[ 8]  col2←16+?3
[ 9]  r[2;]←col1,lin,col2,lin,2×10+?10
[10]  c2←(b←11+?3),a←11+?3
[11]  c1←(c←2+?3),a
[12]  c3←b,d←2+?3
[13]  c4←c,d
[14]  r[3;]←c1,c2,2×3+?7
[15]  r[4;]←c2,c3,2×3+?7
[16]  r[5;]←c3,c4,2×3+?7
[17]  r[6;]←c4,c1,2×3+?7
[18]  x←acha r
[19]  y←tiradups,x
[20]  →(2≥ρ,y)/denvo
-------------------------------------------------------------
[ 0]  r←geraquestaoprova;xx;yy;zz;tt;i
[ 1]  r←0 70ρ' '
[ 2]  i←1
[ 3] t1:→(i>9)/0
[ 4]  tt←27 70ρ' '
[ 5]  tt[1;]←70↑'Esta questto é sobre a fazenda de ostras do Zing Zhu'
[ 6]  tt[2;]←70↑'Lembrando, ele é dono de uma ilha rasa no oceano. Quando a maré sobe'
[ 7]  tt[3;]←70↑'a ilha é integralmente coberta. Para poder criar ostras na ilha'
[ 8]  tt[4;]←70↑'ele vai colocar algumas cercas de plástico. '
[ 9]  tt[5;]←70↑'Nos dados a seguir, em cada linha aparecem as coordenadas'
[10]  tt[6;]←70↑'  $x,y$ do início e do fim de cada cerca, medidos em metros a partir'
[11]  tt[7;]←70↑'de um sistema de coordenadas cartesianas, onde o ponto 0,0 está no'
[12]  tt[8;]←70↑'meio da ilha. O quinto número de cada linha é a altura da cerca'
[13]  tt[9;]←70↑'medido em centímetros. '
[14]  tt[10;]←70↑'\begin{verbatim}'
[15]  tt[17;]←70↑'\end{verbatim}'
[16]  tt[18;]←70↑'Depois de desenhar as cercas, descubra qual a área de ilha que'
[17]  tt[19;]←70↑'fica SECA quando a maré sobe a '
[18]  tt[20;]←70↑'\begin{itemize}'
[19]  tt[21;]←70↑'\item XXX'
[20]  tt[22;]←70↑'\item XXX'
[21]  tt[23;]←70↑'\item XXX'
[22]  tt[24;]←70↑'\item XXX'
[23]  tt[25;]←70↑'\end{itemize}'
[24]  xx←geracaso1
[25]  xx[;5]←xx[;5]×10
[26]  tt[10+ι6;]←6 70↑4 0⍕xx
[27]  yy←acha xx
[28]  zz←resolve yy
[29]  tt[20+ι4;6+ι3]←3 0⍕4 1ρ4↑,zz[;1]
[30]  tt[26;]←70↑'$QR  ',(3 0⍕864+i),'ALGOB404'
[31]  tt[27;]←70↑'Respostas ','000   000   000    000 '⍕4↑,zz[;2]
[32]  r←r,[1]1 70ρ70↑'$QE  ',(3 0⍕864+i),'ALGOB404 4fazenda de ostras '
[33]  r←r,[1]tt
[34]  i←i+1
[35]  →t1
-------------------------------------------------------------
[ 0]  r←a preenche linha;de;para
[ 1] ⍝ linha[ι5] indicacao de PST[i;] e linha [5+ι4]=pa
[ 2] ⍝ 'linha=',⍕linha
[ 3]  r←a
[ 4]  de←linha[5+ι4]r2m linha[1 2]
[ 5] ⍝ 'de=',⍕de
[ 6]  para←linha[5+ι4]r2m linha[3 4]
[ 7] ⍝ 'para=',⍕para
[ 8]  →(linha[1]=linha[3])/mesmox
[ 9] mesmoy:
[10]  →(de[2]>para[2])/ma
[11] me:→(de[2]>para[2])/fi1
```

```
[12]  r[de[1];de[2]]←linha[5]
[13]  de[2]←de[2]+1
[14]  →me
[15] ma:→(de[2]<para[2])/fi1
[16]  r[de[1];de[2]]←linha[5]
[17]  de[2]←de[2]-1
[18]  →ma
[19] mesmox:
[20]  →(de[1]>para[1])/ma2
[21] me2:→(de[1]>para[1])/fi1
[22]  r[de[1];de[2]]←linha[5]
[23]  de[1]←de[1]+1
[24]  →me2
[25] ma2:→(de[1]<para[1])/fi1
[26]  r[de[1];de[2]]←linha[5]
[27]  de[1]←de[1]-1
[28]  →ma2
[29] fi1:
-------------------------------------------------------------
[0]  lc←pa r2m xy
[1]  lc←2⍴0
[2]  lc[1]←1+|(1+2×xy[2]-pa[1])-(1+2×pa[2]-pa[1])
[3]  lc[2]←1+2×xy[1]-pa[3]
-------------------------------------------------------------
[ 0]  r←resolve x;y;z;aa;i
[ 1] ⍝ recebe a matriz gerada por acha
[ 2]  y←tiradups,x
[ 3]  y←1↓y
[ 4]  i←1 ⋄ z←((,x)>0)/,x
[ 5]  r←1 2⍴(¯10+⌊/y),⍴z
[ 6] t1:→(i>⍴y)/fim
[ 7]  r←r,[1]1 2⍴aa,(⍴z)-+/(aa←y[i]+10)>z
[ 8]  i←i+1
[ 9]  →t1
[10] fim:r←r[⍋r[;1];]
-------------------------------------------------------------
[ 0]  testa
[ 1]  acha PTS3
[ 2]  ¯2 2,pa m2r ⍞←pa r2m ¯2 2
[ 3]  2 2,pa m2r ⍞←pa r2m 2 2
[ 4]  2 ¯2,pa m2r ⍞←pa r2m 2 ¯2
[ 5]  ¯2 ¯2,pa m2r ⍞←pa r2m ¯2 ¯2
[ 6]  acha PTS4
[ 7]  20 30,pa m2r ⍞←pa r2m 20 30
[ 8]  50 30,pa m2r ⍞←pa r2m 50 30
[ 9]  50 10,pa m2r ⍞←pa r2m 50 10
[10]  20 10,pa m2r ⍞←pa r2m 20 10
[11]  acha PTS5
[12]  ¯30 ¯10,pa m2r ⍞←pa r2m ¯30 ¯10
[13]  5 ¯10,pa m2r ⍞←pa r2m 5 ¯10
[14]  5 ¯15,pa m2r ⍞←pa r2m 5 ¯15
[15]  ¯30 ¯15,pa m2r ⍞←pa r2m ¯30 ¯15
-------------------------------------------------------------
[0]  r←tiradups x
[1]  r←((x⍳x)=⍳⍴x)/x
-------------------------------------------------------------
[ 0]  veja139;x;lixo
[ 1]  ⎕PW←200
[ 2]  'examinando um caso qualquer...'
[ 3]  x←geracaso1
[ 4]  x
[ 5]  lixo←⎕
[ 6]  'construindo a matriz expandida'
```

```
[ 7]  vemo x
[ 8]  lixo←⍬
[ 9]  'olhando a matriz operada'
[10]  acha x
-------------------------------------------------------------
[ 0]  r←vemo pts;incr;pts2;sx;sy;ix;iy;pa;po;auxi;auxj;cima;baix;esqu;dire;i;j
[ 1]  ix←(⌊/pts[;1])⌊⌊/pts[;3]
[ 2]  iy←(⌊/pts[;2])⌊⌊/pts[;4]
[ 3]  sx←(⌈/pts[;1])⌈⌈/pts[;3]
[ 4]  sy←(⌈/pts[;2])⌈⌈/pts[;4]
[ 5]  pa←iy,sy,ix,sx
[ 6] ⍝ 'iy, sy, ix, sx = ',⍕pa
[ 7]  po←((1+2×sy-iy),(1+2×sx-ix))⍴0
[ 8]  i←1
[ 9] t1:→(i>1↑⍴pts)/fim
[10]  po←po preenche pts[i;],pa
[11]  →(i=i←i+1)/t1
[12] fim:r←po
-------------------------------------------------------------
[ 0]  opesq vivom04a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;relat;resp;resu;
      upag;xk;xx;ylu;yy;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←4 ⋄ EVENTO←'PLm04   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALAm04←ajusta80 FOLHALAm04
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAm04)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[12]  xk←1 ⋄ resu←0 13⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←39 80⍴' '
[15]  f←FOLHALAm04
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←3.12
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[38;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[39;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] ini1:
[26]  xx←geracaso1
[27]  xx[;5]←xx[;5]×10
[28]  yy←acha xx
[29]  zz←resolve yy
[30]  esse[7+⍳6;]←6 80↑5 0⍕xx
[31]  esse[13+⍳4;]←4 80↑4 5⍴'55555'⍕zz[;1],10×22+⍳3
[32]  resp←resp,4↑,zz[;2],0
[33]  xx←geracaso1
[34]  xx[;5]←xx[;5]×10
[35]  yy←acha xx
[36]  zz←resolve yy
[37]  esse[17+⍳6;]←6 80↑5 0⍕xx
[38]  esse[23+⍳4;]←4 80↑4 5⍴'55555'⍕zz[;1],10×22+⍳3
[39]  resp←resp,4↑,zz[;2],0
[40]  xx←geracaso1
[41]  xx[;5]←xx[;5]×10
```

```
[42]  yy←acha xx
[43]  zz←resolve yy
[44]  esse[27+⍳6;]←6 80↑5 0⍕xx
[45]  esse[33+⍳4;]←4 80↑4 5⍴'55555'⍕zz[;1],10×22+⍳3
[46]  resp←resp,4↑,zz[;2],0
[47]  resu←resu,[1]1 13⍴resp
[48]  acuja←(f[;2]='#')/⍳1↑⍴f
[49]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[50]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[51]  ⎕←(⍕xk←xk+1),'-'
[52]  →testa
[53] fim:upag←(1 0+⍴f)⍴' '
[54]  lixo1←4 0,24⍴(8 0,6⍴4 0)
[55]  →(1=≡n)/elafa
[56]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[57]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[58]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←lixo1⍕resu
[59]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[60]  →terminando
[61] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 4↓lixo1⍕resu)
[62]  aaa[1;35 36]←2 0⍕CORRECAO
[63]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[64]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[65] terminando:
[66]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[67]  relat[1↑⍴relat;;]←upag
[68]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[69] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[70]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[71]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivom06

```
[ 0]  AVISO
[ 1]  'veja a variavel comoping'
[ 2]  '----------------------------'
[ 3]  'veja a variavel comoroda'
[ 4]  '---exemplo do cubo---------'
[ 5]  'para reproduzir o exemplo, faca'
[ 6]  ' 0 0 1 7 2 3 comparacu 0 1 0 2 3 7    '
[ 7]  0 0 1 7 2 3 comparacu 0 1 0 2 3 7
[ 8]  'e a resposta sera zero: eles nao sao iguais e nem podem ser'
[ 9]  ' 0 0 1 7 2 3 comparacu 3 0 7 0 2 1'
[10]  0 0 1 7 2 3 comparacu 3 0 7 0 2 1
[11]  'veja que ele responde 1 1 6; so sobra o 6.'
[12]  'de fato, veja que aplicando o anti-horario em 3 0 7 0 2 1'
[13]  'ele fica 0 0 1 7 2 3'
[14]  '=============='
[15]  'Veja ccub148.alg...'
------------------------------------------------------------
[0]  r←qtd acaso un
[1]  r←un[qtd?⍴un]
------------------------------------------------------------
[ 0]  r←c1 comparacu c2;i;achou;x0;x1;x2
[ 1]  i←1
[ 2]  achou←0
[ 3] t1:→((i>343)∨(achou=1))/ufa
[ 4]  x0←c2[operadores[opcoes[i;1];]]
[ 5]  x1←x0[operadores[opcoes[i;2];]]
[ 6]  x2←x1[operadores[opcoes[i;3];]]
[ 7]  →(6≠+/c1=x2)/somai
```

```
[ 8]  achou←1
[ 9]  →ufa
[10] somai:i←i+1
[11]  →t1
[12] ufa:r←achou
[13]  →(0=achou)/0
[14]  'operadores usados ',⍕opcoes[i;]
[15]  'o segundo cubo, recebendo op=',(⍕opcoes[i;1]),' fica ',⍕x0
[16]  'o segundo cubo, recebendo op=',(⍕opcoes[i;2]),' fica ',⍕x1
[17]  'o segundo cubo, recebendo op=',(⍕opcoes[i;3]),' fica ',⍕x2
------------------------------------------------------------
[ 0]  r←deindx v;x1
[ 1] ⍝ v[1]=1,2 ou 3; v[2]=index
[ 2]  →(v[1]=3)/tres
[ 3]  →(v[1]=2)/dois
[ 4] um:r←1+⌊(¯1+v[2])÷49
[ 5]  →0
[ 6] dois:x1←1+49|v[2]-1
[ 7]  r←1+⌊(¯1+x1)÷7
[ 8]  →0
[ 9] tres:r←1+7|v[2]-1
------------------------------------------------------------
[0]  r←max escolhe xxx;zzz
[1] ⍝ escolhe as max materias a serem feitas neste semestre
[2]  zzz←(10=+/[2]xxx[;1+⍳10]=¯1)/[1]xxx
[3]  r←max↑zzz[;1]
------------------------------------------------------------
[0]  r←formatagec cu
[1]  r←4 80⍴' '
[2]  r[1;1]←'4'
[3]  r[2;1 13 25 37]←1 0⍕,cu[;1]
[4]  r[3;1 3 5 7 13 15 17 19 25 27 29 31 37 39 41 43]←1 0⍕,cu[;2 4 5 6]
[5]  r[4;1 13 25 37]←1 0⍕,cu[;3]
------------------------------------------------------------
[ 0]  r←gecubo;cubo;cores;igs;zz;rr;resu
[ 1] novo:cores←4?9
[ 2]  rr←4 6⍴0
[ 3]  rr[1;]←cores[?6⍴4]
[ 4]  zz←rodeia rr[1;]
[ 5]  rr[2;]←(zz[?343;])[6?6]
[ 6]  rr[3;]←(zz[?343;])[6?6]
[ 7]  rr[4;]←(zz[?343;])[6?6]
[ 8]  igs←0 ⋄ resu←0⍴0
[ 9]  →(0=rr[1;]temig rr[2;])/p1
[10]  igs←1
[11]  resu←12
[12] p1:→(0=rr[1;]temig rr[3;])/p2
[13]  igs←igs+1
[14]  resu←resu,13
[15] p2:→(0=rr[1;]temig rr[4;])/p3
[16]  igs←igs+1
[17]  resu←resu,14
[18] p3:→(0=rr[2;]temig rr[3;])/p4
[19]  igs←igs+1
[20]  resu←resu,23
[21] p4:→(0=rr[2;]temig rr[4;])/p5
[22]  igs←igs+1
[23]  resu←resu,24
[24] p5:→(0=rr[3;]temig rr[4;])/p6
[25]  igs←igs+1
[26]  resu←resu,34
[27] p6:→(igs≤3)/blz
[28]  ⎕←'⊗'
```

```
[29]  →novo
[30] blz:
[31]  →(igs≠3)/blz2
[32]  igs←2
[33] blz2:
[34]  r←3ρ0
[35]  r[1]←⊂rr
[36]  r[2]←⊂igs
[37]  r[3]←⊂resu
[38] ⍝ ele responde a instancia, QUANTOS SAO iguais e quais sao iguais.
-------------------------------------------------------------
[ 0]  r←geracaso n;uni;unin;raux;i;ge;zzz;zzzaux;j
[ 1] ⍝ gera instancias de exercicios
[ 2]  uni←'CALCGEOMGEOACOBOFORTCMAMALGOESDAMATBDISCLOGIPORTCULIINGLFRAN'
[ 3]  uni←uni,'ALEMLATIGEOLRETOINFODBASBANDCARICALEMEDIENGAENGEENGCENGM'
[ 4]  uni←uni,'ENFEFISIQUIM'
[ 5]  uni←(((ρuni)÷4),4)ρuni
[ 6]  unin←⍳1↑ρuni
[ 7]  raux←((⌊n×0.4),11)ρ0
[ 8]  i←1 ⋄ zzzaux←0ρ0
[ 9] t1:→(i>1↑ρraux)/aca
[10]  ge←1+?3
[11]  →(ge=2)/dois
[12]  →(ge=3)/tres
[13] quatro:raux[i;1+⍳4]←zzz←4 acaso unin
[14]  zzzaux←zzzaux,zzz
[15]  →junta
[16] tres:raux[i;1+⍳3]←zzz←3 acaso unin
[17]  zzzaux←zzzaux,zzz
[18]  →junta
[19] dois:raux[i;1+⍳2]←zzz←2 acaso unin
[20]  zzzaux←zzzaux,zzz
[21]  →junta
[22] junta:→(i=i←i+1)/t1
[23] aca:zzzaux←tiradups zzzaux
[24]  unin←zzzaux tiraaca unin
[25]  i←1
[26] t2:→(i≥1↑ρraux)/ufa0
[27]  raux[i;1]←zzz←1 acaso unin
[28]  raux[i+1;proxzero raux[i+1;]]←zzz
[29]  unin←zzz tiraaca unin
[30]  i←i+1
[31]  →t2
[32] ufa0:raux[1↑ρraux;1]←1 acaso unin
[33]  raux←raux[(1↑ρraux)?1↑ρraux;]
[34]  i←1 ⋄ r←((1↑ρraux),44)ρ' '
[35] t3:→(i>1↑ρraux)/zebra
[36]  j←1
[37] t4:→(j>1↓ρraux)/sumai
[38]  →(raux[i;j]=0)/poeb
[39]  r[i;((j-1)×4)+⍳4]←uni[raux[i;j];]
[40]  →sumaj
[41] poeb:r[i;((j-1)×4)+⍳4]←'    '
[42] sumaj:→(j=j←j+1)/t4
[43] sumai:→(i=i←i+1)/t3
[44] zebra:r←(1 1 1 1 0,40ρ1)⍉[2]r
[45]  r[;5]←((1↑ρraux),1)ρ1 0⍣¯1++/[2]raux≠0
-------------------------------------------------------------
[ 0]  geraquestaom06;q;sem;z;x;lin;col;resp;a1
[ 1]  q←''''
[ 2]  'Neste exerc⍉',q,'icio, voc⍉^e deve escalonar um determinado curso, formado'
[ 3]  'por diversas mat⍉',q,'erias e sujeito a diversos pr⍉',q,'e-requisitos.'
[ 4]  'A ordem normal de fazer as mat⍉',q,'erias ⍉',q,'e dada pelo aparecimento na lista.'
```

```
[ 5]  z←geracaso 14+?3
[ 6]  sem←2+?3
[ 7]  'As mat⍀',q,'erias que exigem pr⍀',q,'e-requisitos s⍀~ao:'
[ 8]  '⍀begin{verbatim}'
[ 9]  (1 1 1 1 0 0 1 0 0,50⍴1 1 1 1 0)⍀z
[10]  '⍀end{verbatim}'
[11]  'A quantidade m⍀',q,'axima de mat⍀',q,'erias por semestre: ',(⍕sem),'⍀⍀*'
[12]  x←sem pinguinho z
[13] mais:lin←?1↑⍴x
[14]  col←(4×?sem)+¯3 ¯2 ¯1 0
[15]  →(4=+/(a1←,x[lin;col])='    ')/mais
[16]  '1. Em que semestre ser⍀',q,'a cursada a mat⍀',q,'eria de ',(,x[lin;col]),' ?⍀⍀*'
[17]  resp←lin
[18] mais2:lin←?1↑⍴x
[19]  col←(4×?sem)+¯3 ¯2 ¯1 0
[20]  →(4=+/(,x[lin;col])='    ')/mais2
[21]  →(4=+/(,x[lin;col])=a1)/mais2
[22]  '2. Em que semestre ser⍀',q,'a cursada a mat⍀',q,'eria de ',(,x[lin;col]),' ?⍀⍀*'
[23]  resp,' / ',lin
-------------------------------------------------------------
[ 0]  r←gerazuza zuza;quais;i;linha
[ 1] ⍝ recebe a traducao numerica da metriz de entrada e devolve uma lista
[ 2] ⍝ de todas as materias ainda nao cursadas. As que nao tem mais prereqs
[ 3] ⍝  aparecem com dez ¯1s indicando que podem ser feitas
[ 4]  quais←(,zuza≠¯1)/,zuza
[ 5]  quais←tiradups quais[⍋quais]
[ 6] ⍝ 'quais=',⍕quais
[ 7]  r←((⍴quais),11)⍴¯1
[ 8]  r[;1]←((⍴quais),1)⍴quais
[ 9]  i←1
[10] t1:→(i>1↑⍴zuza)/acabou
[11]  linha←r[;1]⍳zuza[i;1]
[12]  →(linha>1↑⍴r)/somak
[13]  r[linha;]←zuza[i;]
[14] somak:→(i=i←i+1)/t1
[15] acabou:
-------------------------------------------------------------
[0]  r←lindeza x
[1]  r←(1 1 1 1 0 1 0,50⍴1 1 1 1 0)⍀x
-------------------------------------------------------------
[0]  lopeia;i;x
[1]  i←1 ⋄ x←rodeia 0 1 0 2 3 7
[2]  →(i>343)/0
[3]  +/6=+/(343 6⍴x[i;])=x
[4]  i←i+1
[5]  →2
-------------------------------------------------------------
[ 0]  r←max pinguinho materias;quais;mate;j;i;qual;zuza;k;w;rrr;raux;xxx;yyy;vetor
[ 1]  mate←quais←(1 1 1 1 0,40⍴1)/[2]materias
[ 2]  quais←((11×1↑⍴materias),4)⍴quais
[ 3]  j←1 ⋄ qual←0 4⍴' ' ⋄ rrr←0⍴0
[ 4] t1:→(j>1↑⍴quais)/acabou
[ 5]  →(4=+/quais[j;]=' ')/somaj
[ 6]  i←1
[ 7] t2:→(i>1↑⍴qual)/inclue
[ 8]  →(4=+/quais[j;]=qual[i;])/somaj
[ 9]  →(i=i←i+1)/t2
[10] inclue:qual←qual,[1]quais[j;]
[11] somaj:→(j=j←j+1)/t1
[12] acabou:zuza←((1↑⍴mate),11)⍴¯1
[13]  j←1
[14] t11:→(j>1↑⍴mate)/finz1
[15]  k←1
```

```
[16] t21:→((k×4)≥1↓⍴mate)/finz2
[17]  →(4=+/mate[j;((k-1)×4)+⍳4]=' ')/somak
[18]  w←1
[19] t31:→(4=+/qual[w;]=mate[j;((k-1)×4)+⍳4])/achou
[20]  →(w=w←w+1)/t31
[21] achou:zuza[j;k]←w
[22] somak:→(k=k←k+1)/t21
[23] finz2:→(j=j←j+1)/t11
[24] finz1:raux←(0,max)⍴0
[25] ula1:→(¯1=⌈/,zuza)/finmesmo
[26]  xxx←gerazuza zuza
[27]  raux←raux,[1]yyy←max escolhe xxx
[28]  →((1↑⍴raux)>2+1↑⍴qual)/naodeu
[29]  zuza←yyy zerazuza zuza
[30]  →ula1
[31] finmesmo:r←((1↑⍴raux),(max×4))⍴' '
[32]  i←1
[33] h1:→(i>1↑⍴raux)/cica
[34]  j←1
[35] h2:→(j>1↓⍴raux)/jija
[36]  →(raux[i;j]=0)/poeb
[37]  r[i;((j-1)×4)+⍳4]←qual[raux[i;j];]
[38]  →biba
[39] poeb:r[i;((j-1)×4)+⍳4]←4⍴'ω'
[40] biba:→(j=j←j+1)/h2
[41] jija:→(i=i←i+1)/h1
[42] cica:i←1
[43] gt:→(i>1↑⍴r)/lolo
[44]  vetor←(((1↓⍴r)÷4),4)⍴r[i;]
[45]  vetor←vetor[⍋⍋vetor;]
[46]  r[i;]←(1↓⍴r)↑((,vetor)≠'ω')/,vetor
[47]  →(i=i←i+1)/gt
[48] lolo:
[49]  →0
[50] naodeu:'prereqs circulares...'
-------------------------------------------------------------
[0]  r←proxzero lin
[1]  r←1↑(lin=0)/⍳⍴lin
-------------------------------------------------------------
[0]  r←qual roda cu;i
[1]  i←1 6 3 2 4 5 1 4 3 5 6 2 2 3 5 4 1 6 5 1 2 4 3 6 4 2 6 3 5 1 6 2 4 1 5 3
[2]  i←7 6⍴i,⍳6
[3] ⍝ i←6 6⍴i
[4]  r←cu[i[qual;]]
-------------------------------------------------------------
[ 0]  r←rodeia cu;i;j;k;a
[ 1]  r←343 6⍴0
[ 2]  i←1 ⋄ a←1
[ 3] t1:→(i>7)/fim
[ 4]  j←1
[ 5] t2:→(j>7)/d1
[ 6]  k←1
[ 7] t3:→(k>7)/d2
[ 8]  r[a;]←i roda j roda k roda cu
[ 9]  a←a+1
[10]  →(k=k←k+1)/t3
[11] d2:→(j=j←j+1)/t2
[12] d1:→(i=i←i+1)/t1
[13] fim:
-------------------------------------------------------------
[0]  r←a temig b;x
[1]  x←rodeia a
[2]  r←+/6=+/(343 6⍴b)=x
```

```
------------------------------------------------------------
[0]  testa
[1]  i←1
[2]  →(i>1000)/0
[3]  zzz←geracaso 20
[4]  xxx←(1+?3)pinguinho zzz
[5]  i←i+1
[6]  i
[7]  →2
------------------------------------------------------------
[0]  r←quais tiraaca un;i
[1]  i←1
[2] t1:→(i>⍴quais)/fim
[3]  un←(quais[i]≠un)/un
[4]  i←i+1
[5]  →t1
[6] fim:r←un
------------------------------------------------------------
[0]  r←tiradups x
[1]  r←((x⍳x)=⍳⍴x)/x
------------------------------------------------------------
[ 0]  opesq vivom06a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixonol;m;nomes;ql39;qlinha;re
      lat;resp;resu;s;sem;upag;xk;xxx;ylu;za;zb;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←0 ⋄ EVENTO←'PLm06   '
[ 5]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 8]  ylu←n grupo ylu
[ 9]  FOLHALAm06←ajusta80 FOLHALAm06
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAm06)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[12]  xk←1 ⋄ resu←0 53⍴' '
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←47 80⍴' '
[15]  f←FOLHALAm06
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←3.06
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  →(36=1↓⍴ylu)/zebra
[21]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[22]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[23]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[24]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[25]  →maiszebra
[26] zebra:
[27]  esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[46;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[47;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  zzz←geracaso 14+?3
[35]  sem←2+?2
[36]  xxx←sem pinguinho zzz
[37]  esse[8;⍳10]←5 0⍎(1↑⍴zzz),sem
[38]  esse[8+⍳10;]←10 80↑((1 1 1 1 0 1 0,50⍴1 1 1 1 0)⍀[2]zzz),[1]2 57⍴(57↑'0 0'),57↑'⍀end
      {verbatim}'
```

```
[39]  s←2?9⌊1↑⍴xxx ⋄ m←?2⍴sem
[40]  →((4≠+/xxx[s[1];((m[1]-1)×4)+⍳4]=' ')∧(4≠+/xxx[s[2];((m[2]-1)×4)+⍳4]=' '))/blz1
[41]  ⍞←'*'
[42]  →inica
[43] blz1:
[44]  esse[18+⍳4;⍳3]←4 3⍴3 0⍕m[1],s[1],m[2],s[2]
[45]  resp←(3 0⍕resp),(2 0⍕1↑⍴xxx),xxx[s[1];((m[1]-1)×4)+⍳4],xxx[s[2];((m[2]-1)×4)+⍳4]
[46] inica2:
[47]  zzz←geracaso 14+?3
[48]  sem←2+?2
[49]  xxx←sem pinguinho zzz
[50]  esse[23;⍳10]←5 0⍕(1↑⍴zzz),sem
[51]  esse[23+⍳10;]←10 80↑((1 1 1 1 0 1 0,50⍴1 1 1 1 0)⌿[2]zzz),[1]2 57⍴(57↑'0 0'),57↑'⌿en
      d{verbatim}'
[52]  s←2?9⌊1↑⍴xxx ⋄ m←?2⍴sem
[53]  →((4≠+/xxx[s[1];((m[1]-1)×4)+⍳4]=' ')∧(4≠+/xxx[s[1];((m[1]-1)×4)+⍳4]=' '))/blz2
[54]  ⍞←'⊗'
[55]  →inica2
[56] blz2:
[57]  esse[33+⍳4;⍳3]←4 3⍴3 0⍕m[1],s[1],m[2],s[2]
[58]  resp←resp,(2 0⍕1↑⍴xxx),xxx[s[1];((m[1]-1)×4)+⍳4],xxx[s[2];((m[2]-1)×4)+⍳4]
[59] ⍝ ====== cubos =======
[60]  za←gecubo
[61]  esse[37+⍳4;]←formatagec⊃za[1]
[62]  resp←resp,'  5 55 55 55 55'⍕(4-⊃za[2]),4↑⊃za[3]
[63]  za←gecubo
[64]  esse[41+⍳4;]←formatagec⊃za[1]
[65]  resp←resp,'  5 55 55 55 55'⍕(4-⊃za[2]),4↑⊃za[3]
[66] ⍝           123456789012345
[67]  resu←resu,[1]1 53⍴resp
[68]  acuja←(f[;2]='#')/⍳1↑⍴f
[69]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[70]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⌿newpage'
[71]  ⍞←(⍕xk←xk+1),'-'
[72]  →testa
[73] fim:
[74]  zb←1 1 1 0 0 1 1 0 1 1 1 1 0 1 1 1 1 0 0 0 1 1 0 1 1 1 1 0 1 1 1 1 0 1 1 0,(13⍴1),0
      1 1 0,13⍴1
[75]  resu←zb⌿[2]resu
[76]  upag←(1 0+⍴f)⍴' '
[77]  →(1=≡n)/elafa
[78]  upag[1;]←(1↓⍴upag)↑'⌿begin{verbatim}'
[79]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[80]  upag[2+⍳1↑⍴resu;⍳66]←resu
[81]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⌿end{verbatim}'
[82]  →terminando
[83] elafa:
[84]  aaa←(ylu[;⍳36],0 5↓resu)
[85]  lixonol←aaa ⎕FM('c:⌿apl2⌿',((~⍷∧⌿⍷EVENTO=' ')/EVENTO),'.gpa')
[86]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[87] terminando:
[88]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⌿end{document}'
[89]  relat[1↑⍴relat;;]←upag
[90]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)⎕FM'c:⌿apl2⌿',((~⍷∧⌿⍷EVENTO=' ')/EVENTO),'.t
      ex'
[91]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[92]  'Arquivo(s) criado(s) com o nome de c:⌿apl2⌿',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[ 0]  r←quem zerazuza zz;i;alfa;inds
[ 1] ⍝ coloca ¯1 nas materias que estao sendo feitas dentro de zuza
[ 2]  i←1
[ 3] vorta:→(i>⍴quem)/fim
[ 4]  →(quem[i]=0)/somai
```

```
[ 5]  alfa←,zz
[ 6]  inds←(alfa=quem[i])/⍳⍴alfa
[ 7]  alfa[inds]←¯1
[ 8]  zz←(⍴zz)⍴alfa
[ 9] somai:→(i=i←i+1)/vorta
[10] fim:r←zz
------------------------------------------------------------
```

vivom08

```
[0]  AVISO
[1]  'em f:\v\fonvg\resolvepiscina.alg esta o modulo VG'
[2]  'que equivale a funcao repis neste ws'
[3]  'Para rodar um caso chame "1 repis 1000 1000 1000 3 4 1'
[4]  '               o primeiro exemplo da folha'
[5]  'Veja a variavel EXPLICA para estudar as questoes do estoque'
[6]  EXPLICA←75 ajusta EXPLICA
------------------------------------------------------------
[ 0]  r←cnaipe t5;O;P;E;C;ma
[ 1]  O←+/t5='O' ⋄ C←+/t5='C' ⋄ E←+/t5='E' ⋄ P←+/t5='P'
[ 2]  →((O≥2)∧(C≥2))/ouro
[ 3]  →((O≥2)∧(E≥2))/ouro
[ 4]  →((O≥2)∧(P≥2))/ouro
[ 5]  →((E≥2)∧(C≥2))/espa
[ 6]  →((E≥2)∧(P≥2))/espa
[ 7]  →((C≥2)∧(P≥2))/copa
[ 8]  ma←4 2⍴'O',(1 0⍕O),'E',(1 0⍕E),'C',(1 0⍕C),'P',1 0⍕P
[ 9]  ma←ma[⍋AV⍋ma[;2];]
[10]  r←ma[4;1]
[11]  →0
[12] ouro:r←'O'
[13]  →0
[14] espa:r←'E'
[15]  →0
[16] copa:r←'C'
------------------------------------------------------------
[0]  r←custopis x
[1]  →(x[1]=¯1)/menos
[2]  r←(x[1]×0.02)+(x[2]×0.15)+x[3]×0.5
[3]  →0
[4] menos:r←¯1
------------------------------------------------------------
[ 0]  r←gerapis;a;b;i;qt;mos
[ 1]  mos←0
[ 2]  r←3 7⍴0
[ 3]  i←1 ⋄ qt←0
[ 4] vo:→(i>3)/fim
[ 5]  a←(500+100×?10),(300+100×?6),(200+100×?8),(0.1×40+?10),(0.1×58+?10),(0.1×14+?10)
[ 6]  b←mos repis a
[ 7]  →(b[2]<0)/vo
[ 8]  →((b[1]=¯1)∧(qt≠0))/vo
[ 9]  →(b[1]≠¯1)/pula
[10]  qt←qt+1
[11] pula:r[i;⍳6]←a
[12]  r[i;7]←custopis b
[13]  i←i+1
[14]  →vo
[15] fim:
------------------------------------------------------------
[ 0]  r←geraquestaoprova;ccx;i
[ 1]  r←0 70⍴' '
[ 2]  i←1
```

```
[ 3] t1:→(i>9)/0
[ 4]  tt←51 70ρ' '
[ 5]  tt[1;]←70↑'Esta questão é sobre o truque de cartas. 5 cartas são retiradas'
[ 6]  tt[2;]←70↑'e apenas 4 são mostradas, codificando a quinta carta'
[ 7]  tt[3;]←70↑'O código é baseado em uma dada ordenação do baralho. As cartas'
[ 8]  tt[4;]←70↑'são ordenadas \textbf{primeiro por naipe} e depois pelo seu'
[ 9]  tt[5;]←70↑'valor de face.'
[10]  tt[7;]←70↑'Usar-se-á a seguinte ordem'
[11]  tt[8;]←70↑'\begin{itemize}'
[12]  tt[9;]←70↑'\item $O < E < C < P$ (ouros, espadas, copas e paus); e'
[13]  tt[10;]←70↑'\item $A < 2 < ... < 9 < T < J < Q < K$, onde $A$=as, $T$=10,'
[14]  tt[11;]←70↑'  $J$=valete, $Q$=dama e $K$=rei.'
[15]  tt[12;]←70↑'\end{itemize}'
[16]  tt[14;]←70↑'Assuma que o expectador escolheu as cartas JC, 8P, 7O, 8E e QO'
[17]  tt[15;]←70↑'(valete de copas, 8 de paus, 7 de ouros, 8 de espadas e dama de'
[18]  tt[16;]←70↑'ouros). A estratégia do assistente é a seguinte:'
[19]  tt[18;]←70↑'\begin{itemize}'
[20]  tt[19;]←70↑'\item Ache o naipe $n$ que aparece ao menos duas vezes no conjunto de'
[21]  tt[20;]←70↑'cartas escolhidas (ouros, no exemplo). Se mais do que um naipe'
[22]  tt[21;]←70↑'aparecem duas vezes, escolha o de menor ordem.'
[23]  tt[22;]←70↑'\item esconda a carta $x$, do naipe $n$ que esteja a no máximo'
[24]  tt[23;]←70↑'6 posiçaes na tabela cíclica $A<2<...<T<J<Q<K<A<2<...$ de outra'
[25]  tt[24;]←70↑'carta $y$ do mesmo naipe. Isto será sempre possível, já que existem'
[26]  tt[25;]←70↑'apenas 13 cartas do mesmo naipe. (No exemplo, o assistente esconde'
[27]  tt[26;]←70↑'a dama de ouros). Se duas ou mais cartas satisfazem o critério acima,'
[28]  tt[27;]←70↑'escolha a que tem o \textbf{menor} valor de face.'
[29]  tt[28;]←70↑'\item mostre $y$ ao mágico. Neste ponto ele saberá o naipe da carta'
[30]  tt[29;]←70↑'escondida (o mesmo de $y$). Saberá também que o valor da carta escondida
      '
[31]  tt[30;]←70↑'não está a mais de 6 posiçaes de $y$.'
[32]  tt[31;]←70↑'\item com as 3 cartas sobrantes, o assistente codifica um número entre'
[33]  tt[32;]←70↑'1 e 6. Para fazer isto ele ordena as três cartas (digamos $z_1, z_2 e'
[34]  tt[33;]←70↑'z_3$) em ordem, onde $z_1 < z_2 < z_3$. Cada uma das 6 ordens possíveis'
[35]  tt[34;]←70↑'em que as cartas são mostradas deve ser interpretada pelo mágico como'
[36]  tt[35;]←70↑'sendo um número:'
[37]  tt[36;]←70↑'\begin{itemize}'
[38]  tt[37;]←70↑'\item $z_1, z_2, z_3$ significa 1,'
[39]  tt[38;]←70↑'\item $z_1, z_3, z_2$ significa 2, '
[40]  tt[39;]←70↑'\item $z_2, z_1, z_3$ significa 3,  '
[41]  tt[40;]←70↑'\item $z_2, z_3, z_1$ significa 4,   '
[42]  tt[41;]←70↑'\item $z_3, z_1, z_2$ significa 5,    '
[43]  tt[42;]←70↑'\item $z_3, z_2, z_1$ significa 6.     '
[44]  tt[43;]←70↑'\end{itemize}                          '
[45]  tt[44;]←70↑'\item Se a carta mostrada é $<$ 7, a conta deve ser feita à esquerda'
[46]  tt[45;]←70↑'(para trás na lista acima de cartas). Se a carta mostrada é $\ge 7$, '
[47]  tt[46;]←70↑'a contagem deve ser para a direita. % olhar no codigo'
[48]  tt[47;]←70↑'\end{itemize}'
[49]  ccx←geratruc
[50]  tt[49;]←70↑'cartas mostradas \verb+',(1 1 0 1 1 0 1 1 0 1 1\ccx[1;2+⍳8]),' +'
[51]  tt[50;]←70↑'$QR  ',(3 0⍕873+i),'ALGOB405'
[52]  tt[51;]←70↑'Resposta ',ccx[1;1 2]
[53]  r←r,[1]1 70ρ70↑'$QE  ',(3 0⍕873+i),'ALGOB405 5truque de cartas'
[54]  r←r,[1]tt
[55]  i←i+1
[56]  →t1
-------------------------------------------------------------
[ 0]  r←geratruc;seq;vet;z
[ 1]  z←3 10ρ' ' ⋄ r←3 80ρ' '
[ 2]  seq←'A23456789TJQK'
[ 3] ⍝ vet←52 2ρ(seq,13ρ'O'),(seq,13ρ'E'),(seq,13ρ'C'),seq,13ρ'P'
[ 4]  vet←⍉2 52ρ(52ρseq),(13ρ'O'),(13ρ'E'),(13ρ'C'),13ρ'P'
[ 5]  z[1;]←resolvetru,vet[5?52;]
[ 6]  z[2;]←resolvetru,vet[5?52;]
```

```
[ 7]  z[3;]←resolvetru,vet[5?52;]
[ 8]  r[1;]←80↑poenaipe z[1;]
[ 9]  r[2;]←80↑poenaipe z[2;]
[10]  r[3;]←80↑poenaipe z[3;]
-------------------------------------------------------------
[0]  r←geraumi;seq;vet
[1]  seq←'A23456789TJQK'
[2]  vet←⍉2 52⍴(52⍴seq),(13⍴'O'),(13⍴'E'),(13⍴'C'),13⍴'P'
[3]  r←,vet[5?52;]
-------------------------------------------------------------
[ 0]  r←esc maidista mos;x
[ 1]  r←2⍴0
[ 2]  x←(ondeta mos)-ondeta esc
[ 3]  →((x>6)∨(x<1))/acerta
[ 4]  r←1,x
[ 5]  →0
[ 6] acerta:→(x<0)/nega
[ 7]  r←¯1,13-x
[ 8]  →0
[ 9] nega:→(x<¯6)/irra
[10]  r←¯1,|x
[11]  →0
[12] irra:r←1,13+x
[13]  →0
-------------------------------------------------------------
[0]  r←a mostralch x
[1]  r←a,'=>   P:',(⍕x[3]),'   M:',(⍕x[2]),'   G:',⍕x[1]
-------------------------------------------------------------
[0]  r←mostraqt q
[1]  'dim em cm' 'qtdG' 'sobra em cm' 'qtdM' 'sobra em cm' 'qtdP' 'sobra em cm',[1]q
-------------------------------------------------------------
[0]  r←mostrazz zz
[1]  r←⍕zz
-------------------------------------------------------------
[ 0]  r←ondeta t;seq;vet;i
[ 1]  seq←'A23456789TJQK'
[ 2]  vet←⍉2 52⍴(52⍴seq),(13⍴'O'),(13⍴'E'),(13⍴'C'),13⍴'P'
[ 3]  i←1
[ 4] t1:→(i>52)/fim
[ 5]  →(2≠+/t=vet[i;])/soma
[ 6]  r←i
[ 7]  →0
[ 8] soma:→(i=i←i+1)/t1
[ 9] fim:
-------------------------------------------------------------
[ 0]  r←poenaipe z;t
[ 1]  t←4 17⍴'O$↓diamondsuit↓;$P$↓clubsuit↓;$   E$↓spadesuit↓;$  C$↓heartsuit↓;$  '
[ 2]  r←'   '
[ 3]  r[1 2 3]←z[1 2 3]
[ 4]  r←r,1↓t[(,t[;1])⍳z[4];]
[ 5]  r←r,z[5]
[ 6]  r←r,1↓t[(,t[;1])⍳z[6];]
[ 7]  r←r,z[7]
[ 8]  r←r,1↓t[(,t[;1])⍳z[8];]
[ 9]  r←r,z[9]
[10]  r←r,1↓t[(,t[;1])⍳z[10];]
-------------------------------------------------------------
[  0]  r←mos repis xx;qt;lc;lh;ch;zz;pppmpg;sm;sg;sp;epemeg;x;aaa;bbb
[  1] ⍝ chamar 1 repis qtdpeq, qtmed, qtgra, dimX, dimY, dimZ
[  2]  epemeg←3↑xx ⋄ x←3↓xx
[  3]  qt←3 7⍴0 ⍝ cada linha destrincha uma das dimensoes da piscina X,Y,Z
[  4]  qt[;1]←x×100 ⍝ col=1 e o comprimento em centimetros
[  5]  qt[;2]←⌊qt[;1]÷30  ⍝col=2 tem a quantidade de lajotas G
```

```
[  6]  qt[;3]←qt[;1]-qt[;2]×30 ⍝ col=3 tem a sobra depois de usar as lajotas G
[  7]  qt[;4]←⌊qt[;3]÷15  ⍝col=4 tem a quantidade de M
[  8]  qt[;5]←qt[;3]-qt[;4]×15 ⍝ col=5 tem o que sobra depois de usar M
[  9]  qt[;6]←⌊qt[;5]÷5   ⍝col=6 tem a quantidade de P
[ 10]  qt[;7]←qt[;5]-qt[;6]×5  ⍝ col=7 tem o que sobra depois de usar P
[ 11]  qt←3 7⍴⍳10 2⍪,qt
[ 12] ⍝ ' formato: pequeno, medio e grande'
[ 13]  →((qt[1;7]≠0)∨(qt[2;7]≠0)∨(qt[3;7]≠0))/deuerro ⍝
[ 14] ⍝ ↑↑↑↑↑ situacao em que as dimensoes nao sao exatas
[ 15]  →(mos=0)/oba1
[ 16]  mostraqt qt
[ 17]  '------------------'
[ 18] oba1:
[ 19]  lc←3⍴0   ⍝ lc significa Largura Comprimento (ou XY). Esta variavel contem a
[ 20] ⍝ qtd de G,M e P na parede lc (ou XY)
[ 21]  lc[1]←qt[1;2]×qt[2;2] ⍝ calcula X×Y em termos de lajotas G e joga em lc[1]
[ 22]  →(qt[1;4]=0)/p1 ⍝ se a qtd de lajotas M em X eh zero, pule a proxima linha
[ 23]  lc[2]←lc[2]+⌊(qt[1;3]-qt[1;5])×qt[2;1]÷225 ⍝
[ 24] ⍝ calcule a dimensao Y vezes o trecho de X que sera coberto por lajotas M
[ 25] ⍝ dividido por 15^2. O piso deste numero indica quantas lajotas M usar aqui
[ 26] p1:→(qt[2;4]=0)/p2 ⍝ se a qtd de lajotas M em Y eh zero, pule a proxima linha
[ 27]  lc[2]←lc[2]+⌊(qt[2;3]-qt[2;5])×qt[1;1]÷225 ⍝ faz o mesmo de cima, na outra parede
[ 28] p2:lc[2]←lc[2]-qt[1;4]×qt[2;4] ⍝ subtrai a lajota contada duas vezes
[ 29]  →(qt[1;6]=0)/p3
[ 30]  lc[3]←lc[3]+⌊qt[1;5]×qt[2;1]÷25
[ 31] p3:→(qt[2;6]=0)/p4
[ 32]  lc[3]←lc[3]+⌊qt[2;5]×qt[1;1]÷25
[ 33] p4:lc[3]←lc[3]-qt[1;6]×qt[2;6]
[ 34]  →(mos=0)/oba2
[ 35]  'lc'mostralch lc
[ 36]  '------------------'
[ 37] oba2:
[ 38]  lh←3⍴0
[ 39]  lh[1]←qt[1;2]×qt[3;2]
[ 40]  →(qt[1;4]=0)/p11
[ 41]  lh[2]←lh[2]+⌊(qt[1;3]-qt[1;5])×qt[3;1]÷225
[ 42] p11:→(qt[3;4]=0)/p12
[ 43]  lh[2]←lh[2]+⌊(qt[3;3]-qt[3;5])×qt[1;1]÷225
[ 44] p12:lh[2]←lh[2]-qt[1;4]×qt[3;4]
[ 45]  →(qt[1;6]=0)/p13
[ 46]  lh[3]←lh[3]+⌊qt[1;5]×qt[3;1]÷25
[ 47] p13:→(qt[3;6]=0)/p14
[ 48]  lh[3]←lh[3]+⌊qt[3;5]×qt[1;1]÷25
[ 49] p14:lh[3]←lh[3]-qt[1;6]×qt[3;6]
[ 50]  →(mos=0)/oba3
[ 51]  'lh'mostralch lh
[ 52]  '------------------'
[ 53] oba3:
[ 54]  ch←3⍴0
[ 55]  ch[1]←qt[2;2]×qt[3;2]
[ 56]  →(qt[2;4]=0)/p21
[ 57]  ch[2]←ch[2]+⌊(qt[2;3]-qt[2;5])×qt[3;1]÷225
[ 58] p21:→(qt[3;4]=0)/p22
[ 59]  ch[2]←ch[2]+⌊(qt[3;3]-qt[3;5])×qt[2;1]÷225
[ 60] p22:ch[2]←ch[2]-qt[2;4]×qt[3;4]
[ 61]  →(qt[2;6]=0)/p23
[ 62]  ch[3]←ch[3]+⌊qt[2;5]×qt[3;1]÷25
[ 63] p23:→(qt[3;6]=0)/p24
[ 64]  ch[3]←ch[3]+⌊qt[3;5]×qt[2;1]÷25
[ 65] p24:ch[3]←ch[3]-qt[2;6]×qt[3;6]
[ 66]  →(mos=0)/oba4
[ 67]  'ch'mostralch ch
[ 68]  '------------------'
```

```
[ 69] oba4:
[ 70]  zz←3 3⍴1c,lh,ch
[ 71] ⍝ zz
[ 72]  pppmpg←⊖+/[1]zz×3 3⍴1 1 1 2 2 2 2 2 2
[ 73]  →(mos=0)/oba6
[ 74]  'Pecas necessarias contando as 5 paredes'
[ 75]  'P:',(⍕pppmpg[1]),'   M:',(⍕pppmpg[2]),'   G:',⍕pppmpg[3]
[ 76]  'Estoques'
[ 77]  'P: ',(⍕epemeg[1]),'   M:',(⍕epemeg[2]),'   G:',⍕epemeg[3]
[ 78]  '------------------'
[ 79] oba6:
[ 80]  sg←epemeg[3]-pppmpg[3]
[ 81]  sm←epemeg[2]-pppmpg[2]
[ 82]  sp←epemeg[1]-pppmpg[1]
[ 83]  →(mos=0)/oba7
[ 84]  'Analise do estoque apos o uso   (se der negativo, ha problemas...)'
[ 85]  'P:',(⍕sp),'   M:',(⍕sm),'   G:',⍕sg
[ 86]  '------------------'
[ 87] oba7:
[ 88] ⍝ 'sp, sm, sg ',⍕sp,sm,sg
[ 89]  →((sp≥0)∧(sm≥0)∧(sg≥0))/okok     ⍝ deu tudo certo
[ 90]  →((sp≥0)∧(sm≥0)∧(sg<0))/ole1     ⍝ faltam grandes
[ 91]  →((sp≥0)∧(sm<0)∧(sg≥0))/ole2     ⍝ faltam medios
[ 92]  →((sp≥0)∧(sm<0)∧(sg<0))/ole3     ⍝ faltam grandes e medios
[ 93]  →deuerro
[ 94] ole1:
[ 95]  →(mos=0)/oba8
[ 96]  'Faltam Gs no estoque'
[ 97] oba8:
[ 98]  →(((|sg)×36)>sp+sm×9)/deuerro  ⍝ se (G×36)>((M×9)+P) deu erro
[ 99]  →(((|sg)×36)>sm×9)/deambos         ⍝ se (G×36)>(M×9) => use ambos o P e o M
[100] deumso:                             ⍝ vai usar so o M
[101]  →(mos=0)/oba9
[102]  'Usar-se-a apenas os Ms em lugar dos Gs'
[103] oba9:
[104]  pppmpg[3]←pppmpg[3]+sg             ⍝ subtrai a qtd de G da solucao provisoria
[105]  pppmpg[2]←pppmpg[2]+(|sg)×4        ⍝ soma 4×o numero acima na qtd de M da solucao
[106]  →okok                              ⍝ cai fora
[107] deambos:                            ⍝ vai usar ambos
[108]  →(mos=0)/oba10
[109]  'Usar-se-ao Ps e Ms em lugar dos Gs'
[110] oba10:
[111]  pppmpg[3]←pppmpg[3]+sg             ⍝ reduz a qtd de G
[112]  aaa←epemeg[2]                      ⍝ nao faco ideia de porque testei aaa e bbb
[113]  bbb←pppmpg[2]+sm                   ⍝ olhando como eles foram calculados
[114]  →(aaa≠bbb)/zebrona                 ⍝ nao faz sentido
[115]  pppmpg[2]←aaa                      ⍝ vou usar todo o estoque de M
[116]  pppmpg[1]←pppmpg[1]+(36×|sg)-sm×9  ⍝ alem disso, usarei os Ps + 36G-9M pequenos
[117]  →okok
[118] ole2:
[119]  →(mos=0)/oba11
[120]  'Faltam Ms no estoque'
[121] oba11:
[122]  →(((|sm)×9)>sp)/deuerro   ⍝ se a necessidade de medios × 9 > qtd de Ps: erro
[123]  pppmpg[2]←pppmpg[2]+sm        ⍝ M necessarios = M necessarios - a falta do estoque d
      e M
[124]  pppmpg[1]←pppmpg[1]+(|sm)×9   ⍝ P a usar = P a usar + abs(falta est M) × 9
[125]  →okok
[126] ole3:
[127]  →(mos=0)/oba12
[128]  'Faltam Ms e Gs no estoque'
[129] oba12:
[130]  →((((|sm)×9)+((|sg)×36))>sp)/deuerro ⍝ Se (nec M × 9)+(nec G×36) > estoque de Ps : e
```

```
      rro
[131]  pppmpg[3]←pppmpg[3]+sg   ⍝ diminui a necessidade de G
[132]  pppmpg[2]←pppmpg[2]+sm   ⍝ diminui a necessidade de M
[133]  pppmpg[1]←pppmpg[1]+((|sm)×9)+((|sg)×36)  ⍝ aumenta os Ps  correspondentemente
[134]  →okok
[135] zebrona:'aaa=',(⍕aaa),'    bbb=',⍕bbb
[136] deuerro:r←¯1 0 0
[137]  →0
[138] okok:r←pppmpg
[139]  →0
-------------------------------------------------------------
[ 0]  r←resolvetru tc;na;ca;nd;escon;prime;demais;dist;i;seq;ziza
[ 1] ⍝ devolve tc de modo a que a primeira carta seja a escondida...
[ 2]  na←cnaipe tc[2 4 6 8 10]
[ 3]  seq←'A23456789TJQK'
[ 4]  ca←5 2⍴tc
[ 5]  nd←(ca[;2]=na)/[1]ca
[ 6]  nd←nd,[2]((1↑⍴nd),2)⍴2 0⍕seq⍳,nd[;1]
[ 7]  nd←nd[⍋AV⍳nd[;3 4];]
[ 8]  ziza←nd[1;1 2]maidista nd[2;1 2]
[ 9]  →(ziza[1]>0)/ufhh
[10]  escon←nd[2;1 2] ⋄ prime←nd[1;1 2]
[11]  →astrava
[12] ufhh:
[13]  escon←nd[1;1 2] ⋄ prime←nd[2;1 2]
[14] astrava:dist←ziza[2]
[15]  demais←(escon,prime)retiracar ca
[16]  i←1 ⋄ demais←demais,[2]3 2⍴' '
[17] t1:→(i>3)/conta
[18]  demais[i;3 4]←2 0⍕ondeta demais[i;1 2]
[19]  →(i=i←i+1)/t1
[20] conta:demais←demais[⍋AV⍳demais[;3 4];]
[21]  →(dist=1)/um
[22]  →(dist=2)/do
[23]  →(dist=3)/tr
[24]  →(dist=4)/qu
[25]  →(dist=5)/ci
[26]  →(dist=6)/se
[27]  'deu zebra, dist=',⍕dist
[28]  →0
[29] um:r←prime,escon,,demais[1 2 3;1 2]
[30]  →0
[31] do:r←prime,escon,,demais[1 3 2;1 2]
[32]  →0
[33] tr:r←prime,escon,,demais[2 1 3;1 2]
[34]  →0
[35] qu:r←prime,escon,,demais[2 3 1;1 2]
[36]  →0
[37] ci:r←prime,escon,,demais[3 1 2;1 2]
[38]  →0
[39] se:r←prime,escon,,demais[3 2 1;1 2]
[40]  →0
-------------------------------------------------------------
[ 0]  r←d2 retiracar t5;i
[ 1]  r←0 2⍴' '
[ 2]  i←1
[ 3] t1:→(i>5)/fim
[ 4]  →(2=+/t5[i;]=d2[1 2])/pula
[ 5]  →(2=+/t5[i;]=d2[3 4])/pula
[ 6]  r←r,[1]t5[i;]
[ 7] pula:i←i+1
[ 8]  →t1
[ 9] fim:
```

```
------------------------------------------------------------
[0]  r←tiradups x
[1]  r←((x⍳x)=⍳⍴x)/x
------------------------------------------------------------
[ 0]  veja151;xx;x;mos
[ 1]  mos←0
[ 2]  'Seja a piscina ',⍕xx←100 100 100 0.3 0.3 0.3
[ 3]  'Ou seja, existem 100 azulejos de cada tamanho, e a piscina (!)'
[ 4]  ' tem apenas 30cm x 30cm x 30cm.'
[ 5]  ''
[ 6]  'A pergunta e se serao usados 5G ou 45M ou 180P'
[ 7]  x←⍞
[ 8]  mos repis xx
[ 9]  '-----------------------------------------'
[10]  x←⍞
[11]  'Seja a piscina ',⍕xx←100 100 480 3 3 3
[12]  'Ou seja, existem 100P, 100M e 480G, e a piscina tem 3m x 3m x 3m.'
[13]  ''
[14]  'Note que sao 5 placas de 3m x 3m, na qual sao necessarios 100 G'
[15]  'em cada placa. Portanto, sao necessarios 500G. Mas so existem 480.'
[16]  ' Assim sao necessarios tambem 4 x 20 M. E a resposta e'
[17]  x←⍞
[18]  mos repis xx
[19]  '-----------------------------------------'
[20]  x←⍞
[21]  'Ainda a mesma piscina ',⍕xx←100 70 480 3 3 3
[22]  'Ou seja, existem 100P, 70M e 480G, e a piscina tem 3m x 3m x 3m.'
[23]  ''
[24]  ' Qual a resposta ?'
[25]  x←⍞
[26]  mos repis xx
[27]  '-----------------------------------------'
[28]  x←⍞
[29]  'Ainda a mesma piscina ',⍕xx←10 70 480 3 3 3
[30]  'Ou seja, existem 10P, 70M e 480G, e a piscina tem 3m x 3m x 3m.'
[31]  ''
[32]  ' Qual a resposta ?'
[33]  x←⍞
[34]  mos repis xx
[35]  'ou seja, IMPOSSIVEL'
[36]  '--------------------------------------'
[37]  x←⍞
[38]  'Seja a piscina ',⍕xx←10000 10000 10000 3.1 4.7 1.4
[39]  'Nao faltam azulejos, mas os numeros sao todos quebrados'
[40]  ''
[41]  'Qual a resposta ?'
[42]  x←⍞
[43]  mos repis xx
[44]  '--------------------------------------'
[45]  ' '
[46]  'Analise agora com detalhe a execucao de ',⍕xx←1000 1000 1000 0.5 0.5 0.5
[47]  1 repis xx
[48]  x←⍞
[49]  ' '
[50]  ' Veja agora ',⍕xx←1000 1000 0 0.5 0.5 0.5
[51]  1 repis xx
[52]  x←⍞
[53]  ' '
[54]  ' Veja agora ',⍕xx←1000 0 0 0.5 0.5 0.5
[55]  1 repis xx
[56]  ' '
[57]  x←⍞
------------------------------------------------------------
```

```
[ 0]  opesq vivom08a n;CORRECAO;EVENTO;aaa;acuja;ccx;dhx;esse;f;lixonol;m;relat;resp;resu;
      s;sem;upag;xk;ylu;zzc
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←69 ⋄ EVENTO←'PLm08   '
[ 5]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 8]  FOLHALAm08←ajusta80 FOLHALAm08
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAm08)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[11]  xk←1 ⋄ resu←0 42⍴' '
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←18 80⍴' '
[14]  f←FOLHALAm08
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍎VERSAOa←3.3
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[22]  esse[17;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[18;⍳17]←esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[5+⍳5]
[24] inica:
[25]  ccx←geratruc
[26]  esse[14;]←80↑2↓ccx[1;]
[27]  esse[15;]←80↑2↓ccx[2;]
[28]  esse[16;]←80↑2↓ccx[3;]
[29]  resp←(3 0⍎resp),':',¯1↓,ccx[;1 2],' '
[30]  zzc←gerapis
[31]  esse[9 11 13;]←3 80↑6 0⍎zzc[;⍳3]
[32]  esse[8 10 12;]←3 80↑6 1⍎zzc[;3+⍳3]
[33]  resp←resp,,10 2⍎zzc[;7]
[34]  resu←resu,[1]1 42⍴resp
[35]  acuja←(f[;2]='#')/⍳1↑⍴f
[36]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[37]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[38]  ⍞←(⍎xk←xk+1),'-'
[39]  →testa
[40] fim:
[41]  upag←(1 0+⍴f)⍴' '
[42]  →(1=≡n)/elafa
[43]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[44]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[45]  upag[2+⍳1↑⍴resu;]←'¯'-'edit((1↑⍴resu),80)↑resu
[46]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[47]  →terminando
[48] elafa:
[49]  aaa←(ylu,'¯'-'edit 0 3↓resu)
[50]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[51]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[52] terminando:
[53]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[54]  relat[1↑⍴relat;;]←upag
[55]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.t
      ex'
[56]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[57]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivom10

```
[ 0]  AVISO
[ 1]  'REGATA'
[ 2]  'execute a←gerarega e mostre no quadro o mapa resultado'
[ 3]  'a seguir faca mostrarega a, e confirme que o mapa foi gerado certo'
[ 4]  ' aqui, a saida e 1, a chegada e 8, e os obstaculos sao 2-3, 4-5 e 6-7'
[ 5]  ''
[ 6]  'os pontos de inicio e fim estao entre as coordenadas [-80,240] para ambos os eixos'
[ 7]  'LUZES'
[ 8]  'na aula, mostre o funcionamento da funcao arranjos n (n e q auantidade de botoes)'
[ 9]  'lembre aos alunos que a resposta dos botoes e unica, pois o programa testa todas'
[10]  'as combinacoes e se houver mais de uma, a instancia e rejeitada'
[11]  ''
[12]  'note tambem que a sequencia de aplicacao dos botoes e irrelevante, isto e: 1 3 4'
[13]  'e a mesma coisa que 3 4 1, que 4 1 3,...'
-------------------------------------------------------------
[ 0]  r←arranjos n;i;j
[ 1]  r←((4*n),n)⍴0
[ 2]  i←n ⋄ j←1
[ 3] t1:→(i≤0)/fim
[ 4]  r[;j]←(4*n)⍴((4*i-1)⍴1),((4*i-1)⍴2),((4*i-1)⍴3),((4*i-1)⍴4)
[ 5]  i←i-1
[ 6]  j←j+1
[ 7]  →t1
[ 8] fim:
-------------------------------------------------------------
[ 0]  r←bot botao luz;inds;corta
[ 1]  →(bot=1)/um
[ 2]  →(bot=2)/dois
[ 3]  →(bot=3)/tres
[ 4]  →(bot=4)/quatro
[ 5]  'erro: codigo de botao ruim'
[ 6]  →0
[ 7] um:r←~luz
[ 8]  →0
[ 9] dois:
[10]  r←luz
[11]  corta←(⍴luz)≥inds←¯1+2×⍳100
[12]  inds←corta/inds
[13]  r[inds]←~r[inds]
[14]  →0
[15] tres:
[16]  r←luz
[17]  corta←(⍴luz)≥inds←2×⍳100
[18]  inds←corta/inds
[19]  r[inds]←~r[inds]
[20]  →0
[21] quatro:
[22]  r←luz
[23]  corta←(⍴luz)≥inds←¯2+3×⍳100
[24]  inds←corta/inds
[25]  r[inds]←~r[inds]
[26]  →0
-------------------------------------------------------------
[ 0]  t←aaaa cmin2 vv;z;retas;pts
[ 1]  retas←⊃aaaa[1]
[ 2]  pts←(⊃aaaa[2])[vv;]
[ 3] ⍝ retas e o conjunto de retas 2-3, 4-5 e 6-7 = matriz 3 x 4
[ 4] ⍝ pts e o conjunto de pontos ABCDE = matriz 5 x 2
[ 5] esta:
[ 6]  →(existeobst(,pts[1 3;]),retas[1;])/sima1
[ 7]  →(existeobst(,pts[1 4;]),retas[2;])/sima2
```

```
[ 8]  →(existeobst(,pts[1 5;]),retas[3;])/sima3
[ 9]  t←pts[1;]dist pts[5;]
[10]  →fim
[11] sima1:t←pts[1;]dist pts[2;]
[12] ⍞ 'distancia de ',(⍕vv[1]),' a ',(⍕vv[2]),' = ',⍕t
[13]  →estb
[14] sima2:t←pts[1;]dist pts[3;]
[15] ⍞ 'distancia de ',(⍕vv[1]),' a ',(⍕vv[3]),' = ',⍕t
[16]  →estc
[17] sima3:t←pts[1;]dist pts[4;]
[18] ⍞ 'distancia de ',(⍕vv[1]),' a ',(⍕vv[4]),' = ',⍕t
[19]  →estd
[20] estb:
[21]  →(existeobst(,pts[2 4;]),retas[2;])/simb1
[22]  →(existeobst(,pts[2 5;]),retas[3;])/simb2
[23]  t←t+z←pts[2;]dist pts[5;]
[24] ⍞ 'distancia de ',(⍕vv[2]),' a ',(⍕vv[5]),' = ',⍕z
[25]  →fim
[26] simb1:t←t+z←pts[2;]dist pts[3;]
[27] ⍞ 'distancia de ',(⍕vv[2]),' a ',(⍕vv[3]),' = ',⍕z
[28]  →estc
[29] simb2:t←t+z←pts[2;]dist pts[4;]
[30] ⍞ 'distancia de ',(⍕vv[2]),' a ',(⍕vv[4]),' = ',⍕z
[31]  →estd
[32] estc:
[33]  →(existeobst(,pts[3 5;]),retas[3;])/simc1
[34]  t←t+z←pts[3;]dist pts[5;]
[35] ⍞ 'distancia de ',(⍕vv[3]),' a ',(⍕vv[5]),' = ',⍕z
[36]  →fim
[37] simc1:t←t+z←pts[3;]dist pts[4;]
[38] ⍞ 'distancia de ',(⍕vv[3]),' a ',(⍕vv[4]),' = ',⍕z
[39]  →estd
[40] estd:t←t+z←pts[4;]dist pts[5;]
[41] ⍞ 'distancia de ',(⍕vv[4]),' a ',(⍕vv[5]),' = ',⍕z
[42] fim:
------------------------------------------------------------
[0]  d←a dist b
[1]  d←(a[1]-b[1])*2
[2]  d←d+(a[2]-b[2])*2
[3]  d←d*0.5
------------------------------------------------------------
[0]  r←a div33 b
[1]  →(b=0)/zero
[2]  r←a÷b
[3]  →0
[4] zero:r←9999
------------------------------------------------------------
[0]  r←existeobst v;xo;yo;xd;yd;xi;yi;xf;yf;wod;wif;x;y;yalt
[1]  xo←v[1] ⋄ yo←v[2] ⋄ xd←v[3] ⋄ yd←v[4] ⋄ xi←v[5] ⋄ yi←v[6] ⋄ xf←v[7] ⋄ yf←v[8]
[2]  wod←(yd-yo)div33 xd-xo
[3]  wif←(yf-yi)div33 xf-xi
[4]  x←((wod×xo)+yi-yo+(wif×xi))÷wod-wif
[5]  y←(wif×x)+yi-(wif×xi)
[6]  r←((x>xi)∧(x<xf))∨(x>xf)∧x<xi
------------------------------------------------------------
[ 0]  r←geraluz n;a1;um;lamp;aceapa;iap;iac;zz
[ 1] denovo:a1←4 80⍴' '
[ 2]  a1[1;]←80↑5 0⍕lamp←9+?4
[ 3]  a1[2;]←80↑5 0⍕n
[ 4]  →(1=?2)/deucara
[ 5]  um←1+?2
[ 6]  aceapa←4?lamp
[ 7]  →junta
```

```
[ 8] deucara:
[ 9]  um←?2
[10]  aceapa←3?lamp
[11] junta:
[12]  iac←um↑aceapa
[13]  iap←um↓aceapa
[14]  iac←iac[⍋iac]
[15]  iap←iap[⍋iap]
[16]  a1[3;]←80↑5 0⍕iac,-1
[17]  a1[4;]←80↑5 0⍕iap,-1
[18]  zz←resolveluz a1
[19]  →(zz[1]=0)/denovo
[20]  r←a1
-------------------------------------------------------------
[ 0]  r←gerarega;a;b;k;kl;pm;pm1;pm2
[ 1]  r←4 4⍴0
[ 2]  r[1;1 2]←(b←¯90+10×?12),a←¯90+10×?12
[ 3]  r[1;3 4]←(b+120+10×?12),a+120+10×?12
[ 4]  k←(r[1;4]-r[1;2])÷r[1;3]-r[1;1]
[ 5]  kl←¯1÷k
[ 6]  pm←⌊((r[1;1]+r[1;3]),(r[1;2]+r[1;4]))÷2
[ 7]  pm1←⌊((r[1;1]+pm[1]),(r[1;2]+pm[2]))÷2
[ 8]  pm2←⌊((pm[1]+r[1;3]),(pm[2]+r[1;4]))÷2
[ 9]  r[2;]←retak kl,pm1
[10]  r[3;]←retak kl,pm
[11]  r[4;]←retak kl,pm2
[12] ⍝ r[1+⍳3;]←r[1+3?3;]
-------------------------------------------------------------
[0]  r←instanrega;a;b
[1]  r←9 5⍴0
[2]  a←gerarega
[3]  b←gerarega
[4]  r[⍳4;⍳4]←a
[5]  r[4+⍳4;⍳4]←b
[6]  r[1 5;5]←3
[7]  r[9;1]←resolverega2 a
[8]  r[9;2]←resolverega2 b
-------------------------------------------------------------
[0]  r←can jaesta mat;i
[1]  r←0
[2]  i←1
[3] t1:→(i>1↑⍴mat)/fim
[4]  →((1↓⍴mat)=+/((1↓⍴mat)↑1 0⍕can)=mat[i;])/sim
[5]  →(i=i←i+1)/t1
[6] sim:r←1
[7] fim:
-------------------------------------------------------------
[0]  r←lixom x
[1]  r←1 20⍴'  -x-  -y-  -x-  -y-'
[2]  r←r,[1]5 0⍕x
-------------------------------------------------------------
[ 0]  r←mostrarega aa;dx;dy
[ 1]  aa←aa÷10
[ 2]  aa←aa×(⍴aa)⍴2 1
[ 3]  dx←⌊/,aa[;1 3] ⋄ dy←⌊/,aa[;2 4]
[ 4]  →((dx>0)∧(dy>0))/0
[ 5]  dx←1+|dx ⋄ dy←1+|dy
[ 6]  aa←aa+4 4⍴dx,dy
[ 7]  r←((⌈/,aa[;2 4]),(⌈/,aa[;1 3]))⍴'.'
[ 8]  r[;dx]←'|' ⋄ r[dy;]←'='
[ 9]  r[aa[1;2];aa[1;1]]←'1'
[10]  r[aa[1;4];aa[1;3]]←'8'
[11]  r[aa[2;2];aa[2;1]]←'2'
```

```
[12]  r[aa[2;4];aa[2;3]]←'3'
[13]  r[aa[3;2];aa[3;1]]←'4'
[14]  r[aa[3;4];aa[3;3]]←'5'
[15]  r[aa[4;2];aa[4;1]]←'6'
[16]  r[aa[4;4];aa[4;3]]←'7'
[17]  r←⍞[1]r
------------------------------------------------------------
[ 0]  r←resolveluz a1;a2;a3;iap;iac;gabar;lamp;zz;i;j;candi;bota
[ 1] ⍝ 1=aceso, 0=apagado, 2=tanto faz
[ 2]  a2←(0,lamp←≢a1[1;])⍴' '
[ 3]  a3←(0,bota←≢a1[2;])⍴0
[ 4]  iac←¯1↓≢a1[3;]
[ 5]  iap←¯1↓≢a1[4;]
[ 6]  gabar←lamp⍴2
[ 7]  gabar[iac]←1
[ 8]  gabar[iap]←0
[ 9]  zz←arranjos bota
[10]  i←1
[11] t1:→(i>1↑⍴zz)/fim
[12]  j←1
[13]  candi←lamp⍴1
[14] t2:→(j>bota)/testa
[15]  candi←zz[i;j]botao candi
[16]  →(j=j←j+1)/t2
[17] testa:→(lamp≠+/(gabar×gabar≠2)=candi×gabar≠2)/naoe
[18]  →(candi jaesta a2)/naoe
[19]  a2←a2,[1](1,lamp)⍴lamp↑1 0⍪candi
[20]  a3←a3,[1]zz[i;]
[21] naoe:→(i=i←i+1)/t1
[22] fim:→(0=1↑⍴a2)/naoac   ⍝ nao achou ninguem
[23]  →(1<1↑⍴a2)/naoac      ⍝ achou mais de um
[24] ⍝ →(bota>⍴tiradups a3[1;])/naoac ⍝ existe um botao aplicado mais de 1 vez
[25]  r←(1 a2 a3)
[26]  →0
[27] naoac:
[28]  r←(0 0 0)
------------------------------------------------------------
[ 0]  r←resolverega2 reg;linhas;pts
[ 1]  pts←8 2⍴reg[1;1 2],reg[2;],reg[3;],reg[4;],reg[1;3 4]
[ 2]  linhas←reg[2 3 4;]
[ 3]  T←8 2⍴0
[ 4]  T[;1]←8 1⍴12468 12478 12568 12578 13468 13478 13568 13578
[ 5] ⍝ '--- 12468'
[ 6]  T[1;2]←(linhas pts)cmin2 1 2 4 6 8
[ 7] ⍝ '---12478'
[ 8]  T[2;2]←(linhas pts)cmin2 1 2 4 7 8
[ 9] ⍝ '---12568'
[10]  T[3;2]←(linhas pts)cmin2 1 2 5 6 8
[11] ⍝ '---12578'
[12]  T[4;2]←(linhas pts)cmin2 1 2 5 7 8
[13] ⍝ '---13468'
[14]  T[5;2]←(linhas pts)cmin2 1 3 4 6 8
[15] ⍝ '---13478'
[16]  T[6;2]←(linhas pts)cmin2 1 3 4 7 8
[17] ⍝ '---13568'
[18]  T[7;2]←(linhas pts)cmin2 1 3 5 6 8
[19] ⍝ '---13578'
[20]  T[8;2]←(linhas pts)cmin2 1 3 5 7 8
[21]  r←≢20 2⍪[/,T[;2]
------------------------------------------------------------
[0]  r←retah x
[1]  r←x[1],(x[2]-5×?4),x[1],x[2]+5×?4
------------------------------------------------------------
```

```
[0]  r←retak v;a;b;c;y0;y1;x0;x1
[1]  a←v[1]
[2]  b←¯1
[3]  c←v[3]-v[1]×v[2]
[4]  y0←10×5+?7
[5]  x0←10×⌊(((-c)-b×y0)÷a)÷10
[6]  y1←10×5-?7
[7]  x1←10×⌊(((-c)-b×y1)÷a)÷10
[8]  r←x0,y0,x1,y1
------------------------------------------------------------
[0]  r←retav x
[1]  r←(x[1]-5×?4),x[2],(x[1]+5×?4),x[2]
------------------------------------------------------------
[0]  r←tiradups x
[1]  r←((x⍳x)=⍳⍴x)/x
------------------------------------------------------------
[ 0]  opesq vivom10a n;CORRECAO;EVENTO;aaa;ab;ac;acuja;ad;dhx;esse;f;lixonol;relat;resp;re
      su;upag;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←0 ⋄ EVENTO←'PLm10   '
[ 5]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 8]  FOLHALAm10←ajusta80 FOLHALAm10
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAm10)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[11]  xk←1 ⋄ resu←0 48⍴' '
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←19 80⍴' '
[14]  f←FOLHALAm10
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍎VERSAOa←1.03
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO[⍳4],'{\large{',EVENTO[4+⍳4],'}}'
[21]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[22]  resp←4 0⍎resp
[23] inica:
[24]  ab←instanrega
[25]  esse[7+⍳8;]←'¯'-'edit 8 80↑6 0⍎ab[⍳8;]
[26]  esse[9 10 11 13 14 15;24+⍳56]←' '
[27]  resp←resp,10 2⍎ab[9;1 2]
[28]  ac←geraluz 3
[29]  ad←resolveluz ac
[30]  esse[15+⍳4;]←'¯'-'edit ac
[31]  resp←resp,'   ',(16↑,⊃ad[2]),5↑'0 0 0'⍎,⊃ad[3]
[32]  resu←resu,[1]1 48⍴resp
[33]  acuja←(f[;2]='#')/⍳1↑⍴f
[34]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[35]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[36]  ⍞←(⍎xk←xk+1),'-'
[37]  →testa
[38] fim:
[39]  upag←(1 0+⍴f)⍴' '
[40]  →(1=≡n)/elafa
[41]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[42]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[43]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑resu
[44]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
```

```
[45]  →terminando
[46] elafa:
[47]  aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 4↓resu)
[48]  aaa[1;35 36]←2 0⍕CORRECAO
[49]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[50]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[51] terminando:
[52]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[53]  relat[1↑⍴relat;;]←upag
[54]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.t
      ex'
[55]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[56]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivom12

```
[0]  AVISO
[1]  'olhe a variavel MAPAPG para ver o mapa citado na folha'
------------------------------------------------------------
[0]  r←geracaso;x;y;aa
[1]  x←(?1↑⍴PER)
[2]  y←2?1↑⍴GAN
[3]  r←(,PER[x;]),0 0
[4]  r←r,[1]1 4⍴aa,joga153 aa←GAN[y[1];]
[5]  r←r,[1]1 4⍴aa,joga153 aa←GAN[y[2];]
[6]  r←r[3?3;]
------------------------------------------------------------
[ 0]  r←gerapergan;i;j
[ 1]  i←1 ⋄ PER←0 2⍴0 ⋄ GAN←0 2⍴0
[ 2] t1:→(i>40)/aca
[ 3]  j←1
[ 4] t2:→(j>40)/soma
[ 5]  →((i<10)∨(j<10))/acu
[ 6]  →(M[i;j]='.')/gan
[ 7] per:→(i=j)/acu
[ 8]  PER←PER,[1]1 2⍴i,j
[ 9]  →acu
[10] gan:→((i<25)∨(j<25))/acu
[11]  GAN←GAN,[1]1 2⍴i,j
[12] acu:j←j+1
[13]  →t2
[14] soma:i←i+1
[15]  →t1
[16] aca:
------------------------------------------------------------
[ 0]  r←joga153 ret;limx;i;xx;limy;j
[ 1] ⍝ret[1] eh a dimensao x e ret[2] eh a dimensao y
[ 2]  limx←⌊ret[1]÷2 ⋄ limy←⌊ret[2]÷2
[ 3]  i←1
[ 4] t1:→((i>limx)∨(ret[1]<2))/aca
[ 5]  xx←podeparar(ret[1]-i),ret[2]
[ 6]  →(xx=1)/jogue
[ 7]  i←i+1
[ 8]  →t1
[ 9] aca:
[10]  j←1
[11] t2:→((j>limy)∨(ret[2]<2))/acb
[12]  xx←podeparar ret[1],ret[2]-j
[13]  →(xx=1)/jogb
[14]  j←j+1
[15]  →t2
```

```
[16] acb: ⍝ perdeu, jogue aleatorio
[17]  →(2=+/ret=1 1)/perdi
[18]  →(ret[2]<2)/tira1
[19] tira2:
[20]  r←-ret-0 1
[21]  →0
[22] tira1:
[23]  r←-ret-1 0
[24]  →0
[25] perdi:r←0 0
[26]  →0
[27] jogue:r←ret-i,0
[28]  →0
[29] jogb:r←ret-0,j
[30] ⍝ retornos: 0 0 - perdi e acabou o jogo
[31] ⍝ nums negativos: perdi, considere o absoluto da resposta
[32] ⍝ nums positivos: estou ganhando, segue o baile.
-------------------------------------------------------------
[ 0]  r←podeparar xy;k;M;m
[ 1] ⍝ 'chamando com ',⍕xy
[ 2]  k←0
[ 3]  M←⌈/xy ⋄ m←⌊/xy
[ 4] t1:→((2*k)>M)/pare
[ 5]  →(M=((2*k)×m)+(2*k)-1)/achou
[ 6]  k←k+1
[ 7]  →t1
[ 8] pare:r←0
[ 9]  →0
[10] achou:r←1
[11]  →0
-------------------------------------------------------------
[ 0]  preencheM;i;j
[ 1]  M←50 50⍴' '
[ 2]  i←1
[ 3] t1:→(i>50)/fim
[ 4]  j←1
[ 5] t2:→(j>50)/so
[ 6]  →(podeparar i,j)/perde
[ 7] ganha:M[i;j]←'.'
[ 8]  →soma
[ 9] perde:M[i;j]←'X'
[10] soma:j←j+1
[11]  →t2
[12] so:i←i+1
[13]  →t1
[14] fim:
-------------------------------------------------------------
[0]  r←tiradups x
[1]  r←((x⍳x)=⍳⍴x)/x
-------------------------------------------------------------
[ 0]  opesq vivom12a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixonol;relat;resp;resu;upag;x
      k;ylu;xxy
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←0 ⋄ EVENTO←'PLm12   '
[ 5]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 8]  FOLHALAm12←ajusta80 FOLHALAm12
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAm12)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
```

```
[11]  xk←1 ⋄ resu←0 7⍴0
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←12 80⍴' '
[14]  f←FOLHALAm12
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍕VERSAOa←1.04
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[22]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25]  xxy←geracaso
[26]  esse[8;]←80 1⍴80↑('99'⍕xxy[1;1]),',','99'⍕xxy[1;2]
[27]  resp←resp,xxy[1;3 4]
[28]  esse[9;]←80 1⍴80↑('99'⍕xxy[2;1]),',','99'⍕xxy[2;2]
[29]  resp←resp,xxy[2;3 4]
[30]  esse[10;]←80 1⍴80↑('99'⍕xxy[3;1]),',','99'⍕xxy[3;2]
[31]  resp←resp,xxy[3;3 4]
[32]  resu←resu,[1]1 7⍴resp
[33]  acuja←(f[;2]='#')/⍳1↑⍴f
[34]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[35]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[36]  ⍞←(⍕xk←xk+1),'-'
[37]  →testa
[38] fim:
[39]  upag←(1 0+⍴f)⍴' '
[40]  →(1=≡n)/elafa
[41]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[42]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[43]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑4 0 6 0 3 0 5 0 3 0 5 0 3 0⍕resu
[44]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[45]  →terminando
[46] elafa:
[47]  aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),6 0 3 0 5 0 3 0 5 0 3 0⍕0 1↓resu)
[48]  aaa[1;35 36]←2 0⍕CORRECAO
[49]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[50]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[51] terminando:
[52]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[53]  relat[1↑⍴relat;;]←upag
[54]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.t
      ex'
[55]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[56]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivom14

```
[ 0]  r←achapals xxx;i;j;pal;PALA
[ 1]  PALA←0 10⍴' '
[ 2]  i←1
[ 3] t1:→(i>¯1000+⍴xxx)/f
[ 4]  j←i
[ 5] t2:→(xxx[j]=' ')/a
[ 6]  →(j=j←j+1)/t2
[ 7] a:→((8>j-i)∨(9<j-i))/naoserve
[ 8]  pal←xxx[(i-1)+⍳j-i]
[ 9]  →((⍴pal)≠+/pal∈letrasmin)/naoserve
[10]  PALA←PALA,[1]1 10⍴10↑pal
```

```
[11] naoserve:
[12]  i←j+1
[13]  →t1
[14] f:r←PALA
-------------------------------------------------------------
[ 0]  r←fazmaius x;i;j
[ 1]  r←(⍴x)⍴' '
[ 2]  i←1
[ 3] t1:→(i>1↑⍴x)/fim
[ 4]  j←1
[ 5] t2:→(j>1↓⍴x)/pula
[ 6]  →(x[i;j]=' ')/soma
[ 7]  r[i;j]←⎕AV[¯32+⎕AV⍳x[i;j]]
[ 8] soma:→(j=j←j+1)/t2
[ 9] pula:→(i=i←i+1)/t1
[10] fim:
-------------------------------------------------------------
[ 0]  r←pal geratabu lim;lin;col;tab;cam;i;xx
[ 1]  →(0≠⎕NC'pal')/veio
[ 2]  pal←,PALAVRAS[?1↑⍴PALAVRAS;]
[ 3] veio:tab←(2⍴lim)⍴letras[?(lim*2)⍴26]
[ 4]  lin←?lim ⋄ col←?lim
[ 5]  pal←trim pal
[ 6]  i←1 ⋄ cam←0 2⍴0
[ 7] t1:→(i>⍴pal)/fim1
[ 8]  tab[lin;col]←pal[i]
[ 9]  cam←cam,[1]1 2⍴lin,col
[10] naodeu:xx←lim vizinhot(?8),lin,col
[11]  →(0≥+/(cam[;1]∈xx[1])∧(cam[;2]∈xx[2]))/blzz
[12]  ⎕←'o'
[13]  →naodeu
[14] blzz:
[15]  lin←xx[1] ⋄ col←xx[2]
[16]  →(i=i←i+1)/t1
[17] fim1:
[18]  →(4≤+/,tab∈pal[6])/blzx
[19]  ⎕←'□'
[20]  →veio
[21] blzx:
[22]  r←(tab cam pal)
-------------------------------------------------------------
[ 0]  r←geravulca n;mat;ori;t;res;i;j;k;zz;xica;zica
[ 1]  mat←(2⍴n)⍴?(n*2)⍴9
[ 2]  ori←(?n),?n
[ 3]  mat[ori[1];ori[2]]←6+?3
[ 4]  t←2
[ 5]  res←(20,n,n)⍴' '
[ 6]  res[1;ori[1];ori[2]]←'X'
[ 7] f1:
[ 8] ⍝ +/,res[t;;]=res[(t-1);;]
[ 9] ⍝ res[t;;]≠' '
[10] ⍝ res[t-1;;]≠' '
[11]  res[t;;]←res[t-1;;]
[12]  i←1
[13] j1:→(i>n)/aca
[14]  j←1
[15] j2:→(j>n)/zza
[16]  k←1
[17] j3:→(k>8)/ufa
[18]  zz←n vizinhov k,i,j
[19]  →(0>⌊/zz)/soma
[20]  →(k=1)/um
[21]  →(k=2)/dois
```

```
[22]  →(k=3)/tres
[23]  →(k=4)/quatro
[24]  →(k=5)/cinco
[25]  →(k=6)/seis
[26]  →(k=7)/sete
[27]  →(k=8)/oito
[28]  'erro1'
[29] um:
[30]  →((mat[i-1;j-1]<mat[i;j])∧(res[t-1;i;j]≠' '))/vazou1
[31]  →soma
[32] vazou1:res[t;i-1;j-1]←'X'
[33]  →soma
[34] dois:
[35]  →((mat[i-1;j]<mat[i;j])∧(res[t-1;i;j]≠' '))/vazou2
[36]  →soma
[37] vazou2:res[t;i-1;j]←'X'
[38]  →soma
[39] tres:
[40]  →((mat[i-1;j+1]<mat[i;j])∧(res[t-1;i;j]≠' '))/vazou3
[41]  →soma
[42] vazou3:res[t;i-1;j+1]←'X'
[43]  →soma
[44] quatro:
[45]  →((mat[i;j+1]<mat[i;j])∧(res[t-1;i;j]≠' '))/vazou4
[46]  →soma
[47] vazou4:res[t;i;j+1]←'X'
[48]  →soma
[49] cinco:
[50]  →((mat[i+1;j+1]<mat[i;j])∧(res[t-1;i;j]≠' '))/vazou5
[51]  →soma
[52] vazou5:res[t;i+1;j+1]←'X'
[53]  →soma
[54] seis:
[55]  →((mat[i+1;j]<mat[i;j])∧(res[t-1;i;j]≠' '))/vazou6
[56]  →soma
[57] vazou6:res[t;i+1;j]←'X'
[58]  →soma
[59] sete:
[60]  →((mat[i+1;j-1]<mat[i;j])∧(res[t-1;i;j]≠' '))/vazou7
[61]  →soma
[62] vazou7:res[t;i+1;j-1]←'X'
[63]  →soma
[64] oito:
[65]  →((mat[i;j-1]<mat[i;j])∧(res[t-1;i;j]≠' '))/vazou8
[66]  →soma
[67] vazou8:res[t;i;j-1]←'X'
[68]  →soma
[69] soma:→(k=k←k+1)/j3
[70] ufa:→(j=j←j+1)/j2
[71] zza:→(i=i←i+1)/j1
[72] aca:
[73]  →((n*2)=+/,res[t;;]=res[(t-1);;])/acabou
[74]  →(t=t←t+1)/f1
[75] acabou:
[76]  res←((t-1),n,n)↑res
[77]  zica←+/[2]'X'=xica←((t-1),(n*2))⍴res
[78]  r←(mat ori zica(t-1))
-------------------------------------------------------------
[0]  r←orig numera2 oper;aa;⎕IO
[1]  ⎕IO←orig
[2]  r←4 0⍕oper
[3]  r←(((3 0⍕(((1↑⍴oper),1)⍴⍳1↑⍴oper)),[⎕IO+1]'|'),[⎕IO+1]' '),r
[4]  r←((1,aa)⍴'     ',4 0⍕⍳1↓⍴oper),[⎕IO]((1,aa←5+4×1↓⍴oper)⍴'   +',100⍴'-'),[⎕IO]r
```

```
------------------------------------------------------------
[0]  r←orig numera25 oper;aa;⎕IO
[1]  ⎕IO←orig
[2]  r←4 0⍕oper
[3]  r←(((3 0⍕(((1↑⍴oper),1)⍴⍳1↑⍴oper)),[⎕IO+1]'|'),[⎕IO+1]' '),r
[4]  r←((1,aa)⍴'   ',4 0⍕⍳1↓⍴oper),[⎕IO]((1,aa←5+4×1↓⍴oper)⍴'   +',100⍴'-'),[⎕IO]r
------------------------------------------------------------
[0]  r←tiradups x
[1]  r←((x⍳x)=⍳⍴x)/x
------------------------------------------------------------
[ 0]  opesq vivom14a n;CORRECAO;EVENTO;aaa;acuja;alfa33;ccc;dhx;esse;f;lixonol;relat;resp;
      resu;upag;xk;ylu;quic
[ 1]  '... demora ...'
[ 2]  →(0≠⎕NC'opesq')/qveio
[ 3]  opesq←10⍴' '
[ 4] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PLm14   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALAm14←ajusta80 FOLHALAm14
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAm14)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 6⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←39 80⍴' '
[15]  f←FOLHALAm14
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[38;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[39;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  ccc←geratabu 12
[27]  esse[8;]←80↑,⊃ccc[3]
[28]  esse[8+⍳14;]←14 80↑1 numera25⊃ccc[1]
[29]  resp←resp,(⊃ccc[2])[6;]
[30] oban:alfa33←geravulca 12
[31]  →(5≤⊃alfa33[4])/loli
[32]  ⍞←'#'
[33]  →oban
[34] loli:
[35]  esse[22+⍳14;]←14 80↑1 numera2⊃alfa33[1]
[36]  quic←⊃alfa33[2]
[37]  esse[37;]←80↑(2 0⍕quic[1]),',',2 0⍕quic[2]
[38]  resp←resp,(⊃alfa33[3])[3 4 5]
[39]  resu←resu,[1]1 6⍴resp
[40]  acuja←(f[;2]='#')/⍳1↑⍴f
[41]  f[acuja;⍳80]←esse[±,f[acuja;3 4],' ';]
[42]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[43]  ⍞←(⍕xk←xk+1),'-'
[44]  →testa
[45] fim:
[46]  upag←(1 0+⍴f)⍴' '
[47]  →(1=≡n)/elafa
[48]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[49]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[50]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑5 0 8 0 3 0 8 0 3 0 3 0⍕resu
```

```
[51]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[52]  →terminando
[53] elafa:
[54]  aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),4 0⍕0 1↓resu)
[55]  aaa[1;35 36]←2 0⍕CORRECAO
[56]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[57]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[58] terminando:
[59]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[60]  relat[1↑⍴relat;;]←upag
[61]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.t
      ex'
[62]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[63]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[ 0]  r←lim vizinhot ab;a;b
[ 1] ⍝ ab[1] indica 1=10h30, 2=12h, 3=13h30, 4=15h, 5=16h30, 6=18h, 7=19h30, 8=21h
[ 2] ⍝ ab[2 3] é a posiçto atual
[ 3] ⍝ lim e o tamanho do tabuleiro
[ 4]  a←ab[1] ⋄ b←ab[2 3]
[ 5]  r←2⍴0
[ 6]  →(a=1)/um
[ 7]  →(a=2)/dois
[ 8]  →(a=3)/tres
[ 9]  →(a=4)/quatro
[10]  →(a=5)/cinco
[11]  →(a=6)/seis
[12]  →(a=7)/sete
[13]  →(a=8)/oito
[14]  r←'erro: codigo vizinhanca invalido'
[15]  →0
[16] um:
[17]  r[1]←((b[1]≤1),(b[1]>1))/(lim,b[1]-1)
[18]  r[2]←((b[2]≤1),(b[2]>1))/(lim,b[2]-1)
[19]  →0
[20] dois:
[21]  r[1]←((b[1]≤1),(b[1]>1))/(lim,b[1]-1)
[22]  r[2]←b[2]
[23]  →0
[24] tres:
[25]  r[1]←((b[1]≤1),(b[1]>1))/(lim,b[1]-1)
[26]  r[2]←((b[2]≥lim),(b[2]<lim))/(1,b[2]+1)
[27]  →0
[28] quatro:
[29]  r[1]←b[1]
[30]  r[2]←((b[2]≥lim),(b[2]<lim))/(1,b[2]+1)
[31]  →0
[32] cinco:
[33]  r[1]←((b[1]≥lim),(b[1]<lim))/(1,b[1]+1)
[34]  r[2]←((b[2]≥lim),(b[2]<lim))/(1,b[2]+1)
[35]  →0
[36] seis:
[37]  r[1]←((b[1]≥lim),(b[1]<lim))/(1,b[1]+1)
[38]  r[2]←b[2]
[39]  →0
[40] sete:
[41]  r[1]←((b[1]≥lim),(b[1]<lim))/(1,b[1]+1)
[42]  r[2]←((b[2]≤1),(b[2]>1))/(lim,b[2]-1)
[43]  →0
[44] oito:
[45]  r[1]←b[1]
[46]  r[2]←((b[2]≤1),(b[2]>1))/(lim,b[2]-1)
[47]  →0
```

```
------------------------------------------------------------
[ 0]  r←lim vizinhov ab;a;b
[ 1] ⍝ ab[1] indica 1=10h30, 2=12h, 3=13h30, 4=15h, 5=16h30, 6=18h, 7=19h30, 8=21h
[ 2] ⍝ ab[2 3] é a posiçto atual
[ 3] ⍝ lim e o tamanho do tabuleiro
[ 4]  a←ab[1] ⋄ b←ab[2 3]
[ 5]  r←2⍴0
[ 6]  →(a=1)/um
[ 7]  →(a=2)/dois
[ 8]  →(a=3)/tres
[ 9]  →(a=4)/quatro
[10]  →(a=5)/cinco
[11]  →(a=6)/seis
[12]  →(a=7)/sete
[13]  →(a=8)/oito
[14]  r←'erro: codigo vizinhanca invalido'
[15]  →0
[16] um:
[17]  r[1]←((b[1]≤1),(b[1]>1))/(¯1,b[1]-1)
[18]  r[2]←((b[2]≤1),(b[2]>1))/(¯1,b[2]-1)
[19]  →0
[20] dois:
[21]  r[1]←((b[1]≤1),(b[1]>1))/(¯1,b[1]-1)
[22]  r[2]←b[2]
[23]  →0
[24] tres:
[25]  r[1]←((b[1]≤1),(b[1]>1))/(¯1,b[1]-1)
[26]  r[2]←((b[2]≥lim),(b[2]<lim))/(¯1,b[2]+1)
[27]  →0
[28] quatro:
[29]  r[1]←b[1]
[30]  r[2]←((b[2]≥lim),(b[2]<lim))/(¯1,b[2]+1)
[31]  →0
[32] cinco:
[33]  r[1]←((b[1]≥lim),(b[1]<lim))/(¯1,b[1]+1)
[34]  r[2]←((b[2]≥lim),(b[2]<lim))/(¯1,b[2]+1)
[35]  →0
[36] seis:
[37]  r[1]←((b[1]≥lim),(b[1]<lim))/(¯1,b[1]+1)
[38]  r[2]←b[2]
[39]  →0
[40] sete:
[41]  r[1]←((b[1]≥lim),(b[1]<lim))/(¯1,b[1]+1)
[42]  r[2]←((b[2]≤1),(b[2]>1))/(¯1,b[2]-1)
[43]  →0
[44] oito:
[45]  r[1]←b[1]
[46]  r[2]←((b[2]≤1),(b[2]>1))/(¯1,b[2]-1)
[47]  →0
------------------------------------------------------------
```

vivom16

```
[ 0]  COMOgerapcruz
[ 1]  'Esta funcao recebe L,C contendo o tamanho da grade de palavras cruzadas e gera:'
[ 2]  'um vetor aninhado de 5 itens, onde:'
[ 3]  '[1]=a matriz alfanumerica onde o=branco e x=preto'
[ 4]  '[2]=a quantidade de numeracoes obtida neste tabuleiro'
[ 5]  '[3]=as numeracoes HORIZONTAIS do tabuleiro'
[ 6]  '[4]=as posicoes (lineares) dos pontos pretos no tabuleiro'
[ 7]  '[5]=as numeracoes VERTICAIS do tabuleiro'
[ 8]  '[6]=o tabuleiro numerado'
```

```
[ 9]  ''
[10]  'retirado da prova OBI99 - terceiro exercicio'
-------------------------------------------------------------
[ 0]  r←geragenoma;r1;r2;r3;r4;r5;r6;r7;r8;r9
[ 1]  r1←6 60⍴' '
[ 2] denovo:r2←ggenoma 30+?10
[ 3]  r3←ggenoma 3+?2
[ 4]  r4←r3 rgen r2
[ 5]  r1[⍳3;]←⊃r4[1]
[ 6]  r2←ggenoma 40+?10
[ 7]  r3←ggenoma 4+?3
[ 8]  r5←r3 rgen r2
[ 9]  →((3>⍴⊃r4[2])∧(3>⍴⊃r4[3])∧(0≠+/⊃r4[2])∧(0≠+/⊃r4[3])∧(3>⍴⊃r5[2])∧(3>⍴⊃r5[3])∧(0≠+/⊃r5
      [2])∧(0≠+/⊃r5[3]))/blz2
[10]  □←'o'
[11]  →denovo
[12] blz2:r1[3+⍳3;]←⊃r5[1]
[13]  r6←3↑⊃r4[2]
[14]  r7←3↑⊃r4[3]
[15]  r8←3↑⊃r5[2]
[16]  r9←3↑⊃r5[3]
[17]  r←(r1 r6 r7 r8 r9)
-------------------------------------------------------------
[ 0]  r←gerapcruz dim;ctd;hor;i;j;r1;r2;r3;r4;r8;r9;tt;ver
[ 1] ⍝ esta funcao recebe L,C de dimensao e gera uma matriz com pretos e com as numeracoes
[ 2] ⍝ vertical e horizontal.
[ 3]  r1←(⌈0.15×tt)?tt←×/dim
[ 4]  r1←r1[⍋r1]
[ 5]  r2←ttρ'o'
[ 6]  r2[r1]←'x'
[ 7]  r9←dimρr2
[ 8] ⍝numeracao dos ditos cujos
[ 9]  r3←ttρ0
[10]  r3[r1]←¯1
[11]  r3←dimρr3
[12]  r4←¯1,[1](¯1,r3,¯1),[1]¯1
[13]  ctd←1
[14]  i←2
[15] t1:→(i≥1↑⍴r4)/fim
[16]  j←2
[17] t2:→(j≥1↓⍴r4)/ufa
[18]  →((r4[i;j]≠¯1)∧((r4[i;j-1]=¯1)∧(r4[i;j+1]≠¯1))∨((r4[i-1;j]=¯1)∧(r4[i+1;j]≠¯1)))/nume
      ra
[19] soma:j←j+1
[20]  →t2
[21] numera:r4[i;j]←ctd
[22]  ctd←ctd+1
[23]  →soma
[24] ufa:i←i+1
[25]  →t1
[26] fim:⍝estabelecendo a listas horizontais
[27]  hor←⍳0
[28]  i←2
[29] t3:→(i≥1↑⍴r4)/fim2
[30]  j←2
[31] t4:→(j≥1↓⍴r4)/ufa2
[32]  →((r4[i;j]≠¯1)∧(r4[i;j]≠0)∧(r4[i;j-1]=¯1)∧(r4[i;j+1]≠¯1))/achouh
[33] soma2:j←j+1
[34]  →t4
[35] achouh:hor←hor,r4[i;j]
[36]  →soma2
[37] ufa2:i←i+1
[38]  →t3
```

```
[39] fim2:
[40] ⍝estabelecendo a lista vertical
[41]  ver←⍳0
[42]  i←2
[43] t5:→(i≥1↑⍴r4)/fim3
[44]  j←2
[45] t6:→(j≥1↓⍴r4)/ufa3
[46]  →((r4[i;j]≠¯1)∧(r4[i;j]≠0)∧(r4[i-1;j]=¯1)∧(r4[i+1;j]≠¯1))/achouv
[47] soma3:j←j+1
[48]  →t6
[49] achouv:ver←ver,r4[i;j]
[50]  →soma3
[51] ufa3:i←i+1
[52]  →t5
[53] fim3:ctd←ctd-1 ⍝ preciso tirar o adicional que e colocado la encima
[54]  r8←1 1↓¯1 ¯1↓r4
[55]  r←(r9 ctd hor r1 ver r8)
-----------------------------------------------------------------
[0]  r←ggenoma t
[1]  r←'ACTG'[?t⍴4]
-----------------------------------------------------------------
[0]  r←penult x
[1]  r←x[¯1+⍴x]
-----------------------------------------------------------------
[ 0]  r←p resolvegenoma t;x;y;plinha;z;w
[ 1] ⍝ busca ocorrencias diretas e inversas de p em t
[ 2]  r←0 60⍴''
[ 3]  x←(p⍷t)/⍳⍴t
[ 4]  r←r,[1]1 60⍴60↑'Ocorrencias diretas=',⍕x
[ 5]  plinha←'Ax'edit p
[ 6]  plinha←'Gy'edit plinha
[ 7]  plinha←'TA'edit plinha
[ 8]  plinha←'CG'edit plinha
[ 9]  plinha←'xT'edit plinha
[10]  plinha←'yC'edit plinha
[11]  plinha←⊖plinha
[12]  y←(plinha⍷t)/⍳⍴t
[13]  r←r,[1]1 60⍴60↑'Ocorr. complementar invertida=',⍕y
[14]  z←((⊖plinha)⍷t)/⍳⍴t
[15]  r←r,[1]1 60⍴60↑'ERRO: complementar=',⍕z
[16]  w←((⊖p)⍷t)/⍳⍴t
[17]  r←r,[1]1 60⍴60↑'ERRO: invertida=',⍕w
-----------------------------------------------------------------
[ 0]  r←p rgen t;x;y;plinha;r1
[ 1] ⍝ busca ocorrencias diretas e inversas de p em t
[ 2]  plinha←'Ax'edit p
[ 3]  plinha←'Gy'edit plinha
[ 4]  plinha←'TA'edit plinha
[ 5]  plinha←'CG'edit plinha
[ 6]  plinha←'xT'edit plinha
[ 7]  plinha←'yC'edit plinha
[ 8]  plinha←⊖plinha
[ 9]  t[(?¯10+⍴t)+⍳⍴p]←p
[10]  t[(?¯10+⍴t)+⍳⍴p]←p
[11]  t[(?¯10+⍴t)+⍳⍴p]←plinha
[12]  r1←3 60⍴' '
[13]  r1[1;]←60↑(3 0⍕⍴p),3 0⍕⍴t
[14]  x←(p⍷t)/⍳⍴t
[15]  r1[2;]←60↑p
[16]  y←(plinha⍷t)/⍳⍴t
[17]  r1[3;]←60↑t
[18]  r←(r1 x y)
[19] ⍝ esta funcao responde as 3 linhas da entrada, depois os valores da busca direta
```

```
[20] ⍝ e depois os valores da busca inversa.
------------------------------------------------------------
[ 0]  opesq vivom16a n;CORRECAO;EVENTO;aaa;acuja;bbb;dhx;esse;f;lixonol;relat;resp;resu;up
      ag;xk;xxx;ylu;yyy;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←0 ⋄ EVENTO←'PLm16   '
[ 5]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 8]  FOLHALAm16←ajusta80 FOLHALAm16
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAm16)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLOI'
[11]  xk←1 ⋄ resu←0 19⍴0
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←19 80⍴' '
[14]  f←FOLHALAm16
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍎VERSAOa←1.02
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[22]  esse[18;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[19;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25]  yyy←geragenoma
[26]  esse[7+⍳6;]←6 80↑⊃yyy[1]
[27]  resp←resp,(⊃yyy[2]),(⊃yyy[3]),(⊃yyy[4]),⊃yyy[5]
[28]  zzz←(5+?3),6+?3
[29]  esse[14;]←1 80⍴80↑3 0⍎zzz
[30]  xxx←gerapcruz zzz
[31]  esse[15;]←1 80⍴80↑3 0⍎⊃xxx[4]
[32]  resp←resp,(⊃xxx[2]),(penult⊃xxx[3]),penult⊃xxx[5]
[33]  zzz←(7+?3),7+?3
[34]  esse[16;]←1 80⍴80↑3 0⍎zzz
[35]  xxx←gerapcruz zzz
[36]  esse[17;]←1 80⍴80↑3 0⍎⊃xxx[4]
[37]  resp←resp,(⊃xxx[2]),(penult⊃xxx[3]),penult⊃xxx[5]
[38]  resu←resu,[1]1 19⍴resp
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[42]  ⍞←(⍎xk←xk+1),'-'
[43]  →testa
[44] fim:
[45]  upag←(1 0+⍴f)⍴' '
[46]  bbb←3 0 5 0 3 0 3 0 5 0 3 0 3 0 5 0 3 0 3 0 5 0 3 0 3 0 5 0 3 0 3 0 5 0 3 0 3 0
[47]  →(1=≡n)/elafa
[48]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[49]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[50]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑bbb⍎resu
[51]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[52]  →terminando
[53] elafa:
[54]  aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 3↓bbb⍎resu)
[55]  aaa[1;35 36]←2 0⍎CORRECAO
[56]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[57]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[58] terminando:
```

```
[59]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[60]  relat[1↑⍴relat;;]←upag
[61]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)⍙FM'c:\apl2\',((~⍷∘\⍷EVENTO=' ')/EVENTO),'.t
      ex'
[62]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[63]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivom18

```
[0]  AVISO
[1]  'Leia a variavel ANGULOS'
------------------------------------------------------------
[ 0]  r←p1p2 angulo p2p3;m1;r1;r2;r3;m2;reta1;reta2;coef1;coef2;alfa;ra;pcruz
[ 1]  m1←3 3⍴p1p2[1 2],1,p1p2[3 4],1 1 1 1
[ 2]  r1←(m1[3;1]×m1[2;2]×m1[1;3])-m1[1;2]×m1[2;3]×m1[3;1]
[ 3]  r2←(m1[3;2]×m1[2;3]×m1[1;1])-m1[1;3]×m1[2;1]×m1[3;2]
[ 4]  r3←(m1[3;3]×m1[2;1]×m1[1;2])-m1[1;1]×m1[2;2]×m1[3;3]
[ 5]  reta1←r1,r2,r3
[ 6] ⍝ 'reta1=',⍕reta1
[ 7]  m2←3 3⍴p2p3[1 2],1,p2p3[3 4],1 1 1 1
[ 8]  r1←(m2[3;1]×m2[2;2]×m2[1;3])-m2[1;2]×m2[2;3]×m2[3;1]
[ 9]  r2←(m2[3;2]×m2[2;3]×m2[1;1])-m2[1;3]×m2[2;1]×m2[3;2]
[10]  r3←(m2[3;3]×m2[2;1]×m2[1;2])-m2[1;1]×m2[2;2]×m2[3;3]
[11]  reta2←r1,r2,r3
[12] ⍝ 'reta2=',⍕reta2
[13]  →(reta1[2]=0)/inf1
[14]  coef1←-reta1[1]÷reta1[2]
[15]  →cont1
[16] inf1:coef1←1000000000000000000
[17] cont1:
[18]  →(reta2[2]=0)/inf2
[19]  coef2←-reta2[1]÷reta2[2]
[20]  →cont2
[21] inf2:coef2←1000000000000000000
[22] cont2:
[23]  →(0=1+coef1×coef2)/xabu
[24]  alfa←(coef1-coef2)÷1+coef1×coef2
[25] ⍝ 'alfa=',⍕alfa
[26]  ra←(180×¯3○alfa)÷○1
[27]  pcruz←((p2p3[3]-p1p2[1])×(p1p2[4]-p1p2[2]))-(p2p3[1]-p1p2[1])×(p2p3[4]-p1p2[2])
[28] ⍝ 'pcruz=',⍕pcruz
[29]  →(pcruz<0)/esq
[30] dir:→(alfa<0)/dneg
[31]  r←ra
[32]  →0
[33] dneg:r←180-ra
[34]  →0
[35] esq:→(alfa>0)/eneg
[36]  r←360-ra
[37]  →0
[38] eneg:r←180+ra
[39]  →0
[40] xabu:r←9999
[41]  →0
------------------------------------------------------------
[0]  r←p1p2 diresq p3;pcruz
[1]  pcruz←((p3[3]-p1p2[1])×(p1p2[4]-p1p2[2]))-(p1p2[3]-p1p2[1])×(p3[4]-p1p2[2])
[2]  →(pcruz<0)/esq
[3] dir:
[4]  r←0
[5]  →0
```

```
[6] esq:r←1
------------------------------------------------------------
[0]  r←gerarest qt;en;sa
[1]  en←?qt⍴5
[2]  en←+⍀en
[3]  sa←?qt⍴5
[4]  sa←10++⍀sa
[5]  r←(2,qt)⍴en,sa
------------------------------------------------------------
[0]  r←gerarobo x;xx;yy
[1]  xx←x?9
[2]  yy←x?9
[3]  r←(⍉(2,x)⍴xx,yy)-3+?3
------------------------------------------------------------
[0]  r←geratc
[1] ⍝r tera 6 valores: peso, fixo e vvel-trem, fixo e vvel-camin
[2]  r←(100+?2000),(600+?400),(0.01×100+?200),(100+?400),(0.01×150+?250)
------------------------------------------------------------
[ 0]  r←en resolres sa;i;ien;isa;qt;qtmax
[ 1]  i←1
[ 2]  ien←1
[ 3]  isa←1
[ 4]  qt←0
[ 5]  qtmax←0
[ 6] t1:→(i>en[⍴en]⌈sa[⍴en])/acab
[ 7]  →(i=en[ien])/soma
[ 8]  →(i=sa[isa])/sub
[ 9] incr:
[10] ⍝ 'i=',(⍕i),' qt=',⍕qt
[11]  i←i+1
[12]  →t1
[13] soma:qt←qt+1
[14]  qtmax←qtmax⌈qt
[15]  ien←(⍴en)⌊ien+1
[16]  →(i=sa[isa])/sub
[17]  →incr
[18] sub:qt←qt-1
[19]  isa←(⍴en)⌊isa+1
[20]  →incr
[21] acab:r←qtmax
------------------------------------------------------------
[0]  r←resoltc a;ctre;ccam
[1]  ccam←a[4]+a[1]×a[5]
[2]  ctre←a[2]+a[1]×a[3]
[3]  →(1>|ccam-ctre)/trem
[4]  →(ctre>ccam)/caminhao
[5] trem:r←1
[6]  →0
[7] caminhao:r←2
------------------------------------------------------------
[ 0]  r←resolverobo que;qtgra;qtope;i;i1;i2;na
[ 1]  qtgra←0
[ 2]  qtope←0
[ 3]  i←1
[ 4] t1:→(qtope≥1↑⍴que)/aca
[ 5]  i1←i+1
[ 6]  →(i1≤1↑⍴que)/blz1
[ 7]  i1←1
[ 8] blz1:
[ 9]  i2←i1+1
[10]  →(i2≤1↑⍴que)/blz2
[11]  i2←1
[12] blz2:
```

```
[13]  na←(,que[(i,i1);])angulo,que[(i1,i2);]
[14]  →(na=9999)/xabu
[15]  qtgra←qtgra+na
[16]  qtope←qtope+1
[17]  i←i+1
[18]  →t1
[19] aca:r←⌊0.1+qtgra÷360
[20]  →0
[21] xabu:r←¯1
------------------------------------------------------------
[  0]  opesq vivom18a n;CORRECAO;EVENTO;aaa;acuja;bbb;dhx;esse;f;lixonol;relat;resp;resu;up
       ag;xk;xxa;xxb;ylu;zza;zzb;zzc
[  1]  →(0≠⎕NC'opesq')/qveio
[  2]  opesq←10⍴' '
[  3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[  4]  CORRECAO←0 ⋄ EVENTO←'PLm18   '
[  5]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
       4 5],⎕TS[6]+⎕TS[7]÷1000
[  6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[  7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[  8]  FOLHALAm18←ajusta80 FOLHALAm18
[  9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAm18)⍴' '
[ 10]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[ 11]  xk←1 ⋄ resu←0 10⍴0
[ 12] testa:→(xk>1↑⍴ylu)/fim
[ 13]  esse←24 80⍴' '
[ 14]  f←FOLHALAm18
[ 15]  esse[1;]←80↑dhx[1;]
[ 16]  esse[2;]←80↑dhx[2;]
[ 17]  esse[3;]←80↑4 2⍎VERSAOa←1.03
[ 18]  esse[4;]←80↑ylu[xk;⍳6]
[ 19]  esse[5;]←80↑ylu[xk;6+⍳30]
[ 20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[ 21]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[ 22]  esse[23;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[ 23]  esse[24;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[ 24] inica:
[ 25]  esse[8;]←1 80⍴80↑8 0 9 0 7 2 9 0 7 2⍎xxa←geratc
[ 26]  resp←resp,resoltc xxa
[ 27]  esse[9;]←1 80⍴80↑8 0 9 0 7 2 9 0 7 2⍎xxa←geratc
[ 28]  resp←resp,resoltc xxa
[ 29]  esse[10;]←1 80⍴80↑8 0 9 0 7 2 9 0 7 2⍎xxa←geratc
[ 30]  resp←resp,resoltc xxa
[ 31] ⍝----------------------------------------
[ 32] ica1:zza←3+?4
[ 33]  zzb←gerarobo zza
[ 34]  zzc←resolverobo zzb
[ 35]  →(zzc≠¯1)/ok1
[ 36]  ⍞←'*'
[ 37]  →ica1
[ 38] ok1:
[ 39]  esse[11;]←80↑(2 0⍎zza),' ','¯'-'edit ¯1↓,(3 0⍎zzb),','
[ 40]  resp←resp,zzc
[ 41] ⍝----------
[ 42] ica2:zza←3+?4
[ 43]  zzb←gerarobo zza
[ 44]  zzc←resolverobo zzb
[ 45]  →(zzc≠¯1)/ok2
[ 46]  ⍞←'o'
[ 47]  →ica2
[ 48] ok2:
[ 49]  esse[12;]←80↑(2 0⍎zza),' ','¯'-'edit ¯1↓,(3 0⍎zzb),','
[ 50]  resp←resp,zzc
```

```
[ 51] ⍝----------
[ 52] ica3:zza←3+?4
[ 53]  zzb←gerarobo zza
[ 54]  zzc←resolverobo zzb
[ 55]  →(zzc≠¯1)/ok3
[ 56]  ⎕←'×'
[ 57]  →ica3
[ 58] ok3:
[ 59]  esse[13;]←80↑(2 0⍕zza),' ','¯'-'edit ¯1↓,(3 0⍕zzb),','
[ 60]  resp←resp,zzc
[ 61] ⍝----------------------------------------
[ 62]  xxa←9+?4
[ 63]  esse[14;]←1 80⍴80↑4 0⍕xxa
[ 64]  xxb←gerarest xxa
[ 65]  esse[15 16;]←2 80↑3 0⍕xxb
[ 66]  resp←resp,xxb[1;]resolres xxb[2;]
[ 67]  xxa←9+?4
[ 68]  esse[17;]←1 80⍴80↑4 0⍕xxa
[ 69]  xxb←gerarest xxa
[ 70]  esse[18 19;]←2 80↑3 0⍕xxb
[ 71]  resp←resp,xxb[1;]resolres xxb[2;]
[ 72]  xxa←9+?4
[ 73]  esse[20;]←1 80⍴80↑4 0⍕xxa
[ 74]  xxb←gerarest xxa
[ 75]  esse[21 22;]←2 80↑3 0⍕xxb
[ 76]  resp←resp,xxb[1;]resolres xxb[2;]
[ 77]  resu←resu,[1]1 10⍴resp
[ 78]  acuja←(f[;2]='#')/⍳1↑⍴f
[ 79]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[ 80]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[ 81]  ⎕←(⍕xk←xk+1),'-'
[ 82]  →testa
[ 83] fim:
[ 84]  upag←(1 0+⍴f)⍴' '
[ 85]  bbb←3 0 6 0 3 0 3 0 6 0 3 0 3 0 6 0 3 0 3 0
[ 86]  →(1=≡n)/elafa
[ 87]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[ 88]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[ 89]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑bbb⍕resu
[ 90]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[ 91]  →terminando
[ 92] elafa:
[ 93]  aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 3↓bbb⍕resu)
[ 94]  aaa[1;35 36]←2 0⍕CORRECAO
[ 95]  lixonol←aaa ⎕FM('c:\apl2\',((~⊖∧\⊖EVENTO=' ')/EVENTO),'.gpa')
[ 96]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[ 97] terminando:
[ 98]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[ 99]  relat[1↑⍴relat;;]←upag
[100]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)⎕FM'c:\apl2\',((~⊖∧\⊖EVENTO=' ')/EVENTO),'.t
       ex'
[101]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[102]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivom20

```
[ 0]  AVISO
[ 1]  'para gerar um exemplo mostravel em sala, chame gerh 1 (gera certo)'
[ 2]  'ou gerh 0 (gera errado). Para ter certeza, chame analizh a sequencia'
[ 3]  ' candidata (alfanumerica'
[ 4]  ' '
```

```
[ 5]  'execute: '
[ 6]  '0  -> eh'
[ 7]  '10100   ->  eh'
[ 8]  '1111001001001101000    -> eh'
[ 9]  '10010           -> nao eh    '
[10]  '10101011001              -> nao eh '
[11]  '10111001110011011100011000101000O   -> eh'
[12]  'execute'
[13]  '2 4,1 2 5;1 5 8;2 1 9;2 4 5;2 5 4;3 4 7;4 1 6;5 1 6;5 3 10 -> 7'
[14]  ' '
[15]  '1 3,1 3 8;1 4 11;2 3 5;2 4 6;2 5 12;3 5 4;4 1 4;4 2 10;'
[16]  '    4 3 7;4 5 6;5 2 7;5 3 13   -> 10'
[17]  'execute'
[18]  '6;3 4 4;1 2 5;1 6 6;2 5 7;1 4 8;4 5 9;1 5 10'
[19]  '2 4 11;2 3 12;1 3 13;2 6 14;3 6 16;4 6 17;3 5 18;5 6 22'
[20]  ' -> 34 12 16 25 14'
[21]  ' '
[22]  '6;3 5 4;1 3 5;5 6 7;1 6 8;2 5 10;1 5 11;2 4 12;2 6 13'
[23]  '4 5 14;2 3 15;3 4 16;1 4 17;1 2 18;4 6 20;3 6 22'
[24]  '  -> 35 13 56 25 24'
------------------------------------------------------------
[ 0]  r←analizh h;i;fila
[ 1]  h←(h≠' ')/h
[ 2]  →((1=⍴,h)∧('0'=h))/fimok
[ 3]  i←1
[ 4]  fila←0⍴0
[ 5] t1:→(i>⍴h)/fim
[ 6]  →(h[i]='1')/eum
[ 7] zero:
[ 8]  →(0=prim fila)/fim
[ 9]  fila[prim fila]←1
[10]  →(2≠+/fila[1 2]=1 1)/soma
[11]  fila←2↓fila
[12]  →((0=⍴fila)∧(i=⍴h))/fimok
[13]  →(0=⍴fila)/fim
[14]  fila[prim fila]←1
[15]  →soma
[16] eum:fila←fila,0 0
[17] soma:
[18] ⍝ 'i=',(⍕i),'  fila=',⍕fila
[19]  i←i+1
[20]  →t1
[21] fim:r←0
[22]  →0
[23] fimok:r←1
[24]  →0
------------------------------------------------------------
[0]  r←arruma x
[1]  r←x[;2 3],x[;1]
------------------------------------------------------------
[ 0]  r←constrlista aa;i;j;ordem
[ 1]  r←0 3⍴0
[ 2]  i←1 ⋄ ordem←1↑⍴aa
[ 3] tt:→(i>ordem)/aca
[ 4]  j←1
[ 5] tr:→(j>ordem)/ufa
[ 6]  →(aa[i;j]=0)/zero
[ 7]  r←r,[1]1 3⍴aa[i;j],i,j
[ 8] zero:→(j=j←j+1)/tr
[ 9] ufa:→(i=i←i+1)/tt
[10] aca:⍝r←r[⍋r[;1];]
------------------------------------------------------------
[ 0]  r←constrlista2 aa;i;j;ordem
```

```
[ 1]  r←0 3ρ0
[ 2]  i←1 ⋄ ordem←1↑ρaa
[ 3] tt:→(i>ordem)/aca
[ 4]  j←1
[ 5] tr:→(j>ordem)/ufa
[ 6]  →(aa[i;j]=0)/zero
[ 7]  r←r,[1]1 3ρaa[i;j],i,j
[ 8] zero:→(j=j←j+1)/tr
[ 9] ufa:→(i=i←i+1)/tt
[10] aca:⍝r←r[⍋r[;1];]
------------------------------------------------------------
[0]  r←deita x
[1] ⍝ r←¯1↓,(((⍕x),' '),';'),' '
[2]  r←¯1↓,(⍕x),';'
------------------------------------------------------------
[ 0]  r←geracarga;od;x;ins;sem;zuca;r1;lim;res
[ 1]  r1←5 5ρ0
[ 2]  od←5?5
[ 3]  sem←?3
[ 4] ⍝'ori=',(⍕od[1]),'  des=',⍕od[2]
[ 5]  r1[od[1];od[2]]←lim←?6+sem
[ 6]  →(lim>6)/ufa
[ 7]  →(lim>4)/tira2
[ 8]  zuca←(sem+4 5 6 7)[4?4]
[ 9]  →okok
[10] tira2:
[11]  zuca←(sem+5 6 7 8)[4?4]
[12]  →okok
[13] ufa:
[14]  zuca←(sem+7 8 9 10)[4?4]
[15] okok:
[16]  r1[od[1];od[3]]←zuca[1]
[17]  r1[od[3];od[4]]←zuca[2]
[18]  r1[od[4];od[5]]←zuca[3]
[19]  r1[od[5];od[2]]←zuca[4]
[20]  x←,r1
[21]  ins←(x=0)/⍳ρx
[22]  x[ins[7?ρins]]←(5+sem)-1 1 2 2 3 4 4
[23]  r1←(ρr1)ρx
[24]  r1[1;1]←r1[2;2]←r1[3;3]←r1[4;4]←r1[5;5]←0
[25]  res←⌊/zuca
[26]  r←(r1 res od[1 2])
------------------------------------------------------------
[ 0]  r←geraotica;i;j;zeca
[ 1]  r←(6,6)ρ0
[ 2]  zeca←3+15?40
[ 3]  i←1
[ 4] v1:→(i>6)/fim
[ 5]  j←1
[ 6] v2:→(j>6)/f0
[ 7]  →(i<j)/blz
[ 8] vorta:→(j=j←j+1)/v2
[ 9] f0:→(i=i←i+1)/v1
[10] fim:
[11]  →0
[12] blz:r[i;j]←1↑zeca
[13]  zeca←1↓zeca
[14]  →vorta
------------------------------------------------------------
[ 0]  r←geraseqs;r1;r2;i
[ 1]  r1←4 60ρ' ' ⋄ r2←0ρ0
[ 2]  →(1=1)/certo1
[ 3]  r1[1;]←60↑gerh 0
```

```
[ 4]  →pula1
[ 5] certo1:r1[1;]←60⍎gerh 1
[ 6] pula1:
[ 7]  →(1=?2)/certo2
[ 8]  r1[2;]←60⍎gerh 0
[ 9]  →pula2
[10] certo2:r1[2;]←60⍎gerh 1
[11] pula2:
[12]  →(1=?2)/certo3
[13]  r1[3;]←60⍎gerh 0
[14]  →pula3
[15] certo3:r1[3;]←60⍎gerh 1
[16] pula3:
[17]  →(1=?2)/certo4
[18]  r1[4;]←60⍎gerh 0
[19]  →pula4
[20] certo4:r1[4;]←60⍎gerh 1
[21] pula4:
[22]  i←1
[23] t1:→(i>4)/fim
[24]  r2←r2,analizh r1[i;]
[25]  i←i+1
[26]  →t1
[27] fim:
[28]  r←(r1 r2)
-------------------------------------------------------------
[ 0]  r←gerh certoerrado;in
[ 1] t1:REC←0
[ 2]  r←gh
[ 3]  →(40>⍴r)/blz
[ 4]  →t1
[ 5] blz:⍝→(1=?4)/fim
[ 6]  →(10≥⍴r)/t1
[ 7] fim:
[ 8]  r←⍕r
[ 9]  →(1=certoerrado)/0
[10] errado:r[in]←⍕~⍎r[in←?⍴r]
-------------------------------------------------------------
[0]  r←gh
[1]  REC←REC+1
[2]  →(REC>50)/peq
[3]  →(1=?2)/cont
[4] peq:r←,'0'
[5]  →0
[6] cont:r←'1',gh,gh
-------------------------------------------------------------
[0]  r←xu ondeta are;i
[1]  i←1 ⋄ r←0
[2] tt:→(i>1↑⍴xu)/term
[3]  →(are∈xu[i;])/achou
[4] naoachou:→(i=i←i+1)/tt
[5] achou:r←i
[6] term:
-------------------------------------------------------------
[0]  r←prim x
[1]  r←1↑(x=0)/⍳⍴x
-------------------------------------------------------------
[ 0]  r←quebra x;z;aa;i;aux
[ 1]  z←x=';'
[ 2]  aa←(2,(⌈0.5×⍴x))⍴z
[ 3]  aux←20+i←1↓⍴aa
[ 4] t1:→((i<1)∨(aa[1;i]=1))/achou
[ 5]  i←i-1
```

```
[ 6]  →t1
[ 7] achou:r←(0 20+ρaa)ρ' '
[ 8]  r[1;]←aux↑i↑x
[ 9]  r[2;]←aux↑i↓x
------------------------------------------------------------
[ 0]  r←ordem resolveotica arestas;arvore;xu;alin;acol;i;cus
[ 1]  arestas←arestas[⍋arestas[;1];]
[ 2]  arvore←0 2ρ0 ⋄ cus←0
[ 3]  xu←(ordem,ordem)ρ0
[ 4]  xu[;1]←(ordem,1)ρ⍳ordem
[ 5]  i←1
[ 6] tr:→(i>1↑ρarestas)/fim
[ 7]  →((alin←xu ondeta arestas[i;2])=(acol←xu ondeta arestas[i;3]))/despreze
[ 8]  xu[alin;]←(1↓ρxu)↑((xu[alin;]≠0)/xu[alin;]),(xu[acol;]≠0)/xu[acol;]
[ 9]  xu[acol;]←0
[10]  arvore←arvore,[1]1 2ρarestas[i;2],arestas[i;3]
[11]  cus←cus+arestas[i;1]
[12] ⍝ xu
[13] ⍝ '----'
[14] despreze:→(i=i←i+1)/tr
[15] fim:
[16] ⍝-------------------------------------------------
[17]  arvore←arvore[⍋(arvore[;1]×100)+arvore[;2];]
[18] ⍝ o comando acima foi incluido para ordenar a resposta
[19]  r←arvore
[20] ⍝ CUS←cus
------------------------------------------------------------
[ 0]  opesq vivom20a n;CORRECAO;EVENTO;aa;aaa;aac;acuja;bb;bbb;cc;dd;dhx;esse;f;lins;lixon
      ol;relat;resp;resu;upag;xk;ylu;zza
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←0 ⋄ EVENTO←'PLm20   '
[ 5]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[ 8]  FOLHALAm20←ajusta80 FOLHALAm20
[ 9]  relat←((2+1↑ρylu),1 0+ρFOLHALAm20)ρ' '
[10]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLOI'
[11]  xk←1 ⋄ resu←0 17ρ0
[12] testa:→(xk>1↑ρylu)/fim
[13]  esse←21 80ρ' '
[14]  f←FOLHALAm20
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍎VERSAOa←1.04
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[22]  esse[20;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[21;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25]  zza←geraseqs
[26]  esse[7+⍳4;]←4 80↑⊃zza[1]
[27]  resp←resp,⊃zza[2]
[28]  aac←geracarga
[29]  lins←quebra deita(arruma constrlista⊃aac[1]) ⍝,[1]1 3ρ0 0 0
[30]  esse[12;]←80↑(⍎⊃aac[3]),'; ',lins[1;]
[31]  esse[13;]←80↑lins[2;]
[32]  resp←resp,⊃aac[2]
[33]  aac←geracarga
```

```
[34]  lins←quebra deita(arruma constrlista⊃aac[1])⍴ ,[1]1 3⍴0 0 0
[35]  esse[14;]←80↑(⍕⊃aac[3]),'; ',lins[1;]
[36]  esse[15;]←80↑lins[2;]
[37]  resp←resp,⊃aac[2]
[38]  cc←6 resolveotica bb←constrlista2 aa←geraotica
[39]  dd←quebra deita arruma bb
[40]  dd[1;]←(1↓⍴dd)↑'6; ',dd[1;]
[41]  esse[16 17;]←2 80↑dd
[42]  resp←resp,5↑⍬,(1 0⍕cc),' '
[43]  cc←6 resolveotica bb←constrlista2 aa←geraotica
[44]  dd←quebra deita arruma bb
[45]  dd[1;]←(1↓⍴dd)↑'6; ',dd[1;]
[46]  esse[18 19;]←2 80↑dd
[47]  resp←resp,5↑⍬,(1 0⍕cc),' '
[48]  resu←resu,[1]1 17⍴resp
[49]  acuja←(f[;2]='#')/⍳1↑⍴f
[50]  f[acuja;⍳80]←esse[⍬,f[acuja;3 4],' ';]
[51]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[52]  ⍞←(⍕xk←xk+1),'-'
[53]  →testa
[54] fim:
[55]  upag←(1 0+⍴f)⍴' '
[56]  bbb←3 0 4 0 2 0 2 0 2 0 7 0 3 0,20⍴6 0,8⍴3 0
[57]  →(1=≡n)/elafa
[58]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[59]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[60]  upag[2+⍳1↑⍴presu;]←((1↑⍴presu),80)↑bbb⍕resu
[61]  upag[3+1↑⍴presu;]←(1↓⍴upag)↑'\end{verbatim}'
[62]  →terminando
[63] elafa:
[64]  aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 3↓bbb⍕resu)
[65]  aaa[1;35 36]←2 0⍕CORRECAO
[66]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[67]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[68] terminando:
[69]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[70]  relat[1↑⍴relat;;]←upag
[71]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.t
      ex'
[72]  lixonol←⍞EX 2 10⍴'quantos   matriz    '
[73]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivom22

```
[0]  AVISO
[1]  'a ultima folha tem suas variaveis em R2, R3 e R4 (olhe tbem QUADRO)'
-------------------------------------------------------------
[0]  r←geragols t
[1]  r←(t,4)⍴' '
[2]  r[;1]←⍕(t,1)⍴?t⍴9 5 3
[3]  r[;3]←⍕(t,1)⍴?t⍴7 4 2
[4]  r[;4]←';'
-------------------------------------------------------------
[ 0]  r←geraquerm tam;x;i;precisa;aux;ind;indaux;met
[ 1]  x←tam?tam
[ 2] inicio:
[ 3]  i←1
[ 4]  precisa←0
[ 5] t0:→(i>tam)/f0
[ 6]  →(i≠x[i])/soma
[ 7] troca:precisa←1
```

```
[ 8]  →(i≥tam)/tras
[ 9]  aux←x[i]
[10]  x[i]←x[i+1]
[11]  x[i+1]←aux
[12]  →soma
[13] tras:
[14]  aux←x[i]
[15]  x[i]←x[i-1]
[16]  x[i-1]←aux
[17] soma:
[18]  i←i+1
[19]  →t0
[20] f0:→(0=precisa)/sorteia
[21] ⍝ ⍞←'*'
[22]  →inicio
[23] sorteia:
[24]  met←⌊tam÷2
[25]  ind←met+?met
[26]  indaux←(x=ind)/⍳tam
[27]  →(x[ind]=indaux)/sorteia
[28]  x[indaux]←x[ind]
[29]  x[ind]←ind
[30]  r←(x ind)
-----------------------------------------------------------------
[ 0]  r←y ondetem mai;i;j;res
[ 1]  i←1
[ 2]  res←0 2⍴0
[ 3] t1:→(i>1↑⍴y)/fi1
[ 4]  j←1
[ 5] t2:→(j>1↓⍴y)/fi2
[ 6]  →(y[i;j]≠mai)/soma
[ 7]  res←res,[1]1 2⍴i,j
[ 8] soma:
[ 9]  →(j=j←j+1)/t2
[10] fi2:→(i=i←i+1)/t1
[11] fi1:r←res
-----------------------------------------------------------------
[ 0]  r←resolsaldog res;rx;sa;co;i;incr;ssa;plano;r2;sssa;r3;r4;reso
[ 1]  rx←((1↑⍴res),2)⍴⍬,(0 ¯1↓res),' '
[ 2]  sssa←ssa←sa←rx[;1]-rx[;2]
[ 3]  →(9≥⍴sssa)/bzura
[ 4]  'nao e possivel rodar com mais de 9 rodadas'
[ 5]  →0
[ 6] bzura:
[ 7]  co←(3⍴⍴sa)⍴0
[ 8]  plano←1
[ 9] denovo:→(plano>⍴sssa)/acabou
[10]  incr←0
[11]  i←1
[12] t1:→(i>⍴sssa)/fi
[13]  co[plano;incr+⍳⍴sa;i]←+⍀sa
[14]  sa←1↓sa
[15]  i←i+1
[16]  incr←incr+1
[17]  →t1
[18] fi:plano←plano+1
[19]  sa←ssa←¯1↓ssa
[20]  →denovo
[21] acabou:
[22]  i←1
[23]  r2←(2⍴⍴sssa)⍴0
[24] t3:→(i>⍴sssa)/ki
[25]  r2[i;]←co[i;((-i)+1+⍴sssa);]
```

```
[26]  i←i+1
[27]  →t3
[28] ki:R2←r2
[29]  R3←r3←(((⌈/,r2)=,r2)/,(2ρρsssa)↑QUADRO
[30]  i←1
[31]  r4←(ρr3)ρ0
[32] t4:→(i>ρr3)/kj
[33]  r4[i]←(10×r3[i]-⌊r3[i])-⌊r3[i]
[34]  i←i+1
[35]  →t4
[36] kj:R4←r4
[37]  →(1<+/(⌈/r4)=r4)/deuxabu
[38]  reso←r3[(r4=⌈/r4)/ιρr4]
[39]  →(reso≥0)/po
[40]  r←¯1 ¯1
[41]  →0
[42] po:r←⍕'. 'edit⍕r3[(r4=⌈/r4)/ιρr4]
[43]  →0
[44] deuxabu:r←,¯2
------------------------------------------------------------
[ 0]  r←resolvenotas vl;cinq;dez;cinc;um
[ 1]  cinq←0 ⋄ dez←0 ⋄ cinc←0 ⋄ um←0
[ 2] testa:→(vl<50)/co1
[ 3]  cinq←cinq+1
[ 4]  vl←vl-50
[ 5]  →testa
[ 6] co1:
[ 7] te2:→(vl<10)/co2
[ 8]  dez←dez+1
[ 9]  vl←vl-10
[10]  →te2
[11] co2:
[12] te3:→(vl<5)/co3
[13]  cinc←cinc+1
[14]  vl←vl-5
[15]  →te3
[16] co3:
[17] te4:→(vl<1)/co4
[18]  um←um+1
[19]  vl←vl-1
[20]  →te4
[21] co4:r←cinq,dez,cinc,um
------------------------------------------------------------
[ 0]  r←resolvesaldog res;rx;sa;co;i;incr;ssa;plano;r2;sssa;r3;r4;reso
[ 1]  rx←((1↑ρres),2)ρ⍕,(0 ¯1↓res),' '
[ 2]  sssa←ssa←sa←rx[;1]-rx[;2]
[ 3]  →(9≥ρsssa)/bzura
[ 4]  'nao e possivel rodar com mais de 9 rodadas'
[ 5]  →0
[ 6] bzura:
[ 7]  co←(3ρρsa)ρ0
[ 8]  plano←1
[ 9] denovo:→(plano>ρsssa)/acabou
[10]  incr←0
[11]  i←1
[12] t1:→(i>ρsssa)/fi
[13]  co[plano;incr+ιρsa;i]←+⌿sa
[14]  sa←1↓sa
[15]  i←i+1
[16]  incr←incr+1
[17]  →t1
[18] fi:plano←plano+1
[19]  sa←ssa←¯1↓ssa
```

```
[20]  →denovo
[21] acabou:
[22]  i←1
[23]  r2←(2⍴⍴sssa)⍴0
[24] t3:→(i>⍴sssa)/ki
[25]  r2[i;]←co[i;((-i)+1+⍴sssa);]
[26]  i←i+1
[27]  →t3
[28] ki:R2←r2
[29]  R3←r3←((⌈/,r2)=,r2)/,(2⍴⍴sssa)⍴QUADRO
[30]  i←1
[31]  r4←(⍴r3)⍴0
[32] t4:→(i>⍴r3)/kj
[33]  r4[i]←(10×r3[i]-⌊r3[i])-⌊r3[i]
[34]  i←i+1
[35]  →t4
[36] kj:R4←r4
[37]  →(1<+/(⌈/r4)=r4)/deuxabu
[38]  reso←r3[(r4=⌈/r4)/⍳⍴r4]
[39]  →(reso≥0)/po
[40]  r←¯1 ¯1
[41]  →0
[42] po:r←⍎'. 'edit⍕r3[(r4=⌈/r4)/⍳⍴r4]
[43]  →0
[44] deuxabu:r←,¯2
------------------------------------------------------------
[ 0]  opesq vivom22a n;CORRECAO;EVENTO;aa0;aa1;aa2;aaa;acuja;bbb;dhx;esse;f;lixonol;relat;
      resp;resu;upag;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←0 ⋄ EVENTO←'PLm22   '
[ 5]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 8]  FOLHALAm22←ajusta80 FOLHALAm22
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAm22)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[11]  xk←1 ⋄ resu←0 27⍴0
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←23 80⍴' '
[14]  f←FOLHALAm22
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍕VERSAOa←1.02
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[22]  esse[22;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[23;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25]  aa1←geraquerm 20
[26]  esse[8;]←80↑3 0⍕⊃aa1[1]
[27]  resp←resp,⊃aa1[2]
[28]  aa1←geraquerm 20
[29]  esse[9;]←80↑3 0⍕⊃aa1[1]
[30]  resp←resp,⊃aa1[2]
[31]  aa1←geraquerm 20
[32]  esse[10;]←80↑3 0⍕⊃aa1[1]
[33]  resp←resp,⊃aa1[2]
[34]  aa1←geraquerm 20
```

```
[35]  esse[11;]←80↑3 0⍕⊃aa1[1]
[36]  resp←resp,⊃aa1[2]
[37]  esse[12;]←80↑4 0⍕aa1←100+?200
[38]  resp←resp,resolvenotas aa1
[39]  esse[13;]←80↑4 0⍕aa1←100+?200
[40]  resp←resp,resolvenotas aa1
[41]  esse[14;]←80↑4 0⍕aa1←100+?200
[42]  resp←resp,resolvenotas aa1
[43]  esse[15;]←80↑4 0⍕aa1←100+?200
[44]  resp←resp,resolvenotas aa1
[45] ji:aa2←resolsaldog aa1←geragols aa0←5+?4
[46]  →(aa2≠¯2)/jol
[47]  □←'o'
[48]  →ji
[49] jol:esse[16;1]←1 0⍕aa0
[50]  esse[17;]←80↑¯1↓,aa1
[51]  resp←resp,aa2
[52] ji2:aa2←resolsaldog aa1←geragols aa0←5+?4
[53]  →(aa2≠¯2)/jol2
[54]  □←'≠'
[55]  →ji2
[56] jol2:esse[18;1]←1 0⍕aa0
[57]  esse[19;]←80↑¯1↓,aa1
[58]  resp←resp,aa2
[59] ji3:aa2←resolsaldog aa1←geragols aa0←9
[60]  →(aa2≠¯2)/jol3
[61]  □←'↑'
[62]  →ji3
[63] jol3:esse[20;1]←1 0⍕aa0
[64]  esse[21;]←80↑¯1↓,aa1
[65]  resp←resp,aa2
[66]  resu←resu,[1]1 27⍴resp
[67]  acuja←(f[;2]='#')/⍳1↑⍴f
[68]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[69]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[70]  □←(⍕xk←xk+1),'-'
[71]  →testa
[72] fim:
[73]  bbb←3 0 5 0 3 0 3 0 3 0,(32⍴3 0 2 0 2 0 2 0),(12⍴3 0 2 0)
[74]  upag←(1 0+⍴f)⍴' '
[75]  →(1=≡n)/elafa
[76]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[77]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[78]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑bbb⍕resu
[79]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[80]  →terminando
[81] elafa:
[82]  aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 3↓bbb⍕resu)
[83]  aaa[1;35 36]←2 0⍕CORRECAO
[84]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[85]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[86] terminando:
[87]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[88]  relat[1↑⍴relat;;]←upag
[89]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.t
      ex'
[90]  lixonol←□EX 2 10⍴'quantos   matriz    '
[91]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivom24

```
[ 0]  criataneis;r1;i
[ 1]  r1←0⍴0
[ 2]  TANEIS←3125 5⍴0
[ 3]  TANEIS[;1]←3125⍴(a⍴1),(a⍴2),(a⍴3),(a⍴4),(a←625)⍴5
[ 4]  TANEIS[;2]←3125⍴(a⍴1),(a⍴2),(a⍴3),(a⍴4),(a←125)⍴5
[ 5]  TANEIS[;3]←3125⍴(a⍴1),(a⍴2),(a⍴3),(a⍴4),(a←25)⍴5
[ 6]  TANEIS[;4]←3125⍴(a⍴1),(a⍴2),(a⍴3),(a⍴4),(a←5)⍴5
[ 7]  TANEIS[;5]←3125⍴⍳5
[ 8]  i←1
[ 9] t1:→(i>3125)/fim
[10]  →(temduplo TANEIS[i;])/duplo
[11]  r1←r1,1
[12]  →soma
[13] duplo:r1←r1,0
[14] soma:i←i+1
[15]  →t1
[16] fim:TANEIS←r1/[1]TANEIS
------------------------------------------------------------
[0]  r←a deate b
[1]  r←a
[2] t1:→(a≥b)/0
[3]  a←a+1
[4]  r←r,a
[5]  →t1
------------------------------------------------------------
[0]  r←geramacaco tam;i
[1]  r←(tam,4)⍴0
[2]  i←1
[3] t1:→(i>tam)/fim
[4]  r[i;]←(?20),(20+?11),(20+?11),?20
[5]  i←i+1
[6]  →t1
[7] fim:r←r-16
------------------------------------------------------------
[0]  r←geramasp
[1]  r←6 6⍴?36⍴9
------------------------------------------------------------
[ 0]  r←geresoaneis;letras;i;j;k;r1;pad
[ 1] lacima:r1←5 10 10⍴' '
[ 2]  letras←'ABCDEFGHIJKLMNOPQRSTUVWXYZ'[5?26]
[ 3]  i←1
[ 4] t1:→(i>5)/fim
[ 5]  r1[i;;]←qualqueranel letras[i]
[ 6]  i←i+1
[ 7]  →t1
[ 8] fim:pad←r1 resaneis⍳6
[ 9] mesmo:
[10] ⍝ solucao unica ?
[11]  i←2
[12] t2:→(i>120)/ufa
[13]  →(100=+/pad=r1 resaneis TANEIS[i;])/xabu
[14]  i←i+1
[15]  →t2
[16] xabu:⍞←'*',⍕i
[17]  →lacima
[18] ufa:
[19]  r←(letras r1 pad)
------------------------------------------------------------
[0]  r←qualqueranel letra;cl;tl;cc;tc
[1]  r←10 10⍴' '
[2]  cl←?4
```

```
[3]  tl←cl+?10-cl
[4]  cc←?4
[5]  tc←cc+?10-cc
[6] ⍝ cl,tl,cc,tc
[7]  r[cl,tl;cc deate tc]←letra
[8]  r[cl deate tl;cc,tc]←letra
------------------------------------------------------------
[ 0]  r←rejeitamasp;i;j;dif;a;x;zx
[ 1]  x←46656 6⍴0
[ 2]  x[;1]←46656⍴(a⍴1),(a⍴2),(a⍴3),(a⍴4),(a⍴5),(a←7776)⍴6
[ 3]  x[;2]←46656⍴(a⍴1),(a⍴2),(a⍴3),(a⍴4),(a⍴5),(a←1296)⍴6
[ 4]  x[;3]←46656⍴(a⍴1),(a⍴2),(a⍴3),(a⍴4),(a⍴5),(a←216)⍴6
[ 5]  x[;4]←46656⍴(a⍴1),(a⍴2),(a⍴3),(a⍴4),(a⍴5),(a←36)⍴6
[ 6]  x[;5]←46656⍴(a⍴1),(a⍴2),(a⍴3),(a⍴4),(a⍴5),(a←6)⍴6
[ 7]  x[;6]←46656⍴⍳6
[ 8]  zx←0⍴0
[ 9]  i←1
[10] t1:→(i>1↑⍴x)/fim
[11]  j←2
[12] t2:→(j>6)/incr
[13]  dif←|x[i;j-1]-x[i;j]
[14]  →((dif>1)∧(dif≠5))/naopode
[15]  j←j+1
[16]  →t2
[17] incr:zx←zx,1
[18]  →soma
[19] naopode:zx←zx,0
[20]  →soma
[21] soma:i←i+1
[22]  →t1
[23] fim:r←zx/[1]x
------------------------------------------------------------
[ 0]  r←mat resaneis ord;i;j;m;k;zica
[ 1]  zica←10 10⍴' '
[ 2]  i←1
[ 3] t2:→(i>10)/mesmo
[ 4]  j←1
[ 5] t3:→(j>10)/atu
[ 6]  m←1
[ 7] t35:→(m>5)/acum
[ 8]  k←ord[m]
[ 9]  →(mat[k;i;j]≠' ')/achou
[10]  m←m+1
[11]  →t35
[12] achou:zica[i;j]←mat[k;i;j]
[13] acum:j←j+1
[14]  →t3
[15] atu:i←i+1
[16]  →t2
[17] mesmo:r←zica
------------------------------------------------------------
[ 0]  r←resolmacaco x;i;co;li;r0;r1;r2;r3;r4;r5;r6;r7;r8;r9;pts;j
[ 1]  x←x+16
[ 2]  i←1
[ 3]  pts←0 2⍴0
[ 4]  r0←31 31⍴0
[ 5] t1:→(i>1↑⍴x)/fim
[ 6]  ⍎'r',(1 0⍕i),'←31 31⍴0'
[ 7]  co←(2 0⍕x[i;1]),'-1)+⍳1+',(2 0⍕x[i;3]),'-',(2 0⍕x[i;1])
[ 8]  li←(2 0⍕x[i;4]),'-1)+⍳1+',(2 0⍕x[i;2]),'-',(2 0⍕x[i;4])
[ 9]  ⍎'r',(1 0⍕i),'[(',li,';(',co,']←1'
[10] ⍝'r',(1 0⍕i),'[(',li,';(',co,']←1'
[11]  ⍎'r0←r0+r',(1 0⍕i)
```

```
[12]  i←i+1
[13]  →t1
[14] fim:R0←(1 65ρ'   ',2 0⍕|¯16+⍳31),[1](1 65ρ'-'),[1](2 0⍕|31 1ρ¯16+⍳31),'-',2 0⍕⌽[1]r0
[15]  i←31
[16] t2:→(i<1)/real
[17]  j←1
[18] t3:→(j>31)/ufa
[19]  →(r0[i;j]≠1↑ρx)/naoe
[20]  pts←pts,[1]1 2ρj,i
[21] naoe:j←j+1
[22]  →t3
[23] ufa:i←i-1
[24]  →t2
[25] real:→(0=1↑ρpts)/zebr
[26]  →(1=1↑ρpts)/unico
[27]  r←,pts[1,1↑ρpts;]-16
[28]  →0
[29] zebr:r←-2 0 0 0
[30]  →0
[31] unico:r←-1 0 0 0 ⍝ refaca este caso. ele nao presta
[32]  →0
-------------------------------------------------------------
[ 0]  r←resolvemasp x;i;j;men;imen;qt
[ 1]  men←99999
[ 2]  i←1
[ 3] t1:→(i>1↑ρOPCOES)/fim
[ 4]  qt←0
[ 5]  j←1
[ 6] t2:→(j>6)/acum
[ 7]  qt←qt+x[OPCOES[i;j];j]
[ 8]  j←j+1
[ 9]  →t2
[10] acum:→(men≤qt)/pula
[11]  men←qt
[12]  imen←i
[13] pula:i←i+1
[14]  →t1
[15] fim:r←OPCOES[imen;],men
-------------------------------------------------------------
[0]  r←temduplo a
[1]  r←0∊(a⍳a)=⍳ρa
-------------------------------------------------------------
[ 0]  r←veret x;i;co;li;r1;r2;r3;r4;r5;r6;r7;r8;r9;pts;j
[ 1]  i←1
[ 2]  pts←0 2ρ0
[ 3]  r0←15 15ρ0
[ 4] t1:→(i>1↑ρx)/fim
[ 5]  ⍎'r',(1 0⍕i),'←15 15ρ0'
[ 6]  co←(2 0⍕x[i;1]),'-1)+⍳1+',(2 0⍕x[i;3]),'-',(2 0⍕x[i;1])
[ 7]  li←(2 0⍕x[i;4]),'-1)+⍳1+',(2 0⍕x[i;2]),'-',(2 0⍕x[i;4])
[ 8]  ⍎'r',(1 0⍕i),'[(',li,';(',co,']←1'
[ 9] ⍝'r',(1 0⍕i),'[(',li,';(',co,']←1'
[10]  ⍎'r0←r0+r',(1 0⍕i)
[11]  i←i+1
[12]  →t1
[13] fim:⍝r0←⌽[1]r0
[14]  i←15
[15] t2:→(i<1)/real
[16]  j←1
[17] t3:→(j>15)/ufa
[18]  →(r0[i;j]≠1↑ρx)/naoe
[19]  pts←pts,[1]1 2ρj,i
[20] naoe:j←j+1
```

```
[21]  →t3
[22] ufa:i←i-1
[23]  →t2
[24] real:→(0=1↑⍴pts)/zebr
[25]  →(1=1↑⍴pts)/unico
[26]  r←,pts[1,1↑⍴pts;]
[27]  →0
[28] zebr:r←-2 2 2 2
[29]  →0
[30] unico:r←-1 1 1 1 ⍝ refaca este caso. ele nao presta
[31]  →0
-------------------------------------------------------------
[ 0]  opesq vivom24a n;CORRECAO;EVENTO;aaa;acuja;bbb;dhx;eee0;eee1;esse;f;lixonol;relat;re
      sp;resu;upag;xk;ylu
[ 1]  'demora...'
[ 2]  →(0≠⎕NC'opesq')/qveio
[ 3]  opesq←10⍴' '
[ 4] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PLm24   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALAm24←ajusta80 FOLHALAm24
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAm24)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[12]  xk←1 ⋄ resu←0 59⍴' '
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←50 80⍴' '
[15]  f←FOLHALAm24
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍎VERSAOa←1.02
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(resp←3 0⍎xk),' ',opesq
[23]  esse[49;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[50;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  eee0←geramacaco 4
[27]  eee1←resolmacaco eee0
[28]  →(eee1[1]≠¯1)/blz1
[29]  ⍞←'*'
[30]  →inica
[31] blz1:
[32]  esse[7+⍳4;]←4 80↑'¯'-'edit 4 0⍎eee0
[33]  →(eee1[1]≠¯2)/blz2
[34]  resp←resp,14↑'nenhum'
[35]  →blz3
[36] blz2:
[37]  resp←resp,'¯'-'edit 5 0 3 0 3 0 3 0⍎eee1
[38] blz3:
[39]  eee0←geramacaco 5
[40]  eee1←resolmacaco eee0
[41]  →(eee1[1]≠¯1)/blz4
[42]  ⍞←'o'
[43]  →blz3
[44] blz4:
[45]  esse[11+⍳5;]←5 80↑'¯'-'edit 4 0⍎eee0
[46]  →(eee1[1]≠¯2)/blz5
[47]  resp←resp,14↑'nenhum'
[48]  →blz6
```

```
[49] blz5:resp←resp,'¯-'edit 5 0 3 0 3 0 3 0⍕eee1
[50] blz6:
[51]  eee0←geramasp
[52]  eee1←resolvemasp eee0
[53]  esse[16+⍳6;]←6 80↑2 0⍕eee0
[54]  resp←resp,4 0 2 0 2 0 2 0 2 0 2 0⍕6↑eee1
[55]  eee0←geramasp
[56]  eee1←resolvemasp eee0
[57]  esse[22+⍳6;]←6 80↑2 0⍕eee0
[58]  resp←resp,4 0 2 0 2 0 2 0 2 0 2 0⍕6↑eee1
[59]  resu←resu,[1]1 59⍴resp
[60]  acuja←(f[;2]='#')/⍳1↑⍴f
[61]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[62]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[63]  ⍞←(⍕xk←xk+1),'-'
[64]  →testa
[65] fim:
[66]  upag←(1 0+⍴f)⍴' '
[67]  →(1=≡n)/elafa
[68]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[69]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[70]  upag[2+⍳1↑⍴presu;]←((1↑⍴presu),80)↑presu
[71]  upag[3+1↑⍴presu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[72]  →terminando
[73] elafa:
[74]  aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 3↓resu)
[75]  aaa[1;35 36]←2 0⍕CORRECAO
[76]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.gpa')
[77]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[78] terminando:
[79]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[80]  relat[1↑⍴relat;;]←upag
[81]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)ΔFM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.t
      ex'
[82]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[83]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivom26

```
[0]  AVISO
[1]  ' As variavies R1 e R2 contem as respostas dos balaios da ultima emissao '
-------------------------------------------------------------
[ 0]  r←ord calcchatea x;i;cu
[ 1] ⍝ calcula a chateacao de fazer as tarefas x[1;] nos proximos
[ 2] ⍝ n dias, (ordem dada por ord) e calcula a chateacao final.
[ 3]  i←1
[ 4]  cu←0
[ 5] t1:→(i>⍴ord)/fim
[ 6]  →(x[1;ord[i]]≥i)/blz
[ 7]  cu←cu+x[2;ord[i]]
[ 8] blz:i←i+1
[ 9]  →t1
[10] fim:r←cu
-------------------------------------------------------------
[ 0]  criataneis;r1;i
[ 1]  r1←0⍴0
[ 2]  TANEIS←3125 5⍴0
[ 3]  TANEIS[;1]←3125⍴(a⍴1),(a⍴2),(a⍴3),(a⍴4),(a←625)⍴5
[ 4]  TANEIS[;2]←3125⍴(a⍴1),(a⍴2),(a⍴3),(a⍴4),(a←125)⍴5
[ 5]  TANEIS[;3]←3125⍴(a⍴1),(a⍴2),(a⍴3),(a⍴4),(a←25)⍴5
[ 6]  TANEIS[;4]←3125⍴(a⍴1),(a⍴2),(a⍴3),(a⍴4),(a←5)⍴5
```

```
[ 7]  TANEIS[;5]←3125ρι5
[ 8]  i←1
[ 9] t1:→(i>3125)/fim
[10]  →(temduplo TANEIS[i;])/duplo
[11]  r1←r1,1
[12]  →soma
[13] duplo:r1←r1,0
[14] soma:i←i+1
[15]  →t1
[16] fim:TANEIS←r1/[1]TANEIS
------------------------------------------------------------
[ 0]  criatbalai;r1;i;b;a
[ 1]  r1←0ρ0
[ 2]  b←823543
[ 3]  TBALAI←(b,7)ρ' '
[ 4]  TBALAI[;1]←bρ(aρ'1'),(aρ'2'),(aρ'3'),(aρ'4'),(aρ'5'),(aρ'6'),(a←117649)ρ'7'
[ 5]  TBALAI[;2]←bρ(aρ'1'),(aρ'2'),(aρ'3'),(aρ'4'),(aρ'5'),(aρ'6'),(a←16807)ρ'7'
[ 6]  TBALAI[;3]←bρ(aρ'1'),(aρ'2'),(aρ'3'),(aρ'4'),(aρ'5'),(aρ'6'),(a←2401)ρ'7'
[ 7]  TBALAI[;4]←bρ(aρ'1'),(aρ'2'),(aρ'3'),(aρ'4'),(aρ'5'),(aρ'6'),(a←343)ρ'7'
[ 8]  TBALAI[;5]←bρ(aρ'1'),(aρ'2'),(aρ'3'),(aρ'4'),(aρ'5'),(aρ'6'),(a←49)ρ'7'
[ 9]  TBALAI[;6]←bρ(aρ'1'),(aρ'2'),(aρ'3'),(aρ'4'),(aρ'5'),(aρ'6'),(a←7)ρ'7'
[10]  TBALAI[;7]←bρ'1234567'
[11]  i←1
[12] t1:→(i>b)/fim
[13]  →(temduplo TBALAI[i;])/duplo
[14]  r1←r1,1
[15]  →soma
[16] duplo:r1←r1,0
[17] soma:i←i+1
[18]  →t1
[19] fim:TBALAI←r1/[1]TBALAI
------------------------------------------------------------
[0]  r←a deate b
[1]  r←a
[2] t1:→(a≥b)/0
[3]  a←a+1
[4]  r←r,a
[5]  →t1
------------------------------------------------------------
[0]  r←gerabalai
[1]  r←(2,7)ρ(?7ρ5),¯1+?7ρ100
------------------------------------------------------------
[ 0]  r←geracasome;i;yes;nao
[ 1]  r←8 4ρ0 ⋄ nao←0 ⋄ yes←0
[ 2]  r[1;]←(?10),(20+?10),(20+?10),?10
[ 3]  r[2;ι2]←?2ρ30
[ 4]  r[3;ι2]←?2ρ30
[ 5]  r[4;ι2]←?2ρ30
[ 6]  r[5;ι2]←?2ρ30
[ 7]  r[6;ι2]←?2ρ30
[ 8]  r[7;ι2]←?2ρ30
[ 9]  i←1
[10] t1:→(i>6)/fim
[11]  →(r[i;ι2]tadentro r[1;])/sim
[12]  nao←nao+1
[13]  →pula
[14] sim:yes←yes+1
[15] pula:i←i+1
[16]  →t1
[17] fim:r[8;1]←yes
------------------------------------------------------------
[ 0]  r←geresoaneis;letras;i;j;k;r1;pad
[ 1] lacima:r1←5 10 10ρ' '
```

```
[ 2]  letras←'ABCDEFGHIJKLMNOPQRSTUVWXYZ'[5?26]
[ 3]  i←1
[ 4] t1:→(i>5)/fim
[ 5]  r1[i;;]←qualqueranel letras[i]
[ 6]  i←i+1
[ 7]  →t1
[ 8] fim:pad←r1 resaneis⍳6
[ 9] mesmo:
[10] ⍝ solucao unica ?
[11]  i←2
[12] t2:→(i>120)/ufa
[13]  →(100=+/pad=r1 resaneis TANEIS[i;])/xabu
[14]  i←i+1
[15]  →t2
[16] xabu:⍞←'*',⍕i
[17]  →lacima
[18] ufa:
[19]  r←(letras r1 pad)
-------------------------------------------------------------
[0]  r←qualqueranel letra;cl;tl;cc;tc
[1]  r←10 10⍴' '
[2]  cl←?4
[3]  tl←cl+1+?9-cl
[4]  cc←?4
[5]  tc←cc+1+?9-cc
[6] ⍝ cl,tl,cc,tc
[7]  r[cl,tl;cc deate tc]←letra
[8]  r[cl deate tl;cc,tc]←letra
-------------------------------------------------------------
[ 0]  r←mat resaneis ord;i;j;m;k;zica
[ 1]  zica←10 10⍴' '
[ 2]  i←1
[ 3] t2:→(i>10)/mesmo
[ 4]  j←1
[ 5] t3:→(j>10)/atu
[ 6]  m←1
[ 7] t35:→(m>5)/acum
[ 8]  k←ord[m]
[ 9]  →(mat[k;i;j]≠' ')/achou
[10]  m←m+1
[11]  →t35
[12] achou:zica[i;j]←mat[k;i;j]
[13] acum:j←j+1
[14]  →t3
[15] atu:i←i+1
[16]  →t2
[17] mesmo:r←zica
-------------------------------------------------------------
[ 0]  r←resolbala z;cu;i;icu;c
[ 1]  cu←999999
[ 2]  i←1
[ 3] t1:→(i>1↑⍴TBALAI)/fim
[ 4]  c←(⍎(14⍴1 0)⍀TBALAI[i;])calcchatea z
[ 5]  →(cu≤c)/okok
[ 6]  cu←c
[ 7]  icu←i
[ 8] okok:i←i+1
[ 9]  →t1
[10] fim:r←cu,⍎(14⍴1 0)⍀TBALAI[icu;]
-------------------------------------------------------------
[0]  r←mete tadentro faze
[1]  r←(faze[1]≤mete[1])∧(mete[1]≤faze[3])∧(faze[2]≥mete[2])∧(mete[2]≥faze[4])
-------------------------------------------------------------
```

```
[0]  r←temduplo a
[1]  r←0∈(a⍳a)=⍳⍴a
------------------------------------------------------------
[ 0]  opesq vivom26a n;CORRECAO;EVENTO;aaa;acuja;bbb;dhx;eee0;eee1;esse;f;lixonol;relat;re
      sp;resu;upag;xk;ylu
[ 1]  'demora...'
[ 2]  →(0≠⎕NC'opesq')/qveio
[ 3]  opesq←10⍴' '
[ 4] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←0 ⋄ EVENTO←'PLm26   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALAm26←ajusta80 FOLHALAm26
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAm26)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 29⍴' '
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←47 80⍴' '
[15]  f←FOLHALAm26
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←1.03
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(resp←3 0⍕xk),' ',opesq
[23]  esse[46;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[47;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  eee0←geresoaneis
[27]  esse[7+⍳10;]←10 80↑' .'edit⊃eee0[3]
[28]  resp←resp,' ',5↑⊃eee0[1]
[29]  eee0←geresoaneis
[30]  esse[17+⍳10;]←10 80↑' .'edit⊃eee0[3]
[31]  resp←resp,' ',5↑⊃eee0[1]
[32]  eee0←gerabalai
[33]  eee1←resolbala eee0
[34]  esse[28 29;]←2 80↑3 0⍕eee0
[35]  resp←resp,4 0⍕1↑eee1
[36]  R1←1↓eee1
[37]  eee0←gerabalai
[38]  eee1←resolbala eee0
[39]  esse[30 31;]←2 80↑3 0⍕eee0
[40]  resp←resp,4 0⍕1↑eee1
[41]  R2←1↓eee1
[42]  eee0←geracasome
[43]  esse[32;]←80↑4 0⍕eee0[1;]
[44]  esse[32+⍳6;]←6 80↑4 0⍕eee0[1+⍳6;⍳2]
[45]  resp←resp,3 0⍕eee0[8;1]
[46]  eee0←geracasome
[47]  esse[39;]←80↑4 0⍕eee0[1;]
[48]  esse[39+⍳6;]←6 80↑4 0⍕eee0[1+⍳6;⍳2]
[49]  resp←resp,3 0⍕eee0[8;1]
[50]  resu←resu,[1]1 29⍴resp
[51]  acuja←(f[;2]='#')/⍳1↑⍴f
[52]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[53]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[54]  ⍞←(⍕xk←xk+1),'-'
[55]  →testa
[56] fim:
[57]  upag←(1 0+⍴f)⍴' '
```

```
[58]  →(1=≡n)/elafa
[59]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[60]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[61]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑resu
[62]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[63]  →terminando
[64] elafa:
[65]  aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 3↓resu)
[66]  aaa[1;35 36]←2 0⍕CORRECAO
[67]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[68]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[69] terminando:
[70]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[71]  relat[1↑⍴relat;;]←upag
[72]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.t
      ex'
[73]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[74]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivom28

```
[0]  r←deita x
[1] ⍝ r←¯1↓,(((⍕x),' '),';'),' '
[2]  r←¯1↓,(⍕x),';'
-------------------------------------------------------------
[0]  r←geracaixas t
[1]  r←(t,2)⍴?(t×2)⍴20
-------------------------------------------------------------
[ 0]  r←naosim geradomino tam;x;z
[ 1] ⍝ o esquerdo e opcional. Se vier, informa se a geracao deve ser
[ 2] ⍝ positiva (=1) ou negativa (=0). Se nao vier, gera qualquer um.
[ 3] ⍝ dados estatisticos sugerem que neste caso 70%=0 e 30%=1
[ 4]  →(0≠⎕NC'naosim')/veio
[ 5]  r←(tam,2)⍴¯1+?(tam×2)⍴7
[ 6]  →0
[ 7] veio:x←(tam,2)⍴¯1+?(tam×2)⍴7
[ 8]  z←resoldomino x
[ 9]  →(z=naosim)/aceite
[10]  →veio
[11] aceite:r←x
-------------------------------------------------------------
[ 0]  r←gerasorvete n;r1;i;aa;bb
[ 1]  r1←1 2⍴(10×50+?50),n
[ 2]  i←1
[ 3] t1:→(i>n)/fim
[ 4]  bb←aa,(10×?20)+aa←10×?⌈0.05×r1[1;1]
[ 5]  →(bb[2]≤bb[1])/t1
[ 6]  r1←r1,[1]1 2⍴bb
[ 7]  i←i+1
[ 8]  →t1
[ 9] fim:r←r1
-------------------------------------------------------------
[ 0]  r←cx pode pi
[ 1] ⍝ 'pode  cx=',(⍕cx),'  pi='
[ 2] ⍝ pi
[ 3]  →((cx[1]≤pi[1;1])∧(cx[2]≤pi[1;2]))/dev1
[ 4]  →((cx[2]≤pi[1;1])∧(cx[1]≤pi[1;2]))/dev2
[ 5]  r←0
[ 6]  →fim
[ 7] dev1:r←1
[ 8]  →fim
```

```
[ 9] dev2:r←2
[10]  →fim
[11] fim:⍞'devolvendo r=',⍕r
-------------------------------------------------------------
[ 0]  r←cx podeb pi
[ 1] ⍞ 'podeb  cx=',(⍕cx),'    pi='
[ 2] ⍞ pi
[ 3]  →((cx[1]≥pi[(1↑⍴pi);1])∧(cx[2]≥pi[(1↑⍴pi);2]))/dev1
[ 4]  →((cx[2]≥pi[(1↑⍴pi);1])∧(cx[1]≥pi[(1↑⍴pi);2]))/dev2
[ 5]  r←0
[ 6]  →fim
[ 7] dev1:r←1
[ 8]  →fim
[ 9] dev2:r←2
[10]  →fim
[11] fim:⍞'devolvendo r=',⍕r
-------------------------------------------------------------
[ 0]  r←resolcaixas x;y;qt;z;pir;i
[ 1]  y←⍒x[;1]⌊x[;2]
[ 2]  qt←1
[ 3]  z←x[y;]
[ 4]  pir←1 2⍴z[1;]
[ 5]  i←2
[ 6] t1:→(i>1↑⍴z)/fim
[ 7]  →(1=z[i;]pode pir)/encimacerto
[ 8]  →(2=z[i;]pode pir)/encimagirado
[ 9]  →(1=z[i;]podeb pir)/embaixocerto
[10]  →(2=z[i;]podeb pir)/embaixogirado
[11] soma:
[12]  i←i+1
[13]  →t1
[14] encimacerto:pir←z[i;],[1]pir
[15]  qt←qt+1
[16]  →soma
[17] encimagirado:pir←(1 2⍴z[i;2 1]),[1]pir
[18]  qt←qt+1
[19]  →soma
[20] embaixocerto:pir←pir,[1]z[i;]
[21]  qt←qt+1
[22]  →soma
[23] embaixogirado:pir←pir,[1]1 2⍴z[i;2 1]
[24]  qt←qt+1
[25]  →soma
[26] fim:r←qt
-------------------------------------------------------------
[ 0]  r←resoldomino x;i;difs;igua;ctd;qti
[ 1]  i←1
[ 2]  difs←igua←0 2⍴0
[ 3] t1:→(i>1↑⍴x)/fi1
[ 4]  →(x[i;1]=x[i;2])/iguais
[ 5]  difs←difs,[1]x[i;]
[ 6]  →soma
[ 7] iguais:igua←igua,[1]x[i;]
[ 8] soma:i←i+1
[ 9]  →t1
[10] fi1:
[11]  ctd←7⍴0
[12]  i←1
[13] t2:→(i>1↑⍴difs)/fi2
[14]  ctd[difs[i;1]+1]←ctd[difs[i;1]+1]+1
[15]  ctd[difs[i;2]+1]←ctd[difs[i;2]+1]+1
[16]  i←i+1
[17]  →t2
```

```
[18] fi2:⍝ primeira avaliacao: os duplos tem que existir nos difs
[19]  i←1
[20] t3:→(i>1↑⍴igua)/fi3
[21]  →(igua[i;1]∊difs)/ok
[22]  →naovai
[23] ok:i←i+1
[24]  →t3
[25] fi3:⍝ segunda avaliacao: a quantidade de impares deve ser 0 ou 2
[26]  qti←0
[27]  i←1
[28] t4:→(i>7)/fi4
[29]  qti←qti+2|ctd[i]
[30]  →(i=i←i+1)/t4
[31] fi4:→((qti≠0)∧(qti≠2))/naovai
[32]  r←1
[33]  →0
[34] naovai:r←0
[35]  →0
-------------------------------------------------------------
[ 0]  r←resolsorvete x;i;nao;sim;j;r1;r2;max
[ 1]  sim←0⍴0
[ 2]  i←1
[ 3] t1:→(i>x[1;1])/fim
[ 4]  →((i≥(1 0↓x)[;1])∧(i≤(1 0↓x)[;2]))/yes
[ 5]  →soma
[ 6] yes:sim←sim,i
[ 7] soma:i←i+1
[ 8]  →t1
[ 9] fim:j←2
[10]  r1←sim[1]
[11] t2:→(j>⍴sim)/f9
[12]  →((sim[j-1]+1)=sim[j])/incr
[13]  r1←r1,sim[j-1],sim[j]
[14] incr:j←j+1
[15]  →t2
[16] f9:r1←r1,sim[j-1]
[17]  r1←((0.5×⍴r1),2)⍴r1
[18]  r2←,r1[;2]-r1[;1]
[19]  max←1↑(r2=⌈/r2)/⍳⍴r2
[20]  r←r1[max;]
-------------------------------------------------------------
[0]  r←temduplo a
[1]  r←0∊(a⍳a)=⍳⍴a
-------------------------------------------------------------
[ 0]  r←testaloop t;i;naosim;r1;x
[ 1]  i←1
[ 2]  naosim←0 0
[ 3] t1:→(i>100)/fim
[ 4]  x←geradomino t
[ 5]  r1←resoldomino x
[ 6]  naosim[1+r1]←naosim[1+r1]+1
[ 7]  i←i+1
[ 8]  →t1
[ 9] fim:r←naosim
-------------------------------------------------------------
[ 0]  opesq vivom28a n;CORRECAO;EVENTO;aaa;acuja;bbb;dhx;eee0;eee1;esse;f;lixonol;relat;re
      sp;resu;upag;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←0 ⋄ EVENTO←'PLm28   '
[ 5]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
```

```
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 8]  FOLHALAm28←ajusta80 FOLHALAm28
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAm28)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[11]  xk←1 ⋄ resu←0 13⍴0
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←18 80⍴' '
[14]  f←FOLHALAm28
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍕VERSAOa←1.02
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[22]  esse[17;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[18;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25]  eee0←¯1+?2
[26]  esse[8;]←80↑'6 ; ',(deita eee0 geradomino 6),' ; 0'
[27]  resp←resp,eee0
[28]  eee0←¯1+?2
[29]  esse[9;]←80↑'7 ; ',(deita eee0 geradomino 7),' ; 0'
[30]  resp←resp,eee0
[31]  eee0←¯1+?2
[32]  esse[10;]←80↑'8 ; ',(deita eee0 geradomino 8),' ; 0'
[33]  resp←resp,eee0
[34]  eee0←gerasorvete 4
[35]  esse[11;]←80↑deita eee0
[36]  resp←resp,,resolsorvete eee0
[37]  eee0←gerasorvete 5
[38]  esse[12;]←80↑deita eee0
[39]  resp←resp,,resolsorvete eee0
[40]  eee0←gerasorvete 6
[41]  esse[13;]←80↑deita eee0
[42]  resp←resp,,resolsorvete eee0
[43]  eee0←geracaixas 5
[44]  esse[14;]←80↑' 5 ; ',(deita eee0),' ; 0 '
[45]  resp←resp,resolcaixas eee0
[46]  eee0←geracaixas 6
[47]  esse[15;]←80↑' 6 ; ',(deita eee0),' ; 0 '
[48]  resp←resp,resolcaixas eee0
[49]  eee0←geracaixas 7
[50]  esse[16;]←80↑' 7 ; ',(deita eee0),' ; 0 '
[51]  resp←resp,resolcaixas eee0
[52]  resu←resu,[1]1 13⍴resp
[53]  acuja←(f[;2]='#')/⍳1↑⍴f
[54]  f[acuja;⍳80]←esse[⍎,f[acuja;3 4],' ';]
[55]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[56]  ⎕←(⍕xk←xk+1),'-'
[57]  →testa
[58] fim:
[59]  bbb←3 0 5 0 2 0 2 0 6 0 4 0 5 0 4 0 5 0 4 0 6 0 2 0 2 0
[60]  upag←(1 0+⍴f)⍴' '
[61]  →(1=≡n)/elafa
[62]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[63]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[64]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑bbb⍕resu
[65]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[66]  →terminando
[67] elafa:
[68]  aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 3↓bbb⍕resu)
```

```
[69]  aaa[1;35 36]←2 0⍕CORRECAO
[70]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[71]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[72] terminando:
[73]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[74]  relat[1↑⍴relat;;]←upag
[75]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.t
      ex'
[76]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[77]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivom30

```
[0]  r←arrumacoes k;i
[1]  r←0⍴0
[2]  i←1
[3] t1:→(i>k)/fim
[4]  r←r,i combinacoes k
[5]  i←i+1
[6]  →t1
[7] fim:
------------------------------------------------------------
[ 0]  r←p combinacoes t;m;i;tam
[ 1]  r←0⍴0
[ 2]  m←(∧⌿2<⍸m)/m←1+((-p)↑⍳t)⊤⍳(!p)×p!t
[ 3]  m←⍒m
[ 4]  i←1
[ 5]  tam←1↓⍴m
[ 6] t1:→(i>1↑⍴m)/fim
[ 7]  r←r,(tam⍴10)⊥m[i;]
[ 8]  i←i+1
[ 9]  →t1
[10] fim:
------------------------------------------------------------
[0]  r←deita x
[1] ⍝ r←¯1↓,(((⍕x),' '),';'),' '
[2]  r←¯1↓,(⍕x),';'
------------------------------------------------------------
[ 0]  r←geraaero;a;v;i;b
[ 1]  a←5+?3
[ 2]  v←8+?6
[ 3]  r←1 2⍴a,v
[ 4]  i←1
[ 5] t1:→(i>v)/fim
[ 6]  b←(?a),?a
[ 7]  →(b[1]=b[2])/t1
[ 8]  r←r,[1]1 2⍴b
[ 9]  i←i+1
[10]  →t1
[11] fim:
------------------------------------------------------------
[ 0]  r←geracoreia;i;cid;est;nl;aba
[ 1] volta:r←2 2⍴(cid←4+?4),(est←6+?6),0,?2
[ 2]  r[2;1]←aba←?cid
[ 3]  i←1
[ 4] t1:→(i>est)/fim
[ 5]  r←r,[1]1 2⍴2?cid
[ 6]  i←i+1
[ 7]  →t1
[ 8] fim:r[nl←2+?¯2+1↑⍴r;?2]←aba
[ 9]  →(r[nl;1]=r[nl;2])/volta
```

```
------------------------------------------------------------
[0]  r←geratesou resp;m;x
[1] volta:
[2]  m←(5+?10),(5+?10),?(5+?3)⍴10
[3]  →(1=2|+/m)/volta
[4]  x←resolvetesou m
[5]  →(x=2|resp)/okok
[6]  →volta
[7] okok:r←m
------------------------------------------------------------
[0]  r←indices n
[1]  r←10 10 10 10 10 10 10 10⍴n
[2]  r←(r≠0)/r
------------------------------------------------------------
[ 0]  r←mochila x;w;v;n;W;i;Y;t;A;B;⎕IO;lixo;aa
[ 1] ⍝recebe (vet pesos) (vet valores) limite-mochila
[ 2] ⍝devolve (listaprodutos) valor-da-mochila
[ 3]  ⎕IO←0
[ 4]  w←0,⊃x[0] ⋄ v←0,⊃x[1] ⋄ W←⊃x[2]
[ 5]   ⋄ n←≢⍴⊃x[1]
[ 6]  r←(n+1)⍴¯1
[ 7]  t←((n+1),W+1)⍴0
[ 8]  Y←0
[ 9] t1:→(Y>W)/f1
[10]  t[0;Y]←0
[11]  i←1
[12] t2:→(i>n)/f2
[13]  A←t[(i-1);Y]
[14]  →(w[i]>Y)/too
[15]  B←t[i-1;Y-w[i]]+v[i]
[16]  →junta
[17] too:B←0
[18] junta:t[i;Y]←A⌈B
[19]  i←i+1
[20]  →t2
[21] f2:Y←Y+1
[22]  →(⎕MOSTRA=0)/t1
[23]  't[i][j]=combinacao melhores i produtos com peso≤j.  Limite=',⍕W
[24]  ' calculando a coluna ',(⍕Y-1),'   de peso≤',⍕Y-1
[25]  (0 numera4 t),'|',((3 3⍴'     w---'),[0]3 0⍕(n,1)⍴1↓w),'|',((3 3⍴'     v---'),[0]3 0
      ⍕(n,1)⍴1↓v)
[26]  '----                          0 para encerrar'
[27]  lixo←⍞
[28]  →('0'=1↑lixo)/0
[29]  →t1
[30] f1:
[31]  →(⎕MOSTRA=0)/k9
[32]  '=================================='
[33] k9:
[34]  Y←W
[35]  i←n
[36] t3:→(i<1)/t5
[37]  →(t[i;Y]=t[i-1;Y])/difas
[38]  →(⎕MOSTRA=0)/h9
[39]  aa←' L=',(2 0⍕i),' C=',(2 0⍕Y),'(',(2 0⍕t[i;Y]),')',' :'
[40]  aa←aa,' L=',(2 0⍕i-1),' C=',(2 0⍕Y),'(',(2 0⍕t[i-1;Y]),')','    logo o elemento ',(2
       0⍕i),' vai'
[41]  aa
[42]  ' o novo peso=',2 0⍕Y-w[i]
[43] h9:
[44]  r[i]←1
[45]  Y←Y-w[i]
[46]  →plen
```

```
[47] difas:
[48]  →(∆MOSTRA=0)/g7
[49]  aa←' L=',(2 0⍕i),' C=',(2 0⍕Y),'(',(2 0⍕t[i;Y]),')',' :'
[50]  aa←aa,' L=',(2 0⍕i-1),' C=',(2 0⍕Y),'(',(2 0⍕t[i-1;Y]),')','    logo o elemento ',(2
       0⍕i),' nao vai'
[51]  aa
[52] g7:
[53]  r[i]←0
[54] plen:i←i-1
[55]  →t3
[56] t5:
[57]  r←(1↓r)(t[(¯1+1↑⍴t);(¯1+¯1↑⍴t)])
[58]  T←t
-------------------------------------------------------------
[ 0]  r←quebra x;z;aa;i;aux
[ 1]  z←x=';'
[ 2]  aa←(2,(⌈0.5×⍴x))⍴z
[ 3]  aux←20+i←1↓⍴aa
[ 4] t1:→((i<1)∨(aa[1;i]=1))/achou
[ 5]  i←i-1
[ 6]  →t1
[ 7] achou:r←(0 20+⍴aa)⍴' '
[ 8]  r[1;]←aux↑i↑x
[ 9]  r[2;]←aux↑i↓x
-------------------------------------------------------------
[ 0]  r←resolveaero x;w;i;z;ind;ind2
[ 1]  w←x[1;1]⍴0
[ 2]  i←2
[ 3] t1:→(i>1↑⍴x)/fim
[ 4]  w[x[i;1]]←w[x[i;1]]+1
[ 5]  w[x[i;2]]←w[x[i;2]]+1
[ 6]  i←i+1
[ 7]  →t1
[ 8] fim:w←w[ind←⍒w]
[ 9]  z←(⍳⍴w)[ind]
[10]  w←(ind2←w=⌈/w)/w
[11]  r←ind2/z
[12]  →(3≥⍴r)/okok
[13]  r←¯1
[14]  →0
[15] okok:
-------------------------------------------------------------
[ 0]  r←resolvecoreia x;cids;mudou;i;men
[ 1]  cids←x[1;1]⍴9999
[ 2]  cids[x[2;1]]←0
[ 3]  mudou←1
[ 4] t1:→(mudou=0)/fim
[ 5]  mudou←0
[ 6]  i←3
[ 7] t2:→(i>1↑⍴x)/denovo
[ 8]  →(cids[x[i;1]]=9999)/mais
[ 9]  men←cids[x[i;2]]⌊cids[x[i;1]]+1
[10]  →(men=cids[x[i;2]])/conta
[11]  mudou←1
[12]  cids[x[i;2]]←men
[13] conta:
[14] mais:
[15]  →(cids[x[i;2]]=9999)/ufa
[16]  men←cids[x[i;1]]⌊cids[x[i;2]]+1
[17]  →(men=cids[x[i;1]])/blz
[18]  mudou←1
[19]  cids[x[i;1]]←men
[20] blz:
```

```
[21] ufa:
[22]  i←i+1
[23]  →t2
[24] denovo:
[25] ⍝ cids
[26]  →t1
[27] fim:r←((cids≤x[2;2])∧(x[2;1]≠⍳⍴cids))/⍳⍴cids
[28]  →(4≥⍴r)/0
[29]  r←¯1
-------------------------------------------------------------
[ 0]  r←resolvetesou x;p1;p2;p;de;soma;simnao;met;i
[ 1] ⍝ este cara responde 0 se nao tem possibilidade
[ 2] ⍝ 1 se existe uma resposta (que pode ser unica OU nao)
[ 3]  →(10<⍴x)/erro
[ 4]  p1←x[1]
[ 5]  p2←x[2]
[ 6]  p←2↓x
[ 7]  de←⍪'de',⍕⍴p
[ 8]  soma←+/x
[ 9]  simnao←0
[10]  →(0≠2|soma)/nao
[11]  met←soma÷2
[12]  i←1
[13] t1:→(i>⍴de)/aca
[14]  →((met-p1)=+/p[indices de[i]])/sim
[15]  →((met-p2)=+/p[indices de[i]])/sim
[16]  i←i+1
[17]  →t1
[18] sim:simnao←1
[19]  →aca
[20] nao:
[21] aca:
[22]  r←simnao
[23]  →0
[24] erro:'o parametro e muito grande > 10'
-------------------------------------------------------------
[0]  r←temduplo a
[1]  r←0∈(a⍳a)=⍳⍴a
-------------------------------------------------------------
[ 0]  opesq vivom30a n;EVENTO;aaa;acuja;bbb;dhx;eee0;eee1;esse;f;lixonol;relat;resp;resu;u
      pag;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  EVENTO←'PLm30   '
[ 5]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 8]  FOLHALAm30←ajusta80 FOLHALAm30
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAm30)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[11]  xk←1 ⋄ resu←0 25⍴0
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←24 80⍴' '
[14]  f←FOLHALAm30
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍕VERSAOa←1.02
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
```

```
[22]  esse[23;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[24;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25]  eee0←geratesou eee1←¯1+?2
[26]  esse[8;]←80↑⍕eee0
[27]  resp←resp,eee1
[28]  eee0←geratesou eee1←¯1+?2
[29]  esse[9;]←80↑⍕eee0
[30]  resp←resp,eee1
[31]  eee0←geratesou eee1←¯1+?2
[32]  esse[10;]←80↑⍕eee0
[33]  resp←resp,eee1
[34] ⍝-------------------------
[35] u11:eee1←resolveaero eee0←geraaero
[36]  →(eee1=¯1)/u11
[37]  esse[11 12;]←2 80↑quebra deita eee0
[38]  resp←resp,3↑eee1
[39] u12:eee1←resolveaero eee0←geraaero
[40]  →(eee1=¯1)/u12
[41]  esse[13 14;]←2 80↑quebra deita eee0
[42]  resp←resp,3↑eee1
[43] u13:eee1←resolveaero eee0←geraaero
[44]  →(eee1=¯1)/u13
[45]  esse[15 16;]←2 80↑quebra deita eee0
[46]  resp←resp,3↑eee1
[47] ⍝----------------------------
[48] u21:eee1←resolvecoreia eee0←geracoreia
[49]  →(¯1=eee1)/u21
[50]  esse[17 18;]←2 80↑quebra deita eee0
[51]  esse[17;1↑(esse[17;]∈';')/⍳80]←' '
[52]  resp←resp,4↑eee1
[53] u22:eee1←resolvecoreia eee0←geracoreia
[54]  →(¯1=eee1)/u22
[55]  esse[19 20;]←2 80↑quebra deita eee0
[56]  esse[19;1↑(esse[19;]∈';')/⍳80]←' '
[57]  resp←resp,4↑eee1
[58] u23:eee1←resolvecoreia eee0←geracoreia
[59]  →(¯1=eee1)/u23
[60]  esse[21 22;]←2 80↑quebra deita eee0
[61]  esse[21;1↑(esse[21;]∈';')/⍳80]←' '
[62]  resp←resp,4↑eee1
[63]  resu←resu,[1]1 25⍴resp
[64]  acuja←(f[;2]='#')/⍳1↑⍴f
[65]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[66]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[67]  ⍞←(⍕xk←xk+1),'-'
[68]  →testa
[69] fim:
[70]  upag←(1 0+⍴f)⍴' '
[71]  bbb←3 0 4 0 2 0 2 0 4 0 2 0 2 0 3 0 2 0 2 0 3 0 2 0 2 0 4 0 2 0 2 0 2 0 3 0 2 0 2 0
      2 0 3 0 2 0 2 0 2 0
[72]  →(1=≡n)/elafa
[73]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[74]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[75]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑bbb⍕resu
[76]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[77]  →terminando
[78] elafa:
[79]  aaa←(ylu,0 3↓bbb⍕resu)
[80]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∘⍳⍷EVENTO=' ')/EVENTO),'.gpa')
[81]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[82] terminando:
[83]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
```

```
[84]  relat[1↑⍴relat;;]←upag
[85]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)⍙FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.t
      ex'
[86]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[87]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivom32

```
[ 0]  ana22 onde;j
[ 1]  ⎕IO←1
[ 2]  →(onde=1)/um
[ 3]  j←1
[ 4] in:→(j>onde)/um
[ 5]  ana22 onde-1
[ 6]  →(onde≠2)/roda
[ 7]  anagra←anagra,[1](1,⍴palavra)⍴palavra
[ 8] roda:rota22 onde
[ 9]  →(j=j←j+1)/in
[10] um:
-------------------------------------------------------------
[ 0]  r←converteinds n;prox;pal;i;j
[ 1]  r←((1↑⍴n),8)⍴0
[ 2]  n←((n,','),'*'),','
[ 3]  n←,n
[ 4]  n←(n≠' ')/n
[ 5]  i←1
[ 6]  j←1
[ 7] t1:
[ 8]  →(0=⍴n)/fim
[ 9]  prox←1↑(n∈',')/⍳⍴n
[10]  pal←¯1↓prox↑n
[11]  n←prox↓n
[12]  →('*'≠pal)/blz
[13]  i←i+1
[14]  j←1
[15]  →t1
[16] blz:
[17]  r[i;j]←pal indice TABN
[18]  j←j+1
[19]  →t1
[20] fim:
-------------------------------------------------------------
[ 0]  r←criapermis t;lixo
[ 1]  →(0=⍴⍴t)/erro
[ 2]  palavra←t
[ 3]  anagra←(0,⍴t)⍴0
[ 4]  ana22⍴t
[ 5]  r←anagra
[ 6]  lixo←⎕EX'palavra'
[ 7]  lixo←⎕EX'anagra'
[ 8]  →0
[ 9] erro:'chamada errada'
-------------------------------------------------------------
[0]  r←deita x
[1] ⍝ r←¯1↓,(((⍕x),' '),';'),' '
[2]  r←¯1↓,(⍕x),';'
-------------------------------------------------------------
[ 0]  r←geraerdos qt;i;nv
[ 1]  r←0 78⍴' '
[ 2]  i←2
[ 3]  nv←1+?5
```

```
[ 4]  r←r,[1]1 78⍴78↑tirab TABN[1,(1+nv?¯1+1↑⍴TABN);]
[ 5] t1:→(i>qt)/fim
[ 6]  nv←1+?5
[ 7]  r←r,[1]1 78⍴78↑tirab TABN[nv?1↑⍴TABN;]
[ 8]  i←i+1
[ 9]  →t1
[10] fim:r←r[(1↑⍴r)?1↑⍴r;]
------------------------------------------------------------
[ 0]  r←gerafinl;locais;ligs;onde;alts;i;de;para;rotas
[ 1]  rotas←0 2⍴0
[ 2]  locais←5+?3
[ 3]  ligs←10+?4
[ 4]  onde←?locais
[ 5]  alts←100+10×locais?50
[ 6]  i←1
[ 7] t1:→(i>ligs)/fim
[ 8]  de←?locais
[ 9]  para←?locais
[10]  →(de=para)/t1
[11]  →(0≠+/(de=rotas[;1])∧(para=rotas[;2]))/t1
[12]  rotas←rotas,[1]1 2⍴de,para
[13]  i←i+1
[14]  →t1
[15] fim:r←((ligs+2),(locais))⍴(locais↑locais,ligs,onde),alts,2000⍴0
[16]  r[2+⍳1↑⍴rotas;⍳2]←rotas
------------------------------------------------------------
[ 0]  r←gerasmerc;smerc;coords;i;nm
[ 1]  smerc←5+?4
[ 2]  coords←(0,2)⍴0
[ 3]  i←1
[ 4] t1:→(i>smerc)/fim
[ 5]  nm←(¯11+?21),¯11+?21
[ 6]  →(0≠+/(nm[1]=coords[;1])∧(nm[2]=coords[;2]))/t1
[ 7]  coords←coords,[1]1 2⍴nm
[ 8]  i←i+1
[ 9]  →t1
[10] fim:r←coords
------------------------------------------------------------
[0]  r←a indice b;i
[1]  i←1 ⋄ r←9999
[2] t1:→(i>1↑⍴b)/fim
[3]  →((⍴a)=+/a=b[i;⍳⍴a])/achou
[4]  i←i+1
[5]  →t1
[6] achou:r←i
[7] fim:
------------------------------------------------------------
[ 0]  r←quebra x;z;aa;i;aux
[ 1]  z←x=';'
[ 2]  aa←(2,(⌈0.5×⍴x))⍴z
[ 3]  aux←20+i←1↓⍴aa
[ 4] t1:→((i<1)∨(aa[1;i]=1))/achou
[ 5]  i←i-1
[ 6]  →t1
[ 7] achou:r←(0 20+⍴aa)⍴' '
[ 8]  r[1;]←aux↑i↑x
[ 9]  r[2;]←aux↑i↓x
------------------------------------------------------------
[ 0]  r←resolvefinl x;locais;rotas;onde;alts;cams;rots;i;mad;cids;caminhando;maxcids;j
[ 1]  locais←x[1;1] ⋄ rotas←x[1;2] ⋄ onde←x[1;3]
[ 2]  alts←x[2;]
[ 3]  cams←(onde≠⍳⍴alts)/⍳⍴alts
[ 4]  rots←criapermis cams
```

```
[ 5]  i←3
[ 6]  maxcids←0
[ 7]  mad←(locais,locais)ρ0
[ 8] t1:→(i>1↑ρx)/t5
[ 9]  mad[x[i;1];x[i;2]]←1
[10]  i←i+1
[11]  →t1
[12] t5:
[13]  i←1
[14] t8:→(i>1↑ρrots)/fim
[15]  cids←0
[16]  j←1
[17]  caminhando←onde,rots[i;]
[18] t9:→(j≥1↓ρrots)/ufa
[19]  →(mad[caminhando[j];caminhando[j+1]]=0)/ufa
[20]  →(alts[caminhando[j]]<alts[caminhando[j+1]])/ufa
[21]  cids←cids+1
[22]  j←j+1
[23]  →t9
[24] ufa:maxcids←cids⌈maxcids
[25]  i←i+1
[26]  →t8
[27] fim:r←maxcids
------------------------------------------------------------
[ 0]  r←resolverdos x;z;w;cus;i;j;mn;lin;xave;ct;fd
[ 1]  ULTERDOS←z←converteinds x
[ 2]  w←tiraduplo,z
[ 3]  w←w[⍋w]
[ 4]  w←1↓w
[ 5]  cus←(1↑ρTABN)ρ99
[ 6]  cus[1]←0
[ 7]  ct←0
[ 8] denovo:ct←ct+1
[ 9]  →(ct>15)/ateq
[10]  i←1
[11] t1:→(i>1↑ρz)/fim
[12]  lin←(z[i;]≠0)/z[i;]
[13]  xave←1
[14]  mn←⌊/cus[lin]
[15]  →(99=mn)/soma
[16]  j←1
[17] t2:→(j>ρlin)/fica
[18]  cus[lin[j]]←cus[lin[j]]⌊mn+1
[19]  j←j+1
[20]  →t2
[21] soma:
[22]  xave←0
[23] fica:
[24]  i←i+1
[25]  →t1
[26] fim:→(xave=1)/ateq
[27]  →denovo
[28] ateq:fd←(2,ρw)ρw,cus[w]
[29]  r←fd[;1+3?¯1+1↓ρfd]
------------------------------------------------------------
[ 0]  r←resolvesmerc x;tab;i;j;k;dtot;d;dmin;zz
[ 1]  x←x+11
[ 2] vorta:tab←0 3ρ0
[ 3]  i←1
[ 4] t1:→(i>21)/fim
[ 5]  j←1
[ 6] t2:→(j>21)/som
[ 7]  k←1
```

```
[ 8]  dtot←0
[ 9] t3:→(k>1↑ρx)/inck
[10]  d←(|x[k;1]-i)+|x[k;2]-j
[11]  dtot←dtot+d
[12]  k←k+1
[13]  →t3
[14] inck:tab←tab,[1]1 3ρi,j,dtot
[15]  j←j+1
[16]  →t2
[17] som:i←i+1
[18]  →t1
[19] fim:
[20]  zz←(+/dmin=tab[;3]),(dmin←⌊/tab[;3])
[21]  →(zz[1]=1)/blz
[22]  r←¯1
[23]  →0
[24] blz:r←¯11+(dmin=tab[;3])/[1]tab[;1 2]
-------------------------------------------------------------
[0]  rota22 on;j;p;temp
[1]  p←1+(ρpalavra)-on
[2]  temp←palavra[p]
[3]  j←p+1
[4] opa:→(j>ρpalavra)/aca
[5]  palavra[j-1]←palavra[j]
[6]  →(j=j←j+1)/opa
[7] aca:palavra[j-1]←temp
-------------------------------------------------------------
[0]  r←temduplo a
[1]  r←0∈(aιa)=ιρa
-------------------------------------------------------------
[0]  r←tirab n
[1]  n←n,','
[2]  n←n,'#'
[3]  n←,n
[4]  n←(n≠' ')/n
[5]  r←¯2↓'# 'edit n
-------------------------------------------------------------
[0]  r←tiraduplo V
[1]  r←((Vι⍳V)=ιρV)/V                    ⍝ Unique.  Drop duplicates from vector.
-------------------------------------------------------------
[  0]  opesq vivom32a n;CORRECAO;EVENTO;aaa;acuja;bbb;dhx;eee0;eee1;eee2;esse;f;lixonol;rel
       at;resp;resu;upag;xk;ylu
[  1]  'demora'
[  2]  →(0≠⎕NC'opesq')/qveio
[  3]  opesq←10ρ' '
[  4] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[  5]  CORRECAO←0 ⋄ EVENTO←'PLm32   '
[  6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
       4 5],⎕TS[6]+⎕TS[7]÷1000
[  7]  →(isnum n)/1+⎕LC ⋄ ylu←⍙FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[  8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎ιn
[  9]  FOLHALAm32←ajusta80 FOLHALAm32
[ 10]  relat←((2+1↑ρylu),1 0+ρFOLHALAm32)ρ' '
[ 11]  relat[1;;]←(1↓ρrelat)↑⍙FM'c:\apl2\VIVOBLOI'
[ 12]  xk←1 ⋄ resu←0 19ρ0
[ 13] testa:→(xk>1↑ρylu)/fim
[ 14]  esse←39 80ρ' '
[ 15]  f←FOLHALAm32
[ 16]  esse[1;]←80↑dhx[1;]
[ 17]  esse[2;]←80↑dhx[2;]
[ 18]  esse[3;]←80↑4 2⍎VERSAOa←1.02
[ 19]  esse[4;]←80↑ylu[xk;ι6]
[ 20]  esse[5;]←80↑ylu[xk;6+ι30]
```

```
[ 21]  →(~1=≡n)/1+⎕LC ◇ esse[6;]←80↑EVENTO
[ 22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[ 23]  esse[38;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[ 24]  esse[39;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[ 25] inica:
[ 26]  eee0←gerafinl
[ 27]  eee1←resolvefinl eee0
[ 28]  esse[8;]←80↑(⍕eee0[1;⍳3]),' ; ',⍕eee0[2;]
[ 29]  esse[9;]←80↑deita eee0[2+⍳eee0[1;2];1 2]
[ 30]  resp←resp,eee1
[ 31]  eee0←gerafinl
[ 32]  eee1←resolvefinl eee0
[ 33]  esse[10;]←80↑(⍕eee0[1;⍳3]),' ; ',⍕eee0[2;]
[ 34]  esse[11;]←80↑deita eee0[2+⍳eee0[1;2];1 2]
[ 35]  resp←resp,eee1
[ 36]  eee0←gerafinl
[ 37]  eee1←resolvefinl eee0
[ 38]  esse[12;]←80↑(⍕eee0[1;⍳3]),' ; ',⍕eee0[2;]
[ 39]  esse[13;]←80↑deita eee0[2+⍳eee0[1;2];1 2]
[ 40]  resp←resp,eee1
[ 41] ⍝-------------------------
[ 42] u11:eee1←resolvesmerc eee0←gerasmerc
[ 43]  →(1=⍴,eee1)/u11
[ 44]  esse[14;]←80↑'¯'-'edit deita eee0
[ 45]  resp←resp,2↑,eee1
[ 46] u12:eee1←resolvesmerc eee0←gerasmerc
[ 47]  →(1=⍴,eee1)/u12
[ 48]  esse[15;]←80↑'¯'-'edit deita eee0
[ 49]  resp←resp,2↑,eee1
[ 50] u13:eee1←resolvesmerc eee0←gerasmerc
[ 51]  →(1=⍴,eee1)/u13
[ 52]  esse[16;]←80↑'¯'-'edit deita eee0
[ 53]  resp←resp,2↑,eee1
[ 54] ⍝----------------------------
[ 55]  eee0←resolverdos eee1←geraerdos 5
[ 56]  esse[16+⍳5;]←5 80↑eee1
[ 57]  eee2←,TABN[eee0[1;];],','
[ 58]  esse[35;]←80↑eee2←¯1↓(eee2≠' ')/eee2
[ 59]  resp←resp,eee0[2;]
[ 60]  eee0←resolverdos eee1←geraerdos 6
[ 61]  esse[21+⍳6;]←6 80↑eee1
[ 62]  eee2←,TABN[eee0[1;];],','
[ 63]  esse[36;]←80↑eee2←¯1↓(eee2≠' ')/eee2
[ 64]  resp←resp,eee0[2;]
[ 65]  eee0←resolverdos eee1←geraerdos 7
[ 66]  esse[27+⍳7;]←7 80↑eee1
[ 67]  eee2←,TABN[eee0[1;];],','
[ 68]  esse[37;]←80↑eee2←¯1↓(eee2≠' ')/eee2
[ 69]  resp←resp,eee0[2;]
[ 70]  resu←resu,[1]1 19⍴resp
[ 71]  acuja←(f[;2]='#')/⍳1↑⍴f
[ 72]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[ 73]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[ 74]  ⍞←(⍕xk←xk+1),'-'
[ 75]  →testa
[ 76] fim:
[ 77]  upag←(1 0+⍴f)⍴' '
[ 78]  bbb←3 0 4 0 2 0 2 0 5 0 3 0 4 0 3 0 4 0 3 0 5 0 3 0 3 0 4 0 3 0 3 0 4 0 3 0 3 0
[ 79]  →(1=≡n)/elafa
[ 80]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[ 81]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[ 82]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑'¯'-'edit bbb⍕resu
[ 83]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
```

```
[ 84]  →terminando
[ 85] elafa:
[ 86]  aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),'¯-'edit 0 3↓bbb⍕resu)
[ 87]  aaa[1;35 36]←2 0⍕CORRECAO
[ 88]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[ 89]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[ 90] terminando:
[ 91]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[ 92]  relat[1↑⍴relat;;]←upag
[ 93]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.t
       ex'
[ 94]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[ 95]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivom34

```
[0]  AVISO
[1]  'Veja a variavel visualgm34a que contem o programa em VG'
-------------------------------------------------------------
[0]  r←a achamigs b;bb
[1]  bb←(b≠a)/b
[2]  r←(¯1+(?5))↑bb[5?⍴bb]
-------------------------------------------------------------
[0]  r←deita x
[1] ⍝ r←¯1↓,(((⍕x),' '),';'),' '
[2]  r←¯1↓,(⍕x),';'
-------------------------------------------------------------
[0]  r←a dist2 b
[1]  r←(((a[1]-b[1])*2)+((a[2]-b[2])*2))*0.5
-------------------------------------------------------------
[ 0]  r←gerafuro x;i;z;j
[ 1]  r←0 2⍴0
[ 2]  i←1
[ 3] t1:→(i>x)/fim
[ 4]  z←(10+?70),(10+?70)
[ 5]  j←1
[ 6] t2:→(j>1↑⍴r)/acab
[ 7]  →(6>z dist2 r[j;])/furou
[ 8]  j←j+1
[ 9]  →t2
[10] furou:
[11]  ⍞←'o'
[12]  →t1
[13] acab:
[14]  r←r,[1]1 2⍴z
[15]  i←i+1
[16]  →t1
[17] fim:
-------------------------------------------------------------
[ 0]  r←gerasenha;senh;x;qx;senhq;i;s;j;z;ct;salva;inds;p;saca;ct
[ 1] inizz:
[ 2]  ct←0
[ 3]  saca←0 12⍴' '
[ 4]  SENHA←senh←¯1+?1000000
[ 5]  r←0 22⍴' '
[ 6]  x←¯1+10?10
[ 7]  qx←5 2⍴x
[ 8]  senhq←10 10 10 10 10 10⍉senh
[ 9] vorta:
[10]  →(unico saca)/acabou
[11]  i←1
```

```
[12]  s←⍳0
[13]  p←''
[14] t1:→(i>6)/fim
[15]  j←1
[16] t2:→(j>5)/ac
[17]  →(senhq[i]∈qx[j;])/guarda
[18]  j←j+1
[19]  →t2
[20] guarda:s←s,j
[21]  p←p,⍪' ',2 0 1 0⍕qx[j;]
[22] ac:i←i+1
[23]  →t1
[24] fim:
[25]  z←((20⍴2 0 1 0)⍕,qx),' ','ABCDE'[s]
[26]  saca←saca,[1]1 12⍴'00'⍕p
[27]  r←r,[1]1 22⍴z
[28]  inds←3?5
[29]  salva←qx[inds[1];]
[30]  qx[inds[1];]←qx[inds[2];]
[31]  qx[inds[2];]←qx[inds[3];]
[32]  qx[inds[3];]←salva
[33]  inds←4?5
[34]  salva←qx[inds[1];1]
[35]  qx[inds[1];1]←qx[inds[2];1]
[36]  qx[inds[2];1]←salva
[37]  salva←qx[inds[3];2]
[38]  qx[inds[3];2]←qx[inds[4];2]
[39]  qx[inds[4];2]←salva
[40]  ct←ct+1
[41]  →(ct≤4)/vorta
[42]  □←'H'
[43]  →inizz
[44] acabou:
------------------------------------------------------------
[ 0]  r←mandafb;cumbuca;nom;text;vv;x;zz
[ 1] ⍝ r[1] contem 0 ou 1/ r[2] contem as linhas que descrevem o problema
[ 2]  r←2⍴0
[ 3]  x←?5 ⍝ x=1,2,3 → POSSIVEL. x=4,5 → IMPOSSIVEL
[ 4]  text←7 60⍴0
[ 5]  →(x=1)/um
[ 6]  →(x=2)/dois
[ 7]  →(x=3)/tres
[ 8]  →(x=4)/quatro
[ 9]  →(x=5)/cinco
[10]  →fim
[11] um:nom←7?1↑⍴NOMES
[12]  text[1;]←60↑tajeita NOMES[nom[1];],'!0!'
[13]  text[2;]←60↑tajeita NOMES[nom[2];],'!0!'
[14]  text[3;]←60↑tajeita NOMES[nom[3];],'!1!',NOMES[nom[?2];]
[15]  text[4;]←60↑tajeita NOMES[nom[4];],'!2!',,NOMES[nom[2?3];]
[16]  text[5;]←60↑tajeita NOMES[nom[5];],'!3!',,NOMES[nom[3?4];]
[17]  text[6;]←60↑tajeita NOMES[nom[6];],'!2!',,NOMES[nom[2?5];]
[18]  text[7;]←60↑tajeita NOMES[nom[7];],'!1!',NOMES[nom[?6];]
[19]  zz←text[7?7;]
[20]  vv←(1 60⍴60↑tajeita,NOMES[nom;]),[1]zz
[21]  r[1]←⊂1
[22]  r[2]←⊂vv
[23]  →fim
[24] dois:nom←7?1↑⍴NOMES
[25]  text[1;]←60↑tajeita NOMES[nom[1];],'!0!'
[26]  text[2;]←60↑tajeita NOMES[nom[2];],'!0!'
[27]  text[3;]←60↑tajeita NOMES[nom[3];],'!0!'
[28]  text[4;]←60↑tajeita NOMES[nom[4];],'!1!',NOMES[nom[?3];]
```

```
[29]  text[5;]←60↑tajeita NOMES[nom[5];],'!2!',,NOMES[nom[2?4];]
[30]  text[6;]←60↑tajeita NOMES[nom[6];],'!3!',,NOMES[nom[3?5];]
[31]  text[7;]←60↑tajeita NOMES[nom[7];],'!2!',,NOMES[nom[2?6];]
[32]  zz←text[7?7;]
[33]  vv←(1 60⍴60↑tajeita,NOMES[nom;]),[1]zz
[34]  r[1]←⊂1
[35]  r[2]←⊂vv
[36]  →fim
[37] tres:
[38]  nom←7?1↑⍴NOMES
[39]  text[1;]←60↑tajeita NOMES[nom[1];],'!0!'
[40]  text[2;]←60↑tajeita NOMES[nom[2];],'!1!',NOMES[nom[1];]
[41]  text[3;]←60↑tajeita NOMES[nom[3];],'!2!',,NOMES[nom[1 2];]
[42]  text[4;]←60↑tajeita NOMES[nom[4];],'!1!',NOMES[nom[2];]
[43]  text[5;]←60↑tajeita NOMES[nom[5];],'!1!',NOMES[nom[3];]
[44]  text[6;]←60↑tajeita NOMES[nom[6];],'!1!',NOMES[nom[4];]
[45]  text[7;]←60↑tajeita NOMES[nom[7];],'!3!',,NOMES[nom[3?6];]
[46]  zz←text[7?7;]
[47]  vv←(1 60⍴60↑tajeita,NOMES[nom;]),[1]zz
[48]  r[1]←⊂1
[49]  r[2]←⊂vv
[50]  →fim
[51] quatro:
[52]  nom←7?1↑⍴NOMES
[53]  text[1;]←60↑tajeita NOMES[nom[1];],'!0!'
[54]  text[2;]←60↑tajeita NOMES[nom[2];],'!0!'
[55]  text[3;]←60↑tajeita NOMES[nom[3];],'!1!',NOMES[nom[?2];]
[56]  text[4;]←60↑tajeita NOMES[nom[4];],'!2!',,NOMES[nom[2?3];]
[57]  text[5;]←60↑tajeita NOMES[nom[5];],'!3!',,NOMES[nom[3?4];]
[58]  text[6;]←60↑tajeita NOMES[nom[6];],'!2!',,NOMES[nom[7,(?5)];]
[59]  text[7;]←60↑tajeita NOMES[nom[7];],'!3!',,NOMES[nom[(2?5),6];]
[60]  zz←text[7?7;]
[61]  vv←(1 60⍴60↑tajeita,NOMES[nom[7?7;]),[1]zz
[62]  r[1]←⊂0
[63]  r[2]←⊂vv
[64]  →fim
[65] cinco:
[66]  nom←7?1↑⍴NOMES
[67]  text[1;]←60↑tajeita NOMES[nom[1];],'!0!'
[68]  text[2;]←60↑tajeita NOMES[nom[2];],'!0!'
[69]  text[3;]←60↑tajeita NOMES[nom[3];],'!0!'
[70]  text[4;]←60↑tajeita NOMES[nom[4];],'!1!',NOMES[nom[?3];]
[71]  text[5;]←60↑tajeita NOMES[nom[5];],'!2!',,NOMES[nom[2?4];]
[72]  text[6;]←60↑tajeita NOMES[nom[6];],'!1!',NOMES[nom[7];]
[73]  text[7;]←60↑tajeita NOMES[nom[7];],'!1!',,NOMES[nom[6];]
[74] ⍝ o cara acima faz um deadlock 6→7 e 7→6
[75]  zz←text[7?7;]
[76]  vv←(1 60⍴60↑tajeita,NOMES[nom[7?7;]),[1]zz
[77]  r[1]←⊂0
[78]  r[2]←⊂vv
[79]  →fim
[80] fim:
-------------------------------------------------------------
[ 0]  r←quebra x;z;aa;i;aux
[ 1]  z←x=';'
[ 2]  aa←(2,(⌈0.5×⍴x))⍴z
[ 3]  aux←20↑i←1↓⍴aa
[ 4] t1:→((i<1)∨(aa[1;i]=1))/achou
[ 5]  i←i-1
[ 6]  →t1
[ 7] achou:r←(0 20↑⍴aa)⍴' '
[ 8]  r[1;]←aux↑i↑x
[ 9]  r[2;]←aux↑i↓x
```

```
------------------------------------------------------------
[ 0]  r←resolvefuro x;ds;dx;i;j
[ 1]  ds←(1↑⍴x)⍴0
[ 2]  i←1
[ 3] t1:→(i>⍴ds)/fim
[ 4]  j←1
[ 5]  dx←⍳0
[ 6] t2:→(j>⍴ds)/some
[ 7]  dx←dx,2×2.5+x[i;]dist2 x[j;]
[ 8]  j←j+1
[ 9]  →t2
[10] some:ds[i]←⌈/dx
[11]  i←i+1
[12]  →t1
[13] fim:r←⌊/ds
[14] ⍝ estrategia geral
[15] ⍝------------------
[16] ⍝ Mede-se a distancia de cada furo ate todos os demais. Guarda-se
[17] ⍝ o  maior valor destes encontrados, ja que este maior valor e
[18] ⍝ o unico que cobre todos os demais.
[19] ⍝ note que antes de guardar este valor e necessario somar a ele
[20] ⍝ 2,5mm (Que correspondem a cobertura do furo em si) e depois
[21] ⍝ multiplicar por 2, pois tinhamos o raio e temos que ter o diametro
[22] ⍝ Ao final, escolhe-se o menor valor destes todos guardados, pois
[23] ⍝ este e o menor valor que cobre todos os demais.
------------------------------------------------------------
[ 0]  r←resolvesenha x;i;j;w1;w2;w3;lixo
[ 1]  w1←x[;2 3 5 6 8 9 11 12 14 15]
[ 2]  w2←'ABCDE'⍳x[;16+⍳6]
[ 3]  w3←((1↑⍴x),12)⍴0
[ 4]  i←1
[ 5] t1:→(i>1↑⍴x)/fim
[ 6]  j←1
[ 7] t2:→(j>6)/ff
[ 8]  w3[i;((0 2 4 6 8 10)[j])+⍳2]←(,w1[i;])[((0 2 4 6 8 10)[w2[i;j]])+⍳2]
[ 9]  j←j+1
[10]  →t2
[11] ff:
[12]  i←i+1
[13]  →t1
[14] fim:lixo←unico w3
[15]  r←'000000'⍕10 10 10 10 10 10⊥SE
------------------------------------------------------------
[0]  r←temduplo a
[1]  r←0∈(a⍳a)=⍳⍴a
------------------------------------------------------------
[0]  r←tiraduplo V
[1]  r←((V⍳V)=⍳⍴V)/V                    ⍝ Unique.  Drop duplicates from vector.
------------------------------------------------------------
[ 0]  r←unico sal;j;vls;ct;k;rv;cls;zica;ika
[ 1]  r←0
[ 2]  SE←0⍴0
[ 3]  →(2>1↑⍴sal)/0
[ 4]  j←1
[ 5]  rv←⍳0
[ 6] t1:→(j>6)/okok
[ 7]  ika←((1↑⍴sal),1)⍴⍨,sal[;(2×(j-1))+⍳2],' '
[ 8]  vls←tiraduplo,cls←⍉10 10⍴,ika
[ 9]  ct←0
[10]  k←1
[11] t2:→(k>⍴vls)/ufa
[12]  zica←(1↑⍴sal)=(+/cls[;1]∈vls[k])++/cls[;2]∈vls[k]
[13]  →(1≠zica)/oki
```

```
[14]  SE←SE,vls[k]
[15] oki:
[16]  ct←ct+zica
[17]  k←k+1
[18]  →t2
[19] ufa:rv←rv,ct=1
[20]  j←j+1
[21]  →t1
[22] okok:
[23]  r←∧/rv
-------------------------------------------------------------
[ 0]  opesq vivom34a n;CORRECAO;EVENTO;aaa;acuja;bbb;dhx;eee0;eee1;eee2;eee3;esse;f;lixono
      l;relat;resp;resu;upag;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  EVENTO←'PLm34   '
[ 5]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 8]  FOLHALAm34←ajusta80 FOLHALAm34
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAm34)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[11]  xk←1 ⋄ resu←0 56⍴' '
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←48 80⍴' '
[14]  f←FOLHALAm34
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍎VERSAOa←1.02
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(resp←3 0⍎xk),' ',opesq
[22]  esse[47;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[48;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25]  eee0←gerafuro 3+?3
[26]  eee1←resolvefuro eee0
[27]  esse[8;]←80↑deita eee0
[28]  resp←resp,8 2⍎eee1
[29]  eee0←gerafuro 3+?3
[30]  eee1←resolvefuro eee0
[31]  esse[9;]←80↑deita eee0
[32]  resp←resp,7 2⍎eee1
[33]  eee0←gerafuro 3+?3
[34]  eee1←resolvefuro eee0
[35]  esse[10;]←80↑deita eee0
[36]  resp←resp,7 2⍎eee1
[37] ⍝------------------------
[38]  eee1←resolvesenha eee0←gerasenha
[39]  esse[10+⍳4;]←4 80↑eee0
[40]  resp←resp,'   ',eee1
[41]  eee1←resolvesenha eee0←gerasenha
[42]  esse[14+⍳4;]←4 80↑eee0
[43]  resp←resp,' ',eee1
[44]  eee1←resolvesenha eee0←gerasenha
[45]  esse[18+⍳4;]←4 80↑eee0
[46]  resp←resp,' ',eee1
[47] ⍝----------------------------
[48]  eee0←mandafb
[49]  esse[22+⍳8;]←8 80↑⊃eee0[2]
```

```
[50]  resp←resp,4 0⍕⊃eee0[1]
[51]  eee0←mandafb
[52]  esse[30+⍳8;]←8 80↑⊃eee0[2]
[53]  resp←resp,2 0⍕⊃eee0[1]
[54]  eee0←mandafb
[55]  esse[38+⍳8;]←8 80↑⊃eee0[2]
[56]  resp←resp,2 0⍕eee0[1]
[57]  resu←resu,[1]1 56⍴resp
[58]  acuja←(f[;2]='#')/⍳1↑⍴f
[59]  f[acuja;⍳80]←esse[⍬,f[acuja;3 4],' ';]
[60]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[61]  □←(⍕xk←xk+1),'-'
[62]  →testa
[63] fim:
[64]  upag←(1 0+⍴f)⍴' '
[65]  →(1=≡n)/elafa
[66]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[67]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[68]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑resu
[69]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[70]  →terminando
[71] elafa:
[72]  aaa←(ylu,0 3↓resu)
[73]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[74]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[75] terminando:
[76]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[77]  relat[1↑⍴relat;;]←upag
[78]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.t
      ex'
[79]  lixonol←□EX 2 10⍴'quantos   matriz    '
[80]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivom36

```
[ 0]  r←a andaminh bbb;r1;r2;r3;cus;MAPAMI
[ 1]  cus←⊃bbb[1]
[ 2]  MAPAMI←⊃bbb[2]
[ 3]  CTD←CTD+1 ⋄ r1←r2←r3←0
[ 4] ⍝ 'ctd=',(⍕CTD),'    cus=',⍕cus
[ 5]  →((a[1]<1)∨(a[2]<1)∨(a[1]>1↑⍴MAPAMI)∨(a[2]>1↓⍴MAPAMI))/fim
[ 6]  →(MAPAMI[a[1];a[2]]≠0)/fim
[ 7]  MAPAMI[a[1];a[2]]←CTD
[ 8]  cus←MINH[a[1];a[2]]+cus
[ 9]  →((a[1]=1↑⍴MAPAMI)∧(a[2]=1↓⍴MAPAMI))/fim
[10] ⍝ esta linha ↑↑↑↑, foi incluida depois do primeiro uso, pois ele estava
[11] ⍝ fazendo a ultima linha sempre, mesmo depois de chegar ao final. Em 16/06/08
[12]  r1←((a[1]+1),a[2])andaminh(cus MAPAMI)
[13]  r2←(a[1],a[2]-1)andaminh(cus MAPAMI)
[14]  r3←(a[1],a[2]+1)andaminh(cus MAPAMI)
[15]  r←r1⌈r2⌈r3
[16]  →aca0
[17] fim:r←cus
[18] aca0:
[19]  →0
------------------------------------------------------------
[ 0]  r←p combinacoes t;m;i;tam
[ 1]  r←0⍴0
[ 2]  m←(∧⌿2<⌿m)/m←1+((-p)↑⍳t)⊤⍳(!p)×p!t
[ 3]  m←⍉m
[ 4]  i←1
```

```
[ 5]  tam←1↓⍴m
[ 6] t1:→(i>1↑⍴m)/fim
[ 7]  r←r,(tam⍴10)⊥m[i;]
[ 8]  i←i+1
[ 9]  →t1
[10] fim:
-------------------------------------------------------------
[0]  r←deita x
[1] ⍝ r←¯1↓,(((⍕x),' '),';'),' '
[2]  r←¯1↓,(⍕x),';'
-------------------------------------------------------------
[ 0]  r←fectransit adj;n;i;j;k;T0;T1;T2;T3;T4;T5;T6;T7;T8;T9;A
[ 1] ⍝ veja a funcao warseou que tem uma implementacao mais simples. Funcionara???
[ 2]  n←1↑⍴adj
[ 3]  i←0
[ 4] x0:→(i>n)/fa
[ 5]  ⍎'T',('0'⍕i),'←(2⍴n)⍴0'
[ 6]  i←i+1
[ 7]  →x0
[ 8] fa:
[ 9]  i←1
[10] t1:→(i>n)/z1
[11]  j←1
[12] t2:→(j>n)/z2
[13]  →((i≠j)∧(adj[i;j]=0))/naopoe
[14]  T0[i;j]←1
[15] naopoe:j←j+1
[16]  →t2
[17] z2:i←i+1
[18]  →t1
[19] z1:
[20]  k←1
[21] v1:→(k>n)/h1
[22]  i←1
[23] v2:→(i>n)/h2
[24]  j←1
[25] v3:→(j>n)/h3
[26]  ⍎'T',('0'⍕k),'[i;j]←','T',('0'⍕k-1),'[i;j]∨(T',('0'⍕k-1),'[i;k]∧T',('0'⍕k-1),'[k;j])
      '
[27]  j←j+1
[28]  →v3
[29] h3:
[30]  i←i+1
[31]  →v2
[32] h2:
[33]  k←k+1
[34]  →v1
[35] h1:r←⍎'T','0'⍕n
-------------------------------------------------------------
[ 0]  r←sol geraburaco pb;mm;i;cv;cb;cn
[ 1] ⍝ gera pb[1] planetas e pb[2] buracos de minhoca
[ 2] novo:cv←2 combinacoes pb[1]
[ 3]  cb←((⍴cv),2)⍴'00'⍕cv
[ 4]  cn←cb,[1](((1↑⍴cb),1)⍴cb[;2]),((1↑⍴cb),1)⍴cb[;1]
[ 5]  mm←((1↑⍴cn),2)⍴⍳,1 0 1 0⍉cn
[ 6]  mm←mm[(1↑⍴mm)?1↑⍴mm;]
[ 7]  i←1
[ 8]  r←(pb[2],2)↑mm
[ 9]  r←(1 2⍴⍴pb),[1]r
[10] teste:→(sol=resolveburaco r)/0
[11]  →novo
-------------------------------------------------------------
[0]  r←gerafrota
```

```
[1]  r←(1+0.01×20+?50),(2+0.01×10+?40),(8+?7),(12+?8)
------------------------------------------------------------
[0]  r←geraminhoca lc
[1]  r←lc⍴10×¯20+?100⍴60
------------------------------------------------------------
[ 0]  r←quebra x;z;aa;i;aux
[ 1]  z←x=';'
[ 2]  aa←(2,(⌈0.5×⍴x))⍴z
[ 3]  aux←20+i←1↓⍴aa
[ 4] t1:→((i<1)∨(aa[1;i]=1))/achou
[ 5]  i←i-1
[ 6]  →t1
[ 7] achou:r←(0 20+⍴aa)⍴' '
[ 8]  r[1;]←aux↑i↑x
[ 9]  r[2;]←aux↑i↓x
------------------------------------------------------------
[ 0]  r←resolveburaco x;mat;i;zz
[ 1]  mat←(2⍴x[1;1])⍴0
[ 2]  i←2
[ 3] t1:→(i>1↑⍴x)/fim
[ 4]  mat[x[i;1];x[i;2]]←1
[ 5]  i←i+1
[ 6]  →t1
[ 7] fim:
[ 8]  MAT←mat
[ 9]  zz←fectransit mat
[10]  r←(+/,zz)=×/⍴mat
------------------------------------------------------------
[0]  r←resolvefrota x;aa;gg
[1] ⍝ correcao a 19/06/08 - estava 1÷3 e 2÷4. E o contrario
[2]  aa←(x[3]÷x[1])
[3]  gg←(x[4]÷x[2])
[4]  →(0.01>|aa-gg)/gas
[5]  r←'GA'[1+aa>gg]
[6]  →0
[7] gas:r←'G'
------------------------------------------------------------
[0]  r←resolveminhoca x;lixo;MAPAMINH
[1]  MINH←x
[2]  CTD←0
[3]  MAPAMINH←(2⍴⍴x)⍴0
[4]  r←1 1 andaminh(0 MAPAMINH)
[5]  lixo←⎕EX'MINH'
[6]  lixo←⎕EX'CTD'
------------------------------------------------------------
[0]  r←temduplo a
[1]  r←0∊(a⍳a)=⍳⍴a
------------------------------------------------------------
[0]  r←tiraduplo V
[1]  r←((V⍳V)=⍳⍴V)/V                  ⍝ Unique.  Drop duplicates from vector.
------------------------------------------------------------
[ 0]  opesq vivom36a n;CORRECAO;EVENTO;aaa;acuja;bbb;dhx;eee0;eee1;eee2;eee3;esse;f;lixono
      l;relat;resp;resu;upag;xk;ylu
[ 1]  'demora'
[ 2]  →(0≠⎕NC'opesq')/qveio
[ 3]  opesq←10⍴' '
[ 4] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLm36   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⍙FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALAm36←ajusta80 FOLHALAm36
```

```
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAm36)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[12]  xk←1 ⋄ resu←0 39⍴' '
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←33 80⍴' '
[15]  f←FOLHALAm36
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←1.03
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(resp←3 0⍕xk),' ',opesq
[23]  esse[32;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[33;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  eee0←geraminhoca(3+?2),(4+?2)
[27]  eee1←resolveminhoca eee0
[28]  esse[7+⍳6;]←6 80↑'¯-'edit 6 0⍕eee0
[29]  resp←resp,8 0⍕eee1
[30]  eee0←geraminhoca(3+?2),(4+?2)
[31]  eee1←resolveminhoca eee0
[32]  esse[13+⍳6;]←6 80↑'¯-'edit 6 0⍕eee0
[33]  resp←resp,6 0⍕eee1
[34]  eee0←geraminhoca(3+?2),(4+?2)
[35]  eee1←resolveminhoca eee0
[36]  esse[19+⍳6;]←6 80↑'¯-'edit 6 0⍕eee0
[37]  resp←resp,6 0⍕eee1
[38] ⍝-------------------------
[39]  eee1←(eee2←¯1+?2)geraburaco(3+?2),5+?3
[40]  esse[26;]←80↑deita eee1
[41]  resp←resp,'   ','NS'[1+eee2]
[42]  eee1←(eee2←¯1+?2)geraburaco(3+?2),5+?3
[43]  esse[27;]←80↑deita eee1
[44]  resp←resp,' ','NS'[1+eee2]
[45]  eee1←(eee2←¯1+?2)geraburaco(3+?2),5+?3
[46]  esse[28;]←80↑deita eee1
[47]  resp←resp,' ','NS'[1+eee2]
[48] ⍝----------------------------
[49]  eee1←resolvefrota eee0←gerafrota
[50]  esse[29;]←80↑7 2⍕eee0
[51]  resp←resp,'   ',eee1
[52]  eee1←resolvefrota eee0←gerafrota
[53]  esse[30;]←80↑7 2⍕eee0
[54]  resp←resp,' ',eee1
[55]  eee1←resolvefrota eee0←gerafrota
[56]  esse[31;]←80↑7 2⍕eee0
[57]  resp←resp,' ',eee1
[58]  resu←resu,[1]1 39⍴resp
[59]  acuja←(f[;2]='#')/⍳1↑⍴f
[60]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[61]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[62]  ⎕←(⍕xk←xk+1),'-'
[63]  →testa
[64] fim:
[65]  upag←(1 0+⍴f)⍴' '
[66]  →(1=≡n)/elafa
[67]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[68]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[69]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑resu
[70]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[71]  →terminando
[72] elafa:
```

```
[73]  aaa←(ylu,0 3↓resu)
[74]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[75]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[76] terminando:
[77]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[78]  relat[1↑⍴relat;;]←upag
[79]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.t
      ex'
[80]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[81]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[ 0]  r←warseou y;W;Q;ordem;infinito;k;i;j
[ 1]  Q←y
[ 2]  ordem←1↑⍴y
[ 3]  k←1
[ 4] testak:→(k>ordem)/saik
[ 5]  i←1
[ 6] testai:→(i>ordem)/saii
[ 7]  j←1
[ 8] testaj:→(j>ordem)/saij
[ 9]  Q[i;j]←Q[i;j]∨(Q[i;k]∧Q[k;j])
[10]  →(j=j←j+1)/testaj
[11] saij:
[12]  →(i=i←i+1)/testai
[13] saii:
[14]  →(k=k←k+1)/testak
[15] saik:r←Q
-------------------------------------------------------------
```

vivom38

```
[0]  r←arrumacoes k;i
[1]  r←0⍴0
[2]  i←1
[3] t1:→(i>k)/fim
[4]  r←r,i combinacoes k
[5]  i←i+1
[6]  →t1
[7] fim:
-------------------------------------------------------------
[ 0]  r←p combinacoes t;m;i;tam
[ 1]  r←0⍴0
[ 2]  m←(∧⌿2<⌿m)/m←1+((-p)↑⍳t)⊤⍳(!p)×p!t
[ 3]  m←⍉m
[ 4]  i←1
[ 5]  tam←1↓⍴m
[ 6] t1:→(i>1↑⍴m)/fim
[ 7]  r←r,(tam⍴10)⊥m[i;]
[ 8]  i←i+1
[ 9]  →t1
[10] fim:
-------------------------------------------------------------
[0]  r←deita x
[1] ⍝ r←¯1↓,(((⍕x),' '),';'),' '
[2]  r←¯1↓,(⍕x),';'
-------------------------------------------------------------
[ 0]  r←fectransit adj;n;i;j;k;T0;T1;T2;T3;T4;T5;T6;T7;T8;T9
[ 1]  n←1↑⍴adj
[ 2]  i←0
[ 3] x0:→(i>n)/fa
[ 4]  ⍎'T',('0'⍕i),'←(2⍴n)⍴0'
[ 5]  i←i+1
```

```
[ 6]  →x0
[ 7] fa:
[ 8]  i←1
[ 9] t1:→(i>n)/z1
[10]  j←1
[11] t2:→(j>n)/z2
[12]  →((i≠j)∧(adj[i;j]=0))/naopoe
[13]  T0[i;j]←1
[14] naopoe:j←j+1
[15]  →t2
[16] z2:i←i+1
[17]  →t1
[18] z1:
[19]  k←1
[20] v1:→(k>n)/h1
[21]  i←1
[22] v2:→(i>n)/h2
[23]  j←1
[24] v3:→(j>n)/h3
[25]  ⍎'T',('0'⍕k),'[i;j]←','T',('0'⍕k-1),'[i;j]∨(T',('0'⍕k-1),'[i;k]∧T',('0'⍕k-1),'[k;j])
      '
[26]  j←j+1
[27]  →v3
[28] h3:
[29]  i←i+1
[30]  →v2
[31] h2:
[32]  k←k+1
[33]  →v1
[34] h1:r←⍎'T','0'⍕n
-------------------------------------------------------------
[0]  r←geracampol
[1]  r←6 6⍴10×?35⍴20
-------------------------------------------------------------
[0]  r←geradesculpa bb;aa;i
[1]  aa←(200+10×?15),bb
[2]  i←1
[3] t1:→(i>bb)/fim
[4]  aa←aa,(50+10×?10),(?4)
[5]  i←i+1
[6]  →t1
[7] fim:r←((bb+1),2)⍴aa
-------------------------------------------------------------
[ 0]  r←sol geratransmi el;mm;xx;yy;cv
[ 1] ⍝ gera el[1] estacoes e el[2] linhas de transmissao
[ 2] novo:cv←2 combinacoes el[1]
[ 3]  cv←((⍴cv),2)⍴'00'⍕cv
[ 4]  mm←((1↑⍴cv),2)⍴⍎,1 0 1 0⍀cv
[ 5]  mm←mm[(1↑⍴mm)?1↑⍴mm;]
[ 6]  xx←(el[2],2)↑mm
[ 7]  r←(1 2⍴el),[1]xx
[ 8] teste:→(sol=resolvetransmi r)/0
[ 9]  →novo
-------------------------------------------------------------
[0]  r←indices n
[1]  r←10 10 10 10 10 10 10 10⊤n
[2]  r←(r≠0)/r
-------------------------------------------------------------
[ 0]  r←quebra x;z;aa;i;aux
[ 1]  z←x=';'
[ 2]  aa←(2,(⌈0.5×⍴x))⍴z
[ 3]  aux←20+i←1⍋⍴aa
[ 4] t1:→((i<1)∨(aa[1;i]=1))/achou
```

```
[ 5]  i←i-1
[ 6]  →t1
[ 7] achou:r←(0 20+ρaa)ρ' '
[ 8]  r[1;]←aux↑i↑x
[ 9]  r[2;]←aux↑i↓x
------------------------------------------------------------
[0]  r←resolvecampol x;z;y
[1]  z←+/[1]x
[2]  y←+/[2]x
[3]  r←⌈/z,y
------------------------------------------------------------
[ 0]  r←resolvedesculpa x;hips;i;max
[ 1]  hips←1 0↓x
[ 2]  i←1
[ 3]  max←0
[ 4] t1:→(i>ρZ6)/fim
[ 5]  →((+/hips[indices Z6[i];1])>x[1;1])/some
[ 6]  max←max⌈+/hips[indices Z6[i];2]
[ 7] some:i←i+1
[ 8]  →t1
[ 9] fim:r←max
------------------------------------------------------------
[ 0]  r←resolvetransmi x;mat;i;zz
[ 1]  mat←(2ρx[1;1])ρ0
[ 2]  i←2
[ 3] t1:→(i>1↑ρx)/fim
[ 4]  mat[x[i;1];x[i;2]]←1
[ 5]  mat[x[i;2];x[i;1]]←1
[ 6]  i←i+1
[ 7]  →t1
[ 8] fim:
[ 9]  MAT←mat
[10]  zz←fectransit mat
[11]  r←~0∈zz
------------------------------------------------------------
[0]  r←temduplo a
[1]  r←0∈(a⍳a)=⍳ρa
------------------------------------------------------------
[0]  r←tiraduplo V
[1]  r←((V⍳V)=⍳ρV)/V                    ⍝ Unique.  Drop duplicates from vector.
------------------------------------------------------------
[ 0]  opesq vivom38a n;CORRECAO;EVENTO;aaa;acuja;bbb;dhx;eee0;eee1;eee2;eee3;esse;f;lixono
      l;relat;resp;resu;upag;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←0 ⋄ EVENTO←'PLm38   '
[ 5]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[ 8]  FOLHALAm38←ajusta80 FOLHALAm38
[ 9]  relat←((2+1↑ρylu),1 0+ρFOLHALAm38)ρ' '
[10]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[11]  xk←1 ⋄ resu←0 10ρ0
[12] testa:→(xk>1↑ρylu)/fim
[13]  esse←31 80ρ' '
[14]  f←FOLHALAm38
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍎VERSAOa←1.02
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
```

```
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO[ι4],'{\large{',EVENTO[4+ι4],'}}'
[21]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[22] inica:
[23]  eee1←resolvecampol eee0←geracampol
[24]  esse[7+ι6;]←6 80↑6 0⍕eee0
[25]  resp←resp,eee1
[26]  eee1←resolvecampol eee0←geracampol
[27]  esse[13+ι6;]←6 80↑6 0⍕eee0
[28]  resp←resp,eee1
[29]  eee1←resolvecampol eee0←geracampol
[30]  esse[19+ι6;]←6 80↑6 0⍕eee0
[31]  resp←resp,eee1
[32] ⍝-------------------------
[33]  esse[26;]←80↑deita eee0←(eee1←¯1+?2)geratransmi 7 7
[34]  resp←resp,eee1
[35]  esse[27;]←80↑deita eee0←(eee1←¯1+?2)geratransmi 7 7
[36]  resp←resp,eee1
[37]  esse[28;]←80↑deita eee0←(eee1←¯1+?2)geratransmi 7 7
[38]  resp←resp,eee1
[39] ⍝---------------------------
[40]  esse[29;]←80↑deita eee0←geradesculpa 7
[41]  resp←resp,eee1←resolvedesculpa eee0
[42]  esse[30;]←80↑deita eee0←geradesculpa 7
[43]  resp←resp,eee1←resolvedesculpa eee0
[44]  esse[31;]←80↑deita eee0←geradesculpa 7
[45]  resp←resp,eee1←resolvedesculpa eee0
[46]  resu←resu,[1]1 10⍴resp
[47]  acuja←(f[;2]='#')/ι1↑⍴f
[48]  f[acuja;ι80]←esse[⍋,f[acuja;3 4],' ';]
[49]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[50]  ⍞←(⍕xk←xk+1),'-'
[51]  →testa
[52] fim:
[53]  upag←(1 0+⍴f)⍴' '
[54]  →(1=≡n)/elafa
[55]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[56]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[57]  upag[2+ι1↑⍴resu;]←((1↑⍴resu),80)↑3 0 8 0 5 0 5 0 4 0 2 0 2 0 5 0 3 0 3 0⍕resu
[58]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[59]  →terminando
[60] elafa:
[61]  aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),8 0 5 0 5 0 4 0 2 0 2 0 5 0 3 0 3 0⍕0 1↓resu)
[62]  aaa[1;35 36]←2 0⍕CORRECAO
[63]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[64]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[65] terminando:
[66]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[67]  relat[1↑⍴relat;;]←upag
[68]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.t
      ex'
[69]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[70]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivom40

```
[ 0]  r←tam acertamarga x;i;z;lin
[ 1]  r←(0,tam)⍴' '
[ 2]  i←1
[ 3]  z←⊃x[2]
[ 4]  lin←(⍕⊃x[1]),' ; '
[ 5] t2:→((⍴lin)>tam-18)/junta
```

```
[ 6]  →(i>1↑⍴z)/acabou
[ 7]  lin←lin,(⍕z[i;]),';'
[ 8]  i←i+1
[ 9]  →t2
[10] junta:r←r,[1](1,tam)⍴tam↑lin
[11]  lin←''
[12]  →t2
[13] acabou:r←r,[1](1,tam)⍴tam↑lin
------------------------------------------------------------
[0]  r←arrumacoes k;i
[1]  r←0⍴0
[2]  i←1
[3] t1:→(i>k)/fim
[4]  r←r,i combinacoes k
[5]  i←i+1
[6]  →t1
[7] fim:
------------------------------------------------------------
[ 0]  r←p combinacoes t;m;i;tam
[ 1]  r←0⍴0
[ 2]  m←(∧⌿2<⍳m)/m←1+((-p)↑⍳t)⊤⍳(!p)×p!t
[ 3]  m←⍉m
[ 4]  i←1
[ 5]  tam←1↓⍴m
[ 6] t1:→(i>1↑⍴m)/fim
[ 7]  r←r,(tam⍴10)⊥m[i;]
[ 8]  i←i+1
[ 9]  →t1
[10] fim:
------------------------------------------------------------
[0]  r←deita x
[1] ⍝ r←¯1↓,(((⍕x),' '),';'),' '
[2]  r←¯1↓,(⍕x),';'
------------------------------------------------------------
[ 0]  r←fectransit adj;n;i;j;k;T0;T1;T2;T3;T4;T5;T6;T7;T8;T9
[ 1]  n←1↑⍴adj
[ 2]  i←0
[ 3] x0:→(i>n)/fa
[ 4]  ⍎'T',('0'⍕i),'←(2⍴n)⍴0'
[ 5]  i←i+1
[ 6]  →x0
[ 7] fa:
[ 8]  i←1
[ 9] t1:→(i>n)/z1
[10]  j←1
[11] t2:→(j>n)/z2
[12]  →((i≠j)∧(adj[i;j]=0))/naopoe
[13]  T0[i;j]←1
[14] naopoe:j←j+1
[15]  →t2
[16] z2:i←i+1
[17]  →t1
[18] z1:
[19]  k←1
[20] v1:→(k>n)/h1
[21]  i←1
[22] v2:→(i>n)/h2
[23]  j←1
[24] v3:→(j>n)/h3
[25]  ⍎'T',('0'⍕k),'[i;j]←','T',('0'⍕k-1),'[i;j]∨(T',('0'⍕k-1),'[i;k]∧T',('0'⍕k-1),'[k;j])
      '
[26]  j←j+1
[27]  →v3
```

```
[28] h3:
[29]  i←i+1
[30]  →v2
[31] h2:
[32]  k←k+1
[33]  →v1
[34] h1:r←⍤'T','0'⍤n
------------------------------------------------------------
[ 0]  r←ganhoumesmo tres;a;aba;i
[ 1]  a←0 0 0 0
[ 2]  a←a,0 0 1 1
[ 3]  a←a,0 0 2 2
[ 4]  a←a,0 1 0 1
[ 5]  a←a,0 1 1 1
[ 6]  a←a,0 1 2 1
[ 7]  a←a,0 2 0 2
[ 8]  a←a,0 2 1 2
[ 9]  a←a,0 2 2 2
[10]  a←a,1 0 0 1
[11]  a←a,1 0 1 1
[12]  a←a,1 0 2 1
[13]  a←a,1 1 0 1
[14]  a←a,1 1 1 1
[15]  a←a,1 1 2 1
[16]  a←a,1 2 0 1
[17]  a←a,1 2 1 1
[18]  a←a,1 2 2 2
[19]  a←a,2 0 0 2
[20]  a←a,2 0 1 2
[21]  a←a,2 0 2 2
[22]  a←a,2 1 0 2
[23]  a←a,2 1 1 1
[24]  a←a,2 1 2 2
[25]  a←a,2 2 0 2
[26]  a←a,2 2 1 2
[27]  a←a,2 2 2 2
[28]  a←27 4⍴a
[29]  aba←(⍤tres[1]),(⍤tres[2]),⍤tres[3]
[30]  i←1
[31] t1:→(3=+/a[i;⍳3]=aba)/ach
[32]  i←i+1
[33]  →t1
[34] ach:r←a[i;4]
------------------------------------------------------------
[ 0]  r←geramarga;m;n;l;c;z;w
[ 1] vorta:m←1+?2 ⋄ n←1+?4
[ 2]  l←(1+?2)×m ⋄ c←(1+?2)×n
[ 3]  →((l=1)∨(c=1))/vorta
[ 4]  →(c>9)/vorta
[ 5]  z←(l,c)⍴?100⍴9
[ 6]  →(4>1↓⍴z)/vorta
[ 7]  w←l,c,m,n
[ 8] ⍝ r←((1,¯1↑⍴z)⍴(¯1↑⍴z)↑w),[1]z
[ 9]  r←(w z)
------------------------------------------------------------
[ 0]  r←gerapoker;kk;zz
[ 1]  →(1=?2)/blz
[ 2]  r←52⍴⍳13
[ 3]  r←r[5?52]
[ 4]  →0
[ 5] blz:→(1=?4)/seq
[ 6]  kk←(⍳13),⍳13
[ 7]  zz←20⍴kk[(?13)+⍳5]
```

```
[ 8]  r←zz[5?20]
[ 9]  →0
[10] seq:
[11]  zz←⍳13
[12]  zz←zz[(?5)+⍳5]
[13]  zz←zz[5?5]
[14]  r←zz
------------------------------------------------------------
[0]  r←geratruco;car
[1]  car←40⍴(⍳7),11 12 13
[2]  r←1 6⍴car[6?40]
[3]  r←r,[1]1 6⍴car[6?40]
[4]  r←r,[1]1 6⍴car[6?40]
------------------------------------------------------------
[0]  r←indices n
[1]  r←10 10 10 10 10 10 10 10⍴n
[2]  r←(r≠0)/r
------------------------------------------------------------
[ 0]  r←quebra x;z;aa;i;aux
[ 1]  z←x=';'
[ 2]  aa←(2,(⌈0.5×⍴x))⍴z
[ 3]  aux←20+i←1↓⍴aa
[ 4] t1:→((i<1)∨(aa[1;i]=1))/achou
[ 5]  i←i-1
[ 6]  →t1
[ 7] achou:r←(0 20+⍴aa)⍴' '
[ 8]  r[1;]←aux↑i↑x
[ 9]  r[2;]←aux↑i↓x
------------------------------------------------------------
[ 0]  r←resolvemarga at;m;i;max;v4;mat;j;k;li;lc
[ 1]  v4←⊃at[1]
[ 2]  mat←⊃at[2]
[ 3]  m←(((v4[1]÷v4[3])×(v4[2]÷v4[4])),v4[3],v4[4])⍴0
[ 4]  li←v4[3]
[ 5]  lc←v4[4]
[ 6]  i←1 ⋄ k←1
[ 7] t10:→(i>(v4[1]÷v4[3]))/upa
[ 8]  j←1
[ 9] t20:→(j>(v4[2]÷v4[4]))/ufa
[10]  m[k;;]←(li,lc)↑((((i-1)×li),((j-1)×lc))↓mat)
[11]  j←j+1
[12]  k←k+1
[13]  →t20
[14] ufa:i←i+1
[15]  →t10
[16] upa:
[17]  i←1
[18]  max←0
[19] t1:→(i>1↑⍴m)/fim
[20]  max←max⌈+/,m[i;;]
[21]  i←i+1
[22]  →t1
[23] fim:r←max
------------------------------------------------------------
[ 0]  r←resolvepoker x
[ 1]  x←x[⍋x]
[ 2] ⍝ 'x=',⍕x
[ 3]  →((x[5]=x[4]+1)∧(x[4]=x[3]+1)∧(x[3]=x[2]+1)∧(x[2]=x[1]+1))/seq
[ 4]  →(((x[4]=x[3])∧(x[3]=x[2])∧(x[2]=x[1]))∨((x[5]=x[4])∧(x[4]=x[3])∧(x[3]=x[2])))/quad
[ 5]  →((x[5]=x[4])∧(x[3]=x[2])∧(x[2]=x[1]))/full1
[ 6]  →((x[5]=x[4])∧(x[4]=x[3])∧(x[2]=x[1]))/full5
[ 7]  →(((x[5]=x[4])∧(x[4]=x[3]))∨((x[4]=x[3])∧(x[3]=x[2]))∨((x[3]=x[2])∧(x[2]=x[1])))/tri
      n
```

```
[ 8]  →((x[5]=x[4])∧(x[3]=x[2]))/du53
[ 9]  →((x[5]=x[4])∧(x[2]=x[1]))/du52
[10]  →((x[4]=x[3])∧(x[2]=x[1]))/du42
[11]  →(x[5]=x[4])/u5
[12]  →(x[4]=x[3])/u4
[13]  →(x[3]=x[2])/u3
[14]  →(x[2]=x[1])/u2
[15]  r←0
[16]  →0
[17] seq:
[18] ⍝ 'seq'
[19]  r←x[1]+200
[20]  →0
[21] quad:
[22] ⍝ 'qua'
[23]  r←x[3]+180
[24]  →0
[25] full1:
[26] ⍝ 'full1'
[27]  r←x[1]+160
[28]  →0
[29] full5:
[30] ⍝ 'full5'
[31]  r←x[5]+160
[32]  →0
[33] trin:
[34] ⍝ 'trin'
[35]  r←x[3]+140
[36]  →0
[37] du53:
[38] ⍝ 'du53'
[39]  r←(3×x[5])+(2×x[3])+20
[40]  →0
[41] du52:
[42] ⍝ 'du52'
[43]  r←(3×x[5])+(2×x[2])+20
[44]  →0
[45] du42:
[46] ⍝ 'du42'
[47]  r←(3×x[4])+(2×x[2])+20
[48]  →0
[49] u5:r←x[5]
[50]  →0
[51] u4:r←x[4]
[52]  →0
[53] u3:r←x[3]
[54]  →0
[55] u2:r←x[2]
[56]  →0
------------------------------------------------------------
[ 0]  r←resolvetruco x;z;i;j;r1;r2;r3;c
[ 1]  z←(⍴x)⍴0
[ 2]  i←1
[ 3] t1:
[ 4]  →(i>1↑⍴z)/fi
[ 5]  j←1
[ 6] t2:→(j>1↓⍴z)/so
[ 7]  →(x[i;j]=4)/p20
[ 8]  →(x[i;j]=5)/p21
[ 9]  →(x[i;j]=6)/p22
[10]  →(x[i;j]=7)/p23
[11]  →(x[i;j]=12)/p24
[12]  →(x[i;j]=11)/p25
```

```
[13]  →(x[i;j]=13)/p26
[14]  →(x[i;j]=1)/p27
[15]  →(x[i;j]=2)/p28
[16]  →(x[i;j]=3)/p29
[17] p20:z[i;j]←20
[18]  →ad
[19] p21:z[i;j]←21
[20]  →ad
[21] p22:z[i;j]←22
[22]  →ad
[23] p23:z[i;j]←23
[24]  →ad
[25] p24:z[i;j]←24
[26]  →ad
[27] p25:z[i;j]←25
[28]  →ad
[29] p26:z[i;j]←26
[30]  →ad
[31] p27:z[i;j]←27
[32]  →ad
[33] p28:z[i;j]←28
[34]  →ad
[35] p29:z[i;j]←29
[36]  →ad
[37] ad:j←j+1
[38]  →t2
[39] so:i←i+1
[40]  →t1
[41] fi:r1←((z[1;1]>z[1;4]),(z[1;1]=z[1;4]),(z[1;1]<z[1;4]))/'102'
[42]  r1←r1,((z[1;2]>z[1;5]),(z[1;2]=z[1;5]),(z[1;2]<z[1;5]))/'102'
[43]  r1←r1,((z[1;3]>z[1;6]),(z[1;3]=z[1;6]),(z[1;3]<z[1;6]))/'102'
[44]  r2←((z[2;1]>z[2;4]),(z[2;1]=z[2;4]),(z[2;1]<z[2;4]))/'102'
[45]  r2←r2,((z[2;2]>z[2;5]),(z[2;2]=z[2;5]),(z[2;2]<z[2;5]))/'102'
[46]  r2←r2,((z[2;3]>z[2;6]),(z[2;3]=z[2;6]),(z[2;3]<z[2;6]))/'102'
[47]  r3←((z[3;1]>z[3;4]),(z[3;1]=z[3;4]),(z[3;1]<z[3;4]))/'102'
[48]  r3←r3,((z[3;2]>z[3;5]),(z[3;2]=z[3;5]),(z[3;2]<z[3;5]))/'102'
[49]  r3←r3,((z[3;3]>z[3;6]),(z[3;3]=z[3;6]),(z[3;3]<z[3;6]))/'102'
[50]  c←3 3ρr1,r2,r3
[51]  r←0ρ0
[52]  r←r,ganhoumesmo c[1;]
[53]  r←r,ganhoumesmo c[2;]
[54]  r←r,ganhoumesmo c[3;]
------------------------------------------------------------
[0]  r←temduplo a
[1]  r←0∈(a⍳a)=⍳ρa
------------------------------------------------------------
[0]  r←tiraduplo V
[1]  r←((V⍳V)=⍳ρV)/V                    ⍝ Unique.  Drop duplicates from vector.
------------------------------------------------------------
[ 0]  opesq vivom40a n;CORRECAO;EVENTO;aaa;acuja;bbb;dhx;eee0;eee1;eee2;eee3;esse;f;lixono
      l;relat;resp;resu;upag;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  EVENTO←'PLm40   '
[ 5]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[ 8]  FOLHALAm40←ajusta80 FOLHALAm40
[ 9]  relat←((2+1↑ρylu),1 0+ρFOLHALAm40)ρ' '
[10]  relat[1;;]←(1↓ρrelat)↑⎕FM'c:\apl2\VIVOBLOI'
[11]  xk←1 ⋄ resu←0 16ρ0
```

```
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←24 80⍴' '
[14]  f←FOLHALAm40
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍕VERSAOa←1.12
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[22]  esse[23;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[24;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25]  esse[8;]←80↑3 0⍕eee0←gerapoker
[26]  resp←resp,eee1←resolvepoker eee0
[27]  esse[9;]←80↑3 0⍕eee0←gerapoker
[28]  resp←resp,eee1←resolvepoker eee0
[29]  esse[10;]←80↑3 0⍕eee0←gerapoker
[30]  resp←resp,eee1←resolvepoker eee0
[31] ⍝-------------------------
[32]  esse[10+⍳3;]←3 80↑75 acertamarga eee0←geramarga
[33]  resp←resp,eee1←resolvemarga eee0
[34]  esse[13+⍳3;]←3 80↑75 acertamarga eee0←geramarga
[35]  resp←resp,eee1←resolvemarga eee0
[36]  esse[16+⍳3;]←3 80↑75 acertamarga eee0←geramarga
[37]  resp←resp,eee1←resolvemarga eee0
[38] ⍝----------------------------
[39]  esse[20;]←80↑deita eee0←geratruco
[40]  resp←resp,eee1←resolvetruco eee0
[41]  esse[21;]←80↑deita eee0←geratruco
[42]  resp←resp,eee1←resolvetruco eee0
[43]  esse[22;]←80↑deita eee0←geratruco
[44]  resp←resp,eee1←resolvetruco eee0
[45]  resu←resu,[1]1 16⍴resp
[46]  acuja←(f[;2]='#')/⍳1↑⍴f
[47]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[48]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[49]  ⎕←(⍕xk←xk+1),'-'
[50]  →testa
[51] fim:
[52]  upag←(1 0+⍴f)⍴' '
[53]  →(1=≡n)/elafa
[54]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[55]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[56]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑3 0 6 0 4 0 4 0 6 0 4 0 4 0 5 0 2 0 2 0 3 0 2 0 2 0
       3 0 2 0 2 0⍕resu
[57]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[58]  →terminando
[59] elafa:
[60]  aaa←(ylu,6 0 4 0 4 0 6 0 4 0 4 0 5 0 2 0 2 0 3 0 2 0 2 0 3 0 2 0 2 0⍕0 1↓resu)
[61]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[62]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[63] terminando:
[64]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[65]  relat[1↑⍴relat;;]←upag
[66]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.t
      ex'
[67]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[68]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivom42

```
[ 0]  r←c achaviz etab;i;primvez;tabf;v1;v2;v3;v4;v5;v6;v7;v8
[ 1]  primvez←1
[ 2]  tabf←1 2⍴etab
[ 3]  i←1
[ 4] t1:→((i≥1↑⍴tabf)∧~primvez)/acabou
[ 5]  primvez←0
[ 6]  v1←tabf[i;]+¯1 ¯1
[ 7]  v2←tabf[i;]+¯1 0
[ 8]  v3←tabf[i;]+¯1 1
[ 9]  v4←tabf[i;]+0 ¯1
[10]  v5←tabf[i;]+0 1
[11]  v6←tabf[i;]+1 ¯1
[12]  v7←tabf[i;]+1 0
[13]  v8←tabf[i;]+1 1
[14]  →((v1[1]=0)∨(v1[2]=0))/pula1
[15]  →(IMA[v1[1];v1[2]]≠c)/pula1
[16]  →(v1 pertence tabf)/pula1
[17]  tabf←tabf,[1]1 2⍴v1
[18] pula1:
[19]  →(v2[1]=0)/pula2
[20]  →(IMA[v2[1];v2[2]]≠c)/pula2
[21]  →(v2 pertence tabf)/pula2
[22]  tabf←tabf,[1]1 2⍴v2
[23] pula2:
[24]  →((v3[1]=0)∨(v3[2]>1↓⍴IMA))/pula3
[25]  →(IMA[v3[1];v3[2]]≠c)/pula3
[26]  →(v3 pertence tabf)/pula3
[27]  tabf←tabf,[1]1 2⍴v3
[28] pula3:
[29]  →(v4[2]=0)/pula4
[30]  →(IMA[v4[1];v4[2]]≠c)/pula4
[31]  →(v4 pertence tabf)/pula4
[32]  tabf←tabf,[1]1 2⍴v4
[33] pula4:
[34]  →(v5[2]>1↓⍴IMA)/pula5
[35]  →(IMA[v5[1];v5[2]]≠c)/pula5
[36]  →(v5 pertence tabf)/pula5
[37]  tabf←tabf,[1]1 2⍴v5
[38] pula5:
[39]  →((v6[1]>1↑⍴IMA)∨(v6[2]=0))/pula6
[40]  →(IMA[v6[1];v6[2]]≠c)/pula6
[41]  →(v6 pertence tabf)/pula6
[42]  tabf←tabf,[1]1 2⍴v6
[43] pula6:
[44]  →(v7[1]>1↑⍴IMA)/pula7
[45]  →(IMA[v7[1];v7[2]]≠c)/pula7
[46]  →(v7 pertence tabf)/pula7
[47]  tabf←tabf,[1]1 2⍴v7
[48] pula7:
[49]  →((v8[1]>1↑⍴IMA)∨(v8[2]>1↓⍴IMA))/pula8
[50]  →(IMA[v8[1];v8[2]]≠c)/pula8
[51]  →(v8 pertence tabf)/pula8
[52]  tabf←tabf,[1]1 2⍴v8
[53] pula8:i←i+1
[54]  →t1
[55] acabou:r←tabf
------------------------------------------------------------
[0]  r←deita x
[1] ⍝ r←¯1↓,(((⍕x),' '),';'),' '
[2]  r←¯1↓,(⍕x),';'
------------------------------------------------------------
```

```
[0]  r←gera3np1;x;mai;zz;qtd
[1]  r←(500+2?500)
[2]  x←r
[3]  x←x[⍋x]
[4]  r←r,reso3np1 x
------------------------------------------------------------
[ 0]  r←geraimag t;x;cse;cid;deate;m;n;cores
[ 1]  r←(t,12)⍴' '
[ 2]  cores←'POAVRLM'
[ 3]  r[1;]←12↑'I ',(1 0⍕m←6+?3),' ',1 0⍕n←6+?3
[ 4]  x←30 12⍴' '
[ 5] ⍝x[1 2;1]←'C'
[ 6]  x[1;]←12↑'L ',(1 0⍕?n),' ',(1 0⍕?m),' ',cores[?⍴cores]
[ 7]  x[2;]←12↑'L ',(1 0⍕?n),' ',(1 0⍕?m),' ',cores[?⍴cores]
[ 8]  x[3;]←12↑'L ',(1 0⍕?n),' ',(1 0⍕?m),' ',cores[?⍴cores]
[ 9]  x[4;]←12↑'L ',(1 0⍕?n),' ',(1 0⍕?m),' ',cores[?⍴cores]
[10]  x[5;]←12↑'L ',(1 0⍕?n),' ',(1 0⍕?m),' ',cores[?⍴cores]
[11]  x[6;]←12↑'L ',(1 0⍕?n),' ',(1 0⍕?m),' ',cores[?⍴cores]
[12]  x[7;]←12↑'L ',(1 0⍕?n),' ',(1 0⍕?m),' ',cores[?⍴cores]
[13]  x[8;]←12↑'L ',(1 0⍕?n),' ',(1 0⍕?m),' ',cores[?⍴cores]
[14]  x[9;]←12↑'L ',(1 0⍕?n),' ',(1 0⍕?m),' ',cores[?⍴cores]
[15]  deate←deate[⍋deate←2?m]
[16]  x[10;]←12↑'V ',(1 0⍕?n),' ',(1 0⍕deate[1]),' ',(1 0⍕deate[2]),' ',cores[?⍴cores]
[17]  deate←deate[⍋deate←2?m]
[18]  x[11;]←12↑'V ',(1 0⍕?n),' ',(1 0⍕deate[1]),' ',(1 0⍕deate[2]),' ',cores[?⍴cores]
[19]  deate←deate[⍋deate←2?m]
[20]  x[12;]←12↑'V ',(1 0⍕?n),' ',(1 0⍕deate[1]),' ',(1 0⍕deate[2]),' ',cores[?⍴cores]
[21]  deate←deate[⍋deate←2?m]
[22]  x[13;]←12↑'V ',(1 0⍕?n),' ',(1 0⍕deate[1]),' ',(1 0⍕deate[2]),' ',cores[?⍴cores]
[23]  deate←deate[⍋deate←2?m]
[24]  x[14;]←12↑'V ',(1 0⍕?n),' ',(1 0⍕deate[1]),' ',(1 0⍕deate[2]),' ',cores[?⍴cores]
[25]  deate←deate[⍋deate←2?n]
[26]  x[15;]←12↑'H ',(1 0⍕deate[1]),' ',(1 0⍕deate[2]),' ',(1 0⍕?m),' ',cores[?⍴cores]
[27]  deate←deate[⍋deate←2?n]
[28]  x[16;]←12↑'H ',(1 0⍕deate[1]),' ',(1 0⍕deate[2]),' ',(1 0⍕?m),' ',cores[?⍴cores]
[29]  deate←deate[⍋deate←2?n]
[30]  x[17;]←12↑'H ',(1 0⍕deate[1]),' ',(1 0⍕deate[2]),' ',(1 0⍕?m),' ',cores[?⍴cores]
[31]  deate←deate[⍋deate←2?n]
[32]  x[18;]←12↑'H ',(1 0⍕deate[1]),' ',(1 0⍕deate[2]),' ',(1 0⍕?m),' ',cores[?⍴cores]
[33]  deate←deate[⍋deate←2?n]
[34]  x[19;]←12↑'H ',(1 0⍕deate[1]),' ',(1 0⍕deate[2]),' ',(1 0⍕?m),' ',cores[?⍴cores]
[35]  cse←?3 3
[36]  cid←cse+?3 3
[37]  x[20;]←12↑'K',(2 0⍕cse),(2 0⍕cid),' ',cores[?⍴cores]
[38]  cse←?3 3
[39]  cid←cse+?3 3
[40]  x[21;]←12↑'K',(2 0⍕cse),(2 0⍕cid),' ',cores[?⍴cores]
[41]  cse←?3 3
[42]  cid←cse+?3 3
[43]  x[22;]←12↑'K',(2 0⍕cse),(2 0⍕cid),' ',cores[?⍴cores]
[44]  cse←?3 3
[45]  cid←cse+?3 3
[46]  x[23;]←12↑'K',(2 0⍕cse),(2 0⍕cid),' ',cores[?⍴cores]
[47]  cse←?3 3
[48]  cid←cse+?3 3
[49]  x[24;]←12↑'K',(2 0⍕cse),(2 0⍕cid),' ',cores[?⍴cores]
[50]  x[25;]←12↑'F',(2 0⍕?n,m),' ',cores[?⍴cores]
[51]  x[26;]←12↑'F',(2 0⍕?n,m),' ',cores[?⍴cores]
[52]  x[27;]←12↑'F',(2 0⍕?n,m),' ',cores[?⍴cores]
[53]  x[28;]←12↑'F',(2 0⍕?n,m),' ',cores[?⍴cores]
[54]  x[29;]←12↑'F',(2 0⍕?n,m),' ',cores[?⍴cores]
[55]  x[30;]←12↑'F',(2 0⍕?n,m),' ',cores[?⍴cores]
[56]  r[1+⍳t-3;]←x[(t-3)?30;]
```

```
[57]  r[t-1;]←12↑'S alfa'
[58]  r[t;1]←'X'
-------------------------------------------------------------
[0]  r←geraviag;zz
[1]  zz←3+?3
[2]  r←(2 0⍕zz),6 2⍕0.01×1000+?zzρ2000
-------------------------------------------------------------
[ 0]  r←a pertence b;i
[ 1]  i←1
[ 2] t1:→(i>1↑ρb)/fim
[ 3]  →(2≠+/a=b[i;])/soma
[ 4]  r←1
[ 5]  →0
[ 6] soma:i←i+1
[ 7]  →t1
[ 8] fim:r←0
[ 9]  →0
-------------------------------------------------------------
[ 0]  r←reso3np1 x;mai;zz;qtd
[ 1]  mai←0
[ 2] t1:→(x[1]>x[2])/fim
[ 3]  zz←x[1]
[ 4]  qtd←1
[ 5] t2:→(zz=1)/aca
[ 6]  →(0=2|zz)/par
[ 7]  zz←1+3×zz
[ 8]  →pula
[ 9] par:zz←zz÷2
[10] pula:qtd←qtd+1
[11]  →t2
[12] aca:→(qtd≤mai)/blz
[13]  mai←qtd
[14] blz:x[1]←x[1]+1
[15]  →t1
[16] fim:r←mai
-------------------------------------------------------------
[ 0]  r←resoimag x;i;quais;j;lixo
[ 1]  i←1
[ 2] t1:→(i>1↑ρx)/fim
[ 3]  →(x[i;1]='I')/III
[ 4]  →(x[i;1]='C')/CCC
[ 5]  →(x[i;1]='L')/LLL
[ 6]  →(x[i;1]='V')/VVV
[ 7]  →(x[i;1]='H')/HHH
[ 8]  →(x[i;1]='K')/KKK
[ 9]  →(x[i;1]='F')/FFF
[10]  →(x[i;1]='S')/SSS
[11]  →(x[i;1]='X')/fim
[12]  →soma
[13] III:r←(⌽x[i;2+⍳3])ρ'B'
[14]  →soma
[15] CCC:r←(ρr)ρ'B'
[16]  →soma
[17] LLL:r[(⌽x[i;5]);⌽x[i;3]]←x[i;7]
[18]  →soma
[19] VVV:r[((⌽x[i;5])-1)+⍳(1+⌽x[i;7])-⌽x[i;5];⌽x[i;3]]←x[i;9]
[20]  →soma
[21] HHH:r[(⌽x[i;7]);((⌽x[i;3])-1)+⍳(1+⌽x[i;5])-⌽x[i;3]]←x[i;9]
[22]  →soma
[23] KKK:r[((⌽x[i;5])-1)+⍳(1+⌽x[i;9])-⌽x[i;5];((⌽x[i;3])-1)+⍳(1+⌽x[i;7])-⌽x[i;3]]←x[i;11]
[24]  →soma
[25] FFF:IMA←r
[26]  quais←IMA[(⌽x[i;5]);⌽x[i;3]]achaviz(⌽x[i;5]),⌽x[i;3]
```

```
[27]  j←1
[28] t2:→(j>1↑⍴quais)/ufa
[29]  r[quais[j;1];quais[j;2]]←x[i;7]
[30]  →(j=j←j+1)/t2
[31] ufa:
[32]  →soma
[33] SSS:
[34]  →soma
[35] soma:i←i+1
[36]  →t1
[37] fim:lixo←⎕EX'IMA'
-------------------------------------------------------------
[ 0]  r←resoviag x;so;i;k
[ 1]  k←⍋x
[ 2]  so←0.01×⌊100×(+/1↓k)÷k[1]
[ 3]  r←0
[ 4]  i←1
[ 5] t1:→(i>k[1])/fim
[ 6]  →(k[i+1]>so)/soma
[ 7]  r←r+so-k[i+1]
[ 8] soma:i←i+1
[ 9]  →t1
[10] fim:
-------------------------------------------------------------
[0]  r←temduplo a
[1]  r←0∈(a⍳a)=⍳⍴a
-------------------------------------------------------------
[0]  r←tiraduplo V
[1]  r←((V⍳V)=⍳⍴V)/V                    ⍝ Unique.  Drop duplicates from vector.
-------------------------------------------------------------
[ 0]  opesq vivom42a n;CORRECAO;EVENTO;acuja;dhx;esse;f;lixonol;relat;resp;resu;upag;xk;yl
      u;zz1;zz2
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←0 ⋄ EVENTO←'PLm42   '
[ 5]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 8]  FOLHALAm42←ajusta80 FOLHALAm42
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAm42)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[11]  xk←1 ⋄ resu←0 58⍴' '
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←25 80⍴' '
[14]  f←FOLHALAm42
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍎VERSAOa←1.01
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO[⍳4],'{\large{',EVENTO[4+⍳4],'}}'
[21]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[22] inica:
[23]  zz1←gera3np1
[24]  esse[8;]←80↑5 0⍎zz1[1 2]
[25]  resp←resp,zz1[3]
[26]  zz1←gera3np1
[27]  esse[9;]←80↑5 0⍎zz1[1 2]
[28]  resp←resp,zz1[3]
[29]  zz1←gera3np1
[30]  esse[10;]←80↑5 0⍎zz1[1 2]
```

```
[31]  resp←resp,zz1[3]
[32]  zz1←geraviag
[33]  esse[11;]←80↑zz1
[34]  resp←resp,resoviag zz1
[35]  zz1←geraviag
[36]  esse[12;]←80↑zz1
[37]  resp←resp,resoviag zz1
[38]  zz1←geraviag
[39]  esse[13;]←80↑zz1
[40]  resp←resp,resoviag zz1
[41]  esse[14+⍳11;⍳12]←zz1←geraimag 11
[42]  zz2←resoimag zz1
[43]  resp←(4 0 6 0 4 0 4 0 9 2 7 2 7 2⍕resp),'   ',zz2[2;2],zz2[3;3],zz2[4;4],zz2[5;5]
[44]  esse[14+⍳11;20+⍳12]←zz1←geraimag 11
[45]  zz2←resoimag zz1
[46]  resp←resp,' ',zz2[2;2],zz2[3;3],zz2[4;4],zz2[5;5]
[47]  esse[14+⍳11;40+⍳12]←zz1←geraimag 11
[48]  zz2←resoimag zz1
[49]  resp←resp,' ',zz2[2;2],zz2[3;3],zz2[4;4],zz2[5;5]
[50]  resu←resu,[1]1 58⍴resp
[51]  acuja←(f[;2]='#')/⍳1↑⍴f
[52]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[53]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[54]  □←(⍕xk←xk+1),'-'
[55]  →testa
[56] fim:
[57]  upag←(1 0+⍴f)⍴' '
[58]  →(1=≡n)/elafa
[59]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[60]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[61]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑resu
[62]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[63]  →terminando
[64] elafa:
[65]  aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 4↓resu)
[66]  aaa[1;35 36]←2 0⍕CORRECAO
[67]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[68]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[69] terminando:
[70]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[71]  relat[1↑⍴relat;;]←upag
[72]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.t
      ex'
[73]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[74]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivom44

```
[ 0]  r←compinte x;i
[ 1]  i←1
[ 2]  r←⍳0
[ 3] t1:→(i>1↑⍴x)/fim
[ 4]  →(4=+/'STOP'=x[i;⍳4])/stop
[ 5]  →(4=+/'STOC'=x[i;⍳4])/stoc
[ 6]  →(4=+/'ADDC'=x[i;⍳4])/addc
[ 7]  →(4=+/'MULC'=x[i;⍳4])/mulc
[ 8]  →(4=+/'STOR'=x[i;⍳4])/stor
[ 9]  →(4=+/'ADDR'=x[i;⍳4])/addr
[10]  →(4=+/'MULR'=x[i;⍳4])/mulr
[11]  →(4=+/'STAR'=x[i;⍳4])/star
[12]  →(4=+/'LDRR'=x[i;⍳4])/ldrr
```

```
[13]  →(4=+/'GOTR'=x[i;⍳4])/gotr
[14]  'deu xabu'
[15]  →0
[16] stop:r←r,100
[17]  →soma
[18] stoc:r←r,200+(10×⍪x[i;5])+⍪x[i;6]
[19]  →soma
[20] addc:r←r,300+(10×⍪x[i;5])+⍪x[i;6]
[21]  →soma
[22] mulc:r←r,400+(10×⍪x[i;5])+⍪x[i;6]
[23]  →soma
[24] stor:r←r,500+(10×⍪x[i;5])+⍪x[i;6]
[25]  →soma
[26] addr:r←r,600+(10×⍪x[i;5])+⍪x[i;6]
[27]  →soma
[28] mulr:r←r,700+(10×⍪x[i;5])+⍪x[i;6]
[29]  →soma
[30] star:r←r,800+(10×⍪x[i;5])+⍪x[i;6]
[31]  →soma
[32] ldrr:r←r,900+(10×⍪x[i;5])+⍪x[i;6]
[33]  →soma
[34] gotr:r←r,(10×⍪x[i;5])+⍪x[i;6]
[35] soma:i←i+1
[36]  →t1
[37] fim:
-------------------------------------------------------------
[0]  r←deita x
[1] ⍝ r←¯1↓,(((⍒x),' '),';'),' '
[2]  r←¯1↓,(⍒x),';'
-------------------------------------------------------------
[0]  r←gerafibo
[1] novo:r←1000 10000+?10000 100000000
[2]  r←r[⍋r]
[3]  →(r[1]>r[2])/novo
-------------------------------------------------------------
[0]  r←gerainte
[1]  r←(200+?4⍴40),(200+?6⍴799),100
-------------------------------------------------------------
[0]  r←gerarsom;zz
[1] ⍝ vide [Ski03], pag. 120
[2] novo:r←50+?20000
[3]  →(r=196)/novo
[4]  zz←resorsom r
[5]  →(zz=¯1)/novo
-------------------------------------------------------------
[0]  r←palindrome x;y;z
[1]  y←⍒x
[2]  z←⍱y
[3]  →((⍴y)=+/y=z)/sim
[4]  r←0
[5]  →0
[6] sim:r←1
-------------------------------------------------------------
[ 0]  r←a pertence b;i
[ 1]  i←1
[ 2] t1:→(i>1↑⍴b)/fim
[ 3]  →(2≠+/a=b[i;])/soma
[ 4]  r←1
[ 5]  →0
[ 6] soma:i←i+1
[ 7]  →t1
[ 8] fim:r←0
[ 9]  →0
```

```
------------------------------------------------------------
[ 0]  r←resofibo z;x;y;a1;a2;a3;ct
[ 1]  x←z[1]
[ 2]  y←z[2]
[ 3]  a1←1
[ 4]  a2←1
[ 5]  ct←0
[ 6] novo:a3←a1+a2
[ 7]  →(a3≥x)/eagora
[ 8]  a1←a2
[ 9]  a2←a3
[10]  →novo
[11] eagora:→(a3>y)/acabou
[12]  a1←a2
[13]  a2←a3
[14]  ct←ct+1
[15]  →novo
[16] acabou:r←ct
------------------------------------------------------------
[ 0]  r←resointe x;i;ct;ddd;dez;uni;RAM;REG
[ 1]  REG←10⍴0
[ 2]  RAM←1000⍴0
[ 3]  i←1
[ 4]  ct←0
[ 5] t1:⍝→(i>⍴x)/fim
[ 6]  →(ct>1000)/loop
[ 7] ⍝i,ct
[ 8]  ct←ct+1
[ 9]  →(x[i]=100)/pare
[10]  ddd←x[i]-100×⌊x[i]÷100
[11]  dez←⌊ddd÷10
[12]  uni←ddd-10×dez
[13] ⍝ i,ddd,dez,uni
[14]  →(2=⌊x[i]÷100)/k200
[15]  →(3=⌊x[i]÷100)/k300
[16]  →(4=⌊x[i]÷100)/k400
[17]  →(5=⌊x[i]÷100)/k500
[18]  →(6=⌊x[i]÷100)/k600
[19]  →(7=⌊x[i]÷100)/k700
[20]  →(8=⌊x[i]÷100)/k800
[21]  →(9=⌊x[i]÷100)/k900
[22]  →(0=⌊x[i]÷100)/k000
[23]  'deu xabu, o valor de x = ',⍕x
[24]  →0
[25] k200:
[26]  REG[dez+1]←uni
[27]  →soma
[28] k300:
[29]  REG[dez+1]←1000|REG[dez+1]+uni
[30]  →soma
[31] k400:
[32]  REG[dez+1]←1000|REG[dez+1]×uni
[33]  →soma
[34] k500:
[35]  REG[dez+1]←REG[uni+1]
[36]  →soma
[37] k600:
[38]  REG[dez+1]←1000|REG[dez+1]+REG[uni+1]
[39]  →soma
[40] k700:
[41]  REG[dez+1]←1000|REG[dez+1]×REG[uni+1]
[42]  →soma
[43] k800:
```

```
[44]  REG[dez+1]←1000|RAM[REG[dez+1]+1]
[45]  →soma
[46] k900:
[47]  RAM[uni+1]←REG[dez+1]
[48]  →soma
[49] k000:
[50]  →(REG[uni+1]=0)/soma
[51]  i←REG[dez+1]+1
[52]  →t1
[53] soma:i←i+1
[54]  →t1
[55] pare:r←+/REG[⍳4]
[56]  →0
[57] loop:'parando... deve ter entrado em loop'
-------------------------------------------------------------
[ 0]  r←resorsom x;ct
[ 1]  ct←1
[ 2] novo:x←x+⌽⍎x
[ 3]  →(palindrome x)/fim
[ 4]  →(ct>10)/xabu
[ 5]  ct←ct+1
[ 6]  →novo
[ 7] xabu:r←¯1
[ 8]  →0
[ 9] fim:
[10]  →(ct>2)/blz
[11]  r←¯1
[12]  →0
[13] blz:r←ct
-------------------------------------------------------------
[0]  r←temduplo a
[1]  r←0∊(a⍳a)=⍳⍴a
-------------------------------------------------------------
[0]  r←tiraduplo V
[1]  r←((V⍳V)=⍳⍴V)/V                    ⍝ Unique.  Drop duplicates from vector.
-------------------------------------------------------------
[ 0]  r←tradinte x;i;ct;REG;RAM;RES;ddd;dez;uni;m
[ 1]  REG←10⍴0
[ 2]  RAM←1000⍴0
[ 3]  RES←0 60⍴' '
[ 4]  i←1
[ 5]  ct←0
[ 6] t1:⍝→(i>⍴x)/fim
[ 7]  →(ct>900)/loop
[ 8]  ct←ct+1
[ 9]  →(x[i]=100)/pare
[10]  ddd←x[i]-100×⌊x[i]÷100
[11]  dez←⌊ddd÷10
[12]  uni←ddd-10×dez
[13] ⍝ i,ddd,dez,uni
[14]  →(2=⌊x[i]÷100)/k200
[15]  →(3=⌊x[i]÷100)/k300
[16]  →(4=⌊x[i]÷100)/k400
[17]  →(5=⌊x[i]÷100)/k500
[18]  →(6=⌊x[i]÷100)/k600
[19]  →(7=⌊x[i]÷100)/k700
[20]  →(8=⌊x[i]÷100)/k800
[21]  →(9=⌊x[i]÷100)/k900
[22]  →(0=⌊x[i]÷100)/k000
[23]  'deu xabu'
[24]  →0
[25] k200:
[26]  REG[dez+1]←uni
```

```
[27]  m←'coloque ',(⍕uni),' em R',(⍕dez),'             fica R',(⍕dez),'=','0000'⍕uni
[28]  RES←RES,[1]1 60⍴60↑('000'⍕ct-1),'.',('000'⍕x[i]),'=',m
[29]  →soma
[30] k300:
[31]  REG[dez+1]←1000|REG[dez+1]+uni
[32]  m←'some ',(⍕uni),' em R',(⍕dez),'                fica R',(⍕dez),'=','0000'⍕REG[dez+1
      ]
[33]  RES←RES,[1]1 60⍴60↑('000'⍕ct-1),'.',('000'⍕x[i]),'=',m
[34]  →soma
[35] k400:
[36]  REG[dez+1]←1000|REG[dez+1]×uni
[37]  m←'multiplique R',(⍕dez),' por ',(⍕uni),'        fica R',(⍕dez),'=','0000'⍕REG[dez+1
      ]
[38]  RES←RES,[1]1 60⍴60↑('000'⍕ct-1),'.',('000'⍕x[i]),'=',m
[39]  →soma
[40] k500:
[41]  REG[dez+1]←REG[uni+1]
[42]  m←'coloque em R',(⍕dez),' o valor de R',(⍕uni),' fica R',(⍕dez),'=','0000'⍕REG[dez+1
      ]
[43]  RES←RES,[1]1 60⍴60↑('000'⍕ct-1),'.',('000'⍕x[i]),'=',m
[44]  →soma
[45] k600:
[46]  REG[dez+1]←1000|REG[dez+1]+REG[uni+1]
[47]  m←'some a R',(⍕dez),' o valor de R',(⍕uni),'     fica R',(⍕dez),'=','0000'⍕REG[dez+1
      ]
[48]  RES←RES,[1]1 60⍴60↑('000'⍕ct-1),'.',('000'⍕x[i]),'=',m
[49]  →soma
[50] k700:
[51]  REG[dez+1]←1000|REG[dez+1]×REG[uni+1]
[52]  m←'multiplique R',(⍕dez),' por R',(⍕uni),'       fica R',(⍕dez),'=','0000'⍕REG[dez+1
      ]
[53]  RES←RES,[1]1 60⍴60↑('000'⍕ct-1),'.',('000'⍕x[i]),'=',m
[54]  →soma
[55] k800:
[56]  REG[dez+1]←1000|RAM[REG[dez+1]+1]
[57]  m←'coloque em R',(⍕dez),' a RAM &=R',(⍕uni),'    fica R',(⍕dez),'=','0000'⍕REG[dez+1
      ]
[58]  RES←RES,[1]1 60⍴60↑('000'⍕ct-1),'.',('000'⍕x[i]),'=',m
[59]  →soma
[60] k900:
[61]  RAM[uni+1]←REG[dez+1]
[62]  m←'RAM &=R',(⍕uni),' pelo valor de R',⍕dez
[63]  RES←RES,[1]1 60⍴60↑('000'⍕ct-1),'.',('000'⍕x[i]),'=',m
[64]  →soma
[65] k000:
[66]  m←'Se R',(⍕uni),' ≠ 0, va para R',(⍕dez),'       R',(⍕uni),'=',('0000'⍕REG[uni+1]),'
       e R',(⍕dez),'=','0000'⍕REG[dez+1]
[67]  RES←RES,[1]1 60⍴60↑('000'⍕ct-1),'.',('000'⍕x[i]),'=',m
[68]  →(REG[uni+1]=0)/soma
[69]  i←REG[dez+1]+1
[70]  →t1
[71] soma:i←i+1
[72]  →t1
[73] pare:
[74]  m←'Parando...'
[75]  RES←RES,[1]1 60⍴60↑('000'⍕ct-1),'.',('000'⍕x[i]),'=',m
[76]  r←RES
[77]  +/REG[⍳4]
[78]  →0
[79] loop:'parando... deve ter entrado em loop'
-------------------------------------------------------------
[ 0]  opesq vivom44a n;CORRECAO;EVENTO;acuja;dhx;esse;f;lixonol;relat;resp;resu;upag;xk;yl
      u;zz1
```

```
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←0 ⋄ EVENTO←'PLm44   '
[ 5]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 8]  FOLHALAm44←ajusta80 FOLHALAm44
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAm44)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[11]  xk←1 ⋄ resu←0 10⍴0
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←16 80⍴' '
[14]  f←FOLHALAm44
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍎VERSAOa←1.01
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO[⍳4],'{\large{',EVENTO[4+⍳4],'}}'
[21]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[22] inica:
[23]  zz1←gerainte
[24]  esse[8;]←80↑4 0⍎zz1
[25]  resp←resp,resointe zz1
[26]  zz1←gerainte
[27]  esse[9;]←80↑4 0⍎zz1
[28]  resp←resp,resointe zz1
[29]  zz1←gerainte
[30]  esse[10;]←80↑4 0⍎zz1
[31]  resp←resp,resointe zz1
[32]  zz1←gerarsom
[33]  esse[11;]←80↑12 0⍎zz1
[34]  resp←resp,resorsom zz1
[35]  zz1←gerarsom
[36]  esse[12;]←80↑12 0⍎zz1
[37]  resp←resp,resorsom zz1
[38]  zz1←gerarsom
[39]  esse[13;]←80↑12 0⍎zz1
[40]  resp←resp,resorsom zz1
[41]  zz1←gerafibo
[42]  esse[14;]←80↑9 0⍎zz1
[43]  resp←resp,resofibo zz1
[44]  zz1←gerafibo
[45]  esse[15;]←80↑9 0⍎zz1
[46]  resp←resp,resofibo zz1
[47]  zz1←gerafibo
[48]  esse[16;]←80↑9 0⍎zz1
[49]  resp←resp,resofibo zz1
[50]  resu←resu,[1]1 10⍴resp
[51]  acuja←(f[;2]='#')/⍳1↑⍴f
[52]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[53]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[54]  ⍞←(⍎xk←xk+1),'-'
[55]  →testa
[56] fim:
[57]  upag←(1 0+⍴f)⍴' '
[58]  →(1=≡n)/elafa
[59]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[60]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[61]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑4 0 6 0 3 0 3 0 6 0 3 0 3 0 6 0 3 0 3 0⍎resu
[62]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
```

```
[63]  →terminando
[64] elafa:
[65]  aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),3 0 3 0 3 0 6 0 3 0 3 0 6 0 3 0 3 0⍕0 1↓resu)
[66]  aaa[1;35 36]←2 0⍕CORRECAO
[67]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[68]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[69] terminando:
[70]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[71]  relat[1↑⍴relat;;]←upag
[72]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.t
      ex'
[73]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[74]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivom46

```
[0]  r←n combina k
[1] ⍝ devolve uma matriz com as combinaṽ~oes de n objetos tomados k a k
[2]  r←⍉(∧⌿2<⌿r)/r←1+((-k)↑ιn)⊤ι(!k)×k!n
-------------------------------------------------------------
[ 0]  rr←gerablo;aa;r;x;zz
[ 1] anotre:r←((aa←6+?3),40)⍴' '
[ 2]  r[;ι4]←(2 4⍴'movepile')[?aa⍴2;]
[ 3]  r[;6 7]←(aa,2)⍴2 0⍕¯1+?aa⍴aa
[ 4]  r[;8+ι4]←(2 4⍴'ontoover')[?aa⍴2;]
[ 5]  r[;13 14]←(aa,2)⍴2 0⍕¯1+?aa⍴aa
[ 6]  r←(1 40⍴40↑2 0⍕aa),[1]r,[1]1 40⍴40↑'quit'
[ 7]  rr←3⍴' '
[ 8]  x←resolblo r
[ 9]  →(1≠⍴x)/blzl
[10]  ⍞←'o'
[11]  →anotre
[12] blzl:
[13]  rr[1]←⊂r
[14]  rr[2]←⊂x
[15]  rr[3]←⊂40↑zz←(zz≠' ')/zz←,'/',x
-------------------------------------------------------------
[ 0]  r←geracai;lin;col;xx;yy
[ 1] novo:lin←5+?3
[ 2]  col←3+?3
[ 3]  xx←(lin,col)⍴99?99
[ 4]  yy←resolcai xx
[ 5]  →(¯1=1↑,yy)/furou
[ 6]  →((⍴yy)>2)/devolve
[ 7]  →(2>?2)/devolve
[ 8] furou:
[ 9]  ⍞←'∘'
[10]  →novo
[11] devolve:r←2⍴0
[12]  r[1]←⊂xx
[13]  r[2]←⊂14↑2 0⍕yy
-------------------------------------------------------------
[0]  r←geragar;x;y
[1]  x←9?99
[2]  y←resolgar x
[3]  r←2⍴' '
[4]  r[1]←⊂x
[5]  r[2]←⊂10↑y
-------------------------------------------------------------
[0]  inicializa
[1]  pils←25 25⍴0
```

```
[2]  tops←25⍴1
[3]  pils[1;]←⍳25
------------------------------------------------------------
[0]  r←ondeta x;en;li;co
[1]  en←(,pils)⍳x
[2]  li←1+⌊(en-1)÷25
[3]  co←1+25|en-1
[4]  r←li,co
------------------------------------------------------------
[ 0]  r←a pertence b;i
[ 1]  i←1
[ 2] t1:→(i>1↑⍴b)/fim
[ 3]  →(2≠+/a=b[i;])/soma
[ 4]  r←1
[ 5]  →0
[ 6] soma:i←i+1
[ 7]  →t1
[ 8] fim:r←0
[ 9]  →0
------------------------------------------------------------
[  0]  rr←resolblo x;ta;z;i;⎕IO;a;b;la;lb;ct;lima;aaa;ondeta;r;contador
[  1]  contador←0
[  2]  ⎕IO←0
[  3]  ta←⊂x[0;]
[  4]  ct←ta⍴0 ⍝ contador de blocos em cada linha
[  5]  aaa←x[1+⍳¯2+1↑⍴x;]
[  6]  z←traduzco aaa
[  7]  i←0
[  8]  r←(2⍴ta)⍴¯1
[  9]  r[;0]←⍳ta
[ 10] t1:→(i≥1↑⍴z)/fim
[ 11] ondeta55:la←(∨/(a←z[i;1])=r)/⍳1↑⍴r
[ 12]  lb←(∨/(b←z[i;2])=r)/⍳1↑⍴r
[ 13]  →(la=lb)/soma
[ 14]  →(a=b)/soma
[ 15]  →(z[i;0]=1)/moveonto
[ 16]  →(z[i;0]=2)/moveover
[ 17]  →(z[i;0]=3)/pileonto
[ 18]  →(z[i;0]=4)/pileover
[ 19]  →(z[i;0]=5)/fim
[ 20] soma:
[ 21]  i←i+1
[ 22]  →t1
[ 23] moveonto:
[ 24]  →(contador>100)/deuxabu
[ 25]  contador←contador+1
[ 26]  →(a=,r[la;ct[la]])/ufaa    ⍝ retorna blocos que estao sobre a
[ 27]  r[a;ct[a]+1]←r[la;ct[la]]
[ 28]  r[la;ct[la]]←¯1
[ 29]  ct[a]←ct[a]+1
[ 30]  ct[la]←ct[la]-1
[ 31]  →moveonto
[ 32] ufaa:
[ 33]  →(contador>100)/deuxabu
[ 34]  contador←contador+1
[ 35]  →(b=,r[lb;ct[lb]])/ufab   ⍝ retorna blocos que estao sobre b
[ 36]  r[b;ct[b]+1]←r[lb;ct[lb]]
[ 37]  r[lb;ct[lb]]←¯1
[ 38]  ct[b]←ct[b]+1
[ 39]  ct[lb]←ct[lb]-1
[ 40]  →ufaa
[ 41] ufab:r[lb;ct[lb]+1]←r[la;ct[la]] ⍝ deve ser a ⍝ a sobre b
[ 42]  r[la;ct[la]]←¯1
```

```
[ 43]  ct[la]←ct[la]-1
[ 44]  ct[lb]←ct[lb]+1
[ 45]  →soma
[ 46] moveover:
[ 47]  →(contador>100)/deuxabu
[ 48]  contador←contador+1
[ 49]  →(a=,r[la;ct[la]])/ufcc   ⍝ retorna blocos que estao sobre a
[ 50]  r[a;ct[a]+1]←r[la;ct[la]]
[ 51]  r[la;ct[la]]←¯1
[ 52]  ct[a]←ct[a]+1
[ 53]  ct[la]←ct[la]-1
[ 54]  →moveover
[ 55] ufcc:
[ 56]  r[lb;ct[lb]+1]←r[la;ct[la]] ⍝ deve ser a ⍝ a sobre a pilha que contem b
[ 57]  r[la;ct[la]]←¯1
[ 58]  ct[la]←ct[la]-1
[ 59]  ct[lb]←ct[lb]+1
[ 60]  →soma
[ 61] pileonto:
[ 62] ⍝ definicoes a=o cara a mover; b=quem vai receber
[ 63] ⍝ la=linha onde esta o a; lb=linha onde esta o b
[ 64] ⍝ ct[la] quantos validos tem na linha onde esta o a
[ 65] ⍝ ct[lb] quantos validos tem na linha onde esta o b
[ 66] volta1:
[ 67]  →(contador>100)/deuxabu
[ 68]  contador←contador+1
[ 69]  →(b=,r[lb;ct[lb]])/volta2   ⍝ retorna blocos que estao sobre b
[ 70]  r[b;ct[b]+1]←r[lb;ct[lb]]
[ 71]  r[lb;ct[lb]]←¯1
[ 72]  ct[b]←ct[b]+1
[ 73]  ct[lb]←ct[lb]-1
[ 74]  →volta1
[ 75] volta2:
[ 76]  ondeta←0
[ 77] ubg:→(a=,r[la;ondeta])/achon
[ 78]  ondeta←ondeta+1
[ 79]  →ubg
[ 80] achon:lima←ondeta-1
[ 81] oju:→(ondeta>ct[la])/treek
[ 82]  r[lb;ct[lb]+1]←r[la;ondeta]
[ 83]  r[la;ondeta]←¯1
[ 84]  ondeta←ondeta+1
[ 85]  ct[lb]←ct[lb]+1
[ 86]  →oju
[ 87] treek:
[ 88]  ct[la]←lima
[ 89]  →soma
[ 90] pileover:
[ 91]  ondeta←0
[ 92] zubg:
[ 93]  →(contador>100)/deuxabu
[ 94]  contador←contador+1
[ 95]  →(a=,r[la;ondeta])/zachon
[ 96]  ondeta←ondeta+1
[ 97]  →zubg
[ 98] zachon:lima←ondeta-1
[ 99] zoju:
[100]  →(contador>100)/deuxabu
[101]  contador←contador+1
[102]  →(ondeta>ct[la])/ztreek
[103]  r[lb;ct[lb]+1]←r[la;ondeta]
[104]  r[la;ondeta]←¯1
[105]  ondeta←ondeta+1
```

```
[106]  ct[lb]←ct[lb]+1
[107]  →zoju
[108] ztreek:
[109]  ct[la]←lima
[110]  →soma
[111] fim:r←((ta,1)ρ1 0⍕⍳ta),[1]((ta,1)ρ':'),[1]' 0123456789'[r+1]
[112]  rr←(1 1,((2×¯2+(1↓ρr))ρ0 1))⍉[1]r
[113]  →0
[114] deuxabu:rr←1ρ-1
------------------------------------------------------------
[ 0]  r←resolcai x;i;ia;it;cands;xi;t
[ 1]  i←1
[ 2] t1:→(i>1↑ρx)/fim
[ 3]  x[i;]←x[i;⍒x[i;]]
[ 4]  i←i+1
[ 5]  →t1
[ 6] fim:
[ 7]  x←x,[2]((1↑ρx),1)ρ⍳1↑ρx
[ 8]  x←x[⍋x;]
[ 9]  it←t←1↑ρx ⍝ quantidade de caixas deste problema
[10] t2:→(it<2)/acaboum
[11]  cands←t combina it
[12]  i←1
[13] t3:→(i>1↑ρcands)/ufa
[14]  xi←testacaixa x[cands[i;];]
[15]  →(xi=1)/oba
[16]  i←i+1
[17]  →t3
[18] ufa:it←it-1
[19]  →t2
[20] acaboum:r←¯1
[21]  →0
[22] oba:r←,x[cands[i;];1↓ρx]
------------------------------------------------------------
[ 0]  r←resolgar x;b1;b2;b3;a;b;mat
[ 1]  b1←x[1 2 3]   ⍝ para cada recipiente, a ordem ?e BGC
[ 2]  b2←x[4 5 6]
[ 3]  b3←x[7 8 9]
[ 4]  a←6ρ0
[ 5] ⍝ hipotese 1: BCG
[ 6]  a[1]←b2[1]+b3[1]+b1[3]+b3[3]+b1[2]+b2[2]
[ 7] ⍝ hipotese 2: BGC
[ 8]  a[2]←b2[1]+b3[1]+b1[2]+b3[2]+b1[3]+b2[3]
[ 9] ⍝ hipotese 3: CBG
[10]  a[3]←b2[3]+b3[3]+b1[1]+b3[1]+b1[2]+b2[2]
[11] ⍝ hipotese 4: CGB
[12]  a[4]←b2[3]+b3[3]+b1[2]+b3[2]+b1[1]+b2[1]
[13] ⍝ hipotese 5: GBC
[14]  a[5]←b2[2]+b3[2]+b1[1]+b3[1]+b1[3]+b2[3]
[15] ⍝ hipotese 6: GCB
[16]  a[6]←b2[2]+b3[2]+b1[3]+b3[3]+b1[1]+b2[1]
[17]  b←⍋a
[18]  mat←6 3ρ'BCGBGCCBGCGBGBCGCB'
[19]  r←mat[b[1];],' ',⍕a[b[1]]
------------------------------------------------------------
[0]  r←sent2vwords c
[1]  r←(c≠' ')⊂c
------------------------------------------------------------
[0]  r←testacaixa tud;res;i
[1]  tud←0 ¯1↓tud
[2]  res←1
[3]  i←1
[4] t1:→(i>¯1+1↑ρtud)/fim
```

```
[5]  res←res^^/tud[i;]<tud[i+1;]
[6]  i←i+1
[7]  →t1
[8] fim:r←res
------------------------------------------------------------
[ 0]  r←traduzco x;i;vv;⎕IO
[ 1]  ⎕IO←1
[ 2]  r←((1↑⍴x),3)⍴0
[ 3]  i←1
[ 4] t1:→(i>1↑⍴x)/finzao
[ 5]  vv←sent2vwords x[i;]
[ 6]  →(4=+/'quit'=⊃vv[1])/fim
[ 7]  →(4=+/'move'=⊃vv[1])/mov
[ 8]  →(4=+/'pile'=⊃vv[1])/pil
[ 9] som:i←i+1
[10]  →t1
[11] mov:→(4=+/'over'=⊃vv[3])/movove
[12]  r[i;1]←1 ⋄ r[i;2]←⍎⊃vv[2] ⋄ r[i;3]←⍎⊃vv[4]
[13]  →som
[14] movove:
[15]  r[i;1]←2 ⋄ r[i;2]←⍎⊃vv[2] ⋄ r[i;3]←⍎⊃vv[4]
[16]  →som
[17] pil:→(4=+/'over'=⊃vv[3])/pilove
[18]  r[i;1]←3 ⋄ r[i;2]←⍎⊃vv[2] ⋄ r[i;3]←⍎⊃vv[4]
[19]  →som
[20] pilove:
[21]  r[i;1]←4 ⋄ r[i;2]←⍎⊃vv[2] ⋄ r[i;3]←⍎⊃vv[4]
[22]  →som
[23] fim:r[i;]←5 0 0
[24]  →som
[25] finzao:
------------------------------------------------------------
[ 0]  opesq vivom46a n;EVENTO;CORRECAO;dhx;ylu;relat;esse;f;xk;zz1;resp;resu;upag;acuja;aa
      a;lixonol
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←0 ⋄ EVENTO←'PLm46   '
[ 5]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 8]  FOLHALAm46←ajusta80 FOLHALAm46
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAm46)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[11]  xk←1 ⋄ resu←0 68⍴' '
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←30 80⍴' '
[14]  f←FOLHALAm46
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍎VERSAOa←1.01
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[22]  esse[29;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[30;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25]  zz1←gerablo
[26]  esse[7+⍳11;]←11 80↑⊃zz1[1]
[27]  resp←(3 0⍎resp),'=',⊃zz1[3]
[28]  zz1←geragar
```

```
[29]  esse[19;]←80↑3 0 3 0 3 0 4 0 3 0 3 0 4 0 3 0 3 0⍕⊃zz1[1]
[30]  resp←resp,⊃zz1[2]
[31]  zz1←geracai
[32]  esse[20;]←80↑3 0⍕ρ⊃zz1[1]
[33]  esse[20+ι8;]←8 80↑3 0⍕⊃zz1[1]
[34]  resp←resp,⊃zz1[2]
[35]  resu←resu,[1]1 68ρ⍕resp
[36]  acuja←(f[;2]='#')/ι1↑ρf
[37]  f[acuja;ι80]←esse[⍋,f[acuja;3 4],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\newpage'
[39]  ⍞←(⍕xk←xk+1),'-'
[40]  →testa
[41] fim:
[42]  upag←(1 0+ρf)ρ' '
[43]  →(1=≡n)/elafa
[44]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[45]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[46]  upag[2+ι1↑ρresu;]←((1↑ρresu),80)↑resu
[47]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[48]  →terminando
[49] elafa:
[50]  aaa←(ylu,(((1↑ρylu),4)ρ' 0.0'),0 4↓resu)
[51]  aaa[1;35 36]←2 0⍕CORRECAO
[52]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[54] terminando:
[55]  upag[1↑ρupag;]←(1↓ρupag)↑'\end{document}'
[56]  relat[1↑ρrelat;;]←upag
[57]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.t
      ex'
[58]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivom50

```
[ 0]  r←contaarv t;i;qt;su;j
[ 1]  i←1↑ρt
[ 2]  r←0ρ0
[ 3] t1:→(i<1)/fim
[ 4]  →(t[i;1]>0)/soma
[ 5]  qt←|t[i;1]
[ 6]  su←t[i;2]
[ 7]  su←su-1
[ 8]  j←i
[ 9] vorta:
[10]  j←j-1
[11]  →(j<1)/pree
[12] t3:→(t[j;2]≠su)/vorta
[13]  qt←qt+t[j;1]
[14]  su←su-1
[15]  →vorta
[16] pree:r←r,qt
[17] soma:
[18]  i←i-1
[19]  →t1
[20] fim:
-------------------------------------------------------------
[0]  r←corta x
[1]  r←(x≠' ')/x
-------------------------------------------------------------
[ 0]  r←crarvore elems;aspa;i;ealfa
```

```
[ 1] ⍝ cria uma arvore para desenho com elems / p.kantek / v2.1
[ 2] ⍝ col [1] = &fe
[ 3] ⍝ col [2] = &fd
[ 4] ⍝ col [3] = conteudo
[ 5] ⍝ col [4] = profundidade
[ 6] ⍝ col [5] = &pai
[ 7] ⍝ col [6] = largura do bloco grafico
[ 8] ⍝ col [7] = 0  ≠se bloco grafico ja foi criado (1=significa que ele e o
[ 9] ⍝           raiz do bloco. 2=ja foi usado para construir outro mais
[10] ⍝           acima
[11]  r←((⍴elems),7)⍴0 ⋄ ealfa←1 ⋄ aspa←''''
[12]  →(isnum elems)/nume
[13]  ealfa←¯1
[14]  elems←1000+⎕AV⍳elems
[15] nume:i←2 ⋄ r[1;1 2 3]←¯1,¯1,elems[1]
[16] inica:→(i>⍴elems)/acabou
[17]  r←r inarvore elems[i]
[18]  →(i=i←i+1)/inica
[19] acabou:
[20]  i←1
[21] conta:→(i>⍴elems)/mesmo
[22]  →((r[i;1]≠¯1)∨(r[i;2]≠¯1))/pula
[23]  →(ealfa=¯1)/letra
[24]  ⍞←'A',('05'⍕i),'  ←',aspa,'<',(formata elems[i]),'>',aspa
[25]  →indo
[26] letra:⍞←'A',('05'⍕i),'  ←',aspa,'(  ⊃',⎕AV[elems[i]-1000],'  ⊂)',aspa
[27] indo:r[i;7]←1
[28]  r[i;6]←3
[29] pula:→(i=i←i+1)/conta
[30] mesmo:
------------------------------------------------------------
[ 0]  r←formata x
[ 1]  →(x>1000)/t4
[ 2]  →(x>99)/t3
[ 3]  →(x>9)/t2
[ 4] t1:r←'⍬',(1 0⍕x),'⍬'
[ 5]  →0
[ 6] t2:r←'⍬',2 0⍕x
[ 7]  →0
[ 8] t3:r←3 0⍕x
[ 9]  →0
[10] t4:r←'⍬',⎕AV[x-1000],'⍬'
[11]  →0
------------------------------------------------------------
[0]  r←geraapara;x;z;k;w
[1]  x←contaarv procesarv preprocarv k←paarvore3 crarvore 10?20
[2]  z←x,30+4?29
[3]  w←?⍴z
[4]  r←2⍴' '
[5]  r[1]←⊂(3 0⍕z[w]),' ',k
[6]  r[2]←⊂(2 3⍴'no yes')[1+z[w]∈x;]
------------------------------------------------------------
[ 0]  r←geracript;n;k
[ 1] vorta:
[ 2]  →(3=?3)/primo
[ 3]  k←77+?299
[ 4]  →(0=10|k)/vorta
[ 5]  →(k>120)/menor
[ 6]  n←3+?6
[ 7]  →gera
[ 8] primo:k←PRIMOS2[?40]
[ 9] menor:
[10]  n←3+?3
```

```
[11] gera:
[12]  r←n,(k*n),k
-------------------------------------------------------------
[ 0]  r←geratsp;l;c;m;res
[ 1]  l←(5+?2)
[ 2]  c←7+?3
[ 3]  m←(l,c)⍴(l×c)⍴?1000⍴20
[ 4]  LIMITE←c
[ 5]  MAT←m,[1]m,[1]m,[1]m,[1]m
[ 6]  MAXATE←999999
[ 7]  ULTROT←''
[ 8]  res←''somatsp((2×l)+1),1,0
[ 9]  r←3⍴0
[10]  r[1]←⊂m
[11]  r[2]←⊂res
[12]  r[3]←⊂1+l|ULTROT-1
[13]  l←⎕EX'LIMITE'
[14]  l←⎕EX'MAT'
[15]  l←⎕EX'MAXATE'
[16]  l←⎕EX'ULTROT'
-------------------------------------------------------------
[ 0]  r←a inarvore elem;li;ipivot;prof
[ 1]  r←a
[ 2]  li←1↑(r[;1]=0)/⍳1↑⍴r
[ 3]  r[li;]←¯1 ¯1,elem,0,0,0,0
[ 4]  ipivot←1 ⋄ prof←1
[ 5] testa:→(elem>r[ipivot;3])/maior
[ 6] menor:→(¯1=r[ipivot;1])/meok
[ 7]  prof←prof+1
[ 8]  →(ipivot=ipivot←r[ipivot;1])/testa
[ 9] meok:r[ipivot;1]←li
[10]  →fim
[11] maior:→(¯1=r[ipivot;2])/maok
[12]  prof←prof+1
[13]  →(ipivot=ipivot←r[ipivot;2])/testa
[14] maok:r[ipivot;2]←li
[15] fim:r[li;5]←ipivot
[16]  r[li;4]←prof
-------------------------------------------------------------
[0]  r←limpa
[1]  r←⎕EX 20 3⍴'A01A02A03A04A05A06A07A08A09A10A11A12A13A14A15A16A17A18A19A20'
[2]  r←⎕EX 20 3⍴'A21A22A23A24A25A26A27A28A29A30A31A32A33A34A35A36A37A38A39A40'
[3]  r←⎕EX 20 3⍴'A41A42A43A44A45A46A47A48A49A50A51A52A53A54A55A56A57A58A59A60'
[4]  r←⎕EX 10 5⍴'ONDE ONDE1PAI  ONDE2'
[5]  r←⎕EX 2 10⍴'PPL       PPVELHO   '
-------------------------------------------------------------
[0]  r←ondeta x;en;li;co
[1]  en←(,pils)⍳x
[2]  li←1+⌊(en-1)÷25
[3]  co←1+25|en-1
[4]  r←li,co
-------------------------------------------------------------
[ 0]  r←paarvore3 x;g;t;i;lixo
[ 1] ⍝ x e a saida de crarvore; r e a arvore parentizada. * e' ausencia
[ 2]  g←300
[ 3]  r←((t←1↑⍴x),g)⍴' '
[ 4]  i←1
[ 5] l1:→(i>t)/fimf1
[ 6]  →((x[i;1]≠¯1)∨(x[i;2]≠¯1))/soma
[ 7]  r[i;]←g↑'(',(3 0⍕x[i;3]),'() ())'
[ 8] soma:→(i=i←i+1)/l1
[ 9] fimf1:i←t
[10] l2:→(i<1)/fim
```

```
[11]  →((x[i;1]=¯1)∧(x[i;2]=¯1))/pula
[12]  →(x[i;2]=¯1)/esq
[13]  →(x[i;1]=¯1)/dir
[14] amb:r[i;]←g↑corta'(',(3 0⍕x[i;3]),(,r[x[i;1];]),,r[x[i;2];],')'
[15]  →pula
[16] dir:r[i;]←g↑corta'(',(3 0⍕x[i;3]),'()',(,r[x[i;2];]),')'
[17]  →pula
[18] esq:r[i;]←g↑corta'(',(3 0⍕x[i;3]),(,r[x[i;1];]),'())'
[19] pula:→(i=i←i-1)/l2
[20] fim:
[21]  r←corta r[1;]
[22]  lixo←limpa
-------------------------------------------------------------
[ 0]  r←preprocarv x;i
[ 1]  i←1
[ 2]  r←(ρx)ρ' '
[ 3]  x←(x≠' ')/x
[ 4]  x←x,6ρ'='
[ 5] t1:→(i>ρx)/fim
[ 6]  →(x[i]='=')/fim
[ 7]  →((x[i]∈'0123456789')∧(x[i+1]='(')∧(x[i+2]=')')∧(x[i+3]='(')∧(x[i+4]=')'))/tt
[ 8]  r[i]←x[i]
[ 9] soma:
[10]  i←i+1
[11]  →t1
[12] tt:→((x[i-1]∈'0123456789')∧(x[i-2]∈'0123456789'))/menos2
[13]  →(x[i-1]∈'0123456789')/menos1
[14] soum:
[15]  r[i+0 1 2 3 4]←5 0⍕-⍎x[i]
[16]  i←i+5
[17]  →t1
[18] menos1:
[19]  r[i+¯1 0 1 2 3 4]←6 0⍕-(10×⍎x[i-1])+⍎x[i]
[20]  i←i+5
[21]  →t1
[22] menos2:
[23]  r[i+¯2 ¯1 0 1 2 3 4]←7 0⍕-(100×⍎x[i-2])+(10×⍎x[i-1])+⍎x[i]
[24]  i←i+5
[25]  →t1
[26] fim:r←(r≠' ')/r
-------------------------------------------------------------
[ 0]  r←procesarv x;i;tab;ct
[ 1]  i←1
[ 2]  ct←0
[ 3]  tab←0 2ρ0
[ 4] t1:→(i>ρx)/aca
[ 5]  →(x[i]='(')/abre
[ 6]  →(x[i]=')')/fech
[ 7]  →(x[i]∈'¯1234567890')/nume
[ 8] soma:i←i+1
[ 9]  →t1
[10] abre:ct←ct+1
[11]  →soma
[12] fech:ct←ct-1
[13]  →soma
[14] nume:
[15]  →(x[i+1]='(')/leza
[16]  →(x[i+2]∈'0123456789')/maidois
[17]  →(x[i+1]∈'0123456789')/maisum
[18] leza:tab←tab,[1]1 2ρ(⍎x[i]),ct
[19]  →soma
[20] maisum:
[21]  →(x[i]≠'¯')/zaica
```

```
[22]  tab←tab,[1]1 2ρ(-⍎x[i+1]),ct
[23]  i←i+1
[24]  →soma
[25] zaica:
[26]  tab←tab,[1]1 2ρ((10×⍎x[i])+⍎x[i+1]),ct
[27]  i←i+1
[28]  →soma
[29] maidois:
[30]  →(x[i]='¯')/zica
[31]  tab←tab,[1]1 2ρ((100×⍎x[i])+(10×⍎x[i+1])+⍎x[i+2]),ct
[32]  i←i+2
[33]  →soma
[34] zica:
[35]  tab←tab,[1]1 2ρ(-(10×⍎x[i+1])+⍎x[i+2]),ct
[36]  i←i+2
[37]  →soma
[38] aca:r←tab
------------------------------------------------------------
[ 0]  r←rodaexemplostsp x;l;c;m;res
[ 1]  l←1↑ρx
[ 2]  c←1↓ρx
[ 3]  m←x
[ 4]  LIMITE←c
[ 5]  MAT←m,[1]m,[1]m,[1]m,[1]m
[ 6]  MAXATE←999999
[ 7]  ULTROT←''
[ 8]  res←''somatsp((2×l)+1),1,0
[ 9]  r←3ρ0
[10]  r[1]←⊂m
[11]  r[2]←⊂res
[12]  r[3]←⊂1+l|ULTROT-1
[13]  l←⎕EX'LIMITE'
[14]  l←⎕EX'MAT'
[15]  l←⎕EX'MAXATE'
[16]  l←⎕EX'ULTROT'
------------------------------------------------------------
[ 0]  r←ro somatsp p;xx
[ 1]  →(p[2]>LIMITE)/fim
[ 2]  xx←p[3]+MAT[p[1];p[2]]
[ 3]  ro←ro,p[1]
[ 4]  r←ro somatsp(p[1]-1),(p[2]+1),xx
[ 5]  r←ro somatsp(p[1]),(p[2]+1),xx
[ 6]  r←ro somatsp(p[1]+1),(p[2]+1),xx
[ 7]  →0
[ 8] fim:→(p[3]≥MAXATE)/quica
[ 9]  MAXATE←p[3]
[10]  ULTROT←ro
[11] quica:
[12]  r←MAXATE
------------------------------------------------------------
[ 0]  opesq vivom50a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixonol;relat;resp;resu;upag;x
      k;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←0 ⋄ EVENTO←'PLm50   '
[ 5]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[ 8]  FOLHALAm50←ajusta80 FOLHALAm50
[ 9]  relat←((2+1↑ρylu),1 0+ρFOLHALAm50)ρ' '
[10]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
```

```
[11]  xk←1 ⋄ resu←0 42ρ' '
[12] testa:→(xk>1↑ρylu)/fim
[13]  esse←18 80ρ' '
[14]  f←FOLHALAm50
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[22]  esse[17;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[18;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25]  zzz←geraapara
[26]  esse[8;]←80↑⊃zzz[1]
[27]  resp←(3 0⍕resp),'-',4↑,⊃zzz[2]
[28]  zzz←geracript
[29]  esse[9;]←80↑(4 0⍕zzz[1]),20 0⍕zzz[2]
[30]  resp←resp,8 0⍕zzz[3]
[31]  zzz←geratsp
[32]  esse[9+⍳7;]←7 80↑5 0⍕⊃zzz[1]
[33]  resp←resp,'  ',(20↑2 0⍕⊃zzz[3]),4 0⍕⊃zzz[2]
[34]  resu←resu,[1]1 42ρresp
[35]  acuja←(f[;2]='#')/⍳1↑ρf
[36]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[37]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\newpage'
[38]  ⎕←(⍕xk←xk+1),'-'
[39]  →testa
[40] fim:
[41]  upag←(1 0+ρf)ρ' '
[42]  →(1=≡n)/elafa
[43]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[44]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[45]  upag[2+⍳1↑ρresu;]←((1↑ρresu),80)↑resu
[46]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[47]  →terminando
[48] elafa:
[49]  aaa←(ylu,(((1↑ρylu),4)ρ' 0.0'),0 4↓resu)
[50]  aaa[1;35 36]←2 0⍕CORRECAO
[51]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[53] terminando:
[54]  upag[1↑ρupag;]←(1↓ρupag)↑'\end{document}'
[55]  relat[1↑ρrelat;;]←upag
[56]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.t
      ex'
[57]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[58]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivom52

```
[0]  r←andahoriz mat;x;z
[1] ⍝ mat e a saida de cravore
[2]  x←(mat[;4]×1000)+mat[;3]
[3]  z←⍋x
[4]  r←mat[z;3]
-------------------------------------------------------------
[0]  r←a ate b
[1]  r←a,a+⍳b-a
-------------------------------------------------------------
```

```
[ 0]  r←corta3 x;i
[ 1]  r←0 60⍴' '
[ 2]  i←1
[ 3] t1:→(50>⍴x)/fim
[ 4]  →(i<50)/soma
[ 5] t2:→(x[i]=')')/aqui
[ 6]  i←i+1
[ 7]  →t2
[ 8] aqui:r←r,[1]1 60⍴60↑i↑x
[ 9]  x←i↓x
[10]  i←1
[11]  →t1
[12] soma:i←i+1
[13]  →t1
[14] fim:
[15]  r←r,[1]1 60⍴60↑x
------------------------------------------------------------
[ 0]  r←crarvore elems;aspa;i;ealfa
[ 1] ⍝ cria uma arvore para desenho com elems / p.kantek / v2.1
[ 2] ⍝ col [1] = &fe
[ 3] ⍝ col [2] = &fd
[ 4] ⍝ col [3] = conteudo
[ 5] ⍝ col [4] = profundidade
[ 6] ⍝ col [5] = &pai
[ 7] ⍝ col [6] = largura do bloco grafico
[ 8] ⍝ col [7] = 0  ≠se bloco grafico ja foi criado (1=significa que ele e o
[ 9] ⍝           raiz do bloco. 2=ja foi usado para construir outro mais
[10] ⍝           acima
[11]  r←((⍴elems),7)⍴0 ⋄ ealfa←1 ⋄ aspa←''''
[12]  →(isnum elems)/nume
[13]  ealfa←¯1
[14]  elems←1000+⎕AV⍳elems
[15] nume:i←2 ⋄ r[1;1 2 3]←¯1,¯1,elems[1]
[16] inica:→(i>⍴elems)/acabou
[17]  r←r inarvore elems[i]
[18]  →(i=i←i+1)/inica
[19] acabou:
[20]  i←1
[21] conta:→(i>⍴elems)/mesmo
[22]  →((r[i;1]≠¯1)∨(r[i;2]≠¯1))/pula
[23]  →(ealfa=¯1)/letra
[24]  ⍞'A',('05'⍕i),'  ←',aspa,'<',(formata elems[i]),'>',aspa
[25]  →indo
[26] letra:⍞'A',('05'⍕i),'  ←',aspa,'(  ⊃',⎕AV[elems[i]-1000],'  ⊂)',aspa
[27] indo:r[i;7]←1
[28]  r[i;6]←3
[29] pula:→(i=i←i+1)/conta
[30] mesmo:
------------------------------------------------------------
[ 0]  r←e de2f d;lin;col
[ 1]  →(2=⍴⍴e)/ee
[ 2]  e←(1,⍴e)⍴e
[ 3] ee:→(2=⍴⍴d)/dd
[ 4]  d←(1,⍴d)⍴d
[ 5] dd:lin←(1↑⍴e)⌈1↑⍴d
[ 6] ⍝ col  ←(3+1  ↓  ⍴e)  ⌊3+1  ↓  ⍴d
[ 7]  col←(1↓⍴e)⌈1↓⍴d
[ 8]  e←(lin,col)↑e ⋄ d←(lin,col)↑d
[ 9] ⍝ e  ←(lin,(1  ↓  ⍴e))  ↑e   ⋄ d  ←(lin,(1  ↓  ⍴d))  ↑d
[10]  r←e,' ',d
[11]  r←((4,1↓⍴r)⍴' '),[1]r
[12]  r[1;((meio 1↓⍴r)-3)+⍳5]←PAI
[13]  r[2;((meio 1↓⍴r)-2)+⍳3]←'_&_'
```

```
[14]  r[3;(ONDE1)ate ¯1+meio 1↓⍴r]←'_'
[15]  r[3;(1+meio 1↓⍴r)ate(1+ONDE2+1↓⍴e)-1]←'_'
[16]  r[3;meio 1↓⍴r]←'#'
[17]  r[3;ONDE1]←'%'
[18]  r[3;(1↓⍴e)+1+ONDE2]←'!'
[19]  r[4;ONDE1+¯1 0 1]←r[4;1+(1↓⍴e)+ONDE2+¯1 0 1]←'_#_'
-------------------------------------------------------------
[ 0]  r←a dearvore b;prim;paiprim;filhos;fe;fd;X;x;aspa;ois;carac;nivel;larg
[ 1] ⍝ 'carac=1/ascii/2=apld/3=apls/4=hdup/5=vdup   niveis=1/2/3/4' v.2.1
[ 2]  r←b
[ 3]  carac←a[1] ⋄ nivel←a[2] ⋄ larg←a[3]
[ 4]  aspa←''''
[ 5] inicio:→(1=r[1;7])/acabou
[ 6]  ois←(r[;7]=1)/⍳1↑⍴r
[ 7]  →(1=⍴ois)/sotem1
[ 8]  prim←1↑(r[ois;4]=⌈/r[ois;4])/ois
[ 9]  →voltaj
[10] sotem1:prim←ois
[11] voltaj:paiprim←r[prim;5]
[12]  →(r[paiprim;3]>1000)/le
[13]  ⍎'PAI←',aspa,'<',(formata r[paiprim;3]),'>',aspa
[14]  →indo
[15] le:⍎'PAI←',aspa,'(⊃',⎕AV[r[paiprim;3]-1000],'⊂)',aspa
[16] indo:→(2=⍴filhos←((r[;5]=paiprim)∧(r[;7]=1))/⍳1↑⍴r)/tem2
[17] tem1:→(r[paiprim;1]=prim)/efe
[18] efd:fd←⍎'A','05'⍕prim
[19]  ONDE←r[prim;6]
[20]  ⍎'A',('05'⍕paiprim),'←defd fd'
[21]  r[paiprim;7]←1 ⋄ r[prim;7]←2 ⋄ r[paiprim;6]←3
[22]  →inicio
[23] efe:
[24]  fe←⍎'A','05'⍕prim
[25]  ONDE←r[prim;6]
[26]  ⍎'X←1↓⍴A',('05'⍕paiprim),'←defe fe'
[27]  r[paiprim;7]←1 ⋄ r[prim;7]←2 ⋄ r[paiprim;6]←X-2
[28]  →inicio
[29] tem2:
[30]  →(r[filhos[1];3]>r[filhos[2];3])/ummaior
[31]  x←filhos[1] ⋄ filhos[1]←filhos[2] ⋄ filhos[2]←x
[32] ummaior:
[33]  ONDE1←r[filhos[2];6] ⋄ ONDE2←r[filhos[1];6]
[34]  fe←⍎'A','05'⍕filhos[2]   ⍝1
[35]  fd←⍎'A','05'⍕filhos[1]   ⍝2
[36]  ⍎'X←1↓⍴A',('05'⍕paiprim),'←fe de2f fd'
[37]  r[paiprim;7]←1 ⋄ r[filhos[1];7]←r[filhos[2];7]←2 ⋄ r[paiprim;6]←meio X
[38]  →inicio
[39] acabou:MAT←r   ⍝ aqui esta a matriz de entrada devidamente ja processada
[40]  →(larg=1)/jump
[41]  A01←(~∧/[1]((A01=' ')∨(A01='_')))/[2]A01
[42] jump:A01←'∘ 'edit A01
[43]  A01←'⊃ 'edit A01
[44]  A01←'⊂ 'edit A01
[45]  r←carac edita A01
[46]  x←limpa
[47]  →(nivel=4)/0
[48]  →(nivel=3)/tres
[49]  →(nivel=2)/dois
[50]  →(nivel=1)/um
[51]  'erro de nivel'
[52]  →fin
[53] um:r←((1↑⍴r)⍴1 0)/[1]r
[54]  →fin
[55] dois:r←((1↑⍴r)⍴1 1 1 0)/[1]r
```

```
[56]  →fin
[57] tres:r←((1↑⍴r)⍴1 0 1 1)/[1]r
[58]  →fin
[59] fin:
------------------------------------------------------------
[ 0]  r←defd x
[ 1]  →(2=⍴⍴x)/esim
[ 2]  x←(1,⍴x)⍴x
[ 3] esim:r←((1↑⍴x),-(1↓⍴x)+4)↑x
[ 4]  r←((4,1↓⍴r)⍴' '),[1]r
[ 5]  r[1;⍳5]←PAI
[ 6]  r[2;2 3 4]←'_&_'
[ 7]  r[3;3]←'$'
[ 8]  r[3;4+ONDE]←'!'
[ 9]  r[3;4 ate 3+ONDE]←'_'
[10]  r[4;4+ONDE+¯1 0 1]←'_#_'
------------------------------------------------------------
[ 0]  r←defe x
[ 1]  →(2=⍴⍴x)/esim
[ 2]  x←(1,⍴x)⍴x
[ 3] esim:r←((1↑⍴x),(1↓⍴x)+4)↑x
[ 4]  r←((4,1↓⍴r)⍴' '),[1]r
[ 5]  r[1;((1↓⍴r)-5)+⍳5]←PAI
[ 6]  r[2;((1↓⍴r)-4)+⍳3]←'_&_'
[ 7]  r[3;(1↓⍴r)-2]←'@'
[ 8]  r[3;(ONDE)ate((1↓⍴r)-3)]←'_'
[ 9]  r[3;ONDE]←'%'
[10]  r[4;ONDE+¯1 0 1]←'_#_'
------------------------------------------------------------
[ 0]  r←qual edita tudo
[ 1]  →(qual=1)/ascii
[ 2]  →(qual=2)/apldu
[ 3]  →(qual=3)/aplsi
[ 4]  →(qual=4)/aplds
[ 5]  →(qual=5)/aplsd
[ 6]  'erro'
[ 7]  →0
[ 8] ⍝              |                          |          |
[ 9] ⍝ %=+--   #=--+--   _=---   !=--+   $=+--   @=--+   &=--+--
[10] ⍝   |                              |                        |
[11] ascii:
[12]  r←'%+'edit tudo
[13]  r←'#+'edit r
[14]  r←'_-'edit r
[15]  r←'!+'edit r
[16]  r←'$+'edit r
[17]  r←'@+'edit r
[18]  r←'&+'edit r
[19]  →0
[20] apldu:
[21]  r←('%',⎕AV[202])edit tudo
[22]  r←('#',⎕AV[203])edit r
[23]  r←('_',⎕AV[206])edit r
[24]  r←('!',⎕AV[188])edit r
[25]  r←('$',⎕AV[201])edit r
[26]  r←('@',⎕AV[189])edit r
[27]  r←('&',⎕AV[204])edit r
[28]  →0
[29] aplsi:
[30]  r←('%',⎕AV[214])edit tudo
[31]  r←('#',⎕AV[208])edit r
[32]  r←('_',⎕AV[206])edit r
[33]  r←('!',⎕AV[185])edit r
```

```
[34]  r←('$',⎕AV[213])edit r
[35]  r←('@',⎕AV[191])edit r
[36]  r←('&',⎕AV[210])edit r
[37]  →0
[38] aplds:
[39]  r←('%',⎕AV[219])edit tudo
[40]  r←('#',⎕AV[194])edit r
[41]  r←('_',⎕AV[197])edit r
[42]  r←('!',⎕AV[192])edit r
[43]  r←('$',⎕AV[193])edit r
[44]  r←('@',⎕AV[218])edit r
[45]  r←('&',⎕AV[195])edit r
[46]  →0
[47] aplsd:
[48]  r←('%',⎕AV[215])edit tudo
[49]  r←('#',⎕AV[209])edit r
[50]  r←('_',⎕AV[197])edit r
[51]  r←('!',⎕AV[184])edit r
[52]  r←('$',⎕AV[212])edit r
[53]  r←('@',⎕AV[190])edit r
[54]  r←('&',⎕AV[211])edit r
[55]  →0
-------------------------------------------------------------
[0]  r←emordem x
[1]  r←∧/(⍳⍴x)=⍋⍋x
-------------------------------------------------------------
[0]  r←a escolheskew b;x;y
[1]  x←a poeskew b
[2]  y←b poeskew a
[3]  r←x⌈y
-------------------------------------------------------------
[ 0]  r←formata x
[ 1]  →(x>1000)/t4
[ 2]  →(x>99)/t3
[ 3]  →(x>9)/t2
[ 4] t1:r←'∘',(1 0⍕x),'∘'
[ 5]  →0
[ 6] t2:r←'∘',2 0⍕x
[ 7]  →0
[ 8] t3:r←3 0⍕x
[ 9]  →0
[10] t4:r←'∘',⎕AV[x-1000],'∘'
[11]  →0
-------------------------------------------------------------
[0]  r←gerapanq;x;z;d
[1]  x←5+?3
[2]  z←x?x
[3]  d←resolpanq z
[4]  r←2⍴0
[5]  r[1]←⊂z
[6]  r[2]←⊂d
-------------------------------------------------------------
[ 0]  r←geratrees;tam;ru;x;a;res;b;i;j;ra
[ 1]  tam←12
[ 2]  ra←''
[ 3]  x←tam?20
[ 4]  a←crarvore x
[ 5]  res←andahoriz a
[ 6]  b←res[tam?tam]
[ 7]  i←1
[ 8] t0:→(i>tam)/acabou
[ 9]  j←1
[10]  ru←''
```

```
[11] t3:
[12]  →(a[j;3]=b[i])/ufa
[13]  →(a[j;3]<b[i])/esquerda
[14] direita:ru←ru,'L'
[15]  j←a[j;1]
[16]  →t3
[17] esquerda:ru←ru,'R'
[18]  j←a[j;2]
[19]  →t3
[20] ufa:ra←ra,'(',(⍕b[i]),',',ru,') '
[21]  i←i+1
[22]  →t0
[23] acabou:ra←ra,' ()'
[24]  r←3⍴' '
[25]  r[1]←⊂corta3 ra
[26]  r[2]←⊂res
[27]  r[3]←⊂1 2 4 dearvore a
-------------------------------------------------------------
[ 0]  r←geratubo;a;b;c
[ 1]  →(2=?2)/fazgr
[ 2] volta:a←(20+?70)÷10
[ 3]  b←(20+?70)÷10
[ 4]  c←a resoltubo b
[ 5]  →(4=+/'skew'=¯4↑c)/achou
[ 6]  →volta
[ 7] fazgr:
[ 8] voila:a←(20+?70)÷10
[ 9]  b←(20+?70)÷10
[10]  c←a resoltubo b
[11]  →(4=+/'grid'=¯4↑c)/achou
[12]  →voila
[13] achou:
[14]  r←3⍴' '
[15]  r[1]←⊂6 1⍕a
[16]  r[2]←⊂6 1⍕b
[17]  r[3]←⊂c
-------------------------------------------------------------
[ 0]  r←a inarvore elem;li;ipivot;prof
[ 1]  r←a
[ 2]  li←1↑(r[;1]=0)/⍳1↑⍴r
[ 3]  r[li;]←¯1 ¯1,elem,0,0,0,0
[ 4]  ipivot←1 ⋄ prof←1
[ 5] testa:→(elem>r[ipivot;3])/maior
[ 6] menor:→(¯1=r[ipivot;1])/meok
[ 7]  prof←prof+1
[ 8]  →(ipivot=ipivot←r[ipivot;1])/testa
[ 9] meok:r[ipivot;1]←li
[10]  →fim
[11] maior:→(¯1=r[ipivot;2])/maok
[12]  prof←prof+1
[13]  →(ipivot=ipivot←r[ipivot;2])/testa
[14] maok:r[ipivot;2]←li
[15] fim:r[li;5]←ipivot
[16]  r[li;4]←prof
-------------------------------------------------------------
[0]  r←limpa
[1]  r←⎕EX 20 3⍴'A01A02A03A04A05A06A07A08A09A10A11A12A13A14A15A16A17A18A19A20'
[2]  r←⎕EX 20 3⍴'A21A22A23A24A25A26A27A28A29A30A31A32A33A34A35A36A37A38A39A40'
[3]  r←⎕EX 20 3⍴'A41A42A43A44A45A46A47A48A49A50A51A52A53A54A55A56A57A58A59A60'
[4]  r←⎕EX 10 5⍴'ONDE ONDE1PAI  ONDE2'
[5]  r←⎕EX 2 10⍴'PPL       PPVELHO   '
-------------------------------------------------------------
[0]  r←meio x
```

```
[1]  r←⌈x÷2
-------------------------------------------------------------
[ 0]  r←a poeskew b;tubos;sobrahorizontal;qthoriz;ct
[ 1]  tubos←0
[ 2]  sobrahorizontal←a-⌊a
[ 3]  qthoriz←⌊a
[ 4]  ct←(3÷4)×0.5
[ 5] primeirafileira:tubos←tubos+qthoriz
[ 6]  b←b-0.5+ct÷2 ⍝0.9330127
[ 7] volta:
[ 8] ⍝ 'b=',⍕b
[ 9]  →(b<ct)/terminou     ⍝ 0.8660254
[10]  →(b<ct×2)/ultimafileira   ⍝ 0.8660254
[11]  →(sobrahorizontal≥0.5)/maisum
[12] menosum:
[13]  tubos←tubos+qthoriz
[14]  tubos←tubos+qthoriz-1
[15]  b←b-ct×2
[16]  →volta
[17] maisum:
[18]  tubos←tubos+2×qthoriz
[19]  b←b-ct×2
[20]  →volta
[21] ultimafileira:
[22]  →(sobrahorizontal≥0.5)/ultmaisum
[23] ultmenosum:
[24]  tubos←tubos+qthoriz-1
[25]  b←b-ct
[26]  →terminou
[27] ultmaisum:
[28]  tubos←tubos+qthoriz
[29]  b←b-ct
[30] terminou:r←tubos
[31] ⍝'sobra de b=',⍕b
-------------------------------------------------------------
[ 0]  r←resolpanq x;i;im
[ 1]  r←⍳0
[ 2]  →(emordem x)/acabou
[ 3]  i←⍴x
[ 4] t1:→(i<1)/acabou
[ 5]  im←(i↑x)⍳⌈/i↑x
[ 6]  →(im=1)/ufa
[ 7]  x←((1+⍴x)-im)⊖x
[ 8]  r←r,(1+⍴x)-im
[ 9]  →(emordem x)/acabou
[10] ufa:x←((1+⍴x)-i)⊖x
[11]  r←r,(1+⍴x)-i
[12]  →(emordem x)/acabou
[13]  i←i-1
[14]  →(1=⍴r)/t1
[15]  →(r[⍴r]=r[¯1+⍴r])/tira
[16]  →t1
[17] tira:r←¯2↓r
[18]  →t1
[19] acabou:r←r,0
-------------------------------------------------------------
[0]  r←a resoltubo b;gr;sk
[1]  gr←(⌊a)×(⌊b)
[2]  sk←a escolheskew b
[3]  →(gr≥sk)/g
[4]  →s
[5] g:r←(⍕gr),' grid'
[6]  →0
```

```
[7] s:
[8]  r←(⍒sk),' skew'
-------------------------------------------------------------
[0]  r←a turnar v;z
[1]  →(a=0)/erro
[2] ⍝ ' a=',⍕a
[3] ⍝ ' v=',⍕v
[4]  z←(⍴v)-a
[5]  r←(⌽(z+1)↑v),(z+1)↓v
[6]  →0
[7] erro:'deu xabu'
-------------------------------------------------------------
[ 0]  opesq vivom52a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixonol;relat;resp;resu;upag;x
      k;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←0 ⋄ EVENTO←'PLm52   '
[ 5]  dhx←2 10⍴('05/05/0005'⍒+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍒+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍒⍳n
[ 8]  FOLHALAm52←ajusta80 FOLHALAm52
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAm52)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[11]  xk←1 ⋄ resu←0 80⍴' '
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←14 80⍴' '
[14]  f←FOLHALAm52
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍒VERSAOa←1.01
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍒resp←xk),' ',opesq
[22]  esse[13;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[14;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25]  zzz←gerapanq
[26]  esse[8;]←80↑⍒⊃zzz[1]
[27]  resp←(3 0⍒resp),'-',30↑2 0⍒⊃zzz[2]
[28]  zzz←geratubo
[29]  esse[9;]←80↑(⊃zzz[1]),' ',⊃zzz[2]
[30]  resp←resp,10↑⊃zzz[3]
[31]  zzz←geratrees
[32]  esse[10 11 12;]←3 80↑⊃zzz[1]
[33]  resp←resp,36↑3 0⍒⊃zzz[2]
[34]  resu←resu,[1]1 80⍴resp
[35]  acuja←(f[;2]='#')/⍳1↑⍴f
[36]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[37]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[38]  ⍞←(⍒xk←xk+1),'-'
[39]  →testa
[40] fim:
[41]  upag←(1 0+⍴f)⍴' '
[42]  →(1=≡n)/elafa
[43]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[44]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[45]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑resu
[46]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[47]  →terminando
[48] elafa:
```

```
[49]  aaa←(ylu,(((1↑ρylu),4)ρ' 0.0'),0 4↓resu)
[50]  aaa[1;35 36]←2 0⍕CORRECAO
[51]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍬∧⍀⍬EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[53] terminando:
[54]  upag[1↑ρupag;]←(1↓ρupag)↑'⍀end{document}'
[55]  relat[1↑ρrelat;;]←upag
[56]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)ΔFM'c:⍀apl2⍀',((~⍬∧⍀⍬EVENTO=' ')/EVENTO),'.t
      ex'
[57]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[58]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivom54

```
[ 0]  r←eprimo x;div
[ 1]  div←3
[ 2]  r←1
[ 3]  →((2=x)∨(x=1))/termina
[ 4]  →(0=2|x)/naoe
[ 5] testa:→(div>⌊x*0.5)/termina
[ 6]  →(0=div|x)/naoe
[ 7]  div←div+1
[ 8]  →testa
[ 9] naoe:r←0
[10] termina:
------------------------------------------------------------
[ 0]  r←fazidcode alfa;uni;xx;i;vv;rr;qual;idx
[ 1]  qual←alfa
[ 2]  uni←alfa[⎕AV⍋alfa]
[ 3]  xx←uni[permutationsρuni]
[ 4]  i←2
[ 5]  vv←1
[ 6] t1:→(i>1↑ρxx)/fim
[ 7]  →(1=∨/∧/(((i-1),1↓ρxx)ρxx[i;])=((i-1),1↓ρxx)↑xx)/pula
[ 8]  vv←vv,1
[ 9]  →junta
[10] pula:
[11]  vv←vv,0
[12] junta:i←i+1
[13]  →t1
[14] fim:
[15]  rr←vv/[1]xx
[16]  idx←(∧/((ρrr)ρqual)=rr)/⍳1↑ρrr
[17]  →(idx=1↑ρrr)/naotem
[18]  r←rr[idx+1;]
[19]  →0
[20] naotem:r←'no successor'
------------------------------------------------------------
[ 0]  r←fazpermalex universo;uni;xx;i;vv;rr;qual
[ 1]  qual←universo
[ 2]  uni←universo[⎕AV⍋universo]
[ 3]  xx←uni[permutationsρuni]
[ 4]  i←2
[ 5]  vv←1
[ 6] t1:→(i>1↑ρxx)/fim
[ 7]  →(1=∨/∧/(((i-1),1↓ρxx)ρxx[i;])=((i-1),1↓ρxx)↑xx)/pula
[ 8]  vv←vv,1
[ 9]  →junta
[10] pula:
[11]  vv←vv,0
[12] junta:i←i+1
```

```
[13]  →t1
[14] fim:
[15]  rr←vv/[1]xx
[16]  r←(∧/((ρrr)ρqual)=rr)/ι1↑ρrr
------------------------------------------------------------
[0]  r←gerafatfat;x;y
[1]  x←40+?50
[2]  y←resolfatfat x
[3]  r←2ρ0
[4]  r[1]←⊂⍕x
[5]  r[2]←⊂⍕y
------------------------------------------------------------
[ 0]  r←gerafeio;primos1;primos2;num;qua;x
[ 1]  r←2ρ' '
[ 2]  primos1←2 3 5
[ 3]  primos2←7 11 13 17 19
[ 4]  num←40+?20
[ 5]  qua←(primos1[2?3]),primos2[1?5]
[ 6]  qua←qua[⍋qua]
[ 7]  x←qua numfeio num
[ 8]  r[1]←⊂⍕qua,num
[ 9]  r[2]←⊂⍕x[ρx]
------------------------------------------------------------
[ 0]  r←geraidcode;a;alfa;x
[ 1]  a←'aaabbbcccdddeeefffgggggggghhhhhhhhiiiiiii'
[ 2]  alfa←a[6?ρa]
[ 3]  →(3=?3)/naotem
[ 4] volta:x←fazidcode alfa
[ 5]  r←2ρ' '
[ 6]  r[1]←⊂alfa
[ 7]  r[2]←⊂⍕x
[ 8]  →0
[ 9] naotem:alfa←alfa[⍋AV⍋alfa]
[10]  →volta
------------------------------------------------------------
[0]  r←geraperma;a;alfa;x
[1]  a←'aaabbbcccdddeeefffgggggggghhhhhhhhiiiiiii'
[2]  alfa←a[6?ρa]
[3]  x←fazpermalex alfa
[4]  r←2ρ' '
[5]  r[1]←⊂alfa
[6]  r[2]←⊂⍕x
------------------------------------------------------------
[ 0]  r←geraprim qtos;i;c
[ 1]  r←ι0
[ 2]  i←1
[ 3]  c←2
[ 4] t1:→(c>qtos)/fim
[ 5]  →(eprimo c)/esim
[ 6]  c←c+1
[ 7]  →t1
[ 8] esim:r←r,c
[ 9]  c←c+1
[10]  i←i+1
[11]  →t1
[12] fim:
------------------------------------------------------------
[ 0]  r←inds x;z;t;y;i
[ 1]  z←(((ρx)*ρx),ρx)ρ0
[ 2]  t←ι0
[ 3]  i←1
[ 4] t1:→(i>ρx)/fim
[ 5]  t←t,ι1↑ρx
```

```
[ 6]  t
[ 7]  y←(1↑⍴z)⍴t
[ 8]  y←y[⍋y]
[ 9]  z[;i]←((1↑⍴z),1)⍴y
[10]  i←i+1
[11]  →t1
[12] fim:
[13]  r←z
-------------------------------------------------------------
[ 0]  r←fats numfeio x;i;iaux
[ 1]  →(3≠⍴fats)/erro
[ 2]  i←2
[ 3]  r←,1
[ 4] volta:
[ 5]  →(x≤⍴r)/0
[ 6]  iaux←i
[ 7] v2:→(0≠fats[1]|i)/fez2
[ 8]  i←i÷fats[1]
[ 9]  →v2
[10] fez2:
[11] v3:
[12]  →(0≠fats[2]|i)/fez3
[13]  i←i÷fats[2]
[14]  →v3
[15] fez3:
[16] v5:
[17]  →(0≠fats[3]|i)/fez5
[18]  i←i÷fats[3]
[19]  →v5
[20] fez5:
[21]  →(1=i)/efeio
[22]  i←iaux+1
[23]  →volta
[24] efeio:r←r,iaux
[25]  i←iaux+1
[26]  →volta
[27] erro:'devem ser dados 3 primos'
-------------------------------------------------------------
[ 0]  z←permutations n;a;d;s
[ 1]  z←(n⌊1 1)⍴1
[ 2] l1:s←⍴z
[ 3]  d←s[2]+1
[ 4]  →(d>n)/fim
[ 5]  z←(s×d,1)⍴z
[ 6]  a←s[1]/⍳d
[ 7]  z←(-a)⌽d,a⌽z
[ 8]  →l1
[ 9] fim:z←z[⍋z;]
-------------------------------------------------------------
[ 0]  r←resolfatfat x;z;cz;xaux;j
[ 1]  z←geraprim x
[ 2]  cz←(⍴z)⍴0
[ 3] t1:xaux←x
[ 4]  →(xaux<1)/fim
[ 5]  j←1
[ 6] t2:→(j>⍴z)/ufa
[ 7] t3:→(0=z[j]|xaux)/diva
[ 8]  j←j+1
[ 9]  →t2
[10] diva:cz[j]←cz[j]+1
[11]  xaux←⌊xaux÷z[j]
[12]  →t3
[13] ufa:x←x-1
```

```
[14]  →t1
[15] fim:r←cz
------------------------------------------------------------
[ 0]  opesq vivom54a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixonol;relat;resp;resu;upag;x
      k;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←0 ⋄ EVENTO←'PLm54   '
[ 5]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 8]  FOLHALAm54←ajusta80 FOLHALAm54
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAm54)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[11]  xk←1 ⋄ resu←0 103⍴' '
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←13 80⍴' '
[14]  f←FOLHALAm54
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍎VERSAOa←1.01
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[22]  esse[12;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[13;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25]  zzz←gerafeio
[26]  esse[8;]←80↑⊃zzz[1]
[27]  resp←(3 0⍎resp),'-',5↑⊃zzz[2]
[28]  zzz←geraidcode
[29]  esse[9;]←80↑⊃zzz[1]
[30]  resp←resp,14↑,⊃zzz[2]
[31]  zzz←geraperma
[32]  esse[10;]←80↑⊃zzz[1]
[33]  resp←resp,5↑⊃zzz[2]
[34]  zzz←gerafatfat
[35]  esse[11;]←80↑⊃zzz[1]
[36]  resp←resp,75↑⊃zzz[2]
[37]  resu←resu,[1]1 103⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[41]  ⍞←(⍎xk←xk+1),'-'
[42]  →testa
[43] fim:
[44]  upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:
[52]  aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 4↓resu)
[53]  aaa[1;35 36]←2 0⍎CORRECAO
[54]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[55]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[56] terminando:
[57]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
```

```
[58]  relat[1↑⍴relat;;]←upag
[59]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)⍙FM'c:⍀apl2⍀',((~⍬∧⍀⍬EVENTO=' ')/EVENTO),'.t
      ex'
[60]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[61]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivom56

```
[ 0]  r←achaarea p;ar;i;po
[ 1] ⍝ esta funcao ainda esta subjudice...  , mas
[ 2] ⍝ aparentemente ela calcula a area de um pol?igono, dadas
[ 3] ⍝ pelas coordeanadas de seus vertices.
[ 4]  po←((0.5×⍴p),2)⍴p
[ 5]  po←po,[1]po[1;]
[ 6]  ar←0
[ 7]  i←1
[ 8] t1:→(i≥1↑⍴po)/fim
[ 9]  ar←ar+0.5×(po[i;1]×po[i+1;2])-po[i+1;1]×po[i;2]
[10]  i←i+1
[11]  →t1
[12] fim:
[13]  r←|ar
-------------------------------------------------------------
[ 0]  r←achaloop x;ini;fim;i;j
[ 1]  ini←1
[ 2]  fim←⍴x
[ 3] zero:
[ 4]  i←ini
[ 5]  j←i+1
[ 6] t1:→((x[j]=x[i])∧(x[j+1]=x[i+1])∧(x[j+2]=x[i+2]))/achou
[ 7]  j←j+1
[ 8]  →(j>¯4+fim)/denovo
[ 9]  →t1
[10] achou:j←j+1
[11]  i←i+1
[12]  →(x[j]≠x[i])/denovo
[13]  →(j>¯4+fim)/calculeloop
[14]  →achou
[15] denovo:ini←ini+1
[16]  →zero
[17] calculeloop:r←j-i
-------------------------------------------------------------
[ 0]  r←a divi b;res;aux;bux;iva;ic
[ 1]  aux←a
[ 2]  bux←b
[ 3]  res←(⍕⌊a÷b),'.'
[ 4]  ic←100
[ 5] t0:→((a×ic)>b)/t1
[ 6]  res←res,'0'
[ 7]  ic←ic×10
[ 8]  →t0
[ 9] t1:
[10]  →(400<⍴res)/fim
[11]  →(bux>aux)/vem1
[12]  res←res,⍕iva←⌊aux÷bux
[13] ⍝ 'aux=',(⍕aux),' bux=',(⍕bux),' iva=',⍕iva
[14]  aux←aux-(iva×bux)
[15]  →t1
[16] vem1:aux←aux×10
[17]  →(bux>aux)/vem2
[18]  →t1
```

```
[19] vem2:aux←aux×10
[20]  res←res,'0'
[21]  →t1
[22] fim:r←res
-------------------------------------------------------------
[0]  r←pon dponret ret;rr
[1] ⍝ recebe x,y-ponto dponret x1y1x2y2-definidora da reta
[2]  rr←eqreta ret
[3] ⍝ 'parametros da reta = ',⍕rr
[4]  r←((rr[1]×pon[1])+(rr[2]×pon[2])+rr[3])÷((rr[1]*2)+rr[2]*2)*0.5
-------------------------------------------------------------
[0]  r←eqreta x1y1x2y2;d;zza
[1] ⍝ recebe 4 pontos (x1y1x2y2) e devolve a,b,c em ax+by+c=0
[2]  r←3⍴0
[3]  zza←(x1y1x2y2[3]-x1y1x2y2[1])
[4]  →(zza=0)/zeros
[5]  d←(x1y1x2y2[4]-x1y1x2y2[2])÷zza
[6]  r←3⍴d,¯1,x1y1x2y2[2]-d×x1y1x2y2[1]
[7]  →0
[8] zeros:r←0 0 0
-------------------------------------------------------------
[ 0]  r←geracircu;ra;re;ras
[ 1] outro:
[ 2]  ras←10 2⍴5 4 7 3 2 1 0 8 9 5 5 7 6 3 9 7 1 3 7 4
[ 3]  ra←,ras[3?10;]
[ 4] ⍝ra←(3+?3),(¯7+?5),(?3),(4+?2),(3+?4),(¯6+?8)
[ 5]  re←resolcircu ra
[ 6]  →(6=+/re=6⍴0)/outro
[ 7]  r←2⍴0
[ 8]  r[1]←⊂ra
[ 9]  r[2]←⊂8 3⍴re
[10] ⍝ eq1
[11] ⍝ eq2
-------------------------------------------------------------
[ 0]  r←gerainter;x;z
[ 1]  →(2=?2)/cara
[ 2] novo:x←?8⍴20
[ 3]  z←resolinter x
[ 4]  →((z=0)∨(z=¯1))/novo
[ 5]  →termina
[ 6] cara:
[ 7] no:x←?8⍴20
[ 8]  z←resolinter x
[ 9]  →((z=1)∨(z=¯1))/no
[10]  →termina
[11] termina:
[12]  r←2⍴0
[13]  r[1]←⊂x
[14]  r[2]←⊂z
-------------------------------------------------------------
[ 0]  r←gerarepeti;x;y;z
[ 1] novo:x←(?100)
[ 2]  y←3+?100
[ 3]  z←achaloop x divi y
[ 4]  →(z=1)/novo
[ 5]  →(z<51)/feito
[ 6]  z←¯51
[ 7] feito:
[ 8]  r←2⍴0
[ 9]  r[1]←⊂x,y
[10]  r[2]←⊂z
-------------------------------------------------------------
[0]  r←pt pertinencia ret
```

```
[1]  r←(ret[1]≤pt[1])∧(pt[1]≤ret[3])∧(ret[2]≥pt[2])∧(pt[2]≥ret[4])
-------------------------------------------------------------
[ 0]  r←resolcircu p;m;abc;alf;zza
[ 1]  m←3 3⍴0
[ 2]  m[1;]←p[1],p[2],-+/p[1 2]*2
[ 3]  m[2;]←p[3],p[4],-+/p[3 4]*2
[ 4]  m[3;]←p[5],p[6],-+/p[5 6]*2
[ 5]  zza←3 3⍴m[;1 2],1
[ 6]  →((3=+/zza[1;]=zza[2;])∨(3=+/zza[1;]=zza[3;])∨(3=+/zza[2;]=zza[3;]))/zebra
[ 7]  abc←(m[;3])⌹zza
[ 8] ⍝ abc←(0.001<,abc)×abc
[ 9] ⍝abc
[10]  →(1000<⌈/abc)/zebra
[11]  eq2←'x∧2 + y∧2 +',(7 3⍕|abc[1]),'x + ',(7 3⍕|abc[2]),'y +',(8 3⍕|abc[3]),' = 0'
[12]  eq2[11]←'- +'[2+×abc[1]]
[13]  eq2[21]←'- +'[2+×abc[2]]
[14]  eq2[32]←'- +'[2+×abc[3]]
[15]  alf←((-abc[3])+((abc[1]÷2)*2)+((abc[2]÷2)*2))*0.5
[16]  eq1←'(x +',(7 3⍕|abc[1]÷2),')∧2 + (y +',(7 3⍕|abc[2]÷2),')∧2 = ',(8 3⍕|alf),'∧2'
[17]  eq1[4]←'- +'[2+×abc[1]]
[18]  eq1[21]←'- +'[2+×abc[2]]
[19]  r←(abc[1]÷2),(abc[2]÷2),alf,abc[1],abc[2],abc[3]
[20]  →0
[21] zebra:r←0 0 0 0 0 0
-------------------------------------------------------------
[ 0]  r←resolinter x;reta;xcalc;z;ycalc;aux
[ 1]  →(x[5]≤x[7])/bla1
[ 2]  aux←x[5]
[ 3]  x[5]←x[7]
[ 4]  x[7]←aux
[ 5] bla1:
[ 6]  →(x[8]≤x[6])/bla2
[ 7]  aux←x[8]
[ 8]  x[8]←x[6]
[ 9]  x[6]←aux
[10] bla2:
[11]  reta←eqreta x[⍳4]
[12]  →(3=+/reta=0 0 0)/zebra
[13]  →(x[1]>x[3])/maior
[14]  xcalc←x[1]
[15] t1:→(xcalc>x[3])/t40
[16]  ycalc←-((reta[1]×xcalc)+reta[3])÷reta[2]
[17]  z←(xcalc,ycalc)pertinencia x[4+⍳4]
[18] ⍝ z,xcalc,ycalc
[19]  →(z=1)/deu
[20]  xcalc←xcalc+0.1
[21]  →t1
[22] maior:
[23]  xcalc←x[3]
[24] t11:→(xcalc>x[1])/t41
[25]  ycalc←-((reta[1]×xcalc)+reta[3])÷reta[2]
[26]  z←(xcalc,ycalc)pertinencia x[4+⍳4]
[27]  →(z=1)/deu
[28]  xcalc←xcalc+0.1
[29]  →t11
[30] t40:
[31] t41:
[32]  r←0
[33]  →0
[34] deu:r←1
[35]  →0
[36] zebra:r←¯1
-------------------------------------------------------------
```

```
[ 0]  opesq vivom56a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixonol;relat;resp;resu;upag;x
      k;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←0 ⋄ EVENTO←'PLm56   '
[ 5]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 8]  FOLHALAm56←ajusta80 FOLHALAm56
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAm56)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[11]  xk←1 ⋄ resu←0 66⍴' '
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←12 80⍴' '
[14]  f←FOLHALAm56
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍎VERSAOa←1.01
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[22]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25]  zzz←geracircu
[26]  esse[8;]←80↑'¯-'edit 5 0⍎⊃zzz[1]
[27]  resp←(3 0⍎resp),':','¯-'edit⊃zzz[2]
[28]  zzz←gerainter
[29]  esse[9;]←80↑'¯-'edit 5 0⍎⊃zzz[1]
[30]  resp←resp,6 0⍎⊃zzz[2]
[31]  zzz←gerarepeti
[32]  esse[10;]←80↑5 0⍎⊃zzz[1]
[33]  resp←resp,'¯-'edit 8 0⍎⊃zzz[2]
[34]  resu←resu,[1]1 66⍴resp
[35]  acuja←(f[;2]='#')/⍳1↑⍴f
[36]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[37]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[38]  ⍞←(⍎xk←xk+1),'-'
[39]  →testa
[40] fim:
[41]  upag←(1 0+⍴f)⍴' '
[42]  →(1=≡n)/elafa
[43]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[44]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[45]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑resu
[46]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[47]  →terminando
[48] elafa:
[49]  aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 4↓resu)
[50]  aaa[1;35 36]←2 0⍎CORRECAO
[51]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.t
      ex'
[57]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[58]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivom58

```
[ 0]  AVISO;ja;ho;ce
[ 1]  'Para calcular datas, chame DTS⍳ddmmaaaaa'
[ 2]  'aceita datas entre 1970 e 2070...'
[ 3]  hoje←(⎕TS[3]×1000000)+(⎕TS[2]×10000)+⎕TS[1]
[ 4]  ' Hoje eh dia ',('99-99-9999'⍕hoje),'      e sao 13296 dias no total'
[ 5]  ' '
[ 6]  'Dias ja trabalhados'
[ 7]  'hoje - 16/11/1974:   ',(⍕ja←(DTS⍳hoje)-(DTS⍳16111974)),' dias'
[ 8]  ' '
[ 9]  'Ja se passaram desde a aposentadoria proporcional'
[10]  ho←(DTS⍳12042009)-DTS⍳hoje
[11]  'hoje - 12/04/2009:     ',(⍕-ho),' dias     '
[12]  ' '
[13]  'Ja se passaram desde a aposentadoria do INSS'
[14]  ho←(DTS⍳16112009)-DTS⍳hoje
[15]  '16/11/2009 - hoje:     ',(⍕-ho),' dias      '
[16]  ' '
[17]  'Faltam ate o inicio do periodo de aclimatacao'
[18]  ho←(DTS⍳12122010)-DTS⍳hoje
[19]  '12/12/2010 - hoje:     ',(⍕ho),' dias     '
[20]  ' '
[21]  'Faltam ate a aposentadoria da Celepar '
[22]  ce←(DTS⍳12042011)-DTS⍳hoje
[23]  '12/04/2011 - hoje:     ',(⍕ce),' dias     '
[24]  ' '
[25]  'Ja trabalhei ',(6 3⍕(100×(13296-ce)÷13296)),'% do total'
[26]  ' '
[27]  '------------------------ nova forma --------------------------'
[28]  ' Hoje eh dia ',('99/99/9999'⍕hoje),'      e sao 12947 dias no total'
[29]  ' '
[30]  'Dias ja trabalhados'
[31]  'hoje - 16/11/1974:   ',(⍕ja←(DTS⍳hoje)-(DTS⍳16111974)),' dias'
[32]  ' '
[33]  'Ja se passaram desde a aposentadoria proporcional'
[34]  ho←(DTS⍳12042009)-DTS⍳hoje
[35]  'hoje - 12/04/2009:     ',(⍕-ho),' dias     '
[36]  ' '
[37]  'Ja se passaram desde a aposentadoria do INSS'
[38]  ho←(DTS⍳16112009)-DTS⍳hoje
[39]  'hoje - 16/11/2009:     ',(⍕-ho),' dias      '
[40]  ' '
[41]  'Faltam ate a aposentadoria da Celepar '
[42]  ce←(DTS⍳28042010)-DTS⍳hoje
[43]  '28/04/2010 - hoje:     ',(⍕ce),' dias     '
[44]  ' '
[45]  'Ja trabalhei ',(8 3⍕(100×(12947-ce)÷12947)),'% do total'
-------------------------------------------------------------
[ 0]  COMO
[ 1]  'MILHARIO'
[ 2]  ' Chame a funcao criaa,que vai criar o vetor DTS,contendo as datas'
[ 3]  ' corretas no formato DDMMAAAA,comecando em 1012000                '
[ 4]  ' Se o vetor ja estiver criado e certo,nao e necessario reexecutar  '
[ 5]  ' criaa.                                                            '
[ 6]  ' Depois e so chamar 1000 milhario DDMMAAAA.                         '
[ 7]  ' Note que a data deve estar certa,e que AAAA tem que estar entre    '
[ 8]  ' 2000 e 2050,inclusive.                                             '
[ 9]  ' O parametro 1000 da funcao milhario pode ser alterado              '
[10]  'para gerar os arquivos de correcao, crie o arquivo milha.ent em c:\apl2\milha.ent'
[11]  'este arquivo deve ter 1 data correta por linha, como descrito no enunciado'
[12]  ''
[13]  'depois chame a funcao geraarqmilh e ela vai criar o arquivo c:\apl2\milha.sai no me
```

```
      smo'
[14]  'diretorio'
[15]  ''
[16]  ''
[17]  ''
[18]  'VAIQUEEMOLE'
[19]  'Chame a funcao geraarqvaico. Ela vai gerar os 2 arquivos (vaico.ent) e '
[20]  '(vaico.sai), cada um com 200 entradas. '
-------------------------------------------------------------
[0]  r←baseqquer base;a;b;op1;op2
[1]  op1←('00','00'⍕a←?4⍴base)
[2]  op2←('00','00'⍕b←?4⍴base)
[3]  r←op1,'+',op2,' ','00'⍕base
[4] ⍝ (⍕a),'+',⍕b
[5]  r←r,'00'⍕(5⍴base)⍴((4⍴base)⊥a)+(4⍴base)⊥b
-------------------------------------------------------------
[0]  criaa;i
[1]  DTS←0⍴0
[2]  i←1970
[3] t1:→(i>2070)/fim
[4]  DTS←DTS,ganos i
[5]  i←i+1
[6]  →t1
[7] fim:
-------------------------------------------------------------
[0]  r←deita x
[1] ⍝ r←¯1↓,(((⍕x),' '),';'),' '
[2]  r←¯1↓,(⍕x),';'
-------------------------------------------------------------
[ 0]  r←ganos aa;x;y;z
[ 1]  →(0≠4|aa)/naoe
[ 2]  x←(⍳31),(⍳29),(⍳31),(⍳30),(⍳31),(⍳30),(⍳31),(⍳31),(⍳30),(⍳31),(⍳30),⍳31
[ 3]  y←(31⍴1),(29⍴2),(31⍴3),(30⍴4),(31⍴5),(30⍴6),(31⍴7)
[ 4]  y←y,(31⍴8),(30⍴9),(31⍴10),(30⍴11),(31⍴12)
[ 5]  →junta
[ 6] naoe:
[ 7]  x←(⍳31),(⍳28),(⍳31),(⍳30),(⍳31),(⍳30),(⍳31),(⍳31),(⍳30),(⍳31),(⍳30),⍳31
[ 8]  y←(31⍴1),(28⍴2),(31⍴3),(30⍴4),(31⍴5),(30⍴6),(31⍴7)
[ 9]  y←y,(31⍴8),(30⍴9),(31⍴10),(30⍴11),(31⍴12)
[10] junta:
[11]  r←(x×1000000)+(y×10000)+aa
-------------------------------------------------------------
[0]  geraarqmilh;x;i;z
[1]  x←⎕FM'c:\apl2\milha.ent'
[2]  i←1
[3]  z←0 44⍴' '
[4] t1:→(i>1↑⍴x)/fim
[5]  z←z,[1]1 44⍴1000 milhario x[i;]
[6]  i←i+1
[7]  →t1
[8] fim:z ⎕FM'c:\apl2\milha.sai'
-------------------------------------------------------------
[ 0]  geraarqvaico;x;i;z;a;b;base;cc
[ 1]  i←1
[ 2]  x←201 24⍴' '
[ 3]  z←200 10⍴' '
[ 4] t0:→(i>200)/zer
[ 5]  cc←baseqquer 1+?59
[ 6]  x[i;]←cc[⍳24]
[ 7]  z[i;]←cc[24+⍳10]
[ 8]  i←i+1
[ 9]  →t0
[10] zer:x[201;]←'0000000000+0000000000 00'
```

```
[11]  x ΔFM'c:⍀apl2⍀vaico.ent'
[12]  z ΔFM'c:⍀apl2⍀vaico.sai'
-------------------------------------------------------------
[ 0]  r←geramilh;d;m;a
[ 1]  a←2000+?49
[ 2]  m←1 2 2 2 2 2 2 2 3 4 5 6 7 8 9 10 11 12
[ 3]  m←m[?⍴m]
[ 4]  →(m=2)/e2
[ 5]  →((m=1)∨(m=3)∨(m=5)∨(m=7)∨(m=8)∨(m=10)∨(m=12))/e31
[ 6] e30:d←?30
[ 7]  →ano
[ 8] e31:d←?31
[ 9]  →ano
[10] e2:d←?28
[11] ano:r←⍕('00'⍕d),('00'⍕m),'0000'⍕a
-------------------------------------------------------------
[0]  r←geravaic base;cc
[1]  cc←baseqquer base-1
[2]  r←cc
-------------------------------------------------------------
[0]  r←mil milhario x;y;i
[1]  y←⍕x
[2] t1:
[3]  i←DTS⍳y
[4]  →((i+mil×5)≥1+⍴DTS)/erro
[5] achou:r←'00000000 00000000 00000000 00000000 00000000'⍕DTS[i+mil×⍳5]
[6]  →0
[7] erro:'deu xabu'
-------------------------------------------------------------
[ 0]  r←a pertence b;i
[ 1]  i←1
[ 2] t1:→(i>1↑⍴b)/fim
[ 3]  →(2≠+/a=b[i;])/soma
[ 4]  r←1
[ 5]  →0
[ 6] soma:i←i+1
[ 7]  →t1
[ 8] fim:r←0
[ 9]  →0
-------------------------------------------------------------
[0]  r←resomilh x
[1]  r←⍕8↑1000 milhario⍕x
-------------------------------------------------------------
[ 0]  r←resovaic x;op1;op2;res;r1
[ 1]  op1←(⍕15⍴x[22 23 24])⊥⍕x[1 2 22 3 4 22 5 6 22 7 8 22 9 10]
[ 2] ⍝ 15⍴x[22 23 24]
[ 3] ⍝ x[1 2 22 3 4 22 5 6 22 7 8 22 9 10]
[ 4]  op2←(⍕15⍴x[22 23 24])⊥⍕x[12 13 22 14 15 22 16 17 22 18 19 22 20 21]
[ 5]  res←op1+op2
[ 6]  r1←(⍕15⍴x[22 23 24])⊤res
[ 7] ⍝ 'op1=',⍕op1
[ 8] ⍝ 'op2=',⍕op2
[ 9] ⍝ 'res=',⍕res
[10] ⍝ 'r1 =',⍕r1
[11]  r←('00'⍕r1[1]),('00'⍕r1[2]),('00'⍕r1[3]),('00'⍕r1[4]),('00'⍕r1[5])
-------------------------------------------------------------
[0]  r←temduplo a
[1]  r←0∈(a⍳a)=⍳⍴a
-------------------------------------------------------------
[ 0]  testavaic
[ 1]  i←1
[ 2] t1:→(i>1000)/fim
[ 3]  x←geravaic 1+?58
```

```
[ 4]  y←resovaic x
[ 5]  →(10=+/(¯10↑x)=y)/ok
[ 6]  'deu xabu'
[ 7]  x
[ 8]  y
[ 9] ok:i
[10]  i←i+1
[11]  →t1
[12] fim:
------------------------------------------------------------
[0]  r←tiraduplo V
[1]  r←((V⍳V)=⍳⍴V)/V                  ⍝ Unique.  Drop duplicates from vector.
------------------------------------------------------------
[ 0]  opesq vivom58a n;CORRECAO;EVENTO;acuja;dhx;esse;f;lixonol;relat;resp;resu;upag;xk;yl
      u;zz1
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←0 ⋄ EVENTO←'PLm58   '
[ 5]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 8]  FOLHALAm58←ajusta80 FOLHALAm58
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAm58)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLOI'
[11]  xk←1 ⋄ resu←0 66⍴' '
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←13 80⍴' '
[14]  f←FOLHALAm58
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO[⍳4],'{\large{',EVENTO[4+⍳4],'}}'
[21]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[22] inica:
[23]  zz1←geramilh
[24]  esse[8;]←80↑⍕'00000000'⍎zz1
[25]  resp←(3 0⍕resp),'  ','00000000'⍎resomilh zz1   ⍝ 12
[26]  zz1←geramilh
[27]  esse[9;]←80↑⍕'00000000'⍎zz1
[28]  resp←resp,' ','00000000'⍎resomilh zz1        ⍝ 21
[29]  zz1←geramilh
[30]  esse[10;]←80↑⍕'00000000'⍎zz1
[31]  resp←resp,' ','00000000'⍎resomilh zz1         ⍝30
[32]  resp←resp,' '
[33]  resp←resp,' '                                    ⍝ 32
[34]  zz1←geravaic 1+?58
[35]  esse[11;]←80↑¯10↓zz1
[36]  resp←resp,' ',resovaic zz1                   ⍝43
[37]  zz1←geravaic 1+?58
[38]  esse[12;]←80↑¯10↓zz1
[39]  resp←resp,' ',resovaic zz1                      ⍝54
[40]  zz1←geravaic 1+?58
[41]  esse[13;]←80↑¯10↓zz1
[42]  resp←resp,' ',resovaic zz1                       ⍝65
[43]  resu←resu,[1]1 66⍴resp
[44]  acuja←(f[;2]='#')/⍳1↑⍴f
[45]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[46]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[47]  ⍞←(⍕xk←xk+1),'-'
```

```
[48]  →testa
[49] fim:
[50]  upag←(1 0+ρf)ρ' '
[51]  →(1=≡n)/elafa
[52]  upag[1;]←(1↓ρupag)↑'⍀begin{verbatim}'
[53]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[54]  upag[2+⍳1↑ρresu;⍳66]←((1↑ρresu),66)↑resu
[55]  upag[3+1↑ρresu;]←(1↓ρupag)↑'⍀end{verbatim}'
[56]  →terminando
[57] elafa:
[58]  aaa←(ylu,(((1↑ρylu),4)ρ' 0.0'),0 3↓resu)
[59]  aaa[1;35 36]←2 0⍕CORRECAO
[60]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[61]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[62] terminando:
[63]  upag[1↑ρupag;]←(1↓ρupag)↑'⍀end{document}'
[64]  relat[1↑ρrelat;;]←upag
[65]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.t
      ex'
[66]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[67]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivom60

```
[0]  r←calcnot x;y;z
[1]  y←⍋x
[2]  z←((y[1]×40)+60×(+/y[1+⍳5])÷5)÷50
[3]  r←(⌊z+0.5)÷2
-------------------------------------------------------------
[0]  r←cc alt;raio
[1]  raio←alt×0.5773
[2]  r←'0000000.00'⍕3.1415×raio*2
-------------------------------------------------------------
[ 0]  r←flex ae;x;p
[ 1]  x←ae[1],3.5×ae[2]
[ 2]  p←⌊/x
[ 3]  →(p=x[2])/el
[ 4]  →(p=x[1])/al
[ 5] erro:'deu xabu'
[ 6]  →0
[ 7] el:r←'ELETRICIDADE'
[ 8]  →0
[ 9] al:r←'ALCOOL'
-------------------------------------------------------------
[ 0]  r←geracasom60;x;aa
[ 1]  x←9 80ρ' '
[ 2]  x[1;]←80↑5 0⍕aa←130+?50
[ 3]  x[9;1]←xerox aa
[ 4]  x[2;]←80↑5 0⍕aa←130+?50
[ 5]  x[9;2]←xerox aa
[ 6]  x[9;3]←'-'
[ 7]  x[3;]←80↑10 2⍕aa←(10+?90 90)÷10
[ 8]  x[9;3+⍳21]←21↑10 0⍕⍋lajota aa
[ 9]  x[4;]←80↑10 2⍕aa←(10+?90 90)÷10
[10]  x[9;25]←' '
[11]  x[9;25+⍳21]←21↑10 0⍕⍋lajota aa
[12]  x[9;47]←'-'
[13]  x[5;]←80↑10 2⍕aa←15+?30
[14]  x[9;47+⍳10]←10 2⍕⍋cc aa
[15]  x[9;58]←' '
[16]  x[6;]←80↑10 2⍕aa←15+?30
```

```
[17]  x[9;58+⍳10]←10 2⍕⍠cc aa
[18]  x[9;69]←'-'
[19]  x[7;]←80↑7 2⍕aa←0.8 3.3+(?5 5)÷10
[20]  x[9;70]←1↑flex aa
[21]  x[8;]←80↑7 2⍕aa←0.8 3.3+(?5 5)÷10
[22]  x[9;71]←1↑flex aa
[23]  r←x
------------------------------------------------------------
[0]  r←geracasom60c
[1]  r←22 80⍴' '
[2]  r[1;]←80↑⍕(?8),(?8)
[3]  r[2;]←80↑⍕(?8),(?8)
[4]  r[3;]←80↑geranot
[5]  r[4;]←80↑geranot
[6]  r[4+⍳9;]←9 80↑3 0 3 0 3 0 7 2⍕gerapedagio
[7]  r[13+⍳9;]←9 80↑3 0 3 0 3 0 7 2⍕gerapedagio
------------------------------------------------------------
[0]  r←geranot
[1]  r←'00.00 '⍕(?6⍴100)÷10
------------------------------------------------------------
[ 0]  r←gerapedagio;x;i;in;cara
[ 1]  x←6 4⍴1 2 1 20 1 3 1 20 1 4 1 50 2 3 1 10 2 4 1 10 3 4 1 10
[ 2]  x←x[6?6;]
[ 3]  x[;4]←(10+?x[;4])÷10
[ 4]  cara←?3
[ 5]  →(cara=1)/um
[ 6]  →(cara=2)/dois
[ 7] tres:
[ 8]  x←(1 1 0 1 1 0 1 1 0)⌿[1]x
[ 9]  x[3;]←(x[2;1 2 3]+0 0 1),?10
[10]  x[6;]←(x[5;1 2 3]+0 0 1),?10
[11]  x[9;]←(x[8;1 2 3]+0 0 1),?10
[12]  r←x
[13]  →0
[14] dois:
[15]  x←(1 0 1 0 1 0 1 1 1)⌿[1]x
[16]  x[2;]←(x[1;1 2 3]+0 0 1),(?50)÷10
[17]  x[4;]←(x[3;1 2 3]+0 0 1),(?70)÷10
[18]  x[6;]←(x[5;1 2 3]+0 0 1),(?70)÷10
[19]  r←x
[20]  →0
[21] um:
[22]  r←0 4⍴0
[23]  in←((x[;1]=1)∧(x[;2]=4))/⍳6
[24]  r←x[⍳in;]
[25] ufa:
[26]  r←r,[1]3 4⍴1 4 2,((10+?40)÷10),1 4 3,((10+?40)÷10),1 4 4,((10+?40)÷10)
[27]  r←r,[1](in,0)↓x
------------------------------------------------------------
[ 0]  r←geraqestprov n;aa;bb
[ 1]  aa←(10+?90 90)÷10
[ 2]  r←21 79⍴' '
[ 3]  r[1;]←79↑'Você deve cobrir grandes áreas com lajotas quadradas. Existem 2 tipos'
[ 4]  r[2;]←79↑'de lajota, o tipo 1 que mede 10 cm por 10 cm, e o tipo 2 que mede'
[ 5]  r[3;]←79↑'0,2m por 0,2m. O tipo 2 custa 4 vezes mais do que o tipo 1 por peça'
[ 6]  r[4;]←79↑'unitária, portanto custam exatamente a mesma coisa para cobrir uma'
[ 7]  r[5;]←79↑'dada área, mas como o assentamento da maior gera ganhos de'
[ 8]  r[6;]←79↑'produtividade, você deve sempre preferir usar a lajota tipo 2 quando'
[ 9]  r[7;]←79↑'for possível. Outro detalhe destas lajotas é que elas s⌿~ao muito '
[10]  r[8;]←79↑'duras e portanto n⌿~ao podem ser cortadas ou serradas. Assim, o serviço'
[11]  r[9;]←79↑'só poderá ser aceito se as dimens⌿~oes da área retangular forem múltiplas'
[12]  r[10;]←79↑'da aresta da lajota menor (ou 10 cm). Por exemplo, uma área de '
[13]  r[11;]←79↑'      $12 m ⌿times 12,05 m$ n⌿~ao pode ser aceita, pois n⌿~ao há como '
```

```
[14]  r[12;]←79↑'cobrir aqueles 5 cm finais usando uma lajota de 10cm.'
[15]  r[13;]←79↑'Para fazer o serviço, devem ser colocadas quantas lajotas do tipo'
[16]  r[14;]←79↑'2 (as maiores) forem possíveis, deixando as lajotas do tipo 1'
[17]  r[15;]←79↑'(as menores) apenas para fazer o acabamento nas laterais da área.'
[18]  r[16;]←79↑'As dimens~oes da área que você deve cobrir s~ao:'
[19]  r[17;]←79↑'   ',(5 2⍕aa[1]),' m por ',(5 2⍕aa[2]),' m.'
[20]  r[18;]←79↑'Descubra quantas lajotas pequenas e quantas grandes ser~ao'
[21]  r[19;]←79↑'necessárias. '
[22]  r[20;]←79↑'Se a área oferecida n~ao puder ser coberta pelas lajotas 1 e 2,'
[23]  r[21;]←79↑'responda a palavra RECUSAR.'
[24]  r←(1 79⍴79↑'$QE ',(4 0⍕n),'404      1rac: lajotas quadradas (m60b)'),[1]r
[25]  r←r,[1]1 79⍴79↑'$QR ',(4 0⍕n),'404 '
[26]  bb←±lajota aa
[27]  r←r,[1]1 79⍴79↑'P=',(10 0⍕bb[1]),'  G=',10 0⍕bb[2]
-------------------------------------------------------------
[ 0]  r←lajota m;a
[ 1]  a←m×100
[ 2]  →((0≠10|a[1])∨(0≠10|a[2]))/naopode
[ 3]  →((0=20|a[1])∧(0=20|a[2]))/ambos
[ 4]  →((0=20|a[1])∧(0≠20|a[2]))/segunda
[ 5]  →((0≠20|a[1])∧(0=20|a[2]))/primeira
[ 6] ruim:
[ 7]  r←((a[1]÷10)+(a[2]÷10)-1),(((a[1]-10)÷20)×(a[2]-10)÷20)
[ 8]  →sai
[ 9] primeira:
[10]  r←(a[2]÷10),(((a[1]-10)÷20)×a[2]÷20)
[11]  →sai
[12] segunda:
[13]  r←(a[1]÷10),(((a[2]-10)÷20)×a[1]÷20)
[14]  →sai
[15] ambos:
[16]  r←0,(a[1]÷20)×(a[2]÷20)
[17] sai:r←'0000000000 0000000000'⍕r
[18]  →0
[19] naopode:
[20]  r←'RECUSAR'
-------------------------------------------------------------
[ 0]  r←resolvep60 x;vet;i;ii
[ 1]  vet←6 3⍴1 2 99 1 3 99 1 4 99 2 3 99 2 4 99 3 4 99
[ 2]  i←1
[ 3] t1:→(i>1↑⍴x)/fim
[ 4]  ii←((x[i;1]=vet[;1])∧(x[i;2]=vet[;2]))/⍳6
[ 5]  →(vet[ii;3]=99)/sobota
[ 6]  vet[ii;3]←vet[ii;3]+x[i;4]
[ 7]  i←i+1
[ 8]  →t1
[ 9] sobota:
[10]  vet[ii;3]←x[i;4]
[11]  i←i+1
[12]  →t1
[13] fim:r←⌊/vet[3;3],(vet[1;3]+vet[4;3]+vet[6;3]),(vet[1;3]+vet[5;3]),(vet[2;3]+vet[6;3])
      ,(vet[2;3]+vet[4;3]+vet[5;3])
-------------------------------------------------------------
[ 0]  opesq vivom60b n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivom60 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PLm60b  '
```

```
[ 9]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
------------------------------------------------------------
[ 0]  opesq vivom60c n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivom60 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PLm60c  '
[ 9]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[59]  upag[2+⍳1↑⍴resu;⍳28]←resu
[60]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[61]  →terminando
[62] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[63] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[64] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[65]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[66]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[67] terminando:
[68]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[69]  relat[1↑⍴relat;;]←upag
[70]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[71] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[72]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[73]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[74]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  r←xadrez lc;la;ca;aa;bb;i;qt
[ 1]  la←¯2,¯1,1,2,2,1,¯1,¯2
[ 2]  ca←1,2,2,1,¯1,¯2,¯2,¯1
[ 3]  aa←lc[1]+la
[ 4]  bb←lc[2]+ca
[ 5]  qt←0
[ 6]  i←1
[ 7] t1:→(i>8)/fim
[ 8]  →((aa[i]>0)∧(aa[i]<9)∧(bb[i]>0)∧(bb[i]<9))/pode
[ 9] soma:i←i+1
[10]  →t1
[11] pode:
[12]  qt←qt+1
[13]  →soma
[14] fim:r←qt
------------------------------------------------------------
[ 0]  r←xerox qtd;abc;tc
[ 1]  abc←0 0 0
[ 2]  →(qtd<151)/podea
[ 3]  abc[1]←99999999999
[ 4]  →junta
[ 5] podea:
[ 6]  abc[1]←qtd×0.09
[ 7] junta:
[ 8]  abc[2]←qtd×0.1
[ 9]  tc←3 2⍴0 0.15 0 0.1 0 0.06
[10]  →(qtd>50)/mais1
[11]  tc[1;1]←qtd
[12]  →ufa
[13] mais1:tc[1;1]←50
[14]  qtd←qtd-50
[15]  →(qtd>50)/mais2
[16]  tc[2;1]←qtd
[17]  →ufa
[18] mais2:tc[2;1]←50
[19]  qtd←qtd-50
[20]  tc[3;1]←qtd
[21]  →junta4
[22] ufa:tc[1;1]←qtd
[23] junta4:abc[3]←+/(×/[2]tc)
[24]  r←((⌊/abc)=abc)/'ABC'
------------------------------------------------------------
```

vivon02

```
[ 0]  r←a ondeta b;i;j;k;⎕PW;⎕IO
[ 1]  ⎕IO←1
[ 2]  ⎕PW←120
[ 3]  b←,b
[ 4]  i←1
[ 5] t1:→(i>1↑⍴a)/fim
[ 6]  j←1
[ 7] t2:→(j>1↓⍴a)/upa
[ 8]  →(a[i;j]≠b[1])/soma
[ 9]  k←1
[10] t3:→(k>⍴b)/achou
[11]  →(a[i;j+k-1]=b[k])/ainda
[12]  →soma
[13] ainda:k←k+1
[14]  →t3
[15] achou:'=',(⍕i),' ',(⍕j),a[i;]
[16]  j←j+⍴b
[17]  →t2
[18] soma:j←j+1
[19]  →t2
[20] upa:i←i+1
[21]  →t1
[22] fim:
------------------------------------------------------------
[ 0]  opesq vivon02a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLn02   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAn02←ajusta80 FOLHALAn02
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAn02)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALAn02
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34] ⍝ xx←geracaso
```

```
[35] ⍝ esse[7+⍳3;]←3 80↑acertaca xx
[36] ⍝ resp←resp,,xx[2 3;5]
[37] ⍝ resu←resu,[1]1 3⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⎕←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:
[44]  upag←(1 0+⍴f)⍴' '
[45]  →terminando
[46]  →(1=≡n)/elafa
[47]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[48]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[49]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍕resu
[50]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[51]  →terminando
[52] elafa:aaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol ⍙FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'    (.tex) - NAo HA GPA'
```

---

vivon05

```
[0]  r←F x;⎕IO
[1]  ⎕IO←0
[2]  r←x[2]|x[0]+x[1]
```

```
[0]  r←F1 y;⎕IO
[1]  ⎕IO←0
[2]  →(y≤809999)/ok
[3] erro:'operador maior que 809999'
[4]  →0
[5] ok:r←ALFABETO[30 30 30 30⊤y]
```

```
[0]  r←F2 y;⎕IO
[1]  ⎕IO←0
[2]  r←30 30 30 30⊥ALFABETO⍳y
```

```
[0]  r←G x;⎕IO
[1]  ⎕IO←0
[2]  r←x[2]|2×|x[1]-x[0]
```

```
[ 0]  r←HASH k;A;B;C;D;T;i;j;m;n;x;temp;⎕IO
[ 1]  ⎕IO←0
[ 2]  k←' /'edit,k
[ 3]  →(∧/k∈ALFABETO)/blz
[ 4] erro:'tem caracter errado...'
[ 5]  →0
[ 6] blz:
[ 7]  m←k,11⍴'/'
[ 8]  n←((⌈(⍴k)÷12),12)⍴m
[ 9]  A←499901   ⍝ ROMK
[10]  B←377007   ⍝ M?Z!
[11]  C←757331   ⍝ ?ANK
[12]  D←111931   ⍝ DDKA
```

```
[13]  i←0
[14] ufa0:→(i≥1↑⍴n)/acabou
[15]  j←0
[16] ufa1:→(j≥3)/acaparc
[17]  x←F2 n[i;(j×4)+⍳4]
[18]  T←809999|A+(F B,C,D)+x+⍴k
[19]  temp←D,C,B,T
[20]  A←temp[0]
[21]  D←temp[1]
[22]  C←temp[2]
[23]  B←temp[3]
[24]  →(j=j←j+1)/ufa1
[25] acaparc:
[26]  j←0
[27] ufa2:→(j≥3)/acaparc2
[28]  x←F2 n[i;(j×4)+⍳4]
[29]  T←809999|A+(G B,C,D)+x+⍴k
[30]  temp←D,C,B,T
[31]  A←temp[0]
[32]  D←temp[1]
[33]  C←temp[2]
[34]  B←temp[3]
[35]  →(j=j←j+1)/ufa2
[36] acaparc2:→(i=i←i+1)/ufa0
[37] acabou:r←(F1 A),(F1 B),(F1 C),F1 D
-------------------------------------------------------------
[0]  r←hexadn num;x;⎕IO
[1]  ⎕IO←0
[2]  →(num>4294967295)/erro
[3]  r←'0123456789ABCDEF'[(8⍴16)⊤num]
[4]  →0
[5] erro:'numero muito grande...'
-------------------------------------------------------------
[0]  r←numh st;st1;⎕IO
[1]  ⎕IO←0
[2] ⍝ recebe st de 8 hexadecimais (4B) e devolve numero
[3]  r←+/(⌽16*⍳⍴st1)×'0123456789ABCDEF'⍳st1←upper st
-------------------------------------------------------------
[ 0]  r←a ondeta b;i;j;k;⎕PW;⎕IO
[ 1]  ⎕IO←1
[ 2]  ⎕PW←120
[ 3]  b←,b
[ 4]  i←1
[ 5] t1:→(i>1↑⍴a)/fim
[ 6]  j←1
[ 7] t2:→(j>1↓⍴a)/upa
[ 8]  →(a[i;j]≠b[1])/soma
[ 9]  k←1
[10] t3:→(k>⍴b)/achou
[11]  →(a[i;j+k-1]=b[k])/ainda
[12]  →soma
[13] ainda:k←k+1
[14]  →t3
[15] achou:'=',(⍕i),' ',(⍕j),a[i;]
[16]  j←j+⍴b
[17]  →t2
[18] soma:j←j+1
[19]  →t2
[20] upa:i←i+1
[21]  →t1
[22] fim:
-------------------------------------------------------------
[0]  r←upper x;zz
```

```
[1]  zz←(x∈'abcdefghijklmnopqrstuvwxyz')×32
[2]  r←⎕AV[(⎕AV⍳x)-zz]
------------------------------------------------------------
[0]  r←vaiasci n;⎕IO
[1] ⍝n deve ser caracter
[2]  ⎕IO←0
[3]  r←⎕AV[(4⍴256)⊤numh n]
------------------------------------------------------------
[0]  r←vemasci x;⎕IO
[1]  ⎕IO←0
[2]  r←hexadn+/(⊖256*⍳⍴x)×⎕AV⍳x
------------------------------------------------------------
[ 0]  opesq vivon05a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;inds;lixo1;lixonol;nomes;ql39;
      qlinha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLn05   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAn05←ajusta80 FOLHALAn05
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAn05)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 40⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALAn05
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  inds←2?1↑⍴frases
[35]  esse[8;]←80↑(18⍴1 0)\' /'edit frases[inds[2];]
[36]  resp←(3 0⍎resp),'     ',(32⍴1 0)\HASH frases[inds[2];]
[37]  resu←resu,[1]1 40⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⍞←(⍎xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳1↓⍴resu]←resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
```

```
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],0 3↓resu)
[51]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivon10

```
[ 0]  r←a ondeta b;i;j;k;⎕PW;⎕IO
[ 1]  ⎕IO←1
[ 2]  ⎕PW←120
[ 3]  b←,b
[ 4]  i←1
[ 5] t1:→(i>1↑⍴a)/fim
[ 6]  j←1
[ 7] t2:→(j>1↓⍴a)/upa
[ 8]  →(a[i;j]≠b[1])/soma
[ 9]  k←1
[10] t3:→(k>⍴b)/achou
[11]  →(a[i;j+k-1]=b[k])/ainda
[12]  →soma
[13] ainda:k←k+1
[14]  →t3
[15] achou:'=',(⍕i),' ',(⍕j),a[i;]
[16]  j←j+⍴b
[17]  →t2
[18] soma:j←j+1
[19]  →t2
[20] upa:i←i+1
[21]  →t1
[22] fim:
------------------------------------------------------------
[ 0]  opesq vivon10a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLn10   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAn10←ajusta80 FOLHALAn10
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAn10)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 8⍴''
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←11 80⍴' '
[16]  f←FOLHALAn10
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
```

```
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'↖#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[10;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[11;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←?1↑⍴casosn10
[35]  esse[8 9;]←2 80⍴((,casosn10[xx;⍳32]),48⍴' '),(,casosn10[xx;32+⍳32]),48⍴' '
[36]  resp←(3 0⍕resp),'=',,casosn10[xx;65+⍳4]
[37]  resu←resu,[1]1 8⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⌸,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'↖clearpage'
[41]  ⎕←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'↖begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳8]←resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'↖end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[51]  lixonol←aaa ⎕FM('c:↖apl2↖',((~⍷∧↖⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'↖end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ⎕FM'c:↖apl2↖',((~⍷∧↖⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:↖apl2↖',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivon20

```
[ 0]  r←v55 fibonacci aa;m;i;val
[ 1] ⍝aa[1] e o valor m, aa[2] e a quantidade (mais 55), v55 sao 55 vals
[ 2]  m←aa[1]
[ 3]  →(0=2|m)/ok
[ 4]  'm tem que ser par'
[ 5]  →0
[ 6] ok:r←⍳0
[ 7]  i←1
[ 8] vvo:→(i>aa[2])/acab
[ 9]  r←r,val←m|v55[55+i-24]+v55[55+i-55]
[10]  v55←v55,val
[11]  →(i=i←i+1)/vvo
[12] acab:
------------------------------------------------------------
[0]  r←incremental aa;sem;i;next
[1] ⍝ aa[1]=semente; aa[2]=a;  aa[3]=c;  a[4]=m;   aa[5]=qtd
[2]  r←⍳0 ⋄ sem←aa[1]
[3]  i←1
[4] vv1:→(i>aa[5])/fim
```

```
[5]  r←r,next←aa[4]|(aa[2]×sem)+aa[3]
[6]  sem←next
[7]  →(i=i←i+1)/vv1
[8] fim:
-------------------------------------------------------------
[ 0]  r←neumann aa;i;uva;uvb;k;⎕PP
[ 1] ⍝ aa[1] e a semente, aa[2] e o valor de k; aa[3] e a quantidade gerada
[ 2]  →(3≠⍴aa)/erro
[ 3]  →(100000000≤aa[1])/erro   ⍝ por restricoes do APL
[ 4]  i←1 ⋄ k←aa[2] ⋄ ⎕PP←16
[ 5]  r←⍳0 ⋄ uva←aa[1]*2
[ 6] volta:→(i>aa[3])/acabou
[ 7]  uvb←⍒uva
[ 8] ufa:→(0=⍴uvb)/erro
[ 9]  →((k=⍴uvb)∨(k=1+⍴uvb))/oba
[10]  uvb←¯1↓(1↓uvb)
[11]  →ufa
[12] oba:r←r,⍪uvb
[13]  uva←(⍪uvb)*2
[14]  →(i=i←i+1)/volta
[15] acabou:
[16]  →0
[17] erro:'parametros errados'
[18]  r←aa[3]⍴¯1
-------------------------------------------------------------
[ 0]  opesq vivon20a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aux;av;lixo1;mm;qum;rr;sem;vm;aaa
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←5 ⋄ EVENTO←'PLn20   '
[ 5]  dhx←2 10⍴('05/05/0005'⍒+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍒+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍒⍳n
[ 8]  FOLHALAn20←ajusta80 FOLHALAn20
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAn20)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLOI'
[11]  xk←1 ⋄ resu←0 6⍴0
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←58 80⍴' '
[14]  f←FOLHALAn20
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍒VERSAOa←3.42
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍒resp←xk),' ',opesq
[22]  esse[57;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[58;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25] uk1:rr←neumann(sem←999+?9000),4,4
[26]  →(¯1=1↑rr)/uk1
[27]  esse[8;]←80↑'Semente=',(4 0⍒sem),', k=4, $X_1$=',(4 0⍒rr[1]),', $X_2$=',(4 0⍒rr[2]),
      ', $X_3$=',(4 0⍒rr[3]),', $X_4$=',4 0⍒rr[4]
[28] uk2:rr←neumann(sem←999+?9000),4,4
[29]  →(¯1=1↑rr)/uk2
[30]  esse[9;]←80↑'Semente=',(4 0⍒sem),', k=4, $X_1$=',(4 0⍒rr[1]),', $X_2$=',(4 0⍒rr[2]),
      ', $X_3$=',(4 0⍒rr[3]),', $X_4$=',4 0⍒rr[4]
[31] uk3:rr←neumann(sem←999+?9000),4,4
[32]  →(¯1=1↑rr)/uk3
[33]  esse[10;]←80↑'Semente=',(4 0⍒sem),', k=4'
```

```
[34]  resp←resp,rr[4]
[35] uk4:rr←neumann(sem←999+?9000),4,4
[36]  →(¯1=1↑rr)/uk4
[37]  esse[11;]←80↑'Semente=',(4 0⍕sem),', k=4'
[38]  resp←resp,rr[4]
[39] ⍝------------------------------
[40]  rr←(qum←?55⍴999)fibonacci(vm←2×100+?100),4
[41]  esse[12;]←80↑5 0⍕qum[⍳14]
[42]  esse[13;]←80↑5 0⍕qum[14+⍳14]
[43]  esse[14;]←80↑5 0⍕qum[28+⍳14]
[44]  esse[15;]←80↑5 0⍕qum[42+⍳13]
[45]  esse[16;]←80↑4 0⍕vm
[46]  esse[17 18 19;]←3 80⍴80 0⍕3↑rr
[47]  rr←(qum)fibonacci(vm←2×100+?100),4
[48]  esse[20;]←80↑4 0⍕vm
[49]  resp←resp,rr[4]
[50] ⍝------------------------------
[51]  aux←21 221 421 621 821
[52]  rr←incremental(vm←999+?9000),(av←aux[?5]),1,(mm←4999+?5000),4
[53]  esse[20+⍳8;]←8 80⍴80 0⍕mm,av,1,vm,rr
[54]  rr←incremental(vm←999+?9000),(av←aux[?5]),1,(mm←4999+?5000),4
[55]  esse[28+⍳8;]←8 80⍴80 0⍕mm,av,1,vm,rr
[56]  rr←incremental(vm←999+?9000),(av←aux[?5]),1,(mm←4999+?5000),4
[57]  esse[36+⍳8;]←8 80⍴80 0⍕mm,av,1,vm,rr
[58]  rr←incremental(vm←999+?9000),(av←aux[?5]),1,(mm←4999+?5000),4
[59]  esse[44+⍳4;]←4 80⍴80 0⍕mm,av,1,vm
[60]  resp←resp,rr[4]
[61]  rr←incremental(vm←999+?9000),(av←aux[?5]),1,(mm←4999+?5000),4
[62]  esse[48+⍳4;]←4 80⍴80 0⍕mm,av,1,vm
[63]  resp←resp,rr[4]
[64]  resu←resu,[1](1,6)⍴resp
[65]  acuja←(f[;2]='#')/⍳1↑⍴f
[66]  f[acuja;⍳80]←esse[⌽,f[acuja;3 4],' ';]
[67]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[68]  ⎕←(⍕xk←xk+1),'-'
[69]  →testa
[70] fim:upag←(1 0+⍴f)⍴' '
[71]  →(1=≡n)/elafa
[72]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[73]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[74]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0 8 0 8 0 8 0)⍕resu
[75]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[76]  →terminando
[77] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),7 0⍕0 1↓resu)
[78]  aaa[1;35 36]←2 0⍕CORRECAO
[79]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.gpa')
[80]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[81] terminando:
[82]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[83]  relat[1↑⍴relat;;]←upag
[84]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)ΔFM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.t
      ex'
[85]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[86]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivon25

```
[ 0]  opesq vivon25a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
```

```
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLn25   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAn25←ajusta80 FOLHALAn25
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAn25)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 73⍴' '
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←13 80⍴' '
[16]  f←FOLHALAn25
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[12;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[13;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←2?1↑⍴casosddd
[35]  esse[8;]←80↑casosddd[xx[1];⍳32]
[36]  esse[9;]←80↑casosddd[xx[1];32+⍳32]
[37]  resp←(3 0⍕xk),'=',casosddd[xx[1];65+⍳34]
[38]  esse[10;]←80↑casosddd[xx[2];⍳32]
[39]  esse[11;]←80↑casosddd[xx[2];32+⍳32]
[40]  resp←resp,'=',casosddd[xx[2];65+⍳34]
[41]  resu←resu,[1]1 73⍴resp
[42]  acuja←(f[;2]='#')/⍳1↑⍴f
[43]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[44]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[45]  ⍞←(⍕xk←xk+1),'-'
[46]  →testa
[47] fim:upag←(1 0+⍴f)⍴' '
[48]  →(1=≡n)/elafa
[49]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[50]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[51]  upag[2+⍳1↑⍴resu;⍳73]←resu
[52]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[53]  →terminando
[54] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[55]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[56]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[57] terminando:
[58]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[59]  relat[1↑⍴relat;;]←upag
[60]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[61]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[62]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[63]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivon35

```
[ 0]  r←geran35;pa;l1;l;⎕IO;ida;volta;is;i;j;e1;e2
[ 1]  ⎕IO←0
[ 2]  ida←?48⍴2
[ 3]  volta←?48⍴2
[ 4]  is←8 8⍴64?64
[ 5]  pa←PALS[64?↑⍴PALS;]
[ 6]  l←'' ⋄ l1←8 80⍴' '
[ 7]  i←0
[ 8] t1:→(i≥8)/fim
[ 9]  j←0
[10] t2:→(j≥8)/uu
[11]  l←l,(trim pa[is[i;j];]),','
[12]  j←j+1
[13]  →(80<⍴l)/xabu
[14]  →t2
[15] uu:l1[i;]←80↑¯1↓l
[16]  i←i+1
[17]  l←''
[18]  →t1
[19] fim:e1←pa rifan35 ida
[20]  e2←pa rifan35 volta
[21]  r←5⍴0
[22]  r[0]←⊂l1       ⍝ lista das 64 palavras
[23]  r[1]←⊂e1[0;]   ⍝ 8 palavras que codificam a senha do ex. 1
[24]  r[2]←⊂e2[1;]   ⍝ o hexadecimal do exercicio 2
[25]  r[3]←⊂e1[1;]   ⍝ o hexadecimal da senha do exercicio 1
[26]  r[4]←⊂primutil e2[0;]  ⍝ primeira e ultima palavra do exercicio 2
[27]  →0
[28] xabu:'linha maior que 80...'
------------------------------------------------------------
[0]  p2
------------------------------------------------------------
[0]  r←primutil a;p1;p2;b
[1]  p1←(~v⍷a=',')/a
[2]  b←⊖a
[3]  p2←⊖(~v⍷b=',')/b
[4]  r←p1,'/',p2
------------------------------------------------------------
[ 0]  r←pal rifan35 a;i;ra;viva;alf;⎕IO
[ 1]  ⎕IO←0
[ 2] ⍝ pal e uma tabela de 64 x 11 palavras
[ 3] ⍝ em a vem 48 bits
[ 4] ⍝ em r[1;] vem as 8 palavras e em r[2;] o codigo hexadecimal
[ 5]  r←2 80⍴' ' ⋄ alf←'0123456789ABCDEF'
[ 6]  i←0 ⋄ ra←''
[ 7] t1:→(i≥8)/fi
[ 8]  ra←ra,(trim pal[2 2 2 2 2 2⊥(8 6⍴a)[i;];]),','
[ 9]  i←i+1
[10]  →t1
[11] fi:r[0;]←80↑¯1↓ra
[12]  i←0 ⋄ ra←'' ⋄ viva←6 8⍴a
[13] t3:→(i≥6)/fu
[14]  ra←ra,(alf[2 2 2 2⊥viva[i;⍳4]]),(alf[2 2 2 2⊥viva[i;4+⍳4]]),'.'
[15]  i←i+1
[16]  →t3
[17] fu:r[1;]←80↑¯1↓ra
------------------------------------------------------------
[ 0]  opesq vivon35a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
```

```
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLn35   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAn35←ajusta80 FOLHALAn35
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAn35)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 45⍴' '
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←19 80⍴' '
[16]  f←FOLHALAn35
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[18;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[19;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geran35
[35]  esse[7+⍳8;]←8 80↑⊃xx[1]
[36]  esse[16;]←1 80⍴80↑⊃xx[2]
[37]  esse[17;]←1 80⍴80↑⊃xx[3]
[38]  resp←(3 0⍎resp),'-',(17↑⊃xx[4]),'=',23↑⊃xx[5]
[39]  resu←resu,[1]1 45⍴resp
[40]  acuja←(f[;2]='#')/⍳1↑⍴f
[41]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[42]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[43]  ⍞←(⍎xk←xk+1),'-'
[44]  →testa
[45] fim:upag←(1 0+⍴f)⍴' '
[46]  →(1=≡n)/elafa
[47]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[48]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[49]  upag[2+⍳1↑⍴resu;⍳45]←resu
[50]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[51]  →terminando
[52] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[53]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[54]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[55] terminando:
[56]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[57]  relat[1↑⍴relat;;]←upag
[58]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[59]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[60]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[61]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivon40

```
[ 0]  r←gerascri;poss;z
[ 1] denovo:
[ 2]  r←'1234'[?2⍴4]
[ 3] t1:→((⍴r)>10)/fim
[ 4]  poss←'11122334+2-3+4=+=-DD'
[ 5] feito:r←r,poss[?⍴poss]
[ 6]  →t1
[ 7] fim:r←r,'P'
[ 8]  →(0>z←resolscri r)/denovo
[ 9]  →(10<z)/denovo
-------------------------------------------------------------
[ 0]  r←a ondeta b;i;j;k;⎕PW;⎕IO
[ 1]  ⎕IO←1
[ 2]  ⎕PW←120
[ 3]  b←,b
[ 4]  i←1
[ 5] t1:→(i>1↑⍴a)/fim
[ 6]  j←1
[ 7] t2:→(j>1↓⍴a)/upa
[ 8]  →(a[i;j]≠b[1])/soma
[ 9]  k←1
[10] t3:→(k>⍴b)/achou
[11]  →(a[i;j+k-1]=b[k])/ainda
[12]  →soma
[13] ainda:k←k+1
[14]  →t3
[15] achou:'=',(⍕i),' ',(⍕j),a[i;]
[16]  j←j+⍴b
[17]  →t2
[18] soma:j←j+1
[19]  →t2
[20] upa:i←i+1
[21]  →t1
[22] fim:
-------------------------------------------------------------
[ 0]  r←resolscri x;pilha;a;b;i
[ 1]  pilha←0 3⍴' '
[ 2]  i←1
[ 3] t1:→(i>⍴x)/fim
[ 4]  →(x[i]∈'1234')/num
[ 5]  →(x[i]='=')/igu
[ 6]  →(x[i]='D')/dup
[ 7]  →(x[i]='+')/som
[ 8]  →(x[i]='P')/pop
[ 9]  →(x[i]='-')/men
[10] xabu:r←-99
[11]  →0
[12] num:pilha←(1 3⍴3 0⍕x[i]),[1]pilha
[13]  →skip
[14] igu:
[15]  a←⌽pilha[1;]
[16]  pilha←1 0↓pilha
[17]  →(0≥1↑⍴pilha)/xabu
[18]  b←⌽pilha[1;]
[19]  pilha←1 0↓pilha
[20]  pilha←(1 3⍴3 0⍕a=b),[1]pilha
[21]  →skip
[22] dup:
[23]  →(0≥1↑⍴pilha)/xabu
[24]  pilha←pilha[1;],[1]pilha
[25]  →skip
```

```
[26] som:
[27]  →(1≥1↑⍴pilha)/xabu
[28]  a←⍪pilha[1;]
[29]  b←⍪pilha[2;]
[30]  pilha←2 0↓pilha
[31]  pilha←(1 3⍴3 0⍪a+b),[1]pilha
[32]  →skip
[33] pop:
[34]  →(0≥1↑⍴pilha)/xabu
[35]  r←⍪pilha[1;]
[36]  pilha←1 0↓pilha
[37]  →(0≥⍴pilha)/xabu
[38]  →skip
[39] men:
[40]  →(1≥1↑⍴pilha)/xabu
[41]  b←⍪pilha[1;]
[42]  a←⍪pilha[2;]
[43]  pilha←2 0↓pilha
[44]  pilha←(1 3⍴3 0⍪a-b),[1]pilha
[45]  →skip
[46] skip:i←i+1
[47]  →t1
[48] fim:
-------------------------------------------------------------
[ 0]  opesq vivon40a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLn40   '
[ 6]  dhx←2 10⍴('05/05/0005'⍪+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍪+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍪⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAn40←ajusta80 FOLHALAn40
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAn40)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 4⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALAn40
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍪VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍪resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerascri
[35]  esse[8;]←1 80⍴80↑(((2×⍴xx)⍴1 0),0)⍀xx
[36]  resp←resp,resolscri xx
```

```
[37]  xx←gerascri
[38]  esse[9;]←1 80ρ80↑(((2×ρxx)ρ1 0),0)↓xx
[39]  resp←resp,resolscri xx
[40]  xx←gerascri
[41]  esse[10;]←1 80ρ80↑(((2×ρxx)ρ1 0),0)↓xx
[42]  resp←resp,resolscri xx
[43]  resu←resu,[1]1 4ρresp
[44]  acuja←(f[;2]='#')/ι1↑ρf
[45]  f[acuja;ι80]←esse[⍳,f[acuja;3 4],' ';]
[46]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'↓clearpage'
[47]  ⍞←(⍕xk←xk+1),'-'
[48]  →testa
[49] fim:upag←(1 0+ρf)ρ' '
[50]  →(1=≡n)/elafa
[51]  upag[1;]←(1↓ρupag)↑'↓begin{verbatim}'
[52]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[53]  upag[2+ι1↑ρresu;ι+/lixo1]←(lixo1←5 0 7 0 3 0 3 0)⍕resu
[54]  upag[3+1↑ρresu;]←(1↓ρupag)↑'↓end{verbatim}'
[55]  →terminando
[56] elafa:aaa←(ylu[;ι36],3 0⍕0 1↓resu)
[57]  lixonol←aaa ΔFM('c:↓apl2↓',((~⍷∧↓⍷EVENTO=' ')/EVENTO),'.gpa')
[58]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[59] terminando:
[60]  upag[1↑ρupag;]←(1↓ρupag)↑'↓end{document}'
[61]  relat[1↑ρrelat;;]←upag
[62]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[63]  lixonol←lixonol ΔFM'c:↓apl2↓',((~⍷∧↓⍷EVENTO=' ')/EVENTO),'.tex'
[64]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[65]  'Arquivo(s) criado(s) com o nome de c:↓apl2↓',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivon55

```
[ 0]  r←ba convbase val;z1;z2;z3;z4;z5
[ 1]  z1←ba|val
[ 2]  val←⌊val÷ba
[ 3]  z2←ba|val
[ 4]  val←⌊val÷ba
[ 5]  z3←ba|val
[ 6]  val←⌊val÷ba
[ 7]  z4←ba|val
[ 8]  val←⌊val÷ba
[ 9]  z5←ba|val
[10]  r←z5,z4,z3,z2,z1
-------------------------------------------------------------
[0]  r←expan55 x
[1]  r←x[ι8],', ',x[8+ι8],', ',x[16+ι8],', ',x[24+ι8],', ',x[32+ι8],', ',x[40+ι8]
-------------------------------------------------------------
[ 0]  r←geracason55;arv;i;ix;tab1;aa;rr;c;g;ca;xi;caca
[ 1]  ix←34?1↑ρLUSI
[ 2]  tab1←LUSI[ix;]
[ 3]  arv←63 9ρ' '
[ 4]  arv[;ι2]←63 2ρ'020406081012141618202224262830323436384042444648505254565860620
      0ρ'-1'
[ 5]  arv[;2+ι2]←63 2ρ'030507091113151719212325272931333537394143454749515355575961630
      0ρ'-1'
[ 6]  i←1
[ 7] t1:→(i>32)/ufa1
[ 8]  arv[31+i;4+ι5]←hashsim trim tab1[i;]
[ 9]  i←i+1
[10]  →t1
[11] ufa1:
```

```
[12]  i←31
[13] t3:→(i<1)/ufa2
[14]  arv[i;4+⍳5]←hashsim arv[(↓arv[i;⍳2]);4+⍳5],arv[(↓arv[i;2+⍳2]);4+⍳5]
[15]  i←i-1
[16]  →t3
[17] ufa2:
[18]  aa←32 7⍴0
[19]  aa[1;]←32 33 17 9 5 3 1
[20]  aa[2;]←33 32 17 9 5 3 1
[21]  aa[3;]←34 35 16 9 5 3 1
[22]  aa[4;]←35 34 16 9 5 3 1
[23]  aa[5;]←36 37 19 8 5 3 1
[24]  aa[6;]←37 36 19 8 5 3 1
[25]  aa[7;]←38 39 18 8 5 3 1
[26]  aa[8;]←39 38 18 8 5 3 1
[27]  aa[9;]←40 41 21 11 4 3 1
[28]  aa[10;]←41 40 21 11 4 3 1
[29]  aa[11;]←42 43 20 11 4 3 1
[30]  aa[12;]←43 42 20 11 4 3 1
[31]  aa[13;]←44 45 23 10 4 3 1
[32]  aa[14;]←45 44 23 10 4 3 1
[33]  aa[15;]←46 47 22 10 4 3 1
[34]  aa[16;]←47 46 22 10 4 3 1
[35]  aa[17;]←48 49 25 13 7 2 1
[36]  aa[18;]←49 48 25 13 7 2 1
[37]  aa[19;]←50 51 24 13 7 2 1
[38]  aa[20;]←51 50 24 13 7 2 1
[39]  aa[21;]←52 53 27 12 7 2 1
[40]  aa[22;]←53 52 27 12 7 2 1
[41]  aa[23;]←54 55 26 12 7 2 1
[42]  aa[24;]←55 54 26 12 7 2 1
[43]  aa[25;]←56 57 29 15 6 2 1
[44]  aa[26;]←57 56 29 15 6 2 1
[45]  aa[27;]←58 59 28 15 6 2 1
[46]  aa[28;]←59 58 28 15 6 2 1
[47]  aa[29;]←60 61 31 14 6 2 1
[48]  aa[30;]←61 60 31 14 6 2 1
[49]  aa[31;]←62 63 30 14 6 2 1
[50]  aa[32;]←63 62 30 14 6 2 1
[51]  rr←(4,97)⍴' '
[52]  xi←4?32
[53]  c←1
[54] h1:→(c>4)/fi
[55]  ca←xi[c]
[56]  g←1
[57]  caca←''
[58] j1:→(g>7)/lo
[59]  caca←caca,(2 0⍕aa[ca;g]),'=',arv[aa[ca;g];4+⍳5]
[60]  g←g+1
[61]  →j1
[62] lo:
[63]  rr[c;]←'1',tab1[ca;],,caca
[64]  c←c+1
[65]  →h1
[66] fi:rr[3;⍳41]←'0',tab1[33;]
[67]  rr[3;44+⍳5]←'*'
[68]  rr[4;⍳41]←'0',tab1[34;]
[69]  rr[4;44+⍳5]←'*'
[70]  r←rr[4?4;]
-------------------------------------------------------------
[ 0]  r←hashsim x;k;i;z;a;z1;z2;z3;z4;z5;⎕IO
[ 1]  ⎕IO←0
[ 2]  →(isnum x)/erro1
```

```
[ 3]  k←⍴x
[ 4]  i←0
[ 5]  a←656356701
[ 6] t1:→(i≥⍴x)/acabou
[ 7]  z←(⎕AV⍳x[i])×i+1   ⍝ era ×i
[ 8]  k←k+z+a
[ 9]  k←656356767|k
[10]  a←k
[11]  i←i+1
[12]  →t1
[13] acabou:r←0
[14]  r←B58[58 convbase k]
[15]  →0
[16] erro1:'operando tem que ser alfa'
------------------------------------------------------------
[ 0]  r←a ondeta b;i;j;k;⎕PW;⎕IO
[ 1]  ⎕IO←1
[ 2]  ⎕PW←120
[ 3]  b←,b
[ 4]  i←1
[ 5] t1:→(i>1↑⍴a)/fim
[ 6]  j←1
[ 7] t2:→(j>1↓⍴a)/upa
[ 8]  →(a[i;j]≠b[1])/soma
[ 9]  k←1
[10] t3:→(k>⍴b)/achou
[11]  →(a[i;j+k-1]=b[k])/ainda
[12]  →soma
[13] ainda:k←k+1
[14]  →t3
[15] achou:'=',(⍕i),' ',(⍕j),a[i;]
[16]  j←j+⍴b
[17]  →t2
[18] soma:j←j+1
[19]  →t2
[20] upa:i←i+1
[21]  →t1
[22] fim:
------------------------------------------------------------
[0]  testalusi;i
[1]  i←1
[2] t1:→(i>80)/fim
[3]  LUSI[i;],hashsim,LUSI[i;]
[4]  i←i+1
[5]  →t1
[6] fim:
------------------------------------------------------------
[0]  r←tirabarras x;i
[1]  i←0
[2]  r←(⍴x)⍴' '
[3] t1:→(i≥1↑⍴x)/fim
[4]  r[i;]←(1↓⍴r)↑(x[i;]≠'/')/x[i;]
[5]  i←i+1
[6]  →t1
[7] fim:
------------------------------------------------------------
[ 0]  opesq vivon55a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz;⎕IO
[ 1]  ⎕IO←1
[ 2]  →(0≠⎕NC'opesq')/qveio
[ 3]  opesq←10⍴' '
[ 4] qveio:
[ 5]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
```

```
[ 6]  EVENTO←'PLn55   '
[ 7]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕⍳n
[10]  ylu←n grupo ylu
[11]  FOLHALAn55←ajusta80 FOLHALAn55
[12]  relat←((2+1↑ρylu),1 0+ρFOLHALAn55)ρ' '
[13]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLO1'
[14]  xk←1 ⋄ resu←0 5ρ0
[15] testa:→(xk>1↑ρylu)/fim
[16]  esse←21 80ρ' '
[17]  f←FOLHALAn55
[18]  esse[1;]←80↑dhx[1;]
[19]  esse[2;]←80↑dhx[2;]
[20]  esse[3;]←80↑4 2⍕VERSAOa←1.2
[21]  esse[4;]←80↑ylu[xk;⍳6]
[22]  →(36=1↓ρylu)/zebra
[23]  qlinha←(1=∧/[2]f[;⍳4]=((1↑ρf),4)ρ'\#05')/⍳1↑ρf
[24]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[25]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[26]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[27]  →maiszebra
[28] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[32]  esse[20;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[21;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] inica:
[35]  xx←geracason55
[36]  esse[8;]←80↑xx[1;1+⍳40]
[37]  esse[9;]←80↑xx[1;41+⍳2]
[38]  esse[10;]←80↑expan55 xx[1;49+⍳48]
[39]  esse[11;]←80↑xx[2;1+⍳40]
[40]  esse[12;]←80↑xx[2;41+⍳2]
[41]  esse[13;]←80↑expan55 xx[2;49+⍳48]
[42]  esse[14;]←80↑xx[3;1+⍳40]
[43]  esse[15;]←80↑xx[3;41+⍳2]
[44]  esse[16;]←80↑expan55 xx[3;49+⍳48]
[45]  esse[17;]←80↑xx[4;1+⍳40]
[46]  esse[18;]←80↑xx[4;41+⍳2]
[47]  esse[19;]←80↑expan55 xx[4;49+⍳48]
[48]  resu←resu,[1]1 5ρresp,⍪xx[1;1],' ',xx[2;1],' ',xx[3;1],' ',xx[4;1]
[49]  acuja←(f[;2]='#')/⍳1↑ρf
[50]  f[acuja;⍳80]←esse[⍪,f[acuja;3 4],' ';]
[51]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\clearpage'
[52]  ⍞←(⍕xk←xk+1),'-'
[53]  →testa
[54] fim:upag←(1 0+ρf)ρ' '
[55]  →(1=≡n)/elafa
[56]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[57]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[58]  upag[2+⍳1↑ρresu;⍳+/lixo1]←(lixo1←5 0 8 0 2 0 2 0 2 0)⍕resu
[59]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[60]  →terminando
[61] elafa:aaa←(ylu[;⍳36],4 0⍕0 1↓resu)
[62]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[63]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[64] terminando:
[65]  upag[1↑ρupag;]←(1↓ρupag)↑'\end{document}'
[66]  relat[1↑ρrelat;;]←upag
[67]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
```

```
[68]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[69]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[70]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivon60

```
[ 0]  opesq vivon60a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLn60   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAn60←ajusta80 FOLHALAn60
[11]  relat←((2+1↑⍴ylu),1 34+⍴FOLHALAn60)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 82⍴' '
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←13 80⍴' '
[16]  f←((1↑⍴FOLHALAn60),114)↑FOLHALAn60
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[12;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[13;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←?1↑⍴casosn60
[35]  esse[8;⍳50]←casosn60[xx;⍳50]
[36]  esse[9;⍳10]←casosn60[xx;51+⍳10]
[37]  esse[10;⍳10]←casosn60[xx;88+⍳10]
[38]  esse[11;⍳10]←casosn60[xx;125+⍳10]
[39]  resp←3 0⍎resp  ⍝ 62+⍳14 e 77+⍳10
[40]  resp←resp,'=',,casosn60[xx;99+⍳14],'-',casosn60[xx;114+⍳10]
[41]  resp←resp,'=',,casosn60[xx;136+⍳14],'-',casosn60[xx;151+⍳10]
[42]  resp←resp,'=',,casosn60[xx;173+⍳14],'-',casosn60[xx;188+⍳10]
[43]  resu←resu,[1]1 82⍴resp
[44]  acuja←(f[;2]='#')/⍳1↑⍴f
[45]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[46]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[47]  ⍞←(⍎xk←xk+1),'-'
[48]  →testa
[49] fim:upag←(1 0+⍴f)⍴' '
[50]  →(1=≡n)/elafa
[51]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[52]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
```

```
[53]  upag[2+⍳1↑⍴resu;⍳82]←resu
[54]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[55]  →terminando
[56] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[57]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[58]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[59] terminando:
[60]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[61]  relat[1↑⍴relat;;]←upag
[62]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[63]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[64]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[65]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivon65

```
[0]  AVISO
[1]  'demora'
-------------------------------------------------------------
[ 0]  r←filtro bloom cand;i1;i2;i3;i4;i5
[ 1] ⍝ retorna o filtro devidamente atualizado pelo cand
[ 2]  i1←h1 cand
[ 3]  i2←h2 cand
[ 4]  i3←h3 cand
[ 5]  i4←h4 cand
[ 6]  i5←h5 cand
[ 7]  filtro[i1]←1
[ 8]  filtro[i2]←1
[ 9]  filtro[i3]←1
[10]  filtro[i4]←1
[11]  filtro[i5]←1
[12]  r←filtro
-------------------------------------------------------------
[ 0]  r←geracason65;cara;i
[ 1]  r←2010 150⍴' '
[ 2]  i←1
[ 3] t1:→(i>2010)/fim
[ 4]  r[i;]←LEG[?150⍴65]
[ 5]  i←i+1
[ 6]  →t1
[ 7] fim:
[ 8]  i←2000
[ 9] t2:→(i>2010)/mesmo
[10]  cara←1=?2
[11]  →(cara=1)/soma
[12]  r[i;]←r[?1000;]
[13] soma:
[14]  i←i+1
[15]  →t2
[16] mesmo:
-------------------------------------------------------------
[ 0]  r←h1 x;s;i
[ 1]  s←0
[ 2]  i←1
[ 3] t1:→(i>150)/fim
[ 4]  s←s+(⎕AV⍳x[i])×i
[ 5]  →(s<1000000000)/ct
[ 6]  s←1000000000|s
[ 7] ct:
[ 8]  i←i+1
[ 9]  →t1
```

```
[10] fim:r←1+20000|s
------------------------------------------------------------
[ 0]  r←h2 x;s;i
[ 1]  s←0
[ 2]  i←1
[ 3] t1:→(PRIMO[i]>150)/fim
[ 4]  s←s+(⎕AV⍳x[PRIMO[i]])×PRIMO[i]
[ 5]  →(s<1000000000)/ct
[ 6]  s←1000000000|s
[ 7] ct:
[ 8]  i←i+1
[ 9]  →t1
[10] fim:r←1+20000|s
------------------------------------------------------------
[ 0]  r←h3 x;y;max;p1;p2;i
[ 1]  y←((⌈(1↑⍴,x)÷8),8)⍴,x,7⍴⎕AV[⎕IO]
[ 2]  max←-999999
[ 3]  i←1
[ 4] t1:→(i>1↑⍴y)/fim
[ 5]  p1←¯1+⎕AV⍳y[i;⍳4]
[ 6]  p2←¯1+⎕AV⍳y[i;4+⍳4]
[ 7]  p1←256 256 256 256⊥p1
[ 8]  p2←256 256 256 256⊥p2
[ 9]  p1←1+20000|p1
[10]  p2←1+20000|p2
[11]  max←max⌈p1⌈p2
[12]  i←i+1
[13]  →t1
[14] fim:r←max
------------------------------------------------------------
[ 0]  r←h4 x;g1;g2;i;mask;p1;um;y;z
[ 1]  mask←0 0 0 0 0 0 1 0 ⍝ 02
[ 2]  mask←mask,1 1 0 0 1 0 1 0 ⍝ CA
[ 3]  mask←mask,1 1 1 1 1 1 1 0 ⍝ FE
[ 4]  mask←mask,1 0 1 1 1 0 1 0 ⍝ BA
[ 5]  mask←mask,1 0 1 1 1 0 1 0 ⍝ BA
[ 6]  mask←mask,1 1 0 0 1 0 1 0 ⍝ CA
[ 7]  mask←mask,0 0 1 0 0 0 1 0 ⍝ 22
[ 8]  mask←mask,1 0 0 0 1 0 0 0 ⍝ 88
[ 9]  y←((⌈(1↑⍴,x)÷8),8)⍴(,x),7⍴⎕AV[256]
[10]  i←1
[11] t1:→(i>1↑⍴y)/fim
[12]  p1←¯1+⎕AV⍳y[i;]
[13]  z←1
[14]  um←''
[15] t2:→(z>8)/ufa
[16]  um←um,(8⍴2)⊤p1[z]
[17]  z←z+1
[18]  →t2
[19] ufa:
[20]  mask←mask≠um
[21]  i←i+1
[22]  →t1
[23] fim:
[24]  g1←(32⍴2)⊥mask[⍳32]
[25]  g2←(32⍴2)⊥mask[32+⍳32]
[26]  r←1+20000|⎕|g1-g2
------------------------------------------------------------
[0]  r←h5 x;in;ct
[1]  in←0
[2]  ct←0
[3] t1:→((2*in)>⍴,x)/fim
[4]  ct←1000000000|ct+(2*in)×¯1+⎕AV⍳x[2*in]
```

```
[5]  in←in+1
[6]  →t1
[7] fim:r←1+20000|ct
------------------------------------------------------------
[ 0]  r←a ondeta b;i;j;k;⎕PW;⎕IO
[ 1]  ⎕IO←1
[ 2]  ⎕PW←120
[ 3]  b←,b
[ 4]  i←1
[ 5] t1:→(i>1↑⍴a)/fim
[ 6]  j←1
[ 7] t2:→(j>1↓⍴a)/upa
[ 8]  →(a[i;j]≠b[1])/soma
[ 9]  k←1
[10] t3:→(k>⍴b)/achou
[11]  →(a[i;j+k-1]=b[k])/ainda
[12]  →soma
[13] ainda:k←k+1
[14]  →t3
[15] achou:'=',(⍕i),' ',(⍕j),a[i;]
[16]  j←j+⍴b
[17]  →t2
[18] soma:j←j+1
[19]  →t2
[20] upa:i←i+1
[21]  →t1
[22] fim:
------------------------------------------------------------
[ 0]  r←resolven65 x;c1;c2;c3;c4;c5;i
[ 1]  FILTRO←20000⍴0
[ 2]  i←1
[ 3] t1:→(i>2000)/fim
[ 4]  FILTRO←FILTRO bloom x[i;]
[ 5]  i←i+1
[ 6]  →t1
[ 7] fim:
[ 8]  r←0⍴0
[ 9] t2:→(i>2010)/mesmo
[10]  c1←h1 x[i;]
[11]  c2←h2 x[i;]
[12]  c3←h3 x[i;]
[13]  c4←h4 x[i;]
[14]  c5←h5 x[i;]
[15]  →((FILTRO[c1]=1)∧(FILTRO[c2]=1)∧(FILTRO[c3]=1)∧(FILTRO[c4]=1)∧(FILTRO[c5]=1))/sim
[16] nao:r←r,0
[17]  i←i+1
[18]  →t2
[19] sim:
[20]  r←r,1
[21]  i←i+1
[22]  →t2
[23] mesmo:
------------------------------------------------------------
[ 0]  opesq vivon65a n;CORRECAO;DARQ;EVENTO;QUIPN;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  QUIPN←'0'
[ 5]  DARQ←'0'
[ 6]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 7]  EVENTO←'PLn65   '
[ 8]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
```

```
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 9]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ QUIPN←n[5]
[10]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[11]  ylu←n grupo ylu
[12]  FOLHALAn65←ajusta80 FOLHALAn65
[13]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAn65)⍴' '
[14]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[15]  xk←1 ⋄ resu←0 11⍴0
[16] testa:→(xk>1↑⍴ylu)/fim
[17]  esse←10 80⍴' '
[18]  f←FOLHALAn65
[19]  esse[1;]←80↑dhx[1;]
[20]  esse[2;]←80↑dhx[2;]
[21]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[22]  esse[4;]←80↑ylu[xk;⍳6]
[23]  →(36=1↓⍴ylu)/zebra
[24]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[25]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[26]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[27]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[28]  →maiszebra
[29] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[30] maiszebra:
[31]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[32]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[33]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[34]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[35] inica:
[36]  xx←geracason65
[37]  lixonol←xx ΔFM'c:\apl2\Fn65D',QUIPN,('00'⍕xk),'.myd'
[38]  esse[8;]←1 80⍴80↑'Fn65D',QUIPN,('00'⍕xk),'.myd'
[39]  resp←xk,resolven65 xx
[40]  resu←resu,[1]1 11⍴resp
[41]  acuja←(f[;2]='#')/⍳1↑⍴f
[42]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[44]  ⍞←(⍕xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+⍴f)⍴' '
[47]  →(1=≡n)/elafa
[48]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[49]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[50]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 2 0 2 0 2 0 8 0 2 0 2 0 2 0 2 0)⍕resu
[51]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[52]  →terminando
[53] elafa:aaa←(ylu[;⍳36],2 0 2 0 2 0 2 0 2 0 8 0 2 0 2 0 2 0 2 0⍕0 1↓resu)
[54]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[55]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[56] terminando:
[57]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[58]  relat[1↑⍴relat;;]←upag
[59]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[60]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[61]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[62]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivon75

```
[ 0]  r←RESOLVECM2 y;W;Q;ordem;infinito;k;i;j;passos
[ 1] ⍝ este algoritmo exige a diagonal principal zerada
[ 2] ⍝ algoritmo de Floyd modificado. RABU92, pag 75, corrigido !
```

```
[ 3]  ordem←1↑⍴y
[ 4]  →(ordem=+/0=(,y)[((⍳ordem)×ordem+1)-ordem])/ok55
[ 5]  'a matiz diagonal nao esta zerada'
[ 6]  →0
[ 7] ok55:W←y
[ 8]  infinito←100000000000
[ 9]  Q←W+(infinito×W=0)
[10]  k←1
[11] fff:→(k>ordem)/vai88
[12]  Q[k;k]←0
[13]  →(k=k←k+1)/fff
[14] vai88:k←1 ⋄ passos←(ordem,ordem)⍴0
[15] testak:→(k>ordem)/saik
[16]  i←1
[17] testai:→(i>ordem)/saii
[18]  j←1
[19] testaj:→(j>ordem)/saij
[20]  →((Q[i;k]+Q[k;j])≥Q[i;j])/somao
[21]  Q[i;j]←Q[i;k]+Q[k;j]
[22]  →(passos[i;k]=0)/eda
[23]  passos[i;j]←passos[i;k]
[24]  →somao
[25] eda:passos[i;j]←k
[26] somao:→(j=j←j+1)/testaj
[27] saij:→(i=i←i+1)/testai
[28] saii:
[29]  →(k=k←k+1)/testak
[30] saik:r←(999×Q>1000000000)+(Q×Q<1000000000)
[31]  r←r,passos←passos+(passos=0)×((ordem,ordem)⍴⍳ordem)
------------------------------------------------------------
[ 0]  r←acerta m
[ 1]  i←1
[ 2] t1:→(i>10)/fim
[ 3]  j←1
[ 4] t2:→(j>10)/oba
[ 5]  →((m[i;j]=0)∧(m[j;i]=0))/soma
[ 6]  m[i;j]←m[j;i]←1
[ 7] soma:
[ 8]  j←j+1
[ 9]  →t2
[10] oba:
[11]  i←i+1
[12]  →t1
[13] fim:
[14]  r←m
[15]  )Wsid
------------------------------------------------------------
[ 0]  r←acertan75 m;i;j
[ 1]  i←1
[ 2] t1:→(i>10)/fim
[ 3]  j←1
[ 4] t2:→(j>10)/oba
[ 5]  →((m[i;j]=0)∧(m[j;i]=0))/soma
[ 6]  m[i;j]←m[j;i]←1
[ 7] soma:
[ 8]  j←j+1
[ 9]  →t2
[10] oba:
[11]  i←i+1
[12]  →t1
[13] fim:
[14]  r←m
------------------------------------------------------------
```

```
[ 0]  r←geran75;a;i;ica;azu;ver;res;maz;te1;te2;li;r1;r2
[ 1] denovo:
[ 2]  a←100⍴0
[ 3]  i←1
[ 4] t1:→(i>100)/fi
[ 5]  a[i]←(0 0 0 0 0 0 0 0 0 0 1)[?11]
[ 6]  i←i+1
[ 7]  →t1
[ 8] fi:
[ 9]  a←10 10⍴a
[10]  i←1
[11] t2:→(i>10)/fi2
[12]  a[i;i]←0
[13]  →(0≠+/a[i;])/ok1
[14]  ica←?10
[15]  →(ica=i)/t2
[16]  a[i;ica]←1
[17] ok1:i←i+1
[18]  →t2
[19] fi2:
[20]  i←1
[21] t3:→(i>10)/fi3
[22]  →(0≠+/a[;i])/ok2
[23]  ica←?10
[24]  →(ica=i)/t3
[25]  a[ica;i]←1
[26] ok2:i←i+1
[27]  →t3
[28] fi3:
[29]  a←acertan75 a
[30]  ica←2?10
[31]  li←2?3
[32]  res←a resoln75 ica,li
[33]  →(900<⌈/,⊃res[4])/denovo
[34]  r←3⍴0
[35]  r[1]←res[1]
[36]  r[2]←res[2]
[37]  r[3]←res[3]
-------------------------------------------------------------
[ 0]  r←a ondeta b;i;j;k;⎕PW;⎕IO
[ 1]  ⎕IO←1
[ 2]  ⎕PW←120
[ 3]  b←,b
[ 4]  i←1
[ 5] t1:→(i>1↑⍴a)/fim
[ 6]  j←1
[ 7] t2:→(j>1↓⍴a)/upa
[ 8]  →(a[i;j]≠b[1])/soma
[ 9]  k←1
[10] t3:→(k>⍴b)/achou
[11]  →(a[i;j+k-1]=b[k])/ainda
[12]  →soma
[13] ainda:k←k+1
[14]  →t3
[15] achou:'=',(⍕i),' ',(⍕j),a[i;]
[16]  j←j+⍴b
[17]  →t2
[18] soma:j←j+1
[19]  →t2
[20] upa:i←i+1
[21]  →t1
[22] fim:
-------------------------------------------------------------
```

```
[ 0]  r←a resoln75 aa;ica;li;azu;ver;te1;te2;res;maz;r1;r2
[ 1]  ica←aa[1 2]
[ 2]  li←aa[3 4]
[ 3]  azu←ica[1]
[ 4]  ver←ica[2]
[ 5]  te1←li[1]
[ 6]  te2←li[2]
[ 7]  res←3 10ρ¯1
[ 8]  maz←RESOLVECM2 a
[ 9]  res[1;]←maz[azu;⍳10]×te1
[10]  res[2;]←maz[ver;⍳10]×te2
[11]  res[3;]←res[1;]⌊res[2;]
[12]  R←res
[13]  M←maz
[14]  r1←+/res[3;]=res[1;]
[15]  r2←+/(res[3;]=res[2;])∧(res[1;]≠res[2;])
[16]  r←4ρ0
[17]  r[1]←⊂a
[18]  r[2]←⊂azu,ver,te1,te2
[19]  r[3]←⊂r1,r2
[20]  r[4]←⊂res
------------------------------------------------------------
[ 0]  opesq vivon75a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLn75   '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAn75←ajusta80 FOLHALAn75
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALAn75)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←23 80ρ' '
[16]  f←FOLHALAn75
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑ρf),4)ρ'⍀#05')/⍳1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[22;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[23;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geran75
[35]  esse[7+⍳10;]←10 80↑1 numera 3 0⍎⊃xx[1]
[36]  esse[18;⍳2]←2 0⍎(⊃xx[2])[1]
[37]  esse[19;⍳2]←2 0⍎(⊃xx[2])[3]
[38]  esse[20;⍳2]←2 0⍎(⊃xx[2])[2]
```

```
[39]  esse[21;⍳2]←2 0⍕(⊃xx[2])[4]
[40]  resp←resp,,⊃xx[3]
[41]  resu←resu,[1]1 3⍴resp
[42]  acuja←(f[;2]='#')/⍳1↑⍴f
[43]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[44]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[45]  ⍞←(⍕xk←xk+1),'-'
[46]  →testa
[47] fim:upag←(1 0+⍴f)⍴' '
[48]  →(1=≡n)/elafa
[49]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[50]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[51]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 8 0 3 0)⍕resu
[52]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[53]  →terminando
[54] elafa:aaa←(ylu[;⍳36],3 0⍕0 1↓resu)
[55]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[56]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[57] terminando:
[58]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[59]  relat[1↑⍴relat;;]←upag
[60]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[61]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[62]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[63]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivoo00

```
[0]  r←examinadefi x;z
[1]  z←(x[;1]='%')/⍳1↑⍴x
[2]  r←x[z;⍳20]
-------------------------------------------------------------
[ 0]  exemploso00;r;lixo
[ 1] ⍝ esta funcao imprime todos os exercicios do banco de dados
[ 2]  EXEMPLOSo00←ajusta80 EXEMPLOSo00
[ 3]  r←ajusta80 ⎕FM'c:\apl2\VIVOBLO1'
[ 4]  r←r,[1]1 80⍴80↑'\section*{Exemplos de o00}'
[ 5]  r←r,[1]EXEMPLOSo00
[ 6]  r←r,[1]1 80⍴80↑'\end{document}'
[ 7]  lixo←r ⎕FM'c:\apl2\exemo00.tex'
[ 8]  'Salvo em c:\apl2\ com o nome de exemo00.tex'
-------------------------------------------------------------
[ 0]  r←geradirt x;lin;i;tam
[ 1]  r←(((+/(,x[;1])='%')÷3),20)⍴' '
[ 2]  tam←0
[ 3]  lin←1
[ 4]  i←1
[ 5] t1:→(i>1↑⍴x)/fim
[ 6]  →((x[i;1]='%')∧(x[i;2]='i'))/comeca
[ 7]  →((x[i;1]='%')∧(x[i;2]='f'))/termina
[ 8]  →((x[i;1]='%')∧(x[i;2]='r'))/resposta
[ 9]  tam←tam+1
[10]  i←i+1
[11]  →t1
[12] comeca:r[lin;⍳3]←x[i;3 4 5]
[13]  r[lin;5+⍳5]←5 0⍕i
[14]  tam←0
[15]  i←i+1
[16]  →t1
[17] resposta:r[lin;10+⍳5]←5 0⍕tam
[18]  i←i+1
```

```
[19]  →t1
[20] termina:r[lin;15+⍳5]←5 0⍕i-1
[21]  lin←lin+1
[22]  i←i+1
[23]  →t1
[24] fim:
-------------------------------------------------------------
[ 0]  r←gerao00 n;x;quais;i;y;resps;defs
[ 1]  DEFIo00←ajusta80 DEFIo00
[ 2]  x←geradirt DEFIo00
[ 3]  y←((1↑⍴x),4)⍴⍕,x,' '
[ 4]  quais←n?1↑⍴y
[ 5]  resps←''
[ 6]  defs←0 80⍴' '
[ 7]  i←1
[ 8] t1:→(i>n)/fim
[ 9]  defs←defs,[1]DEFIo00[y[quais[i];2]+⍳y[quais[i];3];]
[10]  resps←resps,' | ',trim DEFIo00[y[quais[i];4];]
[11]  i←i+1
[12]  →t1
[13] fim:r←2⍴0
[14]  r[1]←⊂defs
[15]  r[2]←⊂1↓resps
[16] ⍝'Tamanho ',⍕1↑⍴r
-------------------------------------------------------------
[ 0]  r←simula n;x;i
[ 1]  x←n 10⍴0
[ 2]  i←1
[ 3] t1:→(i>n)/fim
[ 4]  x[i;]←10?25
[ 5]  i←i+1
[ 6]  →t1
[ 7] fim:
[ 8]  i←1
[ 9] t2:→(i>25)/xu
[10]  i,+/i=,x
[11]  i←i+1
[12]  →t2
[13] xu:
-------------------------------------------------------------
[ 0]  todoso00;r;lixo
[ 1] ⍝ esta funcao imprime todos os exercicios do banco de dados
[ 2]  DEFIo00←ajusta80 DEFIo00
[ 3]  r←ajusta80 ⎕FM'c:\apl2\VIVOBLO1'
[ 4]  r←r,[1]1 80⍴80↑'\section*{Listagem de todos os problemas de o00}'
[ 5]  r←r,[1]1 80⍴80↑'\begin{enumerate}'
[ 6]  r←r,[1]DEFIo00
[ 7]  r←r,[1]1 80⍴80↑'\end{enumerate}'
[ 8]  r←r,[1]1 80⍴80↑'\end{document}'
[ 9]  lixo←r ⎕FM'c:\apl2\todoso00.tex'
[10]  'Salvo em c:\apl2\ com o nome de todoso00.tex'
-------------------------------------------------------------
[ 0]  opesq vivoo00a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLo00   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
```

```
[ 9]  ylu←n grupo ylu
[10]  FOLHALAo00←ajusta80 FOLHALAo00
[11]  relat←((2+1↑⍴ylu),1 30+⍴FOLHALAo00)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 254⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←175 80⍴' '
[16]  f←FOLHALAo00
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[174;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[175;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerao00 10
[35]  →(166≥1↑⍴⊃xx[1])/blz88
[36]  ⎕←'$'
[37]  →inica
[38] blz88:
[39]  →(250≥1↑⍴⊃xx[2])/blz89
[40]  ⎕←'%'
[41]  →inica
[42] blz89:
[43]  esse[7+⍳166;]←166 80↑⊃xx[1]
[44]  resp←(3 0⍕resp),':',250↑⊃xx[2]
[45]  resu←resu,[1]1 254⍴resp
[46]  acuja←(f[;2]='#')/⍳1↑⍴f
[47]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4 5],' ';]
[48]  relat[1+xk;;]←(((⍴f)+0 30)↑f),[1](1,30+1↓⍴f)⍴200↑'\clearpage'
[49]  ⎕←(⍕xk←xk+1),'-'
[50]  →testa
[51] fim:upag←(1 30+⍴f)⍴' '
[52]  →(1=≡n)/elafa
[53]  upag[1;]←(1↓⍴upag)↑'\scriptsize \begin{verbatim}'
[54]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO,'  so os primeiros 110
       bytes'
[55]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),110)↑resu
[56]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[57]  →terminando
[58] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[59]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[60]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[61] terminando:
[62]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[63]  relat[1↑⍴relat;;]←upag
[64]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[65]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[66]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[67]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[ 0]  opesq vivot35a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
```

```
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLt35   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAt35←ajusta80 FOLHALAt35
[11]  relat←((2+1↑⍴ylu),1 30+⍴FOLHALAt35)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 254⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←172 80⍴' '
[16]  f←FOLHALAt35
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[171;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[172;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerat35 10
[35]  →(163≥1↑⍴⊃xx[1])/blz88
[36]  ⍞←'$'
[37]  →inica
[38] blz88:
[39]  →(250≥1↑⍴⊃xx[2])/blz89
[40]  ⍞←'%'
[41]  →inica
[42] blz89:
[43]  esse[7+⍳163;]←163 80↑⊃xx[1]
[44]  resp←(3 0⍕resp),':',250↑⊃xx[2]
[45]  resu←resu,[1]1 254⍴resp
[46]  acuja←(f[;2]='#')/⍳1↑⍴f
[47]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4 5],' ';]
[48]  relat[1+xk;;]←(((⍴f)+0 30)↑f),[1](1,30+1↓⍴f)⍴200↑'\clearpage'
[49]  ⍞←(⍕xk←xk+1),'-'
[50]  →testa
[51] fim:upag←(1 30+⍴f)⍴' '
[52]  →(1=≡n)/elafa
[53]  upag[1;]←(1↓⍴upag)↑'\scriptsize \begin{verbatim}'
[54]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO,'  so os primeiros 110
       bytes'
[55]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),110)↑resu
[56]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[57]  →terminando
[58] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[59]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[60]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[61] terminando:
```

```
[62]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[63]  relat[1↑⍴relat;;]←upag
[64]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[65]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[66]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[67]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivoo01

```
[ 0]  r←x achaq31 in;i;j;viz;k;qtv;val
[ 1]  i←in[1]
[ 2]  j←in[2]
[ 3]  viz←8 2⍴((i-1),j-1),((i-1),j),((i-1),j+1),(i,j-1),(i,j+1),((i+1),j-1),((i+1),j),((i+
      1),j+1)
[ 4]  viz←viz,0
[ 5]  k←1
[ 6]  qtv←0
[ 7]  val←0
[ 8] t2:
[ 9]  →(k>8)/fim
[10]  →(x[i;j]≠0)/soma
[11]  →((viz[k;1]<1)∨(viz[k;1]>4)∨(viz[k;2]<1)∨(viz[k;2]>4))/soma
[12]  →(x[viz[k;1];viz[k;2]]=0)/soma
[13]  qtv←qtv+1
[14]  val←val+x[viz[k;1];viz[k;2]]
[15] soma:
[16]  k←k+1
[17]  →t2
[18] fim:r←val,qtv
-------------------------------------------------------------
[ 0]  r←arrq25 x;i;z
[ 1]  r←6 80⍴' '
[ 2]  z←⊃x[1]
[ 3]  i←1
[ 4] t1:→(i>6)/fim
[ 5]  r[i;]←80↑(⍕z[i;1]),'&',(⍕z[i;2]),'&',(⍕z[i;3]),'&',(⍕z[i;4]),'&',(⍕z[i;5]),'&',(⍕z[i
      ;6]),'\\ \hline'
[ 6]  i←i+1
[ 7]  →t1
[ 8] fim:
-------------------------------------------------------------
[0]  r←arrq31 x
[1]  r←4 80⍴' '
[2]  r[1;]←80↑(⍕x[1;1]),'&',(⍕x[1;2]),'&',(⍕x[1;3]),'&',(⍕x[1;4]),'\\ \hline'
[3]  r[2;]←80↑(⍕x[2;1]),'&',(⍕x[2;2]),'&',(⍕x[2;3]),'&',(⍕x[2;4]),'\\ \hline'
[4]  r[3;]←80↑(⍕x[3;1]),'&',(⍕x[3;2]),'&',(⍕x[3;3]),'&',(⍕x[3;4]),'\\ \hline'
[5]  r[4;]←80↑(⍕x[4;1]),'&',(⍕x[4;2]),'&',(⍕x[4;3]),'&',(⍕x[4;4]),'\\ \hline'
-------------------------------------------------------------
[ 0]  r←arrq32 x;i;t;d;v;j
[ 1]  r←3 80⍴' '
[ 2]  v←⊃x[1]
[ 3]  d←⊃x[2]
[ 4]  j←1
[ 5]  i←1
[ 6]  t←''
[ 7] t1:→(i>8)/f2
[ 8]  →(d[i]='↑')/cima
[ 9]  →(d[i]='↓')/baixo
[10]  →(d[i]='←')/esquerda
[11] direita:
[12]  t←t,' ',(⍕v[i]),' cm para a direita,'
```

```
[13]  →(50>ρt)/junta
[14]  r[j;]←80↑t
[15]  t←''
[16]  j←j+1
[17]  →junta
[18] esquerda:
[19]  t←t,' ',(⍕v[i]),' cm para a esquerda,'
[20]  →(50>ρt)/junta
[21]  r[j;]←80↑t
[22]  t←''
[23]  j←j+1
[24]  →junta
[25] cima:
[26]  t←t,' ',(⍕v[i]),' cm para cima,'
[27]  →(50>ρt)/junta
[28]  r[j;]←80↑t
[29]  t←''
[30]  j←j+1
[31]  →junta
[32] baixo:
[33]  t←t,' ',(⍕v[i]),' cm para baixo,'
[34]  →(50>ρt)/junta
[35]  r[j;]←80↑t
[36]  t←''
[37]  j←j+1
[38] junta:
[39]  i←i+1
[40]  →t1
[41] f2:t←¯1↓t
[42]  r[j;]←80↑t
-------------------------------------------------------------
[0]  r←arrq44 a;x;y;z
[1]  y←1 80ρ80↑'\begin{tabular}{',((2×1↓ρa)ρ'|l'),'|} \hline'
[2]  x←2 80ρ(80↑(1↓'&555 '⍕a[1;]),'\\ \hline'),80↑(1↓'&555 '⍕a[2;]),'\\ \hline'
[3]  z←1 80ρ80↑'...',((¯1+1↓ρa)ρ'&'),'\\ \hline \end{tabular}'
[4]  r←y,[1]x,[1]z
-------------------------------------------------------------
[0]  r←formataq29 x
[1]  r←5 80ρ' '
[2]  r[1;]←80↑(⍕x[1;1]),'&',(⍕x[1;2]),'&',(⍕x[1;3]),'&',(⍕x[1;4]),'&',(⍕x[1;5]),'\\ \hlin
      e'
[3]  r[2;]←80↑(⍕x[2;1]),'&',(⍕x[2;2]),'&',(⍕x[2;3]),'&',(⍕x[2;4]),'&\\ \hline'
[4]  r[3;]←80↑(⍕x[3;1]),'&&&&\\ \hline'
[5]  r[4;]←80↑(⍕x[4;1]),'&&&&\\ \hline'
[6]  r[5;]←80↑(⍕x[5;1]),'&&&&A\\ \hline'
-------------------------------------------------------------
[0]  r←geraq01;x;y
[1] novo:
[2]  x←10×2+?20
[3]  y←10+?10
[4]  →((x=8)∧(y=15))/novo
[5]  r←x,y
-------------------------------------------------------------
[0]  r←geraq02;x;y
[1]  x←10+?50
[2]  y←200+?100
[3] ⍝ r←x,y,±10 0⍕y×(100-x)÷100
[4]  r←x,y
-------------------------------------------------------------
[0]  r←geraq03;x;y;z;w
[1]  x←0.5+(?100)÷100
[2]  y←20+?30
[3]  z←1+?4
```

```
[4]  w←500+10×?20
[5]  r←x,y,z,w
------------------------------------------------------------
[0]  r←geraq04;a;b
[1]  r←(a←20+?80),(b←20+?80)
[2]  r←a,b,(a+b)-10+?40
------------------------------------------------------------
[0]  r←geraq05
[1]  r←(100+?5⍴100)÷10
------------------------------------------------------------
[0]  r←geraq06;x;d
[1]  x←2×80+?40
[2]  d←?9
[3]  r←x,d
------------------------------------------------------------
[0]  r←geraq07
[1]  r←35+?20
------------------------------------------------------------
[  0]  ru←geraq08;j;iz;is;z1;z2;r1;r2;r3;r;res
[  1]  j←15 2⍴5
[  2]  j←¯1+?j
[  3]  r←6 5⍴0
[  4] ⍝ partida 1 A x B
[  5]  r[1;1]←r[1;1]+j[1;1]>j[1;2]
[  6]  r[1;2]←r[1;2]+j[1;1]=j[1;2]
[  7]  r[1;3]←r[1;3]+j[1;1]<j[1;2]
[  8]  r[1;4]←r[1;4]+j[1;1]
[  9]  r[1;5]←r[1;5]+j[1;2]
[ 10]  r[2;1]←r[2;1]+j[1;1]<j[1;2]
[ 11]  r[2;2]←r[2;2]+j[1;1]=j[1;2]
[ 12]  r[2;3]←r[2;3]+j[1;1]>j[1;2]
[ 13]  r[2;4]←r[2;4]+j[1;2]
[ 14]  r[2;5]←r[2;5]+j[1;1]
[ 15] ⍝ partida 2 A x C
[ 16]  r[1;1]←r[1;1]+j[2;1]>j[2;2]
[ 17]  r[1;2]←r[1;2]+j[2;1]=j[2;2]
[ 18]  r[1;3]←r[1;3]+j[2;1]<j[2;2]
[ 19]  r[1;4]←r[1;4]+j[2;1]
[ 20]  r[1;5]←r[1;5]+j[2;2]
[ 21]  r[3;1]←r[3;1]+j[2;1]<j[2;2]
[ 22]  r[3;2]←r[3;2]+j[2;1]=j[2;2]
[ 23]  r[3;3]←r[3;3]+j[2;1]>j[2;2]
[ 24]  r[3;4]←r[3;4]+j[2;2]
[ 25]  r[3;5]←r[3;5]+j[2;1]
[ 26] ⍝ partida 3 A x D
[ 27]  r[1;1]←r[1;1]+j[3;1]>j[3;2]
[ 28]  r[1;2]←r[1;2]+j[3;1]=j[3;2]
[ 29]  r[1;3]←r[1;3]+j[3;1]<j[3;2]
[ 30]  r[1;4]←r[1;4]+j[3;1]
[ 31]  r[1;5]←r[1;5]+j[3;2]
[ 32]  r[4;1]←r[4;1]+j[3;1]<j[3;2]
[ 33]  r[4;2]←r[4;2]+j[3;1]=j[3;2]
[ 34]  r[4;3]←r[4;3]+j[3;1]>j[3;2]
[ 35]  r[4;4]←r[4;4]+j[3;2]
[ 36]  r[4;5]←r[4;5]+j[3;1]
[ 37] ⍝ partida 4 A x E
[ 38]  r[1;1]←r[1;1]+j[4;1]>j[4;2]
[ 39]  r[1;2]←r[1;2]+j[4;1]=j[4;2]
[ 40]  r[1;3]←r[1;3]+j[4;1]<j[4;2]
[ 41]  r[1;4]←r[1;4]+j[4;1]
[ 42]  r[1;5]←r[1;5]+j[4;2]
[ 43]  r[5;1]←r[5;1]+j[4;1]<j[4;2]
[ 44]  r[5;2]←r[5;2]+j[4;1]=j[4;2]
```

```
[ 45]  r[5;3]←r[5;3]+j[4;1]>j[4;2]
[ 46]  r[5;4]←r[5;4]+j[4;2]
[ 47]  r[5;5]←r[5;5]+j[4;1]
[ 48] ⍝ partida 5 A x F
[ 49]  r[1;1]←r[1;1]+j[5;1]>j[5;2]
[ 50]  r[1;2]←r[1;2]+j[5;1]=j[5;2]
[ 51]  r[1;3]←r[1;3]+j[5;1]<j[5;2]
[ 52]  r[1;4]←r[1;4]+j[5;1]
[ 53]  r[1;5]←r[1;5]+j[5;2]
[ 54]  r[6;1]←r[6;1]+j[5;1]<j[5;2]
[ 55]  r[6;2]←r[6;2]+j[5;1]=j[5;2]
[ 56]  r[6;3]←r[6;3]+j[5;1]>j[5;2]
[ 57]  r[6;4]←r[6;4]+j[5;2]
[ 58]  r[6;5]←r[6;5]+j[5;1]
[ 59] ⍝ partida 6 B x C
[ 60]  r[2;1]←r[2;1]+j[6;1]>j[6;2]
[ 61]  r[2;2]←r[2;2]+j[6;1]=j[6;2]
[ 62]  r[2;3]←r[2;3]+j[6;1]<j[6;2]
[ 63]  r[2;4]←r[2;4]+j[6;1]
[ 64]  r[2;5]←r[2;5]+j[6;2]
[ 65]  r[3;1]←r[3;1]+j[6;1]<j[6;2]
[ 66]  r[3;2]←r[3;2]+j[6;1]=j[6;2]
[ 67]  r[3;3]←r[3;3]+j[6;1]>j[6;2]
[ 68]  r[3;4]←r[3;4]+j[6;2]
[ 69]  r[3;5]←r[3;5]+j[6;1]
[ 70] ⍝ partida 7 B x D
[ 71]  r[2;1]←r[2;1]+j[7;1]>j[7;2]
[ 72]  r[2;2]←r[2;2]+j[7;1]=j[7;2]
[ 73]  r[2;3]←r[2;3]+j[7;1]<j[7;2]
[ 74]  r[2;4]←r[2;4]+j[7;1]
[ 75]  r[2;5]←r[2;5]+j[7;2]
[ 76]  r[4;1]←r[4;1]+j[7;1]<j[7;2]
[ 77]  r[4;2]←r[4;2]+j[7;1]=j[7;2]
[ 78]  r[4;3]←r[4;3]+j[7;1]>j[7;2]
[ 79]  r[4;4]←r[4;4]+j[7;2]
[ 80]  r[4;5]←r[4;5]+j[7;1]
[ 81] ⍝ partida 8 B x E
[ 82]  r[2;1]←r[2;1]+j[8;1]>j[8;2]
[ 83]  r[2;2]←r[2;2]+j[8;1]=j[8;2]
[ 84]  r[2;3]←r[2;3]+j[8;1]<j[8;2]
[ 85]  r[2;4]←r[2;4]+j[8;1]
[ 86]  r[2;5]←r[2;5]+j[8;2]
[ 87]  r[5;1]←r[5;1]+j[8;1]<j[8;2]
[ 88]  r[5;2]←r[5;2]+j[8;1]=j[8;2]
[ 89]  r[5;3]←r[5;3]+j[8;1]>j[8;2]
[ 90]  r[5;4]←r[5;4]+j[8;2]
[ 91]  r[5;5]←r[5;5]+j[8;1]
[ 92] ⍝ partida 9 B x F
[ 93]  r[2;1]←r[2;1]+j[9;1]>j[9;2]
[ 94]  r[2;2]←r[2;2]+j[9;1]=j[9;2]
[ 95]  r[2;3]←r[2;3]+j[9;1]<j[9;2]
[ 96]  r[2;4]←r[2;4]+j[9;1]
[ 97]  r[2;5]←r[2;5]+j[9;2]
[ 98]  r[6;1]←r[6;1]+j[9;1]<j[9;2]
[ 99]  r[6;2]←r[6;2]+j[9;1]=j[9;2]
[100]  r[6;3]←r[6;3]+j[9;1]>j[9;2]
[101]  r[6;4]←r[6;4]+j[9;2]
[102]  r[6;5]←r[6;5]+j[9;1]
[103] ⍝ partida 10 C x D
[104]  r[3;1]←r[3;1]+j[10;1]>j[10;2]
[105]  r[3;2]←r[3;2]+j[10;1]=j[10;2]
[106]  r[3;3]←r[3;3]+j[10;1]<j[10;2]
[107]  r[3;4]←r[3;4]+j[10;1]
```

```
[108]  r[3;5]←r[3;5]+j[10;2]
[109]  r[4;1]←r[4;1]+j[10;1]<j[10;2]
[110]  r[4;2]←r[4;2]+j[10;1]=j[10;2]
[111]  r[4;3]←r[4;3]+j[10;1]>j[10;2]
[112]  r[4;4]←r[4;4]+j[10;2]
[113]  r[4;5]←r[4;5]+j[10;1]
[114] ⍝ partida 11 C x E
[115]  r[3;1]←r[3;1]+j[11;1]>j[11;2]
[116]  r[3;2]←r[3;2]+j[11;1]=j[11;2]
[117]  r[3;3]←r[3;3]+j[11;1]<j[11;2]
[118]  r[3;4]←r[3;4]+j[11;1]
[119]  r[3;5]←r[3;5]+j[11;2]
[120]  r[5;1]←r[5;1]+j[11;1]<j[11;2]
[121]  r[5;2]←r[5;2]+j[11;1]=j[11;2]
[122]  r[5;3]←r[5;3]+j[11;1]>j[11;2]
[123]  r[5;4]←r[5;4]+j[11;2]
[124]  r[5;5]←r[5;5]+j[11;1]
[125] ⍝ partida 12 C x F
[126]  r[3;1]←r[3;1]+j[12;1]>j[12;2]
[127]  r[3;2]←r[3;2]+j[12;1]=j[12;2]
[128]  r[3;3]←r[3;3]+j[12;1]<j[12;2]
[129]  r[3;4]←r[3;4]+j[12;1]
[130]  r[3;5]←r[3;5]+j[12;2]
[131]  r[6;1]←r[6;1]+j[12;1]<j[12;2]
[132]  r[6;2]←r[6;2]+j[12;1]=j[12;2]
[133]  r[6;3]←r[6;3]+j[12;1]>j[12;2]
[134]  r[6;4]←r[6;4]+j[12;2]
[135]  r[6;5]←r[6;5]+j[12;1]
[136] ⍝ partida 13 D x E
[137]  r[4;1]←r[4;1]+j[13;1]>j[13;2]
[138]  r[4;2]←r[4;2]+j[13;1]=j[13;2]
[139]  r[4;3]←r[4;3]+j[13;1]<j[13;2]
[140]  r[4;4]←r[4;4]+j[13;1]
[141]  r[4;5]←r[4;5]+j[13;2]
[142]  r[5;1]←r[5;1]+j[13;1]<j[13;2]
[143]  r[5;2]←r[5;2]+j[13;1]=j[13;2]
[144]  r[5;3]←r[5;3]+j[13;1]>j[13;2]
[145]  r[5;4]←r[5;4]+j[13;2]
[146]  r[5;5]←r[5;5]+j[13;1]
[147] ⍝ partida 14 D x F
[148]  r[4;1]←r[4;1]+j[14;1]>j[14;2]
[149]  r[4;2]←r[4;2]+j[14;1]=j[14;2]
[150]  r[4;3]←r[4;3]+j[14;1]<j[14;2]
[151]  r[4;4]←r[4;4]+j[14;1]
[152]  r[4;5]←r[4;5]+j[14;2]
[153]  r[6;1]←r[6;1]+j[14;1]<j[14;2]
[154]  r[6;2]←r[6;2]+j[14;1]=j[14;2]
[155]  r[6;3]←r[6;3]+j[14;1]>j[14;2]
[156]  r[6;4]←r[6;4]+j[14;2]
[157]  r[6;5]←r[6;5]+j[14;1]
[158] ⍝ partida 15 E x F
[159]  r[5;1]←r[5;1]+j[15;1]>j[15;2]
[160]  r[5;2]←r[5;2]+j[15;1]=j[15;2]
[161]  r[5;3]←r[5;3]+j[15;1]<j[15;2]
[162]  r[5;4]←r[5;4]+j[15;1]
[163]  r[5;5]←r[5;5]+j[15;2]
[164]  r[6;1]←r[6;1]+j[15;1]<j[15;2]
[165]  r[6;2]←r[6;2]+j[15;1]=j[15;2]
[166]  r[6;3]←r[6;3]+j[15;1]>j[15;2]
[167]  r[6;4]←r[6;4]+j[15;2]
[168]  r[6;5]←r[6;5]+j[15;1]
[169]  is←2?6
[170]  iz←?6
```

```
[171]  r1←r[is[1];1]
[172]  r2←r[is[2];3]
[173]  r3←r[iz;4]
[174]  z1←'&0'⍕r[;1 2 3]
[175]  z1[is[1];2]←'x'
[176]  z1[is[2];6]←'y'
[177]  z2←'&50'⍕r[;4 5]
[178]  z2[iz;2 3]←' z'
[179]  res←1 70⍴70↑'\begin{tabular}{|l|l|l|l|l|l|} \hline'
[180]  res←res,[1]1 70⍴70↑'&V&E&D&GP&GC\\ \hline'
[181]  res←res,[1]6 70↑((6 1⍴'ABCDEF'),'&'),[2](((0 1↓z1),z2),'\'),'\'
[182]  res←res,[1]1 70⍴70↑'\end{tabular}'
[183]  res[2+⍳6;50+⍳6]←6 6⍴'\hline'
[184]  ru←2⍴0
[185]  ru[1]←⊂res
[186]  ru[2]←⊂r1,r2,r3
------------------------------------------------------------
[ 0]  ru←geraq09;r;qt;dimp;dimg;pe
[ 1]  qt←(1+?3),(3+?3),(6+?8)
[ 2]  dimp←(5×1+?3),(5×1+?3),(10×5+?9)
[ 3]  dimg←dimp×qt
[ 4]  r←1 70⍴70↑'tem ',(⍕dimg[2]),'cm de altura, ',(⍕dimg[1]),'cm de largura e '
[ 5]  r←r,[1]1 70⍴70↑(⍕dimg[3]),'cm de comprimento.'
[ 6]  r←r,[1]1 70⍴70↑(⍕dimp[3]),'cm de comprimento, ',(⍕dimp[1]),'cm de largura e '
[ 7]  r←r,[1]1 70⍴70↑(⍕dimp[2]),'cm de altura.'
[ 8]  r←r,[1]1 70⍴70↑(⍕pe←100×7+?4),' kg.'
[ 9]  ru←2⍴0
[10]  ru[1]←⊂r
[11]  ru[2]←⊂(×/qt),pe××/dimp÷100
------------------------------------------------------------
[ 0]  ru←geraq10;pri;qu;t;d1;d2;n1;n2;v1;v2;v3;ca1;aa
[ 1]  pri←7 11 13 17 19 23
[ 2] mais:
[ 3]  aa←?¯1+⍴pri
[ 4]  aa←aa,aa+1
[ 5]  qu←pri[aa]
[ 6]  t←×/qu    ⍝ 11 e 13 t=143
[ 7]  d1←qu[2]
[ 8]  d2←qu[1]
[ 9]  n1←(⌊0.5×⌊/qu)+(¯2 ¯1 0 1 2)[?5]
[10]  n2←(⌊0.5×⌊/qu)+(¯2 ¯1 0 1 2)[?5]
[11]  v1←n1×t÷d1
[12]  v2←n2×t÷d2
[13]  v3←t-v1+v2
[14]  →(v3<0)/mais
[15]  ca1←(⍕n1),'/',(⍕d1),'       e      ',(⍕n2),'/',⍕d2
[16]  ru←2⍴0
[17]  ru[1]←⊂2 70⍴(70↑(⍕n1),'/',(⍕d1)),70↑(⍕n2),'/',⍕d2
[18]  ru[2]←⊂((⌈/v1,v2,v3)=v1,v2,v3)/⍳3
------------------------------------------------------------
[0]  r←geraq11
[1]  r←100×90+?30
------------------------------------------------------------
[0]  r←geraq12;t;h;m
[1]  t←1440×500+?500
[2]  h←¯1+?24
[3]  m←¯1+?60
[4]  r←t+h+m
------------------------------------------------------------
[0]  r←geraq13
[1]  r←1+2×20+?9
[2]  r←r,1+2×10+?9
------------------------------------------------------------
```

```
[0]  r←geraq14;n
[1] mais:
[2]  n←3+?16
[3]  n←n,n-2
[4]  r←(×/n),n
[5]  →(r[1]=24)/mais
------------------------------------------------------------
[0]  r←geraq15
[1] ⍝ problema 59 - nivel 1 - 2010
[2]  r←3+?10
------------------------------------------------------------
[ 0]  r←geraq16;a;b;cc;dd;i;j;x;zz
[ 1] ⍝ exercicio 67
[ 2] mais:
[ 3]  a←1+7?13
[ 4]  b←1+7?13
[ 5]  x←a÷b
[ 6]  →(1∊x)/mais
[ 7]  zz←((x⍳x)=⍳⍴x)/x
[ 8]  →(7≠⍴zz)/mais
[ 9]  i←⍋x
[10]  cc←'  $$\frac{',(⍕a[1]),'}{',(⍕b[1]),'}, \ '
[11]  cc←cc,'\frac{',(⍕a[2]),'}{',(⍕b[2]),'}, \ '
[12]  cc←cc,'\frac{',(⍕a[3]),'}{',(⍕b[3]),'}, \ '
[13]  cc←cc,'\frac{',(⍕a[4]),'}{',(⍕b[4]),'}, \ '
[14]  dd←'\frac{',(⍕a[5]),'}{',(⍕b[5]),'}, \ '
[15]  dd←dd,'\frac{',(⍕a[6]),'}{',(⍕b[6]),'}, \ '
[16]  dd←dd,'\frac{',(⍕a[7]),'}{',(⍕b[7]),'}$$. '
[17]  r←2⍴0
[18]  r[1]←⊂2 70⍴(70↑cc),70↑dd
[19]  r[2]←⊂,i[4]
------------------------------------------------------------
[0]  r←geraq17;z;v;qm
[1]  z←(13 14)[?2]
[2]  v←¯1+?60
[3]  qm←90+(60×z-13)+v
[4]  r←2⍴0
[5]  r[1]←⊂(⍕z),'h',⍕v
[6]  r[2]←⊂⍉10 1⍕42÷qm÷60
------------------------------------------------------------
[0]  r←geraq18;z;i;j;zz
[1]  z←11+?9
[2]  i←⍳z
[3]  j←⌽i
[4]  zz←⌈/(¯1↓i)×¯1↓j-1
[5]  r←2⍴0
[6]  r[1]←⊂⍕z
[7]  r[2]←⊂zz
------------------------------------------------------------
[ 0]  r←geraq19;cs;p;p1;p6;pf;q;qpro;s
[ 1]  p←2+(1+?98)÷100
[ 2]  s←(p×6)-(1+?22)÷100
[ 3]  q←30+?19
[ 4] ⍝ solucao
[ 5]  p6←cs←⌊q÷6
[ 6]  qpro←q
[ 7]  p1←qpro←qpro-cs×6
[ 8]  pf←(p6×s)+p1×p
[ 9]  r←2⍴0
[10]  r[1]←⊂3 70⍴(70↑6 2⍕p),(70↑6 2⍕s),70↑⍕q
[11]  r[2]←⊂pf
------------------------------------------------------------
[ 0]  r←geraq20;quarto;quinta;aqua;aqui;sala;asala;t;w
```

```
[ 1]  quarto←(4.5 5 5.5 6 6.5)[?5]
[ 2]  quinta←(2 2.5 3 3.5 4)[?5]
[ 3]  aqua←quarto*2
[ 4]  aqui←quinta*2
[ 5]  sala←quarto+(1.5 2 2.5 3 3.5 4)[?6]
[ 6]  asala←sala×quarto
[ 7]  r←2ρ0
[ 8]  t←3 70ρ70
[ 9]  t[1;]←70↑'A área do quarto é de ',(10 2⍕aqua),' $m^2$.'
[10]  t[2;]←70↑'A área do quintal é de ',(10 2⍕aqui),' $m^2$.'
[11]  t[3;]←70↑'A área da sala é de ',(10 2⍕asala),' $m^2$.'
[12]  w←quinta×sala+quarto-quinta
[13]  r[1]←⊂t
[14]  r[2]←⊂w
-------------------------------------------------------------
[ 0]  r←geraq21;p1;p2;dp2
[ 1]  r←3ρ0
[ 2] mais:
[ 3]  p1←300+?500
[ 4]  →(0≠2|p1)/mais
[ 5] ma2:
[ 6]  p2←100+?p1
[ 7]  →(0≠2|p2)/ma2
[ 8]  dp2←0.001×p2
[ 9]  r[1]←p1
[10]  r[2]←dp2
[11]  r[3]←((p1+p2+1000)÷2)-p2
-------------------------------------------------------------
[0]  r←geraq22;vel;dlp;tcr;t
[1]  vel←800+?99
[2]  dlp←1000+?500
[3]  tcr←10+(5 10 15 20 25 30 35 40 45)[?9]
[4]  t←dlp+vel×(60+tcr)÷60
[5]  r←vel,dlp,tcr,±10 0⍕t
-------------------------------------------------------------
[ 0]  r←geraq23;tab;qual;simb
[ 1]  r←3ρ0
[ 2]  tab←6 14ρ' '
[ 3]  tab[1;]←14↑'$⍀triangle$'
[ 4]  tab[2;]←14↑'$⍀clubsuit$'
[ 5]  tab[3;]←14↑'$⍀diamondsuit$'
[ 6]  tab[4;]←14↑'$⍀spadesuit$'
[ 7]  tab[5;]←14↑'$⍀heartsuit$'
[ 8]  tab[6;]←14↑'$⍀square$'
[ 9]  qual←?200
[10]  simb←?6
[11]  r[1]←⊂⍕1000+qual
[12]  r[2]←⊂tab[simb;]
[13]  r[3]←⊂6000+simb+6×qual-1
-------------------------------------------------------------
[ 0]  r←geraq24;l;aq;qp
[ 1]  r←2ρ0
[ 2] mais:
[ 3]  l←(2 3 4 5)[?4]
[ 4]  aq←(l×1000)*2
[ 5]  qp←(2 4 5 10 20 25)[?6]
[ 6]  →(0≠qp|l×1000)/mais
[ 7]  r[1]←⊂⍕l
[ 8]  r[2]←⊂⍕qp
-------------------------------------------------------------
[ 0]  r←geraq25;x;d1;d2;i;j;t
[ 1]  x←6 6ρ?35ρ6
[ 2]  d1←d2←6 6ρ1
```

```
[ 3]  t←10+?4
[ 4]  i←1
[ 5] t1:→(i>6)/f1
[ 6]  j←1
[ 7] t2:→(j>4)/f2
[ 8]  →(t≠+/x[i;j,(j+1),(j+2)])/soma1
[ 9]  d1[i;j,(j+1),(j+2)]←0
[10] soma1:j←j+1
[11]  →t2
[12] f2:
[13]  i←i+1
[14]  →t1
[15] f1:
[16]  j←1
[17] t3:→(j>6)/f3
[18]  i←1
[19] t4:→(i>4)/f4
[20]  →(t≠+/x[(i,(i+1),(i+2));j])/soma2
[21]  d2[i,(i+1),(i+2);j]←0
[22] soma2:i←i+1
[23]  →t4
[24] f4:j←j+1
[25]  →t3
[26] f3:
[27]  r←3ρ0
[28]  r[1]←⊂x
[29]  r[2]←⊂t
[30]  r[3]←⊂+/(,d1∧d2)/,x
-------------------------------------------------------------
[0]  r←geraq26;x;y
[1]  x←(?6)÷10
[2]  y←1+?4
[3]  r←2ρ0
[4]  r[1]←⊂' $$\frac{(',(⍕x),')∧',(⍕y),'+1}{',(⍕x),'+1}$$'
[5]  r[2]←⊂⍎¯1↓0 4⍕(1+x*y)÷x+1
-------------------------------------------------------------
[0]  r←geraq27;x;y;z;t
[1]  x←1+?3
[2]  y←4+?3
[3]  z←7+?3
[4]  t←10+?10
[5]  r←3ρ0
[6]  r[1]←⊂(⍕x),':',(⍕y),':',⍕z
[7]  r[2]←⊂⍕t
[8]  r[3]←⊂⍎¯1↓0 2⍕((x+y+z)×t)÷y
-------------------------------------------------------------
[0]  r←geraq28;ant;pap
[1]  ant←¯4+6×⍳20
[2]  pap←¯2+5×⍳20
[3]  r←ant[?20],pap[?20]
-------------------------------------------------------------
[ 0]  r←geraq29;z;h
[ 1]  h←5?7
[ 2]  h←h[⍋h]
[ 3]  z←5 5ρ0
[ 4]  z[1;]←z[;1]←h
[ 5]  z[2;2]←z[1;1]+z[1;2]+z[2;1]
[ 6]  z[2;3]←z[1;2]+z[1;3]+z[2;2]
[ 7]  z[2;4]←z[1;3]+z[1;4]+z[2;3]
[ 8]  r←z
-------------------------------------------------------------
[0]  r←geraq30;x;y;z;dist
[1]  y←500+100×?4
```

```
[2]  z←1000+100×?4
[3]  x←z-100×?3
[4]  dist←10000+(100×?50)+10×?5
[5]  r←x,y,z,dist
-------------------------------------------------------------
[0]  r←geraq31;vv
[1]  vv←16ρ0
[2]  vv[3?16]←1 2,(3 0 4 0 5 0 6)[?7]
[3]  r←4 4ρvv
-------------------------------------------------------------
[0]  r←geraq32;d;fin;i;v
[1]  v←8?10
[2]  d←'↑↓←→↑↓←→'[8?8]
[3]  r←2ρ0
[4]  r[1]←⊂v
[5]  r[2]←⊂d
-------------------------------------------------------------
[0]  r←geraq33
[1]  r←150+?40
-------------------------------------------------------------
[ 0]  r←geraq34;t;x;tt;i;z;r1;r2
[ 1]  tt←4 7ρ3 2 1 0 5 2 7 3 1 2 0 5 4 5 3 0 2 1 4 5 2 3 0 1 2 0 3 1
[ 2]  i←((2 3 4)[?3]),(5 6 7)[?3]
[ 3]  z←?2ρ4
[ 4]  t←1 0⍉tt
[ 5]  r1←t[z[1];i[1]]
[ 6]  t[z[1];i[1]]←'A'
[ 7]  r2←t[z[2];i[2]]
[ 8]  t[z[2];i[2]]←'B'
[ 9]  x←7 80ρ' '
[10]  x[1;]←80↑'\begin{tabular}{|l|l|l|l|l|l|l|l|} \hline'
[11]  x[2;]←80↑'Seleçto&J&V&E&D&GP&GC&P\\ \hline'
[12]  x[3;]←80↑'Dinamarca&',t[1;1],'&',t[1;2],'&',t[1;3],'&',t[1;4],'&',t[1;5],'&',t[1;6],
      '&',t[1;7],'\\ \hline'
[13]  x[4;]←80↑'Senegal&',t[2;1],'&',t[2;2],'&',t[2;3],'&',t[2;4],'&',t[2;5],'&',t[2;6],'&
      ',t[2;7],'\\ \hline'
[14]  x[5;]←80↑'Uruguai&',t[3;1],'&',t[3;2],'&',t[3;3],'&',t[3;4],'&',t[3;5],'&',t[3;6],'&
      ',t[3;7],'\\ \hline'
[15]  x[6;]←80↑'França&',t[4;1],'&',t[4;2],'&',t[4;3],'&',t[4;4],'&',t[4;5],'&',t[4;6],'&'
      ,t[4;7],'\\ \hline'
[16]  x[7;]←80↑'\end{tabular}'
[17]  r←2ρ0
[18]  r[1]←⊂x
[19]  r[2]←⊂((⍪r1)×10)+⍪r2
-------------------------------------------------------------
[ 0]  r←geraq35;tm;gt;cm;jan;fev;usoj;usof;tm1;gt1;cuj;cuf
[ 1]  tm←10+?19
[ 2]  gt←9+?7
[ 3]  cm←(5+?9)÷100
[ 4]  jan←(8+?9),5+?40
[ 5]  fev←(8+?9),5+?40
[ 6]  usoj←(jan[1]×60)+jan[2]
[ 7]  usof←(fev[1]×60)+fev[2]
[ 8]  gt1←gt×60
[ 9]  →(usoj<gt1)/soj
[10]  cuj←tm+(usoj-gt1)×cm
[11]  →juj
[12] soj:cuj←tm
[13] juj:
[14]  →(usof<gt1)/sof
[15]  cuf←tm+(usof-gt1)×cm
[16]  →juf
[17] sof:
```

```
[18]  cuf←tm
[19] juf:
[20]  r←2ρ0
[21]  r[1]←⊂5 80ρ(80↑⍕tm),(80↑⍕gt),(80↑5 2⍕cm),(80↑(⍕jan[1]),' horas e ',(⍕jan[2]),' minut
      os'),(80↑(⍕fev[1]),' horas e ',(⍕fev[2]),' minutos')
[22]  r[2]←⊂cuj+cuf
------------------------------------------------------------
[0]  r←geraq36;a;b;res
[1]  a←5+?8
[2]  b←2+?6
[3]  res←((a+b)*2)-a*2
[4]  r←2ρ0
[5]  r[1]←⊂2 80ρ(80↑⍕a),80↑⍕b
[6]  r[2]←⊂res
------------------------------------------------------------
[ 0]  r←geraq37;x;t
[ 1]  x←4 4ρ0
[ 2]  x[1;]←?4ρ9
[ 3]  x[2;]←(x[1;1]+x[1;2]),(x[1;2]+x[1;3]),(x[1;3]+x[1;4]),0
[ 4]  x[3;]←(x[2;1]+x[2;2]),(x[2;2]+x[2;3]),0,0
[ 5]  x[4;]←(x[3;1]+x[3;2]),0,0,0
[ 6]  t←11 80ρ' '
[ 7]  t[1;]←80↑'\definecolor{c}{rgb}{0.4, 0.4, 0.4}'
[ 8]  t[2;]←80↑'\begin{tabular}{|l|l|l|l|l|l|l|} \hline'
[ 9]  t[3;]←80↑(⍕x[1;1]),'&\cellcolor{c!20}&',(⍕x[1;2]),'&\cellcolor{c!20}&'
[10]  t[4;]←80↑'$\times$&\cellcolor{c!20}&',(⍕x[1;4]),'\\ \hline'
[11]  t[5;]←80↑'\cellcolor{c!80}&',(⍕x[2;1]),'& \cellcolor{c!20}&&'
[12]  t[6;]←80↑'\cellcolor{c!20}&&\cellcolor{c!80}\\ \hline'
[13]  t[7;]←80↑'\cellcolor{c!80}&\cellcolor{c!80}&&\cellcolor{c!20}&&'
[14]  t[8;]←80↑'\cellcolor{c!80}&\cellcolor{c!80}\\ \hline'
[15]  t[9;]←80↑'\cellcolor{c!80}&\cellcolor{c!80}&\cellcolor{c!80}&'
[16]  t[10;]←80↑(⍕x[4;1]),'&\cellcolor{c!80}&\cellcolor{c!80}&\cellcolor{c!80}\\ \hline'
[17]  t[11;]←80↑'\end{tabular}'
[18]  r←3ρ0
[19]  r[1]←⊂t
[20]  r[2]←⊂2 80ρ(80↑⍕x[2;1]),80↑(⍕x[1;1]),' + ',⍕x[1;2]
[21]  r[3]←⊂80↑⍕x[1;3]
------------------------------------------------------------
[ 0]  r←geraq38;x;y;n;d
[ 1]  x←20+2?10
[ 2]  x←x[⍋x]
[ 3]  y←2?9
[ 4]  y←y[⍋y]
[ 5]  n←(+/⍳x[2])-+/⍳x[1]
[ 6]  d←(+/⍳y[2])-+/⍳y[1]
[ 7]  r←2ρ0
[ 8]  r[1]←⊂'$\frac{',(⍕x[1]),'\nabla ',(⍕x[2]),'}{',(⍕y[1]),'\nabla ',(⍕y[2]),'}$'
[ 9]  r[2]←⊂⍪10 2⍕n÷d
------------------------------------------------------------
[0]  r←geraq39;x;y;z;w
[1]  x←2+(?19)÷10
[2]  y←(?9)÷10
[3]  z←10+?6
[4]  w←((z-x)÷y)÷10
[5]  r←2ρ0
[6]  r[1]←⊂3 80ρ(80↑6 2⍕x),(80↑6 2⍕y),80↑10 2⍕z
[7]  r[2]←⍪10 2⍕w
------------------------------------------------------------
[ 0]  r←geraq40;x;t
[ 1]  x←10+3?20
[ 2]  x←x[⍋x]
[ 3]  t←5 80ρ' '
[ 4]  t[1;]←80↑'\begin{tabular}{|l|l|l|} \hline'
```

```
[ 5]  t[2;]←80↑'&&⍀⍀ ⍀hline'
[ 6]  t[3;]←80↑'&',(⍕x[2]),'&$x$⍀⍀ ⍀hline'
[ 7]  t[4;]←80↑(⍕x[3]),'&&',(⍕x[1]),'⍀⍀ ⍀hline'
[ 8]  t[5;]←80↑'⍀end{tabular}'
[ 9]  r←2ρ0
[10]  r[1]←⊂t
[11]  r[2]←⊂x[2]+x[3]-x[1]
-------------------------------------------------------------
[0]  r←geraq41;x;rx;rx2
[1]  x←(1+?6),(1+?6),(1+?7)
[2]  rx←(×/x[2 3])+x[2]
[3]  rx2←(x[1]×rx)+x[1]
[4]  r←2ρ0
[5]  r[1]←⊂1 80ρ80↑(⍕x[1]),' $⍀bigodot$ (',(⍕x[2]),' $⍀bigodot$ ',(⍕x[3]),' ) '
[6]  r[2]←⊂rx2
-------------------------------------------------------------
[ 0]  r←geraq42;U;i;j;k;lad5;lt;res5;zz
[ 1] novo:
[ 2]  lt←10+2?9
[ 3]  →(4>|-/lt)/novo
[ 4]  lt←lt[⍋lt]
[ 5]  lad5←5ρ¯1
[ 6]  res5←5ρ¯1
[ 7]  i←1
[ 8] t1:→(i>5)/fim
[ 9]  j←¯1+?2
[10]  →(j=0)/errado
[11] certo:
[12]  res5[i]←1
[13]  k←¯1+?2
[14]  →(k=0)/cond1
[15] cond2:⍝ o terceiro lado e menor que a+b
[16]  lad5[i]←(+/lt)-?3
[17]  →juntatu
[18] cond1:⍝ o terceiro lado e maior que |a-b|
[19]  lad5[i]←(|-/lt)+?3
[20]  →juntatu
[21] errado:
[22]  res5[i]←0
[23]  k←¯1+?2
[24]  →(k=0)/err1
[25] err2:⍝ o terceiro lado e maior que a+b
[26]  lad5[i]←(+/lt)+?3
[27]  →juntatu
[28] err1: ⍝ o terceiro lado e menor que |a-b|
[29]  lad5[i]←(|-/lt)-?3
[30] juntatu:
[31]  i←i+1
[32]  →t1
[33] fim:
[34]  U←((lad5⍳lad5)=⍳⍴lad5)/lad5
[35]  →(5≠⍴U)/novo
[36]  →(0=∧/lad5>0)/novo
[37]  r←3ρ0
[38]  r[1]←⊂1 80ρ80↑(⍕lt[1]),' e ',⍕lt[2]
[39]  zz←(80↑'a) ',(⍕lad5[1]),'⍀⍀'),(80↑'b) ',(⍕lad5[2]),'⍀⍀')
[40]  zz←zz,(80↑'c) ',(⍕lad5[3]),'⍀⍀'),(80↑'d) ',(⍕lad5[4]),'⍀⍀')
[41]  zz←zz,(80↑'e) ',(⍕lad5[5]),'⍀⍀')
[42]  r[2]←⊂5 80ρzz
[43]  r[3]←⊂res5
-------------------------------------------------------------
[0]  r←geraq43;cu;pf;co;lu;pa
[1]  cu←2+(?9)÷10
```

```
[2]  pf←500+(?50)×10
[3]  co←cu+(0.1×?30)
[4]  lu←co-cu
[5]  pa←⌊pf÷lu
[6]  r←2⍴0
[7]  r[1]←⊂3 80⍴(80↑10 2⍕cu),(80↑10 2⍕pf),80↑10 2⍕co
[8]  r[2]←±10 0⍕pa
-------------------------------------------------------------
[ 0]  r←geraq44;ra;al;zu;on
[ 1] novo:
[ 2]  ra←⍳2000
[ 3]  ra←(10+?20)↓ra
[ 4]  ra←(200,(zu←7+?7))⍴ra
[ 5]  →(zu=10)/novo
[ 6]  al←1500+?99
[ 7]  on←(∨/[1]ra=al)/⍳zu
[ 8]  r←4⍴0
[ 9]  r[1]←⊂ra[1;1]
[10]  r[2]←⊂ra[⍳2;]
[11]  r[3]←⊂al
[12]  r[4]←⊂on
-------------------------------------------------------------
[ 0]  r←geraq45;ve;qt;qdias;hoje;mais
[ 1]  ve←50+?19
[ 2]  qt←ve,0     ⍝ [1]=qt velas e [2]=qt tocos
[ 3]  qdias←0
[ 4] t1:→((qt[1]=0)∧(qt[2]<4))/fim
[ 5]  hoje←qt[1]
[ 6]  qt[2]←qt[2]+hoje
[ 7]  qdias←qdias+hoje
[ 8]  mais←⌊qt[2]÷4
[ 9]  qt[1]←mais
[10]  qt[2]←qt[2]-mais×4
[11]  →t1
[12] fim:
[13]  r←2⍴0
[14]  r[1]←⊂⍕ve
[15]  r[2]←⊂qdias
-------------------------------------------------------------
[ 0]  r←geraq46;a1;a2;e;i;ind;nomes;quem;u;x;z
[ 1]  nomes←6 5⍴' '
[ 2]  nomes[1;]←'ana  ' ⋄ nomes[2;]←'joto ' ⋄ nomes[3;]←'lisa ' ⋄ nomes[4;]←'pedro'
[ 3]  nomes[5;]←'josé ' ⋄ nomes[6;]←'rosa '
[ 4] novo:
[ 5]  quem←5?6
[ 6]  x←5 3⍴0
[ 7]  i←1
[ 8] t1:→(i>5)/fim
[ 9]  x[i;1 2]←(8+?8),(?10)
[10]  →(20<+/x[i;1 2])/t1
[11]  x[i;3]←20-+/x[i;1 2]
[12]  i←i+1
[13]  →t1
[14] fim:
[15]  e←5⍴0
[16]  i←1
[17] t2:→(i>5)/f0
[18]  e[i]←(x[i;1]×5)-(x[i;2]×3)+(x[i;3]×2)
[19]  i←i+1
[20]  →t2
[21] f0:
[22]  u←((e⍳e)=⍳⍴e)/e
[23]  →(5≠⍴u)/novo
```

```
[24]  ind←⍒e
[25]  a1←((⍕5 1⍴⍳5),'-'),nomes[quem;]
[26]  a2←a1[ind;]
[27] ⍝ a1,3 0⍕x
[28] ⍝ ,a2[;1]
[29]  r←3⍴0
[30]  z←8 80⍴' '
[31]  z[1;]←80↑'\begin{tabular}{|l|l|l|l|} \hline'
[32]  z[2;]←80↑'Candidato&certas&erradas&em branco\\ \hline'
[33]  z[2+⍳5;]←5 80↑a1,('&555 '⍕x),5 9⍴'\\ \hline'
[34]  z[8;]←80↑'\end{tabular}'
[35]  r[1]←⊂80↑(trim nomes[quem[1];]),', ',(trim nomes[quem[2];]),', ',(trim nomes[quem[3]
      ;]),', ',(trim nomes[quem[4];]),' e ',nomes[quem[5];]
[36]  r[2]←⊂z
[37]  r[3]←⍬,a2[;1]
-------------------------------------------------------------
[ 0]  r←geraq47;x;y;z;w
[ 1] novo:
[ 2]  x←10×1+?5
[ 3]  y←x×1+?14
[ 4]  z←4+?36
[ 5]  →(z≥x)/novo
[ 6]  w←(x-z)×y÷x
[ 7]  r←2⍴0
[ 8]  r[1]←⊂3 80⍴(80↑⍕x),(80↑⍕y),80↑⍕z
[ 9]  r[2]←⊂w
-------------------------------------------------------------
[ 0]  r←geraq48;t;p;ind;dp;w
[ 1]  t←(10↑'primeiro'),(10↑'segundo'),(10↑'terceiro'),10↑'quarto'
[ 2]  t←t,(10↑'quinto'),(10↑'sexto'),10↑'sétimo'
[ 3]  t←t,(10↑'oitavo'),(10↑'nono'),10↑'décimo'
[ 4]  t←10 10⍴t
[ 5]  p←11+?8
[ 6]  ind←2?9
[ 7]  ind←ind[⍋ind]
[ 8]  dp←20+?30
[ 9]  w←(p-1)×dp÷ind[2]-ind[1]
[10]  r←2⍴0
[11]  r[1]←⊂3 80⍴(80↑⍕p),(80↑t[ind[1];],' e o ',t[ind[2];]),80↑⍕dp
[12]  r[2]←⊂⍬10 1⍕w
-------------------------------------------------------------
[0]  r←geraq49;ra;vo
[1]  ra←100×?9
[2]  vo←42000÷2×○ra
[3]  r←2⍴0
[4]  r[1]←⊂1 80⍴80↑⍕ra
[5]  r[2]←⊂⍬¯2↓10 1⍕vo
-------------------------------------------------------------
[0]  r←geraq50;ca1;ca2;hi
[1]  ca1←1+0.1×?9
[2]  ca2←2+0.1×?9
[3]  hi←((ca1*2)+(ca2*2))*0.5
[4]  r←2⍴0
[5]  r[1]←⊂2 80⍴(80↑8 1⍕ca1),80↑8 1⍕ca2
[6]  r[2]←⊂⍬8 1⍕hi
-------------------------------------------------------------
[0]  r←resq01 x
[1]  r←x[1]×x[2]
-------------------------------------------------------------
[0]  r←resq02 x
[1]  r←,⍬10 0⍕x[2]×(100-x[1])÷100
-------------------------------------------------------------
[0]  r←resq03 x
```

```
[1]  r←⍎10 0⍕x[1]×x[4]÷(x[2]÷x[3])
-------------------------------------------------------------
[0]  r←resq04 x
[1]  r←x[1]-x[3]-x[2]
-------------------------------------------------------------
[0]  r←resq05 x
[1]  r←⍎10 0⍕(+/x)÷⍴x
-------------------------------------------------------------
[ 0]  r←resq06 x;z;ct;i
[ 1]  z←((x[1]÷2),2)⍴⍳x[1]
[ 2]  ct←0
[ 3]  i←1
[ 4] t1:→(i>1↑⍴z)/fim
[ 5]  →((1 0⍕x[2])∈3 0⍕z[i;])/sim
[ 6] nao:
[ 7]  i←i+1
[ 8]  →t1
[ 9] sim:ct←ct+1
[10]  →nao
[11] fim:r←ct
-------------------------------------------------------------
[0]  r←resq07 x;q
[1]  q←0
[2] t1:→(x<4)/fim
[3]  x←x-4
[4]  q←q+1
[5]  x←x+1
[6]  →t1
[7] fim:r←q
-------------------------------------------------------------
[0]  r←resq11 x;p
[1]  r←2×p←x÷2.5
-------------------------------------------------------------
[ 0]  r←resq12 x;z;h;m;nh;nm
[ 1]  z←1440|x
[ 2]  h←⌊z÷60
[ 3]  m←60|z
[ 4]  nh←18-h
[ 5]  nm←27-m
[ 6]  →(nm≥0)/ok1
[ 7]  nm←nm+60
[ 8]  nh←nh-1
[ 9] ok1:
[10]  →(nh≥0)/ok2
[11]  nh←nh+24
[12] ok2:
[13]  r←nh,nm
-------------------------------------------------------------
[0]  r←resq13 x
[1]  r←x[1]-(+/x)÷2
-------------------------------------------------------------
[0]  r←resq14 x
[1]  r←(x[2]+x[3])÷2
-------------------------------------------------------------
[0]  r←resq15 x
[1]  r←⍎10 1⍕60÷x
-------------------------------------------------------------
[0]  r←resq24 x;tq;qtos;lquinho;ufa
[1]  tq←(⍎⊃x[1])*2
[2]  lquinho←(ufa←(⍎⊃x[2])÷1000)*2
[3]  qtos←tq÷lquinho
[4]  r←qtos×ufa
-------------------------------------------------------------
```

```
[ 0]  r←resq28 x;z
[ 1] ⍝ x[1] se 0 antonio -> papagaio. Se 1 papagaio -> antonio
[ 2] ⍝ x[2] numero a processar
[ 3]  →(x[1]=1)/papagaio
[ 4] antonio:
[ 5]  z←x[2]×5
[ 6]  z←z+14
[ 7]  z←z÷6
[ 8]  z←z-1
[ 9]  r←z
[10]  →0
[11] papagaio:
[12]  z←x[2]+1
[13]  z←z×6
[14]  z←z-14
[15]  z←z÷5
[16]  r←z
------------------------------------------------------------
[ 0]  r←resq29 x;i;j
[ 1]  i←2
[ 2] t1:→(i>5)/fim
[ 3]  j←2
[ 4] t2:→(j>5)/soma
[ 5]  x[i;j]←x[i-1;j-1]+x[i-1;j]+x[i;j-1]
[ 6]  j←j+1
[ 7]  →t2
[ 8] soma:
[ 9]  i←i+1
[10]  →t1
[11] fim:r←x[5;5]
------------------------------------------------------------
[ 0]  r←resq30 x;dist;peri
[ 1]  dist←x[4]+x[1]
[ 2]  peri←2×x[2]+x[3]
[ 3]  dist←peri|dist
[ 4]  →(dist>x[3])/nao1
[ 5]  r←1
[ 6]  →0
[ 7] nao1:→(dist>x[2]+x[3])/nao2
[ 8]  r←2
[ 9]  →0
[10] nao2:→(dist>x[2]+x[3]+x[2])/e4
[11]  r←3
[12]  →0
[13] e4:
[14]  r←4
------------------------------------------------------------
[ 0]  r←resq31 x;xa;viz;val;i;j;zz;max
[ 1]  xa←x
[ 2] t1:→(~0∈xa)/acaboum
[ 3]  viz←0
[ 4]  val←0
[ 5]  max←0,0
[ 6]  i←1
[ 7] t2:→(i>4)/fim
[ 8]  j←1
[ 9] t3:→(j>4)/soma
[10]  zz←xa achaq31(i,j)
[11]  →(zz[1]<val)/subs
[12]  →(zz[1]=val)/testav
[13]  val←zz[1]
[14]  max←i,j
[15] ⍝ →subs
```

```
[16] testav:
[17]  →(zz[2]≤viz)/subs
[18]  viz←zz[2]
[19]  max←i,j
[20] subs:
[21]  j←j+1
[22]  →t3
[23] soma:
[24]  i←i+1
[25]  →t2
[26] fim:
[27]  xa[max[1];max[2]]←val
[28]  →t1
[29] acaboum:r←⌈/,xa
-------------------------------------------------------------
[ 0]  r←resq32 x;d;fin;i;v
[ 1]  v←⊃x[1]
[ 2]  d←⊃x[2]
[ 3]  fin←0 0
[ 4]  i←1
[ 5] t1:→(i>8)/fi
[ 6]  →(d[i]='↑')/cima
[ 7]  →(d[i]='↓')/baixo
[ 8]  →(d[i]='→')/direita
[ 9] esquerda:
[10]  fin[1]←fin[1]-v[i]
[11]  →junta
[12] direita:
[13]  fin[1]←fin[1]+v[i]
[14]  →junta
[15] cima:
[16]  fin[2]←fin[2]+v[i]
[17]  →junta
[18] baixo:
[19]  fin[2]←fin[2]-v[i]
[20] junta:
[21]  i←i+1
[22]  →t1
[23] fi:
[24] ⍝ fin
[25]  r←±0 2⍟(+/fin*2)*0.5
-------------------------------------------------------------
[0]  r←resq33 x
[1]  r←'12345678'[1+8|x]
-------------------------------------------------------------
[  0]  opesq vivoo01b n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
       a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[  1]  →(0≠⎕NC'opesq')/qveio
[  2]  opesq←10⍴' '
[  3] qveio:
[  4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[  5]  EVENTO←'PLo01b  '
[  6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
       4 5],⎕TS[6]+⎕TS[7]÷1000
[  7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[  8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[  9]  ylu←n grupo ylu
[ 10]  FOLHALAo01b←ajusta80 FOLHALAo01b
[ 11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAo01b)⍴' '
[ 12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[ 13]  xk←1 ⋄ resu←0 12⍴0
[ 14] testa:→(xk>1↑⍴ylu)/fim
[ 15]  esse←44 80⍴' '
```

```
[ 16]  f←FOLHALAo01b
[ 17]  esse[1;]←80↑dhx[1;]
[ 18]  esse[2;]←80↑dhx[2;]
[ 19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[ 20]  esse[4;]←80↑ylu[xk;⍳6]
[ 21]  →(36=1↓⍴ylu)/zebra
[ 22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[ 23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[ 24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[ 25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[ 26]  →maiszebra
[ 27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[ 28] maiszebra:
[ 29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[ 30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[ 31]  esse[43;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[ 32]  esse[44;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[ 33] inica:
[ 34]  xx←geraq01
[ 35]  esse[8;]←1 80⍴80↑⍕xx[1]
[ 36]  esse[9;]←1 80⍴80↑⍕xx[2]
[ 37]  resp←resp,,resq01 xx
[ 38]  xx←geraq02
[ 39]  esse[10;]←1 80⍴80↑⍕xx[1]
[ 40]  esse[11;]←1 80⍴80↑⍕xx[2]
[ 41]  resp←resp,,resq02 xx
[ 42]  xx←geraq03
[ 43]  esse[12;]←1 80⍴80↑5 2⍕xx[1]
[ 44]  esse[13;]←1 80⍴80↑⍕xx[2]
[ 45]  esse[14;]←1 80⍴80↑⍕xx[3]
[ 46]  esse[15;]←1 80⍴80↑⍕xx[4]
[ 47]  resp←resp,,resq03 xx
[ 48]  xx←geraq04
[ 49]  esse[16;]←1 80⍴80↑⍕xx[1]
[ 50]  esse[17;]←1 80⍴80↑⍕xx[2]
[ 51]  esse[18;]←1 80⍴80↑⍕xx[1]
[ 52]  resp←resp,,resq04 xx
[ 53]  xx←geraq05
[ 54]  esse[19;]←1 80⍴80↑⍕xx[1]
[ 55]  esse[20;]←1 80⍴80↑⍕xx[2]
[ 56]  esse[21;]←1 80⍴80↑⍕xx[3]
[ 57]  esse[22;]←1 80⍴80↑⍕xx[4]
[ 58]  esse[23;]←1 80⍴80↑⍕xx[5]
[ 59]  resp←resp,,resq05 xx
[ 60]  xx←geraq06
[ 61]  esse[24;]←1 80⍴80↑⍕xx[1]
[ 62]  esse[25;]←1 80⍴80↑⍕xx[2]
[ 63]  resp←resp,,resq06 xx
[ 64]  xx←geraq07
[ 65]  esse[26;]←1 80⍴80↑⍕xx
[ 66]  resp←resp,,resq07 xx
[ 67]  xx←geraq08
[ 68]  esse[26+⍳9;]←9 80↑⊃xx[1]
[ 69]  resp←resp,+/1000 100 1×⊃xx[2]
[ 70]  xx←geraq09
[ 71]  esse[35+⍳5;]←5 80↑⊃xx[1]
[ 72]  resp←resp,,⊃xx[2]
[ 73]  xx←geraq10
[ 74]  esse[41 42;]←2 80↑⊃xx[1]
[ 75]  resp←resp,,⊃xx[2]
[ 76]  resu←resu,[1]1 12⍴resp
[ 77]  acuja←(f[;2]='#')/⍳1↑⍴f
[ 78]  f[acuja;⍳80]←esse[≜,f[acuja;3 4],' ';]
```

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[ 79]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[ 80]  ⍞←(⍕xk←xk+1),'-'
[ 81]  →testa
[ 82] fim:upag←(1 0+⍴f)⍴' '
[ 83]  →(1=≡n)/elafa
[ 84]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[ 85]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[ 86]  upag[2+⍳1↑⍴resu;⍳¯1++/lixo1]←(lixo1←5 0 10 0 4 0 4 0 4 0 4 0 4 0 4 0 6 0 4 0 5 1 3 0
       )⍕resu
[ 87]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[ 88]  →terminando
[ 89] elafa:aaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[ 90]  lixonol←aaa ⎕FM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[ 91]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[ 92] terminando:
[ 93]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[ 94]  relat[1↑⍴relat;;]←upag
[ 95]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[ 96]  lixonol←lixonol ⎕FM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[ 97]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[ 98]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivoo01c n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLo01c  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAo01c←ajusta80 FOLHALAo01c
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAo01c)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 12⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←27 80⍴' '
[16]  f←FOLHALAo01c
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[26;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[27;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geraq11
[35]  esse[8;]←1 80⍴80↑⍕xx
[36]  resp←resp,,resq11 xx    ⍝ v1= 1 valor de 5 0⍕
[37]  xx←geraq12
[38]  esse[9;]←1 80⍴80↑⍕xx
```

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[39]  resp←resp,,resq12 xx    ⍝ v2 =2 valores de  3 0⍕
[40]  xx←geraq13
[41]  esse[10 11;]←2 80⍴(80↑⍕xx[1]),80↑⍕xx[2]
[42]  resp←resp,,resq13 xx    ⍝ v3 = 1 valor de 3 0
[43]  xx←geraq14
[44]  esse[12 13 14;]←3 80⍴(80↑⍕xx[1]),(80↑⍕xx[2]),80↑⍕xx[3]
[45]  resp←resp,,resq14 xx    ⍝ v4 = 1 valor de 3 0
[46]  xx←geraq15
[47]  esse[15;]←1 80⍴80↑⍕xx
[48]  resp←resp,,resq15 xx ⍝ v5 = 1 valor de 4 1⍕
[49]  xx←geraq16
[50]  esse[16 17;]←2 80↑⊃xx[1]
[51]  resp←resp,,⊃xx[2] ⍝ v6 = 1 valor de 2 0⍕
[52]  xx←geraq17
[53]  esse[18;]←1 80⍴80↑⊃xx[1]
[54]  resp←resp,,⊃xx[2] ⍝ v7 = 1 valor de 5 1⍕
[55]  xx←geraq18
[56]  esse[19;]←1 80⍴80↑⍕⊃xx[1]
[57]  resp←resp,,⊃xx[2] ⍝ v8 = 1 valor de 3 0⍕
[58]  xx←geraq19
[59]  esse[20 21 22;]←3 80↑⊃xx[1]
[60]  resp←resp,,⊃xx[2] ⍝ v9 = 1 valor de 5 2⍕
[61]  xx←geraq20
[62]  esse[23 24 25;]←3 80↑⊃xx[1]
[63]  resp←resp,,⊃xx[2] ⍝ v10 = 1 valor de 5 2⍕
[64]  resu←resu,[1]1 12⍴resp
[65]  acuja←(f[;2]='#')/⍳1↑⍴f
[66]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[67]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[68]  ⍞←(⍕xk←xk+1),'-'
[69]  →testa
[70] fim:upag←(1 0+⍴f)⍴' '
[71]  →(1=≡n)/elafa
[72]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[73]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[74]  upag[2+⍳1↑⍴resu;⍳¯6++/lixo1]←(lixo1←6 0 5 0 6 0 3 0 6 0 5 0 6 1 4 0 7 1 5 0 9 2 7 2)
      ⍕resu
[75]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[76]  →terminando
[77] elafa:aaa←(ylu[;⍳36],5 0 6 0 3 0 6 0 5 0 6 1 4 0 7 1 5 0 9 2 7 2⍕0 1↓resu)
[78]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[79]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[80] terminando:
[81]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[82]  relat[1↑⍴relat;;]←upag
[83]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[84]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[85]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[86]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivoo01d n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLo01d  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAo01d←ajusta80 FOLHALAo01d
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[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAo01d)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 12⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←38 80⍴' '
[16]  f←FOLHALAo01d
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[37;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[38;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geraq21
[35]  esse[8 9;]←2 80⍴(80↑⍕xx[1]),80↑⍕xx[2]
[36]  resp←resp,,xx[3]    ⍝ v1= 1 valor de 5 0⍕
[37]  xx←geraq22
[38]  esse[10 11 12;]←3 80⍴(80↑⍕xx[1]),(80↑⍕xx[2]),80↑⍕xx[3]
[39]  resp←resp,,xx[4]    ⍝ v1= 1 valor de 5 0⍕
[40]  xx←geraq23
[41]  esse[13 14;]←2 80⍴(80↑⍕xx[1]),(80↑⍕xx[2])
[42]  resp←resp,,xx[3]    ⍝ v1= 1 valor de 5 0⍕
[43]  xx←geraq24
[44]  esse[15 16;]←2 80⍴(80↑⊃xx[1]),80↑⊃xx[2]
[45]  resp←resp,,resq24 xx ⍝ 1 valor de 6 0⍕
[46]  xx←geraq25
[47]  esse[16+⍳6;]←arrq25 xx
[48]  esse[23;]←1 80⍴80↑⍕⊃xx[2]
[49]  resp←resp,,⊃xx[3]  ⍝ 1 valor de 4 0⍕
[50]  xx←geraq26
[51]  esse[24;]←1 80⍴80↑⊃xx[1]
[52]  resp←resp,,⊃xx[2] ⍝ 1 valor de 6 3⍕
[53]  xx←geraq27
[54]  esse[25;]←1 80⍴80↑⊃xx[1]
[55]  esse[26;]←1 80⍴80↑⊃xx[2]
[56]  resp←resp,,⊃xx[3] ⍝ 1 valor de 6 1⍕
[57]  xx←geraq28
[58]  esse[27 28;]←2 80⍴(80↑⍕xx[1]),80↑⍕xx[2]
[59]  resp←resp,,(resq28 0,xx[1]),resq28 1,xx[2] ⍝ 2 valores de 3 0 cada
[60]  xx←geraq29
[61]  esse[28+⍳5;]←formataq29 xx
[62]  resp←resp,,resq29 xx ⍝ 1 valor de 5 0 ⍕
[63]  xx←geraq30
[64]  esse[34;]←1 80⍴80↑8 3⍕xx[4]÷1000
[65]  esse[35;]←1 80⍴80↑(⍕xx[2]),' x ',⍕xx[3]
[66]  esse[36;]←1 80⍴80↑⍕xx[1]
[67]  resp←resp,,resq30 xx   ⍝ 1 valor de 2 0 ⍕
[68]  resu←resu,[1]1 12⍴resp
[69]  acuja←(f[;2]='#')/⍳1↑⍴f
[70]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[71]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[72]  ⎕←(⍕xk←xk+1),'-'
[73]  →testa
```

```
[74] fim:upag←(1 0+ρf)ρ' '
[75]  →(1=≡n)/elafa
[76]  upag[1;]←(1↓ρupag)↑'⍀begin{verbatim}'
[77]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[78]  upag[2+⍳1↑ρresu;⍳¯4++/lixo1]←(lixo1←4 0 6 0 5 0 5 0 6 0 4 0 6 3 6 1 5 0 3 0 5 0 3 0)
      ⍒resu
[79]  upag[3+1↑ρresu;]←(1↓ρupag)↑'⍀end{verbatim}'
[80]  →terminando
[81] elafa:aaa←(ylu[;⍳36],6 0 5 0 5 0 6 0 4 0 6 3 6 1 5 0 3 0 5 0 3 0⍒0 1↓resu)
[82]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[83]  '!!!!!  Arquivo GPA com ',(⍒1↑ρaaa),' linhas e ',(⍒1↓ρaaa),' colunas'
[84] terminando:
[85]  upag[1↑ρupag;]←(1↓ρupag)↑'⍀end{document}'
[86]  relat[1↑ρrelat;;]←upag
[87]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[88]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[89]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[90]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivoo01e n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLo01e  '
[ 6]  dhx←2 10ρ('05/05/0005'⍒+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍒+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍒⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAo01e←ajusta80 FOLHALAo01e
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALAo01e)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 11ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←53 80ρ' '
[16]  f←FOLHALAo01e
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍒VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑ρf),4)ρ'⍀#05')/⍳1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍒resp←xk),' ',opesq
[31]  esse[52;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[53;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geraq31
[35]  esse[8 9 10 11;]←arrq31 xx
[36]  resp←resp,,resq31 xx    ⍝ v1= 1 valor de 5 0⍒
[37]  xx←geraq32
[38]  esse[12 13 14;]←arrq32 xx
[39]  resp←resp,,resq32 xx ⍝ v1 = 1 valor de 6 2⍒
[40]  xx←geraq33
[41]  esse[15;]←80↑⍒xx
```

```
[42]  resp←resp,,⍤resq33 xx ⍝ v1 = 1 valor de 2 0⍕
[43]  xx←geraq34
[44]  esse[15+⍳7;]←7 80⍴⊃xx[1]
[45]  resp←resp,,⊃xx[2]  ⍝ v1 = 3 0 ⍕
[46]  xx←geraq35
[47]  esse[22+⍳5;]←5 80⍴⊃xx[1]
[48]  resp←resp,,⊃xx[2]  ⍝ v1 = 8 2 ⍕
[49]  xx←geraq36
[50]  esse[28 29;]←2 80⍴⊃xx[1]
[51]  resp←resp,,⊃xx[2]  ⍝ v1 = 5 0⍕
[52]  xx←geraq37
[53]  esse[30 31;]←2 80⍴⊃xx[2]
[54]  esse[31+⍳11;]←11 80⍴⊃xx[1]
[55]  resp←resp,,⍤⊃xx[3]  ⍝ v1 = 4 0⍕
[56]  xx←geraq38
[57]  esse[43;]←80⍴⊃xx[1]
[58]  resp←resp,,⊃xx[2]  ⍝ v1 = 6 2⍕
[59]  xx←geraq39
[60]  esse[44 45 46;]←⊃xx[1]
[61]  resp←resp,,⊃xx[2]  ⍝ v1 = 6 2⍕
[62]  xx←geraq40
[63]  esse[46+⍳5;]←⊃xx[1]
[64]  resp←resp,,⊃xx[2] ⍝ v1 = 4 0⍕
[65]  resu←resu,[1]1 11⍴resp
[66]  acuja←(f[;2]='#')/⍳1↑⍴f
[67]  f[acuja;⍳80]←esse[⍤,f[acuja;3 4],' ';]
[68]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[69]  ⎕←(⍕xk←xk+1),'-'
[70]  →testa
[71] fim:upag←(1 0+⍴f)⍴' '
[72]  →(1=≡n)/elafa
[73]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[74]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[75]  upag[2+⍳1↑⍴resu;⍳¯8++/lixo1]←(lixo1←4 0 7 0 6 2 3 0 3 0 8 2 5 0 4 0 6 2 6 2 4 0)⍕res
      u
[76]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[77]  →terminando
[78] elafa:aaa←(ylu[;⍳36],7 0 6 2 3 0 3 0 8 2 5 0 4 0 6 2 6 2 4 0⍕0 1↓resu)
[79]  lixonol←aaa ⍙FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[80]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴paaa),' linhas e ',(⍕1↓⍴paaa),' colunas'
[81] terminando:
[82]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[83]  relat[1↑⍴relat;;]←upag
[84]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[85]  lixonol←lixonol ⍙FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[86]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[87]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivoo01f n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLo01f  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⍙FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAo01f←ajusta80 FOLHALAo01f
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAo01f)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⍙FM'c:\apl2\VIVOBLO1'
```

```
[13]  xk←1 ⋄ resu←0 11⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←45 80⍴' '
[16]  f←FOLHALAo01f
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+□LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[44;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[45;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geraq41
[35]  esse[8;]←⊃xx[1]
[36]  resp←resp,,xx[2]    ⍝ v1= 1 valor de 4 0⍕
[37]  xx←geraq42
[38]  esse[9;]←⊃xx[1]
[39]  esse[10 11 12 13 14;]←⊃xx[2]
[40]  resp←resp,,+/(⊃xx[3])×⍟2*¯1+⍳5  ⍝ valor 4 0 ⍕
[41]  xx←geraq43
[42]  esse[15 16 17;]←⊃xx[1]
[43]  resp←resp,,⊃xx[2]  ⍝ valor de 4 0⍕
[44]  xx←geraq44
[45]  esse[18;]←80↑⍕⊃xx[1]
[46]  esse[18+⍳4;]←arrq44⊃xx[2]
[47]  esse[23;]←80↑⍕⊃xx[3]
[48]  resp←resp,,⊃xx[4] ⍝ 4 0⍕
[49]  xx←geraq45
[50]  esse[24;]←80↑⊃xx[1]
[51]  resp←resp,,⊃xx[2] ⍝ 4 0 ⍕
[52]  xx←geraq46
[53]  esse[25;]←⊃xx[1]
[54]  esse[25+⍳8;]←⊃xx[2]
[55]  resp←resp,,⊃xx[3] ⍝ 6 0⍕
[56]  xx←geraq47
[57]  esse[34+⍳3;]←⊃xx[1]
[58]  resp←resp,,⊃xx[2] ⍝ 4 0⍕
[59]  xx←geraq48
[60]  esse[37+⍳3;]←⊃xx[1]
[61]  resp←resp,,⊃xx[2] ⍝ 4 1⍕
[62]  xx←geraq49
[63]  esse[41;]←⊃xx[1]
[64]  resp←resp,,⊃xx[2]  ⍝ 4 0⍕
[65]  xx←geraq50
[66]  esse[42 43;]←⊃xx[1]
[67]  resp←resp,,⊃xx[2] ⍝ 4 1 ⍕
[68]  resu←resu,[1]1 11⍴resp
[69]  acuja←(f[;2]='#')/⍳1↑⍴f
[70]  f[acuja;⍳80]←esse[⌽,f[acuja;3 4],' ';]
[71]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[72]  □←(⍕xk←xk+1),'-'
[73]  →testa
[74] fim:upag←(1 0+⍴f)⍴' '
[75]  →(1=≡n)/elafa
```

```
[76]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[77]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[78]  upag[2+⍳1↑⍴resu;⍳¯2++/lixo1]←(lixo1←4 0 7 0 4 0 5 0 4 0 4 0 7 0 5 0 7 1 4 0 5 1)⍉res
      u
[79]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[80]  →terminando
[81] elafa:aaa←(ylu[;⍳36],7 0 4 0 5 0 4 0 4 0 7 0 5 0 7 1 4 0 5 1⍉0 1↓resu)
[82]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[83]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[84] terminando:
[85]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[86]  relat[1↑⍴relat;;]←upag
[87]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[88]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[89]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[90]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivop05

```
[0]  AVISO
[1]  'O limite deste ws eh de 90 exemplares'
-------------------------------------------------------------
[0]  acertaquest
[1]  QUEST←171 75↑QUEST
[2]  quest←57 225⍴QUEST
[3]  RESP←57 75↑RESP
-------------------------------------------------------------
[0]  r←enjambra x;i
[1]  r←''
[2]  i←1
[3] t1:→(i>1↑⍴x)/fim
[4]  r←r,(x[i;]≠' ')/x[i;]
[5]  i←i+1
[6]  →t1
[7] fim:
-------------------------------------------------------------
[0]  r←geracasop05;ind
[1]  ind←19?57
[2]  acertaquest
[3]  r←57 75⍴quest[ind;]
[4]  respostas←RESP[ind;]
[5]  respostas←(((0,-+/19=+/[1]⍷[2]∧\⍷[2]respostas=' ')↓respostas),';'),' '
-------------------------------------------------------------
[ 0]  imprimetudo;x
[ 1]  x←CABE,[1]1 80⍴80↑'\section*{questões} \large'
[ 2]  x←x,[1](1 80⍴80↑'\begin{enumerate}'),[1]171 80↑171 75⍴QUEST
[ 3]  x←x,[1]1 80⍴80↑'\end{enumerate}'
[ 4]  x←x,[1]1 80⍴80↑'\section*{respostas} \begin{enumerate}'
[ 5]  x←x,[1]57 80↑(57 6⍴'\item '),[2]RESP
[ 6]  x←x,[1]1 80⍴80↑'\end{document}'
[ 7]  x ΔFM'c:\apl2\tudop05.tex'
[ 8]  'Impresso no diretorio c:\apl2\tudop05.tex'
-------------------------------------------------------------
[ 0]  r←quem replace depara;de;i;j;k;onde;para
[ 1] ⍝ forma de usar: texto replace 'strin-de' 'string para'
[ 2] ⍝ obviamente eles nao precisam ter o mesmo tamanho
[ 3]  de←,⊃depara[1] ⋄ para←,⊃depara[2]
[ 4]  i←1 ⋄ r←((1↑⍴quem),200)⍴' '
[ 5] t1:→(i>1↑⍴quem)/fim
[ 6]  →(0=∨/onde←de⍷quem[i;])/naotem
[ 7]  j←1 ⋄ k←1
```

```
[ 8] t2:→(k>ρquem[i;])/acabou
[ 9]  →(onde[k]=0)/soma
[10]  r[i;(j-1)+ιρpara]←para
[11]  j←j+ρpara
[12]  k←k+ρde
[13]  →t2
[14] soma:r[i;j]←quem[i;k]
[15]  k←k+1
[16]  →(j=j←j+1)/t2
[17] naotem:r[i;]←200↑quem[i;]
[18] acabou:→(i=i←i+1)/t1
[19] fim:r←trim4 r
-------------------------------------------------------------
[0]  r←trim4 x;z
[1] ⍝f corta as colunas direitas que sao brancos
[2]  →(2≠ρρx)/erro
[3]  z←+/[1]x=' '
[4]  r←(z≠1↑ρx)/[2]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
-------------------------------------------------------------
[ 0]  opesq vivop05a n;CORRECAO;EVENTO;aaa;acuja;aqui;dhx;esse;f;lixo1;lixonol;relat;resp;
      resu;upag;va;xk;xx;xy;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←1 ⋄ EVENTO←'PLp05   '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)ρ4 0⍎ιn
[ 9]  FOLHALAp05←100 ajusta FOLHALAp05
[10]  relat←((2+1↑ρylu),1 0+ρFOLHALAp05)ρ' '
[11]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLO1'
[12]  xk←1 ⋄ resu←0 200ρ' '
[13] testa:→(xk>1↑ρylu)/fim
[14]  esse←66 100ρ' '
[15]  f←FOLHALAp05
[16]  esse[1;]←100↑dhx[1;]
[17]  esse[2;]←100↑dhx[2;]
[18]  esse[3;]←100↑4 2⍎VERSAOa←1.02
[19]  esse[4;]←100↑ylu[xk;ι6]
[20]  esse[5;]←100↑ylu[xk;6+ι30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←100↑EVENTO
[22]  esse[7;]←100↑(3 0⍎resp←xk),' ',opesq
[23]  esse[65;ι10]←'@',esse[6;5+ι3],esse[4;1+ι5],'@'
[24]  esse[66;]←100↑esse[6;5+ι3],'-',esse[4;1+ι5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  aqui←geracasop05
[27]  esse[7+ι57;]←57 100↑aqui
[28]  resp←(3 0⍎resp),'-',196↑,enjambra respostas
[29]  resu←resu,[1]1 200ρresp
[30]  acuja←(f[;2]='#')/ι1↑ρf
[31]  f[acuja;ι100]←esse[⍋,f[acuja;3 4],' ';]
[32]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\newpage'
[33]  ⍞←(⍎xk←xk+1),'-'
[34]  →testa
[35] fim:upag←(1 0+ρf)ρ' '
[36]  →(1=≡n)/elafa
[37]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[38]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO,''
[39]  upag[2+ι1↑ρresu;]←0 ¯100↓resu
```

```
[40]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[41]  →terminando
[42] elafa:aaa←(ylu,0 4↓resu)
[43]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.gpa')
[44]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[45] terminando:
[46]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[47]  relat[1↑⍴relat;;]←upag
[48]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[49]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.tex'
[50]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[51]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[ 0]  r←xyn oper;x;y;n;tmp
[ 1] ⍝ xyn calcula (x*y) mod n, atraves do alg. addition chaining sch96p.244
[ 2]  x←oper[1] ⋄ y←oper[2] ⋄ n←oper[3]
[ 3]  →(y≠1)/difa
[ 4]  r←n|x
[ 5]  →fim
[ 6] difa:→(0=2|y)/par
[ 7] impar:tmp←xyn(x,((y-1)÷2),n)
[ 8]  tmp←n|(tmp×tmp)
[ 9]  tmp←n|(tmp×x)
[10]  r←tmp
[11]  →fim
[12] par:tmp←xyn(x,(y÷2),n)
[13]  r←n|(tmp×tmp)
[14] fim:
-------------------------------------------------------------
```

vivop15

```
[0]  AVISO
[1]  'Existem 2 variaveis aqui: FOLHALAp15m (que cita o ambiente como Maple)'
[2]  'e FOLHALAp15f que e igual, mas cita Freemat'
[3]  ' '
[4]  'assim, antes de emitir, faca FOLHALAp15 ← uma ou outra, para ter no jeito que quise
      r'
[5]  ' depois segue tudo igual'
-------------------------------------------------------------
[0]  acertaquest15
[1]  QUEST←285 75↑QUEST
[2]  quest←57 375⍴QUEST
[3]  RESP←57 75↑RESP
-------------------------------------------------------------
[0]  r←enjambra x;i
[1]  r←''
[2]  i←1
[3] t1:→(i>1↑⍴x)/fim
[4]  r←r,(x[i;]≠' ')/x[i;]
[5]  i←i+1
[6]  →t1
[7] fim:
-------------------------------------------------------------
[0]  r←geracasop15;ind
[1]  ind←18?57
[2]  acertaquest15
[3]  r←90 75⍴quest[ind;]
[4]  respostas←RESP[ind;]
[5]  respostas←(((0,-+/18=+/[1]⍵[2]∧⍀⍵[2]respostas=' ')↓respostas),';'),' '
-------------------------------------------------------------
[ 0]  imprimetudo15;x
```

```
[ 1]  x←CABE,[1]1 80ρ80↑'\section*{questões} \large'
[ 2]  x←x,[1](1 80ρ80↑'\begin{enumerate}'),[1]285 80↑285 75ρQUEST
[ 3]  x←x,[1]1 80ρ80↑'\end{enumerate}'
[ 4]  x←x,[1]1 80ρ80↑'\section*{respostas} \begin{enumerate}'
[ 5]  x←x,[1]57 80↑(57 6ρ'\item '),[2]RESP
[ 6]  x←x,[1]1 80ρ80↑'\end{document}'
[ 7]  x ΔFM'c:\apl2\tudop15.tex'
[ 8]  'Impresso no diretorio c:\apl2\tudop15.tex'
-------------------------------------------------------------
[ 0]  r←quem replace depara;de;i;j;k;onde;para
[ 1] ⍝ forma de usar: texto replace 'strin-de' 'string para'
[ 2] ⍝ obviamente eles nao precisam ter o mesmo tamanho
[ 3]  de←,⊃depara[1] ⋄ para←,⊃depara[2]
[ 4]  i←1 ⋄ r←((1↑ρquem),200)ρ' '
[ 5] t1:→(i>1↑ρquem)/fim
[ 6]  →(0=∨/onde←de⍷quem[i;])/naotem
[ 7]  j←1 ⋄ k←1
[ 8] t2:→(k>ρquem[i;])/acabou
[ 9]  →(onde[k]=0)/soma
[10]  r[i;(j-1)+⍳ρpara]←para
[11]  j←j+ρpara
[12]  k←k+ρde
[13]  →t2
[14] soma:r[i;j]←quem[i;k]
[15]  k←k+1
[16]  →(j=j←j+1)/t2
[17] naotem:r[i;]←200↑quem[i;]
[18] acabou:→(i=i←i+1)/t1
[19] fim:r←trim4 r
-------------------------------------------------------------
[0]  r←trim4 x;z
[1] ⍝f corta as colunas direitas que sao brancos
[2]  →(2≠ρρx)/erro
[3]  z←+/[1]x=' '
[4]  r←(z≠1↑ρx)/[2]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
-------------------------------------------------------------
[ 0]  opesq vivop15a n;CORRECAO;EVENTO;aaa;acuja;aqui;dhx;esse;f;lixo1;lixonol;relat;resp;
      resu;upag;va;xk;xx;xy;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←1 ⋄ EVENTO←'PLp15   '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)ρ4 0⍎⍳n
[ 9]  FOLHALAp15←150 ajusta FOLHALAp15
[10]  QUEST←75 ajusta QUEST
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALAp15)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 154ρ' '
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←99 150ρ' '
[16]  f←FOLHALAp15
[17]  esse[1;]←150↑dhx[1;]
[18]  esse[2;]←150↑dhx[2;]
[19]  esse[3;]←150↑4 2⍎VERSAOa←1.02
[20]  esse[4;]←150↑ylu[xk;⍳6]
[21]  esse[5;]←150↑ylu[xk;6+⍳30]
[22]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←150↑EVENTO
```

```
[23]  esse[7;]←150↑(3 0⍕resp←xk),' ',opesq
[24]  esse[98;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[25]  esse[99;]←150↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[26] inica:
[27]  aqui←geracasop15
[28]  esse[7+⍳90;]←90 150↑aqui
[29]  resp←(3 0⍕resp),'-',150↑,enjambra respostas
[30]  resu←resu,[1]1 154⍴resp
[31]  acuja←(f[;2]='#')/⍳1↑⍴f
[32]  f[acuja;⍳150]←esse[⍬,f[acuja;3 4],' ';]
[33]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[34]  ⎕←(⍕xk←xk+1),'-'
[35]  →testa
[36] fim:upag←(1 0+⍴f)⍴' '
[37]  →(1=≡n)/elafa
[38]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[39]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO,''
[40]  upag[2+⍳1↑⍴presu;]←0 ¯4↓resu
[41]  upag[3+1↑⍴presu;]←(1↓⍴upag)↑'\end{verbatim}'
[42]  →terminando
[43] elafa:aaa←(ylu,0 4↓resu)
[44]  lixonol←aaa ⎕FM('c:\apl2\',((~0∧\0EVENTO=' ')/EVENTO),'.gpa')
[45]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[46] terminando:
[47]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[48]  relat[1↑⍴relat;;]←upag
[49]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[50]  lixonol←lixonol ⎕FM'c:\apl2\',((~0∧\0EVENTO=' ')/EVENTO),'.tex'
[51]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[52]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  r←xyn oper;x;y;n;tmp
[ 1] ⍝ xyn calcula (x*y) mod n, atraves do alg. addition chaining sch96p.244
[ 2]  x←oper[1] ⋄ y←oper[2] ⋄ n←oper[3]
[ 3]  →(y≠1)/difa
[ 4]  r←n|x
[ 5]  →fim
[ 6] difa:→(0=2|y)/par
[ 7] impar:tmp←xyn(x,((y-1)÷2),n)
[ 8]  tmp←n|(tmp×tmp)
[ 9]  tmp←n|(tmp×x)
[10]  r←tmp
[11]  →fim
[12] par:tmp←xyn(x,(y÷2),n)
[13]  r←n|(tmp×tmp)
[14] fim:
------------------------------------------------------------
```

vivop25

```
[0]  AVISO
[1]  'O limite deste ws eh de 90 exemplares'
------------------------------------------------------------
[0]  acertaquest
[1]  QUEST←171 75↑QUEST
[2]  quest←57 225⍴QUEST
[3]  RESP←57 75↑RESP
------------------------------------------------------------
[0]  r←enjambra x;i
[1]  r←''
[2]  i←1
[3] t1:→(i>1↑⍴x)/fim
```

```
[4]  r←r,(x[i;]≠' ')/x[i;]
[5]  i←i+1
[6]  →t1
[7] fim:
-------------------------------------------------------------
[0]  r←geracasop25;ind
[1]  ind←19?57
[2]  acertaquest
[3]  r←57 75ρquest[ind;]
[4]  respostas←RESP[ind;]
[5]  respostas←(((0,-+/19=+/[1]⍳[2]∧⍀⍳[2]respostas=' ')↓respostas),';'),' '
-------------------------------------------------------------
[ 0]  imprimetudo;x
[ 1]  x←CABE,[1]1 80ρ80↑'⍀section*{questΔes} ⍀large'
[ 2]  x←x,[1](1 80ρ80↑'⍀begin{enumerate}'),[1]171 80↑171 75ρQUEST
[ 3]  x←x,[1]1 80ρ80↑'⍀end{enumerate}'
[ 4]  x←x,[1]1 80ρ80↑'⍀section*{respostas} ⍀begin{enumerate}'
[ 5]  x←x,[1]57 80↑(57 6ρ'⍀item '),[2]RESP
[ 6]  x←x,[1]1 80ρ80↑'⍀end{document}'
[ 7]  x ⍙FM'c:⍀apl2⍀tudop25.tex'
[ 8]  'Impresso no diretorio c:⍀apl2⍀tudop25.tex'
-------------------------------------------------------------
[ 0]  r←quem replace depara;de;i;j;k;onde;para
[ 1] Δ forma de usar: texto replace 'strin-de' 'string para'
[ 2] Δ obviamente eles nao precisam ter o mesmo tamanho
[ 3]  de←,⊃depara[1] ⋄ para←,⊃depara[2]
[ 4]  i←1 ⋄ r←((1↑ρquem),200)ρ' '
[ 5] t1:→(i>1↑ρquem)/fim
[ 6]  →(0=∨/onde←de⍷quem[i;])/naotem
[ 7]  j←1 ⋄ k←1
[ 8] t2:→(k>ρquem[i;])/acabou
[ 9]  →(onde[k]=0)/soma
[10]  r[i;(j-1)+⍳ρpara]←para
[11]  j←j+ρpara
[12]  k←k+ρde
[13]  →t2
[14] soma:r[i;j]←quem[i;k]
[15]  k←k+1
[16]  →(j=j←j+1)/t2
[17] naotem:r[i;]←200↑quem[i;]
[18] acabou:→(i=i←i+1)/t1
[19] fim:r←trim4 r
-------------------------------------------------------------
[0]  r←trim4 x;z
[1] Δf corta as colunas direitas que sao brancos
[2]  →(2≠ρρx)/erro
[3]  z←+/[1]x=' '
[4]  r←(z≠1↑ρx)/[2]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
-------------------------------------------------------------
[ 0]  opesq vivop25a n;CORRECAO;EVENTO;aaa;acuja;aqui;dhx;esse;f;lixo1;lixonol;relat;resp;
      resu;upag;va;xk;xx;xy;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←1 ⋄ EVENTO←'PLp25   '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⍙FM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)ρ4 0⍎⍳n
[ 9]  FOLHALAp25←150 ajusta FOLHALAp25
```

```
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAp25)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[12]  xk←1 ⋄ resu←0 154⍴' '
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←66 150⍴' '
[15]  f←FOLHALAp25
[16]  esse[1;]←150↑dhx[1;]
[17]  esse[2;]←150↑dhx[2;]
[18]  esse[3;]←150↑4 2⍕VERSAOa←1.02
[19]  esse[4;]←150↑ylu[xk;⍳6]
[20]  esse[5;]←150↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←150↑EVENTO
[22]  esse[7;]←150↑(3 0⍕resp←xk),' ',opesq
[23]  esse[65;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[66;]←150↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  aqui←geracasop25
[27]  esse[7+⍳57;]←57 150↑aqui
[28]  resp←(3 0⍕resp),'-',150↑,enjambra respostas
[29]  resu←resu,[1]1 154⍴resp
[30]  acuja←(f[;2]='#')/⍳1↑⍴f
[31]  f[acuja;⍳150]←esse[⍋,f[acuja;3 4],' ';]
[32]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[33]  ⎕←(⍕xk←xk+1),'-'
[34]  →testa
[35] fim:upag←(1 0+⍴f)⍴' '
[36]  →(1=≡n)/elafa
[37]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[38]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO,''
[39]  upag[2+⍳1↑⍴resu;]←0 ¯4↓resu
[40]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[41]  →terminando
[42] elafa:aaa←(ylu,0 4↓resu)
[43]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[44]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[45] terminando:
[46]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[47]  relat[1↑⍴relat;;]←upag
[48]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[49]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[50]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[51]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  r←xyn oper;x;y;n;tmp
[ 1] ⍝ xyn calcula (x*y) mod n, atraves do alg. addition chaining sch96p.244
[ 2]  x←oper[1] ⋄ y←oper[2] ⋄ n←oper[3]
[ 3]  →(y≠1)/difa
[ 4]  r←n|x
[ 5]  →fim
[ 6] difa:→(0=2|y)/par
[ 7] impar:tmp←xyn(x,((y-1)÷2),n)
[ 8]  tmp←n|(tmp×tmp)
[ 9]  tmp←n|(tmp×x)
[10]  r←tmp
[11]  →fim
[12] par:tmp←xyn(x,(y÷2),n)
[13]  r←n|(tmp×tmp)
[14] fim:
------------------------------------------------------------
```

vivop45

```
[0]  AVISO
[1]  'O limite deste ws eh de 90 exemplares'
-------------------------------------------------------------
[0]  r←geracasop45;ind
[1]  ind←(10 3⍴⍳30)[3?10;]
[2]  r←PROGS[ind;]
-------------------------------------------------------------
[0]  imprimetudo;x
[1]  x←CABE,[1]1 80⍴80↑'\section*{questões} \large'
[2]  x←x,[1](1 80⍴80↑'\begin{enumerate}'),[1]30 80↑PROGS
[3]  x←x,[1]1 80⍴80↑'\end{enumerate}'
[4]  x←x,[1]1 80⍴80↑'\end{document}'
[5]  x ⎕NTIE'c:\apl2\tudop45.tex'
[6]  'Impresso no diretorio c:\apl2\tudop45.tex'
-------------------------------------------------------------
[ 0]  r←quem replace depara;de;i;j;k;onde;para
[ 1] ⍝ forma de usar: texto replace 'strin-de' 'string para'
[ 2] ⍝ obviamente eles nao precisam ter o mesmo tamanho
[ 3]  de←,⊃depara[1] ⋄ para←,⊃depara[2]
[ 4]  i←1 ⋄ r←((1↑⍴quem),200)⍴' '
[ 5] t1:→(i>1↑⍴quem)/fim
[ 6]  →(0=∨/onde←de⍷quem[i;])/naotem
[ 7]  j←1 ⋄ k←1
[ 8] t2:→(k>⍴quem[i;])/acabou
[ 9]  →(onde[k]=0)/soma
[10]  r[i;(j-1)+⍳⍴para]←para
[11]  j←j+⍴para
[12]  k←k+⍴de
[13]  →t2
[14] soma:r[i;j]←quem[i;k]
[15]  k←k+1
[16]  →(j=j←j+1)/t2
[17] naotem:r[i;]←200↑quem[i;]
[18] acabou:→(i=i←i+1)/t1
[19] fim:r←trim4 r
-------------------------------------------------------------
[0]  r←trim4 x;z
[1] ⍝f corta as colunas direitas que sao brancos
[2]  →(2≠⍴⍴x)/erro
[3]  z←+/[1]x=' '
[4]  r←(z≠1↑⍴x)/[2]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
-------------------------------------------------------------
[ 0]  opesq vivop45a n;CORRECAO;EVENTO;aaa;acuja;aqui;dhx;esse;f;lixo1;lixonol;relat;resp;
      resu;upag;va;xk;xx;xy;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←1 ⋄ EVENTO←'PLp45   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALAp45←80 ajusta FOLHALAp45
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAp45)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[12]  xk←1 ⋄ resu←0 0⍴' '
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←18 80⍴' '
```

```
[15]  f←FOLHALAp45
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←1.02
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[17;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[18;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  aqui←geracasop45
[27]  esse[7+⍳9;]←9 80⍴aqui
[28]  resp←(3 0⍕resp),'-',80↑' '
[29] ⍝ resu←resu,[1]1 154⍴resp
[30]  acuja←(f[;2]='#')/⍳1↑⍴f
[31]  f[acuja;⍳80]←esse[⍎,f[acuja;3 4],' ';]
[32]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[33]  ⍞←(⍕xk←xk+1),'-'
[34]  →testa
[35] fim:upag←(1 0+⍴f)⍴' '
[36] elafa:
[37]  '!!!!!  Nao ha aquivo GPA '
[38] terminando:
[39]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[40]  relat[1↑⍴relat;;]←upag
[41]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[42]  lixonol←lixonol ⎕FM'c:⍀apl2⍀',((~⍬∧⍀⍬EVENTO=' ')/EVENTO),'.tex'
[43]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[44]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivop55

```
[ 0]  acertatudo
[ 1]  DEF01←80 ajusta DEF01
[ 2]  DEF02←80 ajusta DEF02
[ 3]  DEF03←80 ajusta DEF03
[ 4]  DEF04←80 ajusta DEF04
[ 5]  DEF05←80 ajusta DEF05
[ 6]  DEF06←80 ajusta DEF06
[ 7]  DEF07←80 ajusta DEF07
[ 8]  DEF08←80 ajusta DEF08
[ 9]  DEF09←80 ajusta DEF09
[10]  DEF10←80 ajusta DEF10
[11]  DEF11←80 ajusta DEF11
[12]  DEF12←80 ajusta DEF12
[13]  DEF13←80 ajusta DEF13
[14]  DEF14←80 ajusta DEF14
[15]  DEF15←80 ajusta DEF15
[16]  DEF16←80 ajusta DEF16
[17]  DEF17←80 ajusta DEF17
[18]  DEF18←80 ajusta DEF18
[19]  DEF19←80 ajusta DEF19
[20]  DEF20←80 ajusta DEF20
[21]  DEF21←80 ajusta DEF21
[22]  DEF22←80 ajusta DEF22
[23]  DEF23←80 ajusta DEF23
[24]  DEF24←80 ajusta DEF24
[25]  DEF25←80 ajusta DEF25
[26]  DEF26←80 ajusta DEF26
[27]  DEF27←80 ajusta DEF27
```

```
------------------------------------------------------------
[ 0]  r←geracaso;lim;qu;i
[ 1] denovo:r←0 80⍴' '
[ 2]  lim←27
[ 3] ⍝ a variavel lim (acima) deve ser atualizada com o numero de enunciados
[ 4]  qu←10?lim
[ 5]  i←1
[ 6] t1:→(i>10)/fim
[ 7]  r←r,[1]⍪'DEF','00'⍕qu[i]
[ 8]  i←i+1
[ 9]  →t1
[10] fim:→(90<⍴r)/ops
[11]  r←90 80↑r
[12]  →0
[13] ops:⎕←'*'
[14]  →denovo
------------------------------------------------------------
[ 0]  opesq vivo003a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivo003 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  CORRECAO←1 ⋄ EVENTO←'PL003   '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[44]  resp←resp,,xx[2 3;5]
[45]  resu←resu,[1]1 3ρresp
[46]  acuja←(f[;2]='#')/⍳1↑ρf
[47]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[48]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\clearpage'
[49]  ⍞←(⍕xk←xk+1),'-'
[50]  →testa
[51] fim:upag←(1 0+ρf)ρ' '
[52]  →(1=≡n)/elafa
[53]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[54]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO,'/',opesq
[55]  upag[2+⍳1↑ρresu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍕resu
[56]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[57]  →terminando
[58] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[59] elafa:aaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[60] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[61]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[62]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[63] terminando:
[64]  upag[1↑ρupag;]←(1↓ρupag)↑'\end{document}'
[65]  relat[1↑ρrelat;;]←upag
[66]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[67] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[68]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[69]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[70]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivop55a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivop55 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10ρ' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PLp55   '
[ 9]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[33] ⍝⍝⍝
```

```
[ 2]  x←6?30
[ 3]  vc←2?30
[ 4]  d1←+/|x[1 2]-vc
[ 5]  d2←+/|x[3 4]-vc
[ 6]  d3←+/|x[5 6]-vc
[ 7]  →((d1≠d2)∧(d1≠d3))/ok1
[ 8]  ⍞←'*'
[ 9]  →vorta
[10] ok1:
[11]  d←d1,d2,d3
[12]  z←3 2⍴x
[13]  z←z[⍋d;]
[14]  →(qual='A')/ea
[15]  →(qual='B')/eb
[16]  →(qual='C')/ec
[17]  'deu xabu'
[18]  →0
[19] ec:r←vc,,z[2 3 1;]
[20]  →0
[21] eb:r←vc,,z[2 1 3;]
[22]  →0
[23] ea:
[24]  r←vc,,z[1 2 3;]
[25]  →0
------------------------------------------------------------
[ 0]  r←gera3 qual;din;x;d1;d2;d3;d;v1;w1;aj
[ 1] denovo:din←1000×100+?20
[ 2]  x←1+(50+3?50)÷10000
[ 3]  x←x[⍒x]
[ 4]  d1←din×x[1]*6
[ 5]  d2←din×x[2]*6
[ 6]  d3←din×x[3]*6
[ 7]  v1←100+d1-d2
[ 8]  w1←¯100+d2-d3
[ 9]  →(qual='A')/ea
[10]  →(qual='B')/eb
[11]  →(qual='C')/ec
[12]  'deu xabu'
[13]  →0
[14] ea:aj←v1-110+?90
[15]  →((aj>0)∧(w1>0))/uha
[16]  ⍞←'O'
[17]  →denovo
[18] uha:
[19]  r←din,x,aj,w1
[20]  →0
[21] eb:
[22]  →((v1>0)∧(w1>0))/uja
[23]  ⍞←'O'
[24]  →denovo
[25] uja:
[26]  r←din,x,v1,w1
[27]  →0
[28] ec:
[29]  aj←w1+110+?200
[30]  →((v1>0)∧(aj>0))/ufa
[31]  ⍞←'O'
[32]  →denovo
[33] ufa:
[34]  r←din,x,v1,aj
------------------------------------------------------------
[ 0]  r←gera4 qual;a;b;c;no;ma;mb;mc;m;q;in
[ 1]  a←((14+?6)÷2),(?6⍴20)÷2
```

```
[ 2]  b←((14+?6)÷2),(?6ρ20)÷2
[ 3]  c←((14+?6)÷2),(?6ρ20)÷2
[ 4]  no←3 7ρa,b,c
[ 5]  ma←+/(a[1]×0.4),0.6×(+/a[1+ι6])÷6
[ 6]  mb←+/(b[1]×0.4),0.6×(+/b[1+ι6])÷6
[ 7]  mc←+/(c[1]×0.4),0.6×(+/c[1+ι6])÷6
[ 8]  m←ma,mb,mc
[ 9]  m←m[in←⍋m]
[10]  q←no[in;]
[11]  →(qual='A')/ea
[12]  →(qual='B')/eb
[13]  →(qual='C')/ec
[14]  'deu xabu'
[15]  →0
[16] ea:r←q[3 1 2;]
[17]  →0
[18] eb:r←q[1 3 2;]
[19]  →0
[20] ec:r←q[1 2 3;]
[21]  →0
------------------------------------------------------------
[ 0]  r←gera5 qual;h;ar;cus;cun;cupa;aa
[ 1]  h←10+3?8
[ 2]  ar←area5 h
[ 3]  cus←3 2ρ100+?6ρ60
[ 4]  cun←(h[1]custo5 cus[1;]),(h[2]custo5 cus[2;]),h[3]custo5 cus[3;]
[ 5]  cupa←cun÷ar
[ 6]  aa←⍒cupa
[ 7]  h←h[aa]
[ 8]  cus←cus[aa;]
[ 9]  →(qual='A')/ea
[10]  →(qual='B')/eb
[11]  →(qual='C')/ec
[12]  'deu xabu'
[13]  →0
[14] ea:r←h[3 2 1],cus[3 2 1;]
[15]  →0
[16] eb:r←h[2 1 3],cus[2 1 3;]
[17]  →0
[18] ec:r←h[1 2 3],cus[1 2 3;]
[19]  →0
------------------------------------------------------------
[ 0]  r←gera6 qual
[ 1]  →(qual='A')/ea
[ 2]  →(qual='B')/eb
[ 3]  →(qual='C')/ec
[ 4]  'deu xabu'
[ 5]  →0
[ 6] ea:r←±10 2⍟(1+(?200)÷1000)×0.23 0.25 0.26×12 14 1
[ 7]  →0
[ 8] eb:r←±10 2⍟(1+(?200)÷1000)×0.21 0.2 0.22×12 14 1
[ 9]  →0
[10] ec:r←±10 2⍟(1+(?200)÷1000)×0.22 0.24 0.21×12 14 1
------------------------------------------------------------
[ 0]  r←gera7 qual;pre;qtd;lsc;qpo
[ 1]  →(qual='A')/ea
[ 2]  →(qual='B')/eb
[ 3]  →(qual='C')/ec
[ 4]  'deu xabu'
[ 5]  →0
[ 6] ea:
[ 7]  pre←(5+0.05×?19),(6+0.01×?9),7+0.01×?9
[ 8]  qtd←(150+50×?3)
```

```
[ 9]  lsc←5+?10
[10]  qpo←30+?20
[11]  r←((pre[1]×qtd)÷500),qtd,(pre[2]×lsc),lsc,(pre[3]÷qpo),qpo
[12]  →0
[13] eb:
[14]  pre←(6+0.01×?9),(5+0.05×?19),7+0.01×?9
[15]  qtd←(150+50×?3)
[16]  lsc←5+?10
[17]  qpo←30+?20
[18]  r←((pre[1]×qtd)÷500),qtd,(pre[2]×lsc),lsc,(pre[3]÷qpo),qpo
[19]  →0
[20] ec:
[21]  pre←(7+0.01×?9),(6+0.01×?9),(5+0.05×?19)
[22]  qtd←(150+50×?3)
[23]  lsc←5+?10
[24]  qpo←30+?20
[25]  r←((pre[1]×qtd)÷500),qtd,(pre[2]×lsc),lsc,(pre[3]÷qpo),qpo
[26]  →0
------------------------------------------------------------
[ 0]  r←gera8 qual;pr;ds
[ 1]  →(qual='A')/ea
[ 2]  →(qual='B')/eb
[ 3]  →(qual='C')/ec
[ 4]  'deu xabu'
[ 5]  →0
[ 6] ea:pr←((2+(?40)÷100)÷10),((3+(?40)÷100)÷10),(4+(?40)÷100)÷10
[ 7]  ds←(9+(?20)÷7),(6+(?20)÷7),(1.5+(?12)÷7)
[ 8]  r←±10 2∓(pr×ds),ds
[ 9]  →0
[10] eb:
[11]  pr←((3+(?40)÷100)÷10),((2+(?40)÷100)÷10),(4+(?40)÷100)÷10
[12]  ds←(9+(?20)÷7),(6+(?20)÷7),(1.5+(?12)÷7)
[13]  r←±10 2∓(pr×ds),ds
[14]  →0
[15] ec:
[16]  pr←((3+(?40)÷100)÷10),((4+(?40)÷100)÷10),((2+(?40)÷100)÷10)
[17]  ds←(9+(?20)÷7),(6+(?20)÷7),(1.5+(?12)÷7)
[18]  r←±10 2∓(pr×ds),ds
[19]  →0
------------------------------------------------------------
[ 0]  r←gera9 qual;p
[ 1]  →(qual='A')/ea
[ 2]  →(qual='B')/eb
[ 3]  →(qual='C')/ec
[ 4]  'deu xabu'
[ 5]  →0
[ 6] ea:
[ 7]  p←(5+(?9)÷10),(6+(?9)÷10),(7+(?9)÷10)
[ 8]  r←p×2 1 8
[ 9]  →0
[10] eb:
[11]  p←(6+(?9)÷10),(5+(?9)÷10),(7+(?9)÷10)
[12]  r←p×2 1 8
[13]  →0
[14] ec:
[15]  p←(6+(?9)÷10),(7+(?9)÷10),(5+(?9)÷10)
[16]  r←p×2 1 8
[17]  →0
------------------------------------------------------------
[ 0]  r←geraa qual;aa
[ 1]  →(qual='A')/ea
[ 2]  →(qual='B')/eb
[ 3]  →(qual='C')/ec
```

```
[ 4]  'deu xabu'
[ 5]  →0
[ 6] ea:r←(1 1,aa,1)×(0.04+(?10)÷1000),(0.05+(?10)÷1000),(0.06+(?10)÷1000),aa←50+?50
[ 7]  →0
[ 8] eb:
[ 9]  r←(1 1,aa,1)×(0.05+(?10)÷1000),(0.04+(?10)÷1000),(0.06+(?10)÷1000),aa←50+?50
[10]  →0
[11] ec:
[12]  r←(1 1,aa,1)×(0.06+(?10)÷1000),(0.05+(?10)÷1000),(0.04+(?10)÷1000),aa←50+?50
[13]  →0
-------------------------------------------------------------
[0]  r←geraletra
[1]  r←'ABC'[?3]
-------------------------------------------------------------
[ 0]  r←a ondeta b;i;j;k;⎕PW;⎕IO
[ 1]  ⎕IO←1
[ 2]  ⎕PW←120
[ 3]  b←,b
[ 4]  i←1
[ 5] t1:→(i>1↑⍴a)/fim
[ 6]  j←1
[ 7] t2:→(j>1↓⍴a)/upa
[ 8]  →(a[i;j]≠b[1])/soma
[ 9]  k←1
[10] t3:→(k>⍴b)/achou
[11]  →(a[i;j+k-1]=b[k])/ainda
[12]  →soma
[13] ainda:k←k+1
[14]  →t3
[15] achou:'=',(⍕i),' ',(⍕j),a[i;]
[16]  j←j+⍴b
[17]  →t2
[18] soma:j←j+1
[19]  →t2
[20] upa:i←i+1
[21]  →t1
[22] fim:
-------------------------------------------------------------
[ 0]  opesq vivop65a n;CORRECAO;EVENTO;aaa;ab;acuja;az;dhx;esse;f;lixo1;lixonol;nomes;ql39
      ;qlinha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivop65 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PLp65   '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[23]  esse[2;]←80↑dhx[2;]
[24]  esse[3;]←80↑4 2⍕VERSAOa←1.08
[25]  esse[4;]←80↑ylu[xk;⍳6]
[26] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[27]  →(36=1↓⍴ylu)/zebra
[28]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[29]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[30]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[31]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[32]  →maiszebra
[33] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[86] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[87]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍬∧⍀⍬EVENTO=' ')/EVENTO),'.tex'
[88]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[89]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivop75

```
[0]  x←geracasop75
[1]  x←2 75⍴' '
[2]  x[1;]←75↑'&1&2&3&4&5'
[3]  x[2;]←75↑'&',(3 0⍕8+?5),'&',(3 0⍕16+?5),'&',(3 0⍕24+?5),'&',(3 0⍕28+?5),'&',(3 0⍕32+
      ?5)
-------------------------------------------------------------
[ 0]  r←a ondeta b;i;j;k;⎕PW;⎕IO
[ 1]  ⎕IO←1
[ 2]  ⎕PW←120
[ 3]  b←,b
[ 4]  i←1
[ 5] t1:→(i>1↑⍴a)/fim
[ 6]  j←1
[ 7] t2:→(j>1↓⍴a)/upa
[ 8]  →(a[i;j]≠b[1])/soma
[ 9]  k←1
[10] t3:→(k>⍴b)/achou
[11]  →(a[i;j+k-1]=b[k])/ainda
[12]  →soma
[13] ainda:k←k+1
[14]  →t3
[15] achou:'=',(⍕i),' ',(⍕j),a[i;]
[16]  j←j+⍴b
[17]  →t2
[18] soma:j←j+1
[19]  →t2
[20] upa:i←i+1
[21]  →t1
[22] fim:
-------------------------------------------------------------
[ 0]  opesq vivop75a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivop75 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PLp75   '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[22]  esse[1;]←80↑dhx[1;]
[23]  esse[2;]←80↑dhx[2;]
[24]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[25]  esse[4;]←80↑ylu[xk;⍳6]
[26] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[27]  →(36=1↓⍴ylu)/zebra
[28]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[29]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[30]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[31]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[32]  →maiszebra
[33] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[ 8]  y[;2]←?y[;2]
[ 9]  m4←+/y[;1]
[10]  m5←+/(y[;1]≥200)/y[;1]
[11]  m6←+/(y[;2]≤89)/y[;1]
[12]  z←365 5⍴180 40 900 0 0
[13]  z[;1]←(z[;1]+?365⍴130)÷10
[14]  z[;2]←(z[;2]+?365⍴140)÷10
[15]  z[;3]←(?z[;3])÷10
[16]  i←1
[17] t1:→(i>365)/f2
[18]  z[i;4]←(0 0 0 0 0 0 0 2 2 2 3 5 6 8 10 15 20 25)[?18]
[19]  z[i;5]←(0 0 0 0 0 1 1 1 2 2 2 3 3 3 4 4 4 5 5 5 5 6 6 6 7 8 8 9 10 11)[?30]
[20]  i←i+1
[21]  →t1
[22] f2:m7←⌹10 1⍕(+/(z[;1]+z[;2])÷2)÷365
[23]  m8←+/z[;5]>3
[24]  m9←1+(+/z[⍳182;4])<+/z[182+⍳182;4]
[25]  ma←+/z[;3]<30
[26]  nom←3↑(trim nom),'XXX'
[27]  cam←'c:\apl2\'
[28]  lix←(10 0⍕1000 1⍴x)⎕FM(cam,nom,'F',('00'⍕num),'E1')
[29]  lix←(10 2 4 0⍕y)⎕FM(cam,nom,'F',('00'⍕num),'E2')
[30]  lix←(6 1 6 1 6 1 5 0 5 0⍕z)⎕FM(cam,nom,'F',('00'⍕num),'E3')
[31]  r←m1,m2,m3,m4,m5,m6,m7,m8,m9,ma
[32]  X←x
[33]  Y←y
[34]  Z←z
-------------------------------------------------------------
[ 0]  opesq vivop76a n;CORRECAO;EVENTO;IDX;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;q
      linha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivop76 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PLp76   '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ IDX←3↑2↓n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n ⋄ IDX←'XXX'
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[33] ⍝⍝⍝
```

```
[16]  r←d1,d2
------------------------------------------------------------
[ 0]  r←gerap91;aa;vars;coefs;res;rl;x;bb
[ 1]  rl←5 80ρ' '
[ 2]  bb←⍕aa←100000000+?899999999
[ 3]  rl[1;]←80↑bb[1 2 3],'.',bb[4 5 6],'.',bb[7 8 9],'⍀⍀*'
[ 4]  x←cpf aa
[ 5] t1:
[ 6]  vars←4?100
[ 7]  →((0∈vars)∨(1∈vars))/t1
[ 8] t2:
[ 9]  coefs←4 4ρ16?100
[10]  →((0∈coefs)∨(1∈coefs))/t2
[11]  x←x,vars
[12]  res←4ρ0
[13]  res[1]←+/coefs[1;]×vars
[14]  res[2]←+/coefs[2;]×vars
[15]  res[3]←+/coefs[3;]×vars
[16]  res[4]←+/coefs[4;]×vars
[17]  rl[2;]←80↑'$',(⍕coefs[1;1]),'x+',(⍕coefs[1;2]),'y+',(⍕coefs[1;3]),'z+',(⍕coefs[1;4])
      ,'w=',(⍕res[1]),'$⍀⍀*'
[18]  rl[3;]←80↑'$',(⍕coefs[2;1]),'x+',(⍕coefs[2;2]),'y+',(⍕coefs[2;3]),'z+',(⍕coefs[2;4])
      ,'w=',(⍕res[2]),'$⍀⍀*'
[19]  rl[4;]←80↑'$',(⍕coefs[3;1]),'x+',(⍕coefs[3;2]),'y+',(⍕coefs[3;3]),'z+',(⍕coefs[3;4])
      ,'w=',(⍕res[3]),'$⍀⍀*'
[20]  rl[5;]←80↑'$',(⍕coefs[4;1]),'x+',(⍕coefs[4;2]),'y+',(⍕coefs[4;3]),'z+',(⍕coefs[4;4])
      ,'w=',(⍕res[4]),'$⍀⍀*'
[21]  r←2ρ0
[22]  r[1]←⊂rl
[23]  r[2]←⊂x
------------------------------------------------------------
[ 0]  opesq vivop91a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←1 ⋄ EVENTO←'PLp91   '
[ 6]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAp91←ajusta80 FOLHALAp91
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALAp91)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 7ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←14 80ρ' '
[16]  f←FOLHALAp91
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑ρf),4)ρ'⍀#05')/⍳1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
```

```
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[13;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[14;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerap91
[35]  esse[7+⍳5;]←5 80↑⊃xx[1]
[36]  resp←resp,,⊃xx[2]
[37]  resu←resu,[1]1 7⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⎕←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO,'/',opesq
[47]  upag[2+⍳1↑⍴presu;⍳+/lixo1]←(lixo1←5 0 6 0 2 0 8 0 3 0 3 0 3 0)⍕resu
[48]  upag[3+1↑⍴presu;]←(1↓⍴upag)↑'\end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],6 0 2 0 8 0 3 0 3 0 3 0⍕0 1↓resu)
[51]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivor20

```
[ 0]  opesq vivor20a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivor20 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PLr20   '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[26] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[27]  →(36=1↓⍴ylu)/zebra
[28]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[29]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[30]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[31]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[32]  →maiszebra
[33] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

vivor25

```
[ 0]  RRRR←LIXO;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ008;Δ009;Δ010
[ 1]  Δ001←(4<5)
[ 2]  →(~Δ001)/Δ002
[ 3]  Δ003←(((4<9)∨(6≤2))∧(2≥4))
[ 4]  →(~Δ003)/Δ004
[ 5]  RRRR←(3)
[ 6]  →Δ005
[ 7] Δ004:
[ 8]  RRRR←(6)
[ 9] Δ005:
[10]  →Δ006
[11] Δ002:
[12]  Δ007←((~(1≥4))∨(6<3))
[13]  →(~Δ007)/Δ008
[14]  RRRR←(8)
[15]  →Δ009
[16] Δ008:
[17]  RRRR←(8)
[18] Δ009:
[19] Δ006:
------------------------------------------------------------
[ 0]  r←cgc25 z;z1;r1;z2;d1;z3;d2
[ 1]  →(11≠ρz)/erro
[ 2]  r1←mod10 7↑z
[ 3] k1:z←(7↑z),r1,¯4↑z
[ 4]  z2←+/z×5 4 3 2 9 8 7 6 5 4 3 2
[ 5]  d1←11|z2
[ 6]  →((d1=0)∨(d1=1))/ok10
[ 7]  d1←11-d1
[ 8]  →vai
[ 9] ok10:d1←0
[10] vai:z←z,d1
[11]  z3←+/z×6 5 4 3 2 9 8 7 6 5 4 3 2
[12]  d2←11|z3
[13]  →((d2=0)∨(d2=1))/ok20
[14]  d2←11-d2
[15]  →anda
[16] ok20:d2←0
[17] anda:
[18]  r←r1,d1,d2
[19]  →0
[20] erro:'deu erro'
------------------------------------------------------------
[0]  r←a div b
[1]  →((b=0)∧(a≠0))/lixo
[2]  r←⌊a÷b
[3]  →0
[4] lixo:'divisao por zero'
------------------------------------------------------------
[0]  r←geraatom17
[1]  r←'(',('5'⍕?9),' ',('><=≠≥≤'[?6]),' ',('5'⍕?9),')'
[2]  →(7>?10)/0
[3]  r←'(~ ',r,')'
------------------------------------------------------------
[ 0]  r←gerac25;x;y;lixo;res;i;z;h
[ 1]  x←gerafunc17
[ 2]  y←(1 100ρ100↑'funcao LIXO'),[1]x,[1]1 100ρ100↑'fimfuncao'
[ 3]  y←y replace'escreva' 'RRRR <- '
[ 4]  lixo←⎕FX cpc y
[ 5]  res←≡'LIXO'
[ 6]  h←(1 100ρ100↑'\begin{algorithmic}[1]'),[1]x,[1]1 100ρ100↑'\end{algorithmic}'
```

```
[ 7]  h←h replace'senao' '⍀ELSE'
[ 8]  h←h replace'fimse' '⍀ENDIF'
[ 9]  h←h replace'se' '⍀IF{'
[10]  h←h replace'escreva' '⍀STATE escreva'
[11]  h←h replace'entao' ''
[12]  r←2⍴0 ⋄ z←15 100⍴' '
[13]  i←1
[14] t1:→(i>15)/vai
[15]  z[i;]←100↑(trim traduzr25 h[i;])
[16]  i←i+1
[17]  →t1
[18] vai:
[19]  z[2 3 9;100]←'}'
[20]  r[1]←⊂z
[21]  r[2]←res
-------------------------------------------------------------
[  0]  ra←geracoman25 gra;aa;vv;z1;z2;r;respa
[  1] ⍝retorna 6 linhas numeradas de comandos e a soma dos 6 resultados
[  2]  r←12 76⍴' ' ⋄ vv←0⍴0 ⋄ ra←2⍴0
[  3]  r[1;]←76↑'⍀item'
[  4] a1:→(1=?2)/b1
[  5]  aa←(trim 76↑z1←geramod25 2),'+',trim 76↑z2←gra gerafunc25 3
[  6]  →(76>⍴aa)/v1
[  7]  →a1
[  8] v1:r[2;]←76↑aa ⋄ vv←respa←⍎z1[76+⍳4],' + ',z2[76+⍳4]
[  9]  →h1
[ 10] b1:
[ 11]  aa←(trim 76↑z1←geramod25 3),'-',trim 76↑z2←gra gerafunc25 2
[ 12]  →(76>⍴aa)/v2
[ 13]  →b1
[ 14] v2:r[2;]←76↑aa ⋄ vv←respa←⍎z1[76+⍳4],' - ',z2[76+⍳4]
[ 15] h1:→(respa≠⍎,retrad25 76↑aa)/merda
[ 16]  r[3;]←76↑'⍀item'
[ 17] a3:→(1=?2)/b3
[ 18]  aa←(trim 76↑z1←geramod25 3),'+',trim 76↑z2←gra gerafunc25 2
[ 19]  →(76>⍴aa)/v3
[ 20]  →a3
[ 21] v3:r[4;]←76↑aa ⋄ vv←vv,respa←⍎z1[76+⍳4],' + ',z2[76+⍳4]
[ 22]  →h2
[ 23] b3:
[ 24]  aa←(trim 76↑z1←geramod25 2),'-',trim 76↑z2←gra gerafunc25 3
[ 25]  →(76>⍴aa)/v4
[ 26]  →b3
[ 27] v4:r[4;]←76↑aa ⋄ vv←vv,respa←⍎z1[76+⍳4],' - ',z2[76+⍳4]
[ 28] h2:→(respa≠⍎,retrad25 76↑aa)/merda
[ 29]  r[5;]←76↑'⍀item'
[ 30] a5:→(1=?2)/b5
[ 31]  aa←(trim 76↑z1←gra gerafunc25 1),'+',trim 76↑z2←gra gerafunc25 2
[ 32]  →(76>⍴aa)/v5
[ 33]  →a5
[ 34] v5:r[6;]←76↑aa ⋄ vv←vv,respa←⍎z1[76+⍳4],' + ',z2[76+⍳4]
[ 35]  →h3
[ 36] b5:
[ 37]  aa←(trim 76↑z1←gra gerafunc25 2),'-',trim 76↑z2←gra gerafunc25 1
[ 38]  →(76>⍴aa)/v6
[ 39]  →b5
[ 40] v6:r[6;]←76↑aa ⋄ vv←vv,respa←⍎z1[76+⍳4],' - ',z2[76+⍳4]
[ 41] h3:→(respa≠⍎,retrad25 76↑aa)/merda
[ 42]  r[7;]←76↑'⍀item'
[ 43] a7:→(1=?2)/b7
[ 44]  aa←(trim 76↑z1←geramod25 2),'+',trim 76↑z2←gra gerafunc25 3
[ 45]  →(76>⍴aa)/v7
[ 46]  →a7
```

```
[ 47] v7:r[8;]←76↑aa ⋄ vv←vv,respa←⍕z1[76+⍳4],' + ',z2[76+⍳4]
[ 48]  →h4
[ 49] b7:
[ 50]  aa←(trim 76↑z1←geramod25 3),'-',trim 76↑z2←gra gerafunc25 2
[ 51]  →(76>⍴aa)/v8
[ 52]  →b7
[ 53] v8:r[8;]←76↑aa ⋄ vv←vv,respa←⍕z1[76+⍳4],' - ',z2[76+⍳4]
[ 54] h4:→(respa≠⍕,retrad25 76↑aa)/merda
[ 55]  r[9;]←76↑'⍀item'
[ 56] a9:→(1=?2)/b9
[ 57]  aa←(trim 76↑z1←geramod25 3),'+',trim 76↑z2←gra gerafunc25 2
[ 58]  →(76>⍴aa)/v9
[ 59]  →a9
[ 60] v9:r[10;]←76↑aa ⋄ vv←vv,respa←⍕z1[76+⍳4],' + ',z2[76+⍳4]
[ 61]  →h5
[ 62] b9:
[ 63]  aa←(trim 76↑z1←geramod25 2),'-',trim 76↑z2←gra gerafunc25 3
[ 64]  →(76>⍴aa)/va
[ 65]  →b9
[ 66] va:r[10;]←76↑aa ⋄ vv←vv,respa←⍕z1[76+⍳4],' - ',z2[76+⍳4]
[ 67] h5:→(respa≠⍕,retrad25 76↑aa)/merda
[ 68]  r[11;]←76↑'⍀item'
[ 69] ab:→(1=?2)/bb
[ 70]  aa←(trim 76↑z1←gra gerafunc25 1),'+',trim 76↑z2←gra gerafunc25 2
[ 71]  →(76>⍴aa)/vb
[ 72]  →ab
[ 73] vb:r[12;]←76↑aa ⋄ vv←vv,respa←⍕z1[76+⍳4],' + ',z2[76+⍳4]
[ 74]  →h6
[ 75] bb:
[ 76]  aa←(trim 76↑z1←gra gerafunc25 2),'-',trim 76↑z2←gra gerafunc25 1
[ 77]  →(76>⍴aa)/vc
[ 78]  →bb
[ 79] vc:r[12;]←76↑aa ⋄ vv←vv,respa←⍕z1[76+⍳4],' - ',z2[76+⍳4]
[ 80] h6:→(respa≠⍕,retrad25 76↑aa)/merda
[ 81]  ra[1]←⊂r ⋄ ra[2]←⊂vv
[ 82]  →0
[ 83] merda:WARNING1←z1
[ 84]  WARNING2←z2
[ 85]  WARNING3←aa
[ 86]  '3'+2
------------------------------------------------------------
[ 0]  r←geracond17;x;aa;bb;cc;dd
[ 1] inicio:x←?6
[ 2]  →((x=1)∨(x=2))/aaa
[ 3]  →((x=4)∨(x=5))/bbb
[ 4]  →((x=6)∨(x=3))/ccc
[ 5]  'erro: gerado um estranho...'
[ 6]  →0
[ 7] aaa:aa←geraatom17
[ 8]  bb←geraatom17
[ 9]  r←aa geracone17 bb
[10]  →0
[11] bbb:r←geraatom17
[12]  →0
[13] ccc:aa←geraatom17
[14]  bb←geraatom17
[15]  cc←geraatom17
[16]  dd←aa geracone17 bb
[17]  r←dd geracone17 cc
[18] ⍝ r
[19] ⍝ r=' '
[20]  →(100>⍴r)/0
[21]  ⍞←'*'
```

```
[22]  →inicio
-------------------------------------------------------------
[0]  r←a geracone17 b
[1]  r←'(',a,' ',('v^'[?2]),' ',b,')'
-------------------------------------------------------------
[ 0]  r←gerafunc17
[ 1]  r←13 100⍴' '
[ 2]  r[1;]←100↑'se ',geracond17
[ 3]  r[2;]←100↑'se ',geracond17
[ 4]  r[3;]←100↑gerasoma17
[ 5]  r[4;]←100↑'senao'
[ 6]  r[5;]←100↑gerasoma17
[ 7]  r[6;]←100↑'fimse'
[ 8]  r[7;]←100↑'senao'
[ 9]  r[8;]←100↑'se ',geracond17
[10]  r[9;]←100↑gerasoma17
[11]  r[10;]←100↑'senao'
[12]  r[11;]←100↑gerasoma17
[13]  r[12;]←100↑'fimse'
[14]  r[13;]←100↑'fimse'
-------------------------------------------------------------
[0]  r←gerasoma17;aa;bb;ind
[1]  r←'escreva (',('5'⍕?9),')'
-------------------------------------------------------------
[0]  r←a igual b;maior
[1]  maior←(1↑⍴a)⌈1↑⍴b
[2]  a←maior↑a ⋄ b←maior↑b
[3]  r←maior=+/a=b
-------------------------------------------------------------
[0]  r←a mod b
[1]  →((b=0)^(a≠0))/dab
[2]  r←b|a
[3]  →0
[4] dab:
[5]  r←a
-------------------------------------------------------------
[ 0]  r←mod10 z;z1;s1;s2
[ 1]  →(7=⍴z)/blz
[ 2]  'erro: nao foram entrados 7 digitos separados'
[ 3] blz:
[ 4]  s1←2 1 2 1 2 1 2×z
[ 5]  s2←s1-(s1>9)×9
[ 6]  r←10-10|(+/s2)
[ 7]  →(r=10)/viva
[ 8]  →0
[ 9] viva:r←0
-------------------------------------------------------------
[0]  r←pedemail x
[1]  →(40≠+/' '=x)/aindanao
[2]  r←80↑'Por favor, informe seu e-mail: ↓_↓_↓_↓_↓_↓_↓_↓_↓_↓_↓_↓_↓_↓_↓_'
[3]  →junnao
[4] aindanao:r←80↑'e-mail cadastrado: ↓verb+',x,'+'
[5] junnao:
-------------------------------------------------------------
[ 0]  r←quem replace depara;de;i;j;k;onde;para
[ 1] ⍝ forma de usar: texto replace 'strin-de' 'string para'
[ 2] ⍝ obviamente eles nao precisam ter o mesmo tamanho
[ 3]  de←,⊃depara[1] ⋄ para←,⊃depara[2]
[ 4]  i←1 ⋄ r←((1↑⍴quem),200)⍴' '
[ 5] t1:→(i>1↑⍴quem)/fim
[ 6]  →(0=∨/onde←de⍷quem[i;])/naotem
[ 7]  j←1 ⋄ k←1
[ 8] t2:→(k>⍴quem[i;])/acabou
```

```
[ 9]  →(onde[k]=0)/soma
[10]  r[i;(j-1)+⍳⍴para]←para
[11]  j←j+⍴para
[12]  k←k+⍴de
[13]  →t2
[14] soma:r[i;j]←quem[i;k]
[15]  k←k+1
[16]  →(j=j←j+1)/t2
[17] naotem:r[i;]←200↑quem[i;]
[18] acabou:→(i=i←i+1)/t1
[19] fim:r←trim4 r
------------------------------------------------------------
[ 0]  r←traduzr25 x;i
[ 1]  i←1 ⋄ r←''
[ 2] t1:→(i>⍴x)/fim
[ 3]  →('∨'=x[i])/eou
[ 4]  →('∧'=x[i])/ee
[ 5]  →('>'=x[i])/emai
[ 6]  →('<'=x[i])/emen
[ 7]  →('≥'=x[i])/emag
[ 8]  →('≤'=x[i])/emeg
[ 9]  →('~'=x[i])/enao
[10]  →('÷'=x[i])/ediv
[11]  →('×'=x[i])/evez
[12]  →('←'=x[i])/erec
[13]  →('⌈'=x[i])/ecei
[14]  →('⌊'=x[i])/eflo
[15]  →('≠'=x[i])/edifa
[16]  r←r,x[i]
[17] soma:→(i=i←i+1)/t1
[18] eou:r←r,'$⍀lor$'
[19]  →soma
[20] ee:r←r,'$⍀land$'
[21]  →soma
[22] enao:r←r,'$⍀sim$'
[23]  →soma
[24] emai:r←r,'$>$'
[25]  →soma
[26] emen:r←r,'$<$'
[27]  →soma
[28] emag:r←r,'$⍀ge$'
[29]  →soma
[30] emeg:r←r,'$⍀le$'
[31]  →soma
[32] ediv:r←r,'$⍀div$'
[33]  →soma
[34] evez:r←r,'$⍀times$'
[35]  →soma
[36] erec:r←r,'$⍀gets$'
[37]  →soma
[38] eflo:r←r,'$⍀lfloor$'
[39]  →soma
[40] ecei:r←r,'$⍀lceil$'
[41]  →soma
[42] edifa:r←r,'$⍀neq$'
[43]  →soma
[44] fim:
------------------------------------------------------------
[0]  r←trim4 x;z
[1] ⍝f corta as colunas direitas que sao brancos
[2]  →(2≠⍴⍴x)/erro
[3]  z←+/[1]x=' '
[4]  r←(z≠1↑⍴x)/[2]x
```

```
[5]  →0
[6] erro:'o operando deve ter rank=2'
-------------------------------------------------------------
[ 0]  r←vetoriza x;i;rr;letra;aspa;nume
[ 1]  aspa←'''' ⋄ nume←'0123456789'
[ 2]  letra←'abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ()',aspa
[ 3] ⍝ tira os brancos
[ 4]  i←1 ⋄ rr←1
[ 5] t2:→(i>¯2+⍴x)/vaiz
[ 6]  →((x[i+1]=' ')∧(x[i]∈letra)∧(x[i+2]∈nume))/mataz
[ 7]  →((x[i+1]=' ')∧(x[i]∈nume)∧(x[i+2]∈letra))/mataz
[ 8]  →((x[i]∈letra)∧(x[i+2]∈letra))/naopode
[ 9]  →(x[i+1]≠' ')/naopode
[10] pode:rr←rr,0
[11]  →(i=i←i+1)/t2
[12] mataz:x[i+1]←'!'
[13] naopode:rr←rr,1
[14]  →(i=i←i+1)/t2
[15] vaiz:rr←rr,1
[16]  x←rr/x
[17] ⍝ separa o sinal <-
[18]  →(2≠+/'<-'∈x)/faca
[19]  i←1 ⋄ rr←⍳0
[20] t1:→(i>¯1+⍴x)/vaix
[21]  →((x[i]='<')∧(x[i+1]='-'))/esim
[22]  rr←rr,1
[23]  →(i=i←i+1)/t1
[24] esim:rr←rr,0 1 1 0
[25]  →(i=i←i+2)/t1
[26] vaix:rr←rr,1
[27]  x←rr⌿x
[28] faca:x←'! 'edit x
[29]  r←(~' '=x)⊂x
-------------------------------------------------------------
[ 0]  opesq vivor25a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;relat;resp;resu;
      upag;va;xk;xx;xy;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←1 ⋄ EVENTO←'PLr25   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⌿apl2⌿',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALAr25←100 ajusta FOLHALAr25
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAr25)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⌿apl2⌿VIVOBLOI'
[12]  xk←1 ⋄ resu←0 8⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←45 100⍴' '
[15]  f←FOLHALAr25
[16]  esse[1;]←100↑dhx[1;]
[17]  esse[2;]←100↑dhx[2;]
[18]  esse[3;]←100↑4 2⍎VERSAOa←1.04
[19]  esse[4;]←100↑ylu[xk;⍳6]
[20]  esse[5;]←100↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←100↑EVENTO
[22]  esse[7;]←100↑(3 0⍎resp←xk),' ',opesq
[23]  esse[44;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[45;]←100↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  esse[8 9;⍳3]←2 3⍴3 0⍎xx←2?999
```

```
[27]  resp←resp,+/xx
[28] ⍝ xx←geracoman25 '++++----××××××'
[29] ⍝ esse[9+⍳12;⍳76]←⊃xx[1]
[30] ⍝ resp←resp,+/⊃xx[2]
[31] ⍝ xx←geracoman25 '+÷+-÷÷-×÷÷÷×'
[32] ⍝ esse[21+⍳12;⍳76]←⊃xx[1]
[33] ⍝ resp←resp,+/⊃xx[2]
[34]  xx←gerac25
[35]  esse[9+⍳15;]←⊃xx[1]
[36]  resp←resp,xx[2]
[37]  xx←gerac25
[38]  esse[24+⍳15;]←⊃xx[1]
[39]  resp←resp,xx[2]
[40]  xx←¯1+?11⍴10
[41]  xx[8 9]←0
[42]  esse[40;]←100↑4 0 2 0 2 0 2 0 2 0 2 0 2 0 8 0 2 0 2 0 2 0⍕xx
[43]  resp←resp,+/100 10 1×cgc25 xx
[44]  xx←¯1+?11⍴10
[45]  xx[8 9]←0
[46]  esse[41;]←100↑4 0 2 0 2 0 2 0 2 0 2 0 2 0 8 0 2 0 2 0 2 0⍕xx
[47]  resp←resp,+/100 10 1×cgc25 xx
[48]  xx←¯1+?11⍴10
[49]  esse[42;]←100↑4 0 2 0 2 0 2 0 2 0 2 0 2 0 8 0 2 0 2 0 2 0⍕xx
[50]  resp←resp,+/100 10 1×cgc25 xx
[51]  xx←¯1+?11⍴10
[52]  xx[8 9 10]←0
[53]  esse[43;]←100↑4 0 2 0 2 0 2 0 2 0 2 0 2 0 8 0 2 0 2 0 2 0⍕xx
[54]  resp←resp,+/100 10 1×cgc25 xx
[55]  resu←resu,[1]1 8⍴resp
[56]  acuja←(f[;2]='#')/⍳1↑⍴f
[57]  f[acuja;⍳100]←esse[⍤,f[acuja;3 4],' ';]
[58]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[59]  □←(⍕xk←xk+1),'-'
[60]  →testa
[61] fim:upag←(1 0+⍴f)⍴' '
[62]  →(1=≡n)/elafa
[63]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[64]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[65]  upag[2+⍳1↑⍴resu;⍳20++/lixo1]←'¯-'edit((lixo1←3 0 8 0 8 0 2 0)⍕resu[;⍳4]),'     000 0
      00 000 000'⍕resu[;4+⍳4]
[66]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[67]  →terminando
[68] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),'¯-'edit 8 0 8 0 2 0 8 0 4 0 4 0 4 0⍕0 1↓resu)
[69]  aaa[1;35 36]←2 0⍕CORRECAO
[70]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∘.⊃⍷EVENTO=' ')/EVENTO),'.gpa')
[71]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[72] terminando:
[73]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[74]  relat[1↑⍴relat;;]←upag
[75]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[76]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∘.⊃⍷EVENTO=' ')/EVENTO),'.tex'
[77]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[78]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivor26

```
[0]  AVISO
[1]  'O limite deste ws eh de 46 exemplares'
------------------------------------------------------------
[0]  r←geracasor26;axyn;reim
[1] denovo:axyn←(55+?945),(55+?945),1000+?999
```

```
[2]  reim←((?999)÷1000),(?999)÷1000
[3]  r←7⍴0
[4]  r[1 2 3]←axyn
[5]  r[6]←xyn axyn
[6]  r[4 5]←reim
[7]  r[7]←man026 reim
[8]  →(r[7]<4)/denovo
------------------------------------------------------------
[ 0]  r←man026 p;i;za;zb;aux;mag
[ 1]  i←1
[ 2]  za←p[1]
[ 3]  zb←p[2]
[ 4] inica:→(i>100)/fim
[ 5]  aux←za
[ 6]  za←((za×za)-(zb×zb))+p[1]
[ 7]  zb←(2×aux×zb)+p[2]
[ 8]  mag←((za×za)+(zb×zb))*0.5
[ 9]  →(mag>2)/ufa
[10]  i←i+1
[11]  →inica
[12] ufa:r←i
[13]  →0
[14] fim:r←100
------------------------------------------------------------
[ 0]  r←quem replace depara;de;i;j;k;onde;para
[ 1] ⍝ forma de usar: texto replace 'strin-de' 'string para'
[ 2] ⍝ obviamente eles nao precisam ter o mesmo tamanho
[ 3]  de←,⊃depara[1] ⋄ para←,⊃depara[2]
[ 4]  i←1 ⋄ r←((1↑⍴quem),200)⍴' '
[ 5] t1:→(i>1↑⍴quem)/fim
[ 6]  →(0=∨/onde←de⍷quem[i;])/naotem
[ 7]  j←1 ⋄ k←1
[ 8] t2:→(k>⍴quem[i;])/acabou
[ 9]  →(onde[k]=0)/soma
[10]  r[i;(j-1)+⍳⍴para]←para
[11]  j←j+⍴para
[12]  k←k+⍴de
[13]  →t2
[14] soma:r[i;j]←quem[i;k]
[15]  k←k+1
[16]  →(j=j←j+1)/t2
[17] naotem:r[i;]←200↑quem[i;]
[18] acabou:→(i=i←i+1)/t1
[19] fim:r←trim4 r
------------------------------------------------------------
[0]  r←trim4 x;z
[1] ⍝f corta as colunas direitas que sao brancos
[2]  →(2≠⍴⍴x)/erro
[3]  z←+/[1]x=' '
[4]  r←(z≠1↑⍴x)/[2]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
------------------------------------------------------------
[ 0]  opesq vivor26a n;CORRECAO;EVENTO;aaa;acuja;aqui;dhx;esse;f;lixo1;lixonol;relat;resp;
      resu;upag;va;xk;xx;xy;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←1 ⋄ EVENTO←'PLr26   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
```

```
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALAr26←100 ajusta FOLHALAr26
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAr26)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[12]  xk←1 ⋄ resu←0 3⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←14 100⍴' '
[15]  f←FOLHALAr26
[16]  esse[1;]←100↑dhx[1;]
[17]  esse[2;]←100↑dhx[2;]
[18]  esse[3;]←100↑4 2⍕VERSAOa←1.02
[19]  esse[4;]←100↑ylu[xk;⍳6]
[20]  esse[5;]←100↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←100↑EVENTO
[22]  esse[7;]←100↑(3 0⍕resp←xk),' ',opesq
[23]  esse[13;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[14;]←100↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  aqui←geracasor26
[27]  esse[8 9 10;]←100 0⍕3 1⍴aqui[1 2 3]
[28]  esse[11 12;]←2 100↑7 3⍕2 1⍴aqui[4 5]
[29]  resp←resp,aqui[6 7]
[30]  resu←resu,[1]1 3⍴resp
[31]  acuja←(f[;2]='#')/⍳1↑⍴f
[32]  f[acuja;⍳100]←esse[⍤,f[acuja;3 4],' ';]
[33]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[34]  ⎕←(⍕xk←xk+1),'-'
[35]  →testa
[36] fim:upag←(1 0+⍴f)⍴' '
[37]  →(1=≡n)/elafa
[38]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[39]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[40]  upag[2+⍳1↑⍴resu;⍳13]←3 0 5 0 5 0⍕resu
[41]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[42]  →terminando
[43] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),5 0 5 0⍕0 1↓resu)
[44]  aaa[1;35 36]←2 0⍕CORRECAO
[45]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[46]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[47] terminando:
[48]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[49]  relat[1↑⍴relat;;]←upag
[50]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[51]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[52]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[53]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  r←xyn oper;x;y;n;tmp
[ 1] ⍝ xyn calcula (x*y) mod n, atraves do alg. addition chaining sch96p.244
[ 2]  x←oper[1] ⋄ y←oper[2] ⋄ n←oper[3]
[ 3]  →(y≠1)/difa
[ 4]  r←n|x
[ 5]  →fim
[ 6] difa:→(0=2|y)/par
[ 7] impar:tmp←xyn(x,((y-1)÷2),n)
[ 8]  tmp←n|(tmp×tmp)
[ 9]  tmp←n|(tmp×x)
[10]  r←tmp
[11]  →fim
[12] par:tmp←xyn(x,(y÷2),n)
[13]  r←n|(tmp×tmp)
[14] fim:
------------------------------------------------------------
```

vivor28

```
[ 0]  r←quem replace depara;de;i;j;k;onde;para
[ 1] ⍝ forma de usar: texto replace 'strin-de' 'string para'
[ 2] ⍝ obviamente eles nao precisam ter o mesmo tamanho
[ 3]  de←,⊃depara[1] ⋄ para←,⊃depara[2]
[ 4]  i←1 ⋄ r←((1↑⍴quem),200)⍴' '
[ 5] t1:→(i>1↑⍴quem)/fim
[ 6]  →(0=∨/onde←de⍷quem[i;])/naotem
[ 7]  j←1 ⋄ k←1
[ 8] t2:→(k>⍴quem[i;])/acabou
[ 9]  →(onde[k]=0)/soma
[10]  r[i;(j-1)+⍳⍴para]←para
[11]  j←j+⍴para
[12]  k←k+⍴de
[13]  →t2
[14] soma:r[i;j]←quem[i;k]
[15]  k←k+1
[16]  →(j=j←j+1)/t2
[17] naotem:r[i;]←200↑quem[i;]
[18] acabou:→(i=i←i+1)/t1
[19] fim:r←trim4 r
------------------------------------------------------------
[0]  r←trim4 x;z
[1] ⍝f corta as colunas direitas que sao brancos
[2]  →(2≠⍴⍴x)/erro
[3]  z←+/[1]x=' '
[4]  r←(z≠1↑⍴x)/[2]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
------------------------------------------------------------
[ 0]  opesq vivor28a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;relat;resp;resu;
      upag;va;xk;xx;xy;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←1 ⋄ EVENTO←'PLr28   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍎⍳n
[ 9]  FOLHALAr28←100 ajusta FOLHALAr28
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAr28)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[12]  xk←1 ⋄ resu←0 8⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←45 100⍴' '
[15]  f←FOLHALAr28
[16]  esse[1;]←100↑dhx[1;]
[17]  esse[2;]←100↑dhx[2;]
[18]  esse[3;]←100↑4 2⍎VERSAOa←1.04
[19]  esse[4;]←100↑ylu[xk;⍳6]
[20]  esse[5;]←100↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←100↑EVENTO
[22]  esse[7;]←100↑(3 0⍎resp←xk),' ',opesq
[23]  esse[44;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[45;]←100↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  resu←resu,[1]1 8⍴resp
[27]  acuja←(f[;2]='#')/⍳1↑⍴f
[28]  f[acuja;⍳100]←esse[⍋,f[acuja;3 4],' ';]
[29]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
```

```
[30]  ⍞←(⍕xk←xk+1),'-'
[31]  →testa
[32] fim:upag←(1 0+⍴f)⍴' '
[33] ⍝⍝⍝
```

```
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←1 ⋄ EVENTO←'PLr29   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,76)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALAr29←100 ajusta FOLHALAr29
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAr29)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[12]  xk←1 ⋄ resu←0 8⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←45 100⍴' '
[15]  f←FOLHALAr29
[16]  esse[1;]←100↑dhx[1;]
[17]  esse[2;]←100↑dhx[2;]
[18]  esse[3;]←100↑4 2⍕VERSAOa←1.04
[19]  esse[4;]←100↑ylu[xk;⍳6]
[20]  esse[5;]←100↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←100↑EVENTO
[22]  esse[7;]←100↑(3 0⍕resp←xk),' ',opesq
[23]  esse[44;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[45;]←100↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] inica:
[26]  resu←resu,[1]1 8⍴resp
[27]  acuja←(f[;2]='#')/⍳1↑⍴f
[28]  f[acuja;⍳100]←esse[⍋,f[acuja;3 4],' ';]
[29]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[30]  ⎕←(⍕xk←xk+1),'-'
[31]  →testa
[32] fim:upag←(1 0+⍴f)⍴' '
[33] AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
[34]  →terminando
[35] AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
[36]  →(1=≡n)/elafa
[37]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[38]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[39]  upag[2+⍳1↑⍴resu;⍳20++/lixo1]←'¯-'edit((lixo1←3 0 8 0 8 0 2 0)⍕resu[;⍳4]),'     000 0
      00 000 000'⍕resu[;4+⍳4]
[40]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[41]  →terminando
[42] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),'¯-'edit 8 0 8 0 2 0 8 0 4 0 4 0 4 0⍕0 1↓resu)
[43]  aaa[1;35 36]←2 0⍕CORRECAO
[44]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[45]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[46] terminando:
[47]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[48]  relat[1↑⍴relat;;]←upag
[49]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[50]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[51]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[52]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivor30

```
[ 0]  opesq vivor30a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;nomes;num
      ;ql39;qlinha;relat;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLr30   '
```

```
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAr30←ajusta80 FOLHALAr30
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALAr30)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 2ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←20 80ρ' '
[16]  f←FOLHALAr30
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.01
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[⎕IO+1]f[;⍳4]=((1↑ρf),4)ρ'\#05')/⍳1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[⎕IO]nomes,[⎕IO](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:
[28]  esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[32]  esse[19;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[20;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] ini1:
[35]  esse[8;]←80↑'1'
[36]  esse[9;]←80↑'1'
[37]  esse[10;]←80↑'1'
[38]  esse[11;]←80↑'1'
[39]  esse[12;]←80↑'1'
[40]  resu←resu,[1]1 2ρresp
[41]  acuja←(f[;2]='#')/⍳1↑ρf
[42]  f[acuja;]←esse[⍋,f[acuja;3 4],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\newpage'
[44]  ⍞←(⍎xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+ρf)ρ' '
[47]  →(1=≡n)/elafa
[48]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[49]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[50]  upag[2+⍳1↑ρresu;⍳+/lixo1]←(lixo1←4 0 8 0)⍎resu
[51]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[52]  →terminando
[53] elafa:aaa←(ylu[;⍳36],4 0⍎0 1↓resu)
[54]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[55]  '!!!!!  Arquivo GPA com ',(⍎1↑ρaaa),' linhas e ',(⍎1↓ρaaa),' colunas'
[56] terminando:
[57]  upag[1↑ρupag;]←(1↓ρupag)↑'\end{document}'
[58]  relat[1↑ρrelat;;]←upag
[59]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[60] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[61]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[62]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivor32

```
[ 0]  opesq vivor32a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivor32 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PLr32   '
[ 9]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[59] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[60] elafa:aaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[61] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[62]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[63]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[64] terminando:
[65]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[66]  relat[1↑⍴relat;;]←upag
[67]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[68] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[69]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[70]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[71]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'    .tex   (nao ha GPA)'
------------------------------------------------------------
```

vivor37

```
[ 0]  opesq vivor37a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLr37   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAr37←ajusta80 FOLHALAr37
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAr37)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALAr37
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  resu←resu,[1]1 3⍴resp
[35]  acuja←(f[;2]='#')/⍳1↑⍴f
[36]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[37]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[38]  ⍞←(⍕xk←xk+1),'-'
[39]  →testa
[40] fim:upag←(1 0+⍴f)⍴' '
[41]  →terminando ⍝ para matar o GPA
[42]  →(1=≡n)/elafa
```

```
[43]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[44]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[45]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍕resu
[46]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[47]  →terminando
[48] elafa:aaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[49]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[50]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[51] terminando:
[52]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[53]  relat[1↑⍴relat;;]←upag
[54]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[55]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[56]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[57]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'    .tex   (nao ha GPA)'
------------------------------------------------------------
```

vivor38

```
[0]  r←gerar38_1
[1]  r←12⍴0.7
[2]  r←r+(¯500+?12⍴1000)÷1000
[3]  r←'¯-'edit' 59.999'⍕2 6⍴r
------------------------------------------------------------
[0]  r←gerar38_2;cu;va;x
[1]  cu←10 11⍴'eng civil  ','sistemas   ','arquitetura','odontologia','medicina   ','mate
      matica ','moda       ','eletrica   ','musica     ','direito    '
[2]  va←400+?6⍴500
[3]  va←va[⍒va]
[4]  x←cu[6?10;]
[5]  r←2 70⍴' '
[6]  r[1;]←70↑(trim x[1;]),'=',(⍕va[1]),', ',(trim x[2;]),'=',(⍕va[2]),', ',(trim x[3;]),
      '=',(⍕va[3])
[7]  r[2;]←70↑(trim x[4;]),'=',(⍕va[4]),', ',(trim x[5;]),'=',(⍕va[5]),', ',(trim x[6;]),
      '=',(⍕va[6])
------------------------------------------------------------
[0]  r←gerar38_3;x;y
[1]  x←¯100+?4⍴300
[2]  y←¯100+?4⍴300
[3]  r←70↑'(',(⍕x[1]),',',(⍕y[1]),'), (',(⍕x[2]),',',(⍕y[2]),'), (',(⍕x[3]),',',(⍕y[3]),'
      ), (',(⍕x[4]),',',(⍕y[4]),')'
[4]  r←'¯-'edit r
------------------------------------------------------------
[ 0]  opesq vivor38a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLr38   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAr38←ajusta80 FOLHALAr38
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAr38)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←14 80⍴' '
[16]  f←FOLHALAr38
```

```
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[13;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[14;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerar38_1
[35]  esse[7+⍳2;]←2 80↑xx
[36]  xx←gerar38_2
[37]  esse[9+⍳2;]←2 80↑xx
[38]  xx←gerar38_3
[39]  esse[12;]←80↑xx
[40]  acuja←(f[;2]='#')/⍳1↑⍴f
[41]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[42]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[43]  ⎕←(⍕xk←xk+1),'-'
[44]  →testa
[45] fim:upag←(1 0+⍴f)⍴' '
[46]  →terminando
[47] ⍝ →(1=≡n)/elafa
[48] ⍝ upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[49] ⍝ upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[50] ⍝ upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍕resu
[51] ⍝ upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[52] ⍝ →terminando
[53] ⍝elafa:aaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[54] ⍝ lixonol←aaa ⎕FM('c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.gpa')
[55] ⍝ '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[56] terminando:
[57]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[58]  relat[1↑⍴relat;;]←upag
[59]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[60]  lixonol←lixonol ⎕FM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.tex'
[61]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[62]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivor39

```
[0]  r←gerar39_1;a;b;e
[1]  a←2 6⍴?12⍴19
[2]  b←3 6⍴?18⍴19
[3]  e←a×.+⍉b
[4]  r←3⍴0
[5]  r[1]←⊂a
[6]  r[2]←⊂b
[7]  r[3]←⊂e
-------------------------------------------------------------
[ 0]  opesq vivor39a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
```

```
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←1 ⋄ EVENTO←'PLr39   '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAr39←ajusta80 FOLHALAr39
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALAr39)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←14 80ρ' '
[16]  f←FOLHALAr39
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑ρf),4)ρ'\#05')/⍳1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[13;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[14;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerar39_1
[35]  esse[7+⍳2;]←2 80↑⍎⊃xx[1]
[36]  esse[9+⍳3;]←3 80↑⍎⊃xx[2]
[37]  zz←⊃xx[3]
[38]  resp←resp,,zz[1;1],zz[2;3]
[39]  resu←resu,[1]1 3ρresp
[40]  acuja←(f[;2]='#')/⍳1↑ρf
[41]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[42]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\clearpage'
[43]  ⍞←(⍎xk←xk+1),'-'
[44]  →testa
[45] fim:upag←(1 0+ρf)ρ' '
[46]  →(1=≡n)/elafa
[47]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[48]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO,'/',opesq
[49]  upag[2+⍳1↑ρresu;⍳+/lixo1]←(lixo1←5 0 14 0 12 0)⍎resu
[50]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[51]  →terminando
[52] elafa:aaa←(ylu[;⍳36],14 0⍎0 1↓resu)
[53]  lixonol←aaa ΔFM('c:\apl2\',((~⍬∧\⍬EVENTO=' ')/EVENTO),'.gpa')
[54]  '!!!!!  Arquivo GPA com ',(⍎1↑ρaaa),' linhas e ',(⍎1↓ρaaa),' colunas'
[55] terminando:
[56]  upag[1↑ρupag;]←(1↓ρupag)↑'\end{document}'
[57]  relat[1↑ρrelat;;]←upag
[58]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[59]  lixonol←lixonol ΔFM'c:\apl2\',((~⍬∧\⍬EVENTO=' ')/EVENTO),'.tex'
[60]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[61]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivor41

```
[ 0]  r←gerar41_1;a;b;c;d;x;w
[ 1] ⍝ formato ax^3+bx^2+cx-d=0
[ 2]  a←1+?4
[ 3]  b←1+?3
[ 4]  c←4+?29
[ 5]  d←?50
[ 6] oba:
[ 7]  x←¯5+?11
[ 8]  →(x=0)/oba
[ 9]  w←(a×x*3)+(b×x*2)+(c×x)+d
[10]  r←2⍴0
[11]  →(0>d-w)/neg
[12] pos:
[13]  r[1]←⊂'$$',(⍕a),'x^3+',(⍕b),'x^2+',(⍕c),'x+',(⍕d-w),'=0$$'
[14]  →junta
[15] neg:
[16]  r[1]←⊂'$$',(⍕a),'x^3+',(⍕b),'x^2+',(⍕c),'x-',(⍕|d-w),'=0$$'
[17] junta:
[18]  r[2]←⊂x
------------------------------------------------------------
[ 0]  r←gerar41_2 n;a;b;c;h;i;area
[ 1] ⍝ formato int(al× sin(x)_b^c)
[ 2]  a←1+?10
[ 3]  b←1+?5
[ 4]  c←6+?3
[ 5]  r←2⍴0
[ 6]  r[1]←⊂'$$\int_',(⍕b),'^',(⍕c),'(',(⍕a),'\times sin(x))$$'
[ 7]  h←(c-b)÷n
[ 8]  i←1
[ 9]  area←a×1○b
[10] t1:
[11]  →(i≥n)/fim
[12]  b←b+h
[13]  area←area+2×a×1○b
[14]  i←i+1
[15]  →t1
[16] fim:
[17]  b←b+h
[18]  area←area+a×1○b
[19]  area←area×h÷2
[20]  r[2]←⊂area
------------------------------------------------------------
[ 0]  r←n gerar41_2;a;b;c;h;i;area
[ 1] ⍝ formato int(al× sin(x)_b^c)
[ 2]  a←1+?10
[ 3]  b←1+?5
[ 4]  c←6+?3
[ 5]  r←2⍴0
[ 6]  r[1]←⊂'$$\int(',(⍕a),'\times sin(x)_',(⍕b),'^',(⍕c),')$$'
[ 7]  h←(c-b)÷n
[ 8]  i←1
[ 9]  area←a×1○b
[10] t1:
[11]  →(i≥n)/fim
[12]  b←b+h
[13]  area←area+2×a×1○b
[14]  i←i+1
[15]  →t1
[16] fim:
[17]  b←b+h
[18]  area←area+a×1○b
```

```
[19]  area←area×h÷2
[20]  r[2]←⊂'¯-'edit⍕area
-------------------------------------------------------------
[0]  r←pol6 x
[1] ⍝r←1÷(x*2)+4
[2]  r←3×1○x
-------------------------------------------------------------
[ 0]  opesq vivor41a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←1 ⋄ EVENTO←'PLr41   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAr41←ajusta80 FOLHALAr41
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAr41)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←11 80⍴' '
[16]  f←FOLHALAr41
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[10;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[11;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerar41_1
[35]  esse[8;]←80↑⊃xx[1]
[36]  resp←resp,⊃xx[2]
[37]  xx←gerar41_2 50
[38]  esse[9;]←80↑⊃xx[1]
[39]  resp←resp,⊃xx[2]
[40]  resu←resu,[1]1 3⍴resp
[41]  acuja←(f[;2]='#')/⍳1↑⍴f
[42]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[44]  ⍞←(⍎xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+⍴f)⍴' '
[47]  →(1=≡n)/elafa
[48]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[49]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO,'/',opesq
[50]  upag[2+⍳1↑⍴resu;⍳23]←'¯-'edit 3 0 7 0 13 3⍎resu
[51]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[52]  →terminando
[53] elafa:aaa←(ylu[;⍳28]←'¯-'edit 14 0⍎0 1↓resu)
```

```
[54]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[55]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[56] terminando:
[57]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[58]  relat[1↑⍴relat;;]←upag
[59]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[60]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[61]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[62]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivor49

```
[0]  r←geracaso;i
[1] ⍝ pressupoe 10 variaveis chamadas CASO0, CASO1, ..., CASO9 contendo a questao
[2]  i←¯1+?10
[3]  r←10 80↑⍷'CASO','0'⍕i
------------------------------------------------------------
[ 0]  opesq vivor49a n;CORRECAO;EVENTO;a;aaa;acuja;b;dhx;esse;f;kk;lixo1;lixonol;num;relat
      ;resp;resu;upag;xixo;xk;ylu;zzz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←8 ⋄ EVENTO←'PLr49   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  FOLHALAr49←ajusta80 FOLHALAr49
[10]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAr49)⍴' '
[11]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[12]  xk←1 ⋄ resu←0 2⍴0
[13] testa:→(xk>1↑⍴ylu)/fim
[14]  esse←19 80⍴' '
[15]  f←FOLHALAr49
[16]  esse[1;]←80↑dhx[1;]
[17]  esse[2;]←80↑dhx[2;]
[18]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[19]  esse[4;]←80↑ylu[xk;⍳6]
[20]  esse[5;]←80↑ylu[xk;6+⍳30]
[21]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[22]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[23]  esse[18;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[24]  esse[19;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[25] ini1:
[26]  esse[7+⍳10;]←geracaso
[27]  resu←resu,[1]1 2⍴resp
[28]  acuja←(f[;2]='#')/⍳1↑⍴f
[29]  f[acuja;]←esse[⍷,f[acuja;3 4],' ';]
[30]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[31]  ⍞←(⍕xk←xk+1),'-'
[32]  →testa
[33] fim:upag←(1 0+⍴f)⍴' '
[34]  'nao ha arquivo GPA'
[35] terminando:
[36]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[37]  relat[1↑⍴relat;;]←upag
[38]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[39] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[40]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[41]  'Arquivo criado com o nome de c:⍀apl2⍀',EVENTO,'    (.tex)'
```

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vivor50

```
[ 0]  opesq vivor50a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLr50   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAr50←ajusta80 FOLHALAr50
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAr50)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALAr50
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34] ⍝ xx←geracaso
[35] ⍝ esse[7+⍳3;]←3 80↑acertaca xx
[36] ⍝ resp←resp,,xx[2 3;5]
[37]  resu←resu,[1]1 3⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[±,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⍞←(⍎xk←xk+1),'-'
[42]  →testa
[43] fim:
[44]  upag←(1 0+⍴f)⍴' '
[45]  →terminando
[46]  →(1=≡n)/elafa
[47]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[48]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[49]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍎resu
[50]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[51]  →terminando
[52] elafa:aaa←(ylu[;⍳36],9 0⍎0 1↓resu)
[53] ⍝ lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[54]  '!!!!! nao ha GPA'
[55] terminando:
```

```
[56]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[57]  relat[1↑⍴relat;;]←upag
[58]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[59] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[60]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[61]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[62]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivor51

```
[ 0]  opesq vivor51a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLr51   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAr51←ajusta80 FOLHALAr51
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAr51)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALAr51
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34] ⍝ xx←geracaso
[35] ⍝ esse[7+⍳3;]←3 80↑acertaca xx
[36] ⍝ resp←resp,,xx[2 3;5]
[37]  resu←resu,[1]1 3⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⍞←(⍎xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍎resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
```

```
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[51]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivor55

```
[ 0]  opesq vivor55a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLr55   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAr55←ajusta80 FOLHALAr55
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAr55)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALAr55
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34] ⍝ xx←geracaso
[35] ⍝ esse[7+⍳3;]←3 80↑acertaca xx
[36] ⍝ resp←resp,,xx[2 3;5]
[37]  resu←resu,[1]1 3⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[±,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[41]  ⎕←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:
[44]  upag←(1 0+⍴f)⍴' '
```

```
[45]  →terminando
[46]  →(1=≡n)/elafa
[47]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[48]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[49]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍒resu
[50]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[51]  →terminando
[52] elafa:aaa←(ylu[;⍳36],9 0⍒0 1↓resu)
[53] ⍝ lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[54]  '!!!!! nao ha GPA'
[55] terminando:
[56]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[57]  relat[1↑⍴relat;;]←upag
[58]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[59] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[60]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[61]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[62]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivor60

```
[ 0]  opesq vivor60a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLr60   '
[ 6]  dhx←2 10⍴('05/05/0005'⍒+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍒+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍒⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAr60←ajusta80 FOLHALAr60
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAr60)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALAr60
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍒VERSAO⍝←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍒resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34] ⍝ xx←geracaso
[35] ⍝ esse[7+⍳3;]←3 80↑acertaca xx
[36] ⍝ resp←resp,,xx[2 3;5]
[37]  resu←resu,[1]1 3⍴resp
```

```
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⍞←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:
[44]  upag←(1 0+⍴f)⍴' '
[45]  →terminando
[46]  →(1=≡n)/elafa
[47]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[48]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[49]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍕resu
[50]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[51]  →terminando
[52] elafa:aaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[53] ⍝ lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[54]  '!!!!! nao ha GPA'
[55] terminando:
[56]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[57]  relat[1↑⍴relat;;]←upag
[58]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[59] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[60]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[61]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[62]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivor70

```
[ 0]  opesq vivor70a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLr70   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAr70←ajusta80 FOLHALAr70
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAr70)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALAr70
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
```

```
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34] ⍝ xx←geracaso
[35] ⍝ esse[7+⍳3;]←3 80↑acertaca xx
[36] ⍝ resp←resp,,xx[2 3;5]
[37]  resu←resu,[1]1 3⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⍞←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  'nao ha aquivo gpa'
[45] terminando:
[46]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[47]  relat[1↑⍴relat;;]←upag
[48]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[49]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧\⍵=' ')/EVENTO),'.tex'
[50]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[51]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivor80

```
[ 0]  opesq vivor80a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLr80   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAr80←ajusta80 FOLHALAr80
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAr80)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALAr80
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34] ⍝ xx←geracaso
```

```
[35] ⍝ esse[7+⍳3;]←3 80↑acertaca xx
[36] ⍝ resp←resp,,xx[2 3;5]
[37]  resu←resu,[1]1 3⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⎕←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  'nao há GPA'
[45] terminando:
[46]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[47]  relat[1↑⍴relat;;]←upag
[48]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[49]  lixonol←lixonol ΔFM'c:\apl2\',((~⍬∧\⍬EVENTO=' ')/EVENTO),'.tex'
[50]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[51]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivot02

```
[ 0]  r←acertalinha x;i;x1;x2;x3;x4;x5;r1;r2;r3;r4;r5
[ 1] ⍝ devolve os elementos numéricos de x em forma de conjunto
[ 2] ⍝ x pode ser uma unica linha ou uma matriz....
[ 3]  →(2=⍴⍴x)/ematriz
[ 4] elinha:r←'A=\{'
[ 5]  i←1
[ 6] t1:→(i>⍴x)/fim1
[ 7]  →(x[i]=0)/soma1
[ 8]  r←r,(⍕x[i]),','
[ 9]  →(13≠i)/soma1
[10]  r←r,' '
[11] soma1:i←i+1
[12]  →t1
[13] fim1:r←(¯1↓r),'\}.'
[14]  →caifora
[15] ematriz:
[16]  r1←r2←r3←r4←r5←78⍴' '
[17]  x1←'X1=\{' ⋄ x2←'X2=\{' ⋄ x3←'X3=\{' ⋄ x4←'X4=\{' ⋄ x5←'X5=\{'
[18]  i←1
[19] t11:→(i>1↓⍴x)/fim11
[20]  →(x[1;i]=0)/soma11
[21]  x1←x1,(⍕x[1;i]),','
[22] soma11:i←i+1
[23]  →t11
[24] fim11:r1←(¯1↓x1),'\} '
[25]  i←1
[26] t21:→(i>1↓⍴x)/fim21
[27]  →(x[2;i]=0)/soma21
[28]  x2←x2,(⍕x[2;i]),','
[29] soma21:i←i+1
[30]  →t21
[31] fim21:r2←(¯1↓x2),'\} '
[32]  i←1
[33] t31:
[34]  →((1↓⍴x)=+/x[3;]=0)/acabou
[35]  →(i>1↓⍴x)/fim31
[36]  →(x[3;i]=0)/soma31
[37]  x3←x3,(⍕x[3;i]),','
[38] soma31:i←i+1
[39]  →t31
[40] fim31:r3←(¯1↓x3),'\} '
```

```
[41]  i←1
[42] t41:
[43]  →((1↓ρx)=+/x[4;]=0)/acabou
[44]  →(i>1↓ρx)/fim41
[45]  →(x[4;i]=0)/soma41
[46]  x4←x4,(⍕x[4;i]),','
[47] soma41:i←i+1
[48]  →t41
[49] fim41:r4←(¯1↓x4),'⍀} '
[50]  i←1
[51] t51:
[52]  →((1↓ρx)=+/x[5;]=0)/acabou
[53]  →(i>1↓ρx)/fim51
[54]  →(x[5;i]=0)/soma51
[55]  x5←x5,(⍕x[5;i]),','
[56] soma51:i←i+1
[57]  →t51
[58] fim51:r5←(¯1↓x5),'⍀} '
[59] acabou:
[60]  r←5 78ρ(78↑r1),(78↑r2),(78↑r3),(78↑r4),(78↑r5)
[61] caifora:
-------------------------------------------------------------
[0]  r←divso a;i
[1]  r←0ρ0
[2]  i←2
[3] volta:→(i>a)/fim
[4]  →(0≠i|a)/nao
[5]  r←r,i
[6] nao:i←i+1
[7]  →volta
[8] fim:
-------------------------------------------------------------
[ 0]  r←simb ereflexiva a;re;i
[ 1]  r←1
[ 2]  re←⍎'a∘.',simb,'a'
[ 3]  i←1
[ 4] t1:→(i>ρa)/fim
[ 5]  →(re[i;i]=0)/nao
[ 6]  i←i+1
[ 7]  →t1
[ 8] fim:
[ 9]  →0
[10] nao:r←0
[11]  →0
-------------------------------------------------------------
[ 0]  r←escolheequi a;i
[ 1] ⍝ 'a=',⍕a
[ 2]  r←2ρ0
[ 3]  i←?7
[ 4]  →(i≠1)/vai2
[ 5]  r[1]←⊂'$x$ é menor do que $y$'
[ 6]  r[2]←⊂('<'ereflexiva a),('<'esimetrica a),('<'etransitiva a)
[ 7]  →ended
[ 8] vai2:
[ 9]  →(i≠2)/vai3
[10]  r[1]←⊂'$x$ é menor ou igual do que $y$'
[11]  r[2]←⊂('≤'ereflexiva a),('≤'esimetrica a),('≤'etransitiva a)
[12]  →ended
[13] vai3:
[14]  →(i≠3)/vai4
[15]  r[1]←⊂'$x$ é maior do que $y$'
[16]  r[2]←⊂('>'ereflexiva a),('>'esimetrica a),('>'etransitiva a)
[17]  →ended
```

```
[18] vai4:
[19]  →(i≠4)/vai5
[20]  r[1]←⊂'$x$ é maior ou igual do que $y$'
[21]  r[2]←⊂('≥'ereflexiva a),('≥'esimetrica a),('≥'etransitiva a)
[22]  →ended
[23] vai5:
[24]  →(i≠5)/vai6
[25]  r[1]←⊂'$x$ e $y$ sto primos entre si'
[26]  r[2]←⊂1,1,1
[27] ⍝ alteracao a 19/04/2017:
[28]  r[2]←⊂0,1,1
[29] ⍝------------------------
[30]  →ended
[31] vai6:
[32]  →(i≠6)/vai7
[33]  r[1]←⊂'$x$ é o dobro de $y$'
[34]  r[2]←⊂0,0,0
[35]  →ended
[36] vai7:
[37]  r[1]←⊂'$x$ é a metade de $y$'
[38]  r[2]←⊂0,0,0
[39]  →ended
[40] ended:
------------------------------------------------------------
[ 0]  r←a escolherel b;i
[ 1]  r←2⍴0
[ 2]  i←?10
[ 3]  →(i≠1)/vai2
[ 4]  r[1]←⊂'$x$ é menor do que $y$'
[ 5]  r[2]←⊂(+/,a∘.<b),+/,b∘.<a
[ 6]  →ended
[ 7] vai2:
[ 8]  →(i≠2)/vai3
[ 9]  r[1]←⊂'$x$ é menor ou igual do que $y$'
[10]  r[2]←⊂(+/,a∘.≤b),+/,b∘.≤a
[11]  →ended
[12] vai3:
[13]  →(i≠3)/vai4
[14]  r[1]←⊂'$x$ é maior do que $y$'
[15]  r[2]←⊂(+/,a∘.>b),+/,b∘.>a
[16]  →ended
[17] vai4:
[18]  →(i≠4)/vai5
[19]  r[1]←⊂'$x$ é maior ou igual do que $y$'
[20]  r[2]←⊂(+/,a∘.≥b),+/,b∘.≥a
[21]  →ended
[22] vai5:
[23]  →(i≠5)/vai6
[24]  r[1]←⊂'$x$ e $y$ sto primos entre si'
[25]  r[2]←⊂2⍴(+/,a primosentresi b)
[26]  →ended
[27] vai6:
[28]  →(i≠6)/vai7
[29]  r[1]←⊂'$x$ é o dobro de $y$'
[30]  r[2]←⊂(+/,a∘.=2×b),+/,b∘.=2×a
[31]  →ended
[32] vai7:
[33]  →(i≠7)/vai8
[34]  r[1]←⊂'$x$ é a metade de $y$'
[35]  r[2]←⊂(+/,(a×2)∘.=b),+/,(2×b)∘.=a
[36]  →ended
[37] vai8:
[38]  →(i≠8)/vai9
```

```
[39]  r[1]←⊂'$x$ + 8 é maior do que $y$'
[40]  r[2]←⊂(+/,(a+8)∘.>b),+/,(b+8)∘.>a
[41]  →ended
[42] vai9:
[43]  →(i≠9)/vai10
[44]  r[1]←⊂'$x$ - 3 é menor ou igual a $y$'
[45]  r[2]←⊂(+/,(a-3)∘.≤b),+/,(b-3)∘.≤a
[46]  →ended
[47] vai10:
[48]  r[1]←⊂'$x$ + 2 é maior ou igual a $y$'
[49]  r[2]←⊂(+/,(a+2)∘.≥b),+/,(b+2)∘.≥a
[50] ended:
------------------------------------------------------------
[ 0]  r←simb esimetrica a;re;i;j
[ 1]  re←⍎'a∘.',simb,'a'
[ 2]  r←1
[ 3]  i←1
[ 4] ⍝ alteracao em 19/04/17:
[ 5]  →(0=⌈,re)/nao
[ 6] ⍝----------------------
[ 7] t1:→(i>⍴a)/fim
[ 8]  j←1
[ 9] t2:→(j>⍴a)/soma22
[10]  →(re[i;j]=0)/soma
[11]  →(re[j;i]=0)/nao
[12] soma:
[13]  j←j+1
[14]  →t2
[15] soma22:
[16]  i←i+1
[17]  →t1
[18] fim:
[19]  →0
[20] nao:
[21]  r←0
[22] ⍝r←(×/2⍴⍴a)=+/,re  // ta errado isso aqui
------------------------------------------------------------
[ 0]  r←simb etransitiva a;re;i;j;k
[ 1]  re←⍎'a∘.',simb,'a'
[ 2]  r←1
[ 3]  i←1
[ 4] ⍝ alteracao a 19/04/17:
[ 5]  →(0=⌈/,re)/nao
[ 6] ⍝----------------------
[ 7] t1:→(i>⍴a)/fim
[ 8]  j←1
[ 9] t2:→(j>⍴a)/uca
[10]  k←1
[11] t3:→(k>⍴a)/uba
[12]  →((re[i;j]=1)∧(re[j;k]=1)∧(re[i;k]=0))/nao
[13] kkk:k←k+1
[14]  →t3
[15] uba:
[16]  j←j+1
[17]  →t2
[18] uca:
[19]  i←i+1
[20]  →t1
[21] fim:
[22]  →0
[23] nao:
[24]  r←0
[25]  →0
```

```
------------------------------------------------------------
[ 0]  r←gerat02a;at;bt;a;b;rel;rx
[ 1]  rx←9 78⍴' '
[ 2]  a←1+8?19
[ 3]  a←a[⍋a]
[ 4]  b←1+8?19
[ 5]  b←b[⍋b]
[ 6]  at←¯1↓,(8 3⍴3 0⍕a),','
[ 7]  bt←¯1↓,(8 3⍴3 0⍕b),','
[ 8]  rel←a escolherel b
[ 9]  rx[1;]←78↑('\item Seja $R$ a relaçto ',(⊃rel[1])),' e sejam os conjuntos'
[10]  rx[2;]←78↑'$A=\{',at,'\}$ e '
[11]  rx[3;]←78↑'$B=\{',bt,'\}$ e '
[12]  rx[4;]←78↑'\begin{enumerate}'
[13]  rx[5;]←78↑'\item Escreva NO VERSO, $R$ como um conjunto de pares ordenados, '
[14]  rx[6;]←78↑'\item Represente graficamente $R$ num diagrama de coordenadas $A \times B
      $'
[15]  rx[7;]←78↑'\item Ache a relaçto inversa $R^{-1}$'
[16]  rx[8;]←78↑'\end{enumerate}'
[17]  rx[9;]←78↑'Responda no local correto quantos pares existem em $R$ e em $R^{-1}$'
[18]  r←2⍴' '
[19]  r[1]←⊂rx
[20]  r[2]←⊂⊃rel[2]
------------------------------------------------------------
[ 0]  r←gerat02b;at;bt;a;b;rel;rx
[ 1]  rx←8 78⍴' '
[ 2]  →(1=?2)/coroa
[ 3] cara:
[ 4]  a←1+8?19
[ 5]  a←a[⍋a]
[ 6]  →junta
[ 7] coroa:
[ 8]  a←4⍴?9
[ 9] junta:
[10]  at←¯1↓,(((⍴a),3)⍴3 0⍕a),','
[11]  rel←escolheequi a
[12]  rx[1;]←78↑('\item Seja $R$ a relaçto ',(⊃rel[1])),' e seja o conjunto'
[13]  rx[2;]←78↑'$A=\{',at,'\}$. Determine se $R$ é:'
[14]  rx[3;]←78↑'\begin{enumerate}'
[15]  rx[4;]←78↑'\item reflexiva'
[16]  rx[5;]←78↑'\item simétrica'
[17]  rx[6;]←78↑'\item transitiva'
[18]  rx[7;]←78↑'\end{enumerate}'
[19]  rx[8;]←78↑'Responda no local correto 1 para SIM e 0 para N⍱O'
[20]  r←2⍴' '
[21]  r[1]←⊂rx
[22]  r[2]←⊂⊃rel[2]
------------------------------------------------------------
[ 0]  r←gerat02c;a;caracoroa;i;m;nc;re;h;inds
[ 1]  r←2⍴0
[ 2]  re←12 78⍴' '
[ 3]  a←24?40 ⋄ m←5 25⍴0 ⋄ nc←2+?3 ⋄ caracoroa←?4
[ 4] novi:
[ 5]  inds←?25⍴nc
[ 6]  h←1
[ 7] t0:→(h>nc)/po
[ 8]  →(1<+/inds∈h)/su
[ 9]  →novi
[10] su:h←h+1
[11]  →t0
[12] po:
[13]  →(0=2|caracoroa)/certo
[14]  →(caracoroa=3)/erradomais
```

```
[15] erradomenos:
[16]  r[2]←⊂0  ⍝ era -1
[17]  i←2
[18] t1:→(i>⍴a)/fim1
[19]  m[inds[i];i]←a[i]
[20]  i←i+1
[21]  →t1
[22] erradomais:
[23]  r[2]←0  ⍝ era -3
[24]  i←1
[25]  a←a,a[1]
[26] t2:→(i>⍴a)/fim99
[27]  m[inds[i];i]←a[i]
[28]  i←i+1
[29]  →t2
[30] certo:
[31]  r[2]←⊂1
[32]  i←1
[33] t3:→(i>⍴a)/fim1
[34]  m[inds[i];i]←a[i]
[35]  i←i+1
[36]  →t3
[37] fim99:
[38]  a←¯1↓a
[39] fim1:
[40]  re[1;]←78↑'\item Sejam os conjuntos $A$ e $X_i$ abaixo definidos. Verifique'
[41]  re[2;]←78↑'os elementos pertinentes a cada (sub) conjunto e informe 1 se $X_i$'
[42]  re[3;]←78↑'constitui uma partiç\~ao de $A$. Responda 0 se $X_i$ n\~ao for partiç\~ao
      '
[43]  re[4;]←78↑'de $A$.'
[44]  re[6;]←78↑acertalinha a
[45]  re[7 8 9 10 11;]←acertalinha m
[46]  r[1]←⊂re
-------------------------------------------------------------
[ 0]  r←mostrarefsimtra;a;at;l;z;simb
[ 1]  simb←'><≤≥'[?4]
[ 2]  r←0 79⍴' '
[ 3]  →(1=?2)/coroa
[ 4] cara:
[ 5]  a←1+8?19
[ 6]  a←a[⍋a]
[ 7]  →junta
[ 8] coroa:
[ 9]  a←4⍴?9
[10] junta:
[11]  at←¯1↓,(((⍴a),3)⍴3 0⍕a),','
[12]  r←r,[1]1 79⍴79↑'Seja um A qualquer: A←{',at,'}'
[13]  r←r,[1]1 79⍴79↑' e seja a relaçao ',simb
[14]  r←r,[1]1 79⍴79↑' constróe-se a seguinte matriz (z←a∘.',simb,'a)'
[15]  l←1↑⍴⍎'z←a∘.',simb,'a'
[16]  r←r,[1](l,79)⍴(l,79)↑⍕z
[17]  r←r,[1]1 79⍴79↑' AGORA:'
[18]  r←r,[1]1 79⍴79↑' REFLEXIVA: se tem algum zero na d.p. a resp=ZERO'
[19]  r←r,[1]1 79⍴79↑' SIMETRICA: se todo z[i;j]≠0 implica z[j;i]≠0,'
[20]  r←r,[1]1 79⍴79↑'      a resposta=UM (e tem pelo algum ≠0 em z)'
[21]  r←r,[1]1 79⍴79↑' TRANSITIVA: se houver algum z[i;j]=1 ∧ z[j;k]=1'
[22]  r←r,[1]1 79⍴79↑'   ∧ z[i;k]=0 a resposta=ZERO (e tem pelo algum ≠0 em z)'
[23]  r←r,[1]1 79⍴79↑' ...  '
[24]  r←r,[1]1 79⍴79↑⍕(simb ereflexiva a),(simb esimetrica a),(simb etransitiva a)
[25]  r←r,[1]1 79⍴79↑' ...  '
[26]  r←r,[1]1 79⍴79↑' a proposito: 3 5 10 12 17 primosentresi 3 5 10 12 17:'
[27]  r←r,[1]5 79⍴5 79↑⍕3 5 10 12 17 primosentresi 3 5 10 12 17
[28]  r←r,[1]1 79⍴79↑' ...  '
```

```
[29]  r←r,[1]1 79⍴79↑' DICAS: dobro e metade => 0,0,0 e primosentresi => 0,1,1'
-------------------------------------------------------------
[ 0]  r←a primosentresi b;i;j;aa;bb
[ 1]  r←((⍴a),⍴b)⍴1
[ 2]  i←1
[ 3] t1:→(i>⍴a)/fim
[ 4]  j←1
[ 5] t2:→(j>⍴b)/uba
[ 6]  aa←divso a[i]
[ 7]  bb←divso b[j]
[ 8]  →((1=∨/aa∈bb)∨(1=∨/bb∈aa))/poe0
[ 9] soma:
[10]  j←j+1
[11]  →t2
[12] uba:
[13]  i←i+1
[14]  →t1
[15] fim:
[16]  →0
[17] poe0:r[i;j]←0
[18]  →soma
-------------------------------------------------------------
[ 0]  opesq vivot02a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLt02   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAt02←ajusta80 FOLHALAt02
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAt02)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 8⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←50 80⍴' '
[16]  f←FOLHALAt02
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.2
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[49;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[50;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerat02a
[35]  esse[7+⍳9;⍳78]←9 78↑⊃xx[1]
[36]  resp←resp,,⊃xx[2]
[37]  xx←gerat02b
[38]  esse[16+⍳8;⍳78]←8 78↑⊃xx[1]
```

```
[39]  resp←resp,,⊃xx[2]
[40]  xx←gerat02c
[41]  esse[24+⍳12;⍳78]←12 78↑⊃xx[1]
[42]  resp←resp,,⊃xx[2]
[43]  xx←gerat02c
[44]  esse[36+⍳12;⍳78]←12 78↑⊃xx[1]
[45]  resp←resp,,⊃xx[2]
[46]  resu←resu,[1]1 8⍴resp
[47]  acuja←(f[;2]='#')/⍳1↑⍴f
[48]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[49]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[50]  ⎕←(⍕xk←xk+1),'-'
[51]  →testa
[52] fim:upag←(1 0+⍴f)⍴' '
[53]  →(1=≡n)/elafa
[54]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[55]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[56]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←5 0 8 0 3 0 8 0 2 0 2 0 8 0 8 0)⍕resu
[57]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[58]  →terminando
[59] ∆∆∆∆∆∆∆∆∆∆∆↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[60] elafa:aaa←(ylu[;⍳36],'¯-'edit 8 0 3 0 8 0 2 0 2 0 8 0 8 0⍕0 1↓resu)
[61] ∆∆∆∆∆∆∆∆∆∆∆↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[62]  lixonol←aaa ⎕FM('c:\apl2\',((~⊖∧\⊖EVENTO=' ')/EVENTO),'.gpa')
[63]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[64] terminando:
[65]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[66]  relat[1↑⍴relat;;]←upag
[67]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[68] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[69]  lixonol←lixonol ⎕FM'c:\apl2\',((~⊖∧\⊖EVENTO=' ')/EVENTO),'.tex'
[70]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[71]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivot04

```
[0]  r←F01 x
[1]  r←(x*2)+(3×x)-4
-------------------------------------------------------------
[0]  r←F02 x
[1]  r←(3×x*2)+(2×x)-9
-------------------------------------------------------------
[0]  r←F03 x
[1]  r←(x*3)+(5×x)+2-(x*2)
-------------------------------------------------------------
[0]  r←F04 x
[1]  r←(4×x*2)+(3×x)-7
-------------------------------------------------------------
[0]  r←F05 x
[1]  r←⌈(10⊗|x)*2
-------------------------------------------------------------
[0]  r←F06 x
[1]  r←3+|x-17
-------------------------------------------------------------
[0]  r←F07 x
[1]  r←⌊(|x*3)*0.5
-------------------------------------------------------------
[0]  r←F08 x
[1]  r←(2×x*2)-33
-------------------------------------------------------------
[0]  r←F09 x
```

```
[1]  r←⌊((x*2)+¯3-(6×x))÷2
------------------------------------------------------------
[0]  r←F10 x
[1]  r←x×1+⌈2⊛|x
------------------------------------------------------------
[0]  r←F11 x
[1]  r←(x*2)+22-(33×x)
------------------------------------------------------------
[0]  r←F12 x
[1]  r←2*⌊10⊛|(x*2)+(33×x)+22
------------------------------------------------------------
[0]  r←F13 x
[1]  r←(4×x)+2
------------------------------------------------------------
[0]  r←F14 x
[1]  r←(8×x*2)-16
------------------------------------------------------------
[0]  r←F15 x
[1]  r←(x*3)+(-4×x*2)+(-5×x)-10
------------------------------------------------------------
[0]  r←F16 x
[1]  r←⌈55×1○x
------------------------------------------------------------
[0]  r←F17 x
[1]  r←⌈55×2○x
------------------------------------------------------------
[0]  r←F18 x
[1]  r←(x*2)-18
------------------------------------------------------------
[0]  r←F19 x
[1]  r←(x*2)-21
------------------------------------------------------------
[0]  r←F20 x
[1]  r←(x*3)-17
------------------------------------------------------------
[0]  r←S01 x
[1]  r←+/x[3]×1+(x[1]-1)+⍳1+x[2]-x[1]
------------------------------------------------------------
[0]  r←S02 x
[1]  r←+/x[3]+(x[1]-1)+⍳1+x[2]-x[1]
------------------------------------------------------------
[0]  r←S03 x
[1]  r←+/x[3]+((x[1]-1)+⍳1+x[2]-x[1])*2
------------------------------------------------------------
[0]  r←S04 x
[1]  r←+/x[3]+3×((x[1]-1)+⍳1+x[2]-x[1])*2
------------------------------------------------------------
[0]  r←S05 x
[1]  r←+/x[3]-((x[1]-1)+⍳1+x[2]-x[1])
------------------------------------------------------------
[0]  r←S06 x
[1]  r←+/x[3]-4×((x[1]-1)+⍳1+x[2]-x[1])
------------------------------------------------------------
[0]  r←S07 x
[1]  r←+/(4×((x[1]-1)+⍳1+x[2]-x[1]))-x[3]
------------------------------------------------------------
[0]  r←S08 x
[1]  r←+/x[3]+(4×((x[1]-1)+⍳1+x[2]-x[1]))
------------------------------------------------------------
[0]  r←S09 x
[1]  r←+/x[3]+⌈2⊛((x[1]-1)+⍳1+x[2]-x[1])
------------------------------------------------------------
[0]  r←S10 x
```

```
[1]  r←+/⌈10⊛((x[1]-1)+⍳1+x[2]-x[1])
------------------------------------------------------------
[0]  r←S11 x
[1]  r←+/((x[1]-1)+⍳1+x[2]-x[1])
------------------------------------------------------------
[0]  r←S12 x
[1]  r←+/(((x[1]-1)+⍳1+x[2]-x[1]))*2
------------------------------------------------------------
[0]  r←S13 x
[1]  r←+/2×((x[1]-1)+⍳1+x[2]-x[1])*2
------------------------------------------------------------
[0]  r←S14 x
[1]  r←+/3×((x[1]-1)+⍳1+x[2]-x[1])*2
------------------------------------------------------------
[0]  r←S15 x
[1]  r←+/3×⌊((x[1]-1)+⍳1+x[2]-x[1])*0.5
------------------------------------------------------------
[0]  r←S16 x
[1]  r←+/⌈3×1○((x[1]-1)+⍳1+x[2]-x[1])
------------------------------------------------------------
[0]  r←S17 x
[1]  r←+/⌈3×2○((x[1]-1)+⍳1+x[2]-x[1])
------------------------------------------------------------
[0]  r←S18 x
[1]  r←+/x[3]+8×((x[1]-1)+⍳1+x[2]-x[1])
------------------------------------------------------------
[0]  r←S19 x
[1]  r←+/x[3]+5×((x[1]-1)+⍳1+x[2]-x[1])
------------------------------------------------------------
[0]  r←S20 x
[1]  r←+/x[3]+6×((x[1]-1)+⍳1+x[2]-x[1])
------------------------------------------------------------
[ 0]  r←gerat04a;re;quais;f;g;h;m;rx;a;b
[ 1]  re←10 78⍴' '
[ 2]  r←2⍴0
[ 3]  quais←4?1↑⍴FUNCOES
[ 4]  re[1;]←78↑'Suponha as seguintes funçAes:⍀⍀*'
[ 5]  re[2;]←78↑'$$f(x)=',(trim FUNCOES[quais[1];])
[ 6]  re[3;]←78↑'$$g(x)=',(trim FUNCOES[quais[2];])
[ 7]  re[4;]←78↑'$$h(x)=',(trim FUNCOES[quais[3];])
[ 8]  re[5;]←78↑'$$m(x)=',(trim FUNCOES[quais[4];])
[ 9]  f←((¯6+⍳5),1+⍳6)[?11]
[10]  g←((¯6+⍳5),1+⍳6)[?11]
[11]  h←((¯6+⍳5),1+⍳6)[?11]
[12]  m←((¯6+⍳5),1+⍳6)[?11]
[13]  rx←⍪'F',('OO'⍕quais[1]),' ',⍕f
[14]  rx←rx,⍪'F',('OO'⍕quais[2]),' ',⍕g
[15]  rx←rx,⍪'F',('OO'⍕quais[3]),' ',⍕h
[16]  rx←rx,⍪'F',('OO'⍕quais[4]),' ',⍕m
[17]  re[6;]←78↑'1. Calcule $f(',(⍕f),')$⍀⍀'
[18]  re[7;]←78↑'2. Calcule $g(',(⍕g),')$⍀⍀'
[19]  re[8;]←78↑'3. Calcule $h(',(⍕h),')$⍀⍀'
[20]  re[9;]←78↑'4. Calcule $m(',(⍕m),')$⍀⍀'
[21]  a←1+?4 ⋄ b←1+?5
[22]  re[10;]←78↑'5. Calcule $(',(⍕a),' ⍀times f(2)) + (',(⍕b),' ⍀times g(3))$'
[23]  rx←rx,⍪'(',(⍕a),'×F',('OO'⍕quais[1]),' 2)+(',(⍕b),'×F',('OO'⍕quais[2]),' 3)'
[24]  r[1]←⊂'¯'-'edit re
[25]  r[2]←⊂rx
------------------------------------------------------------
[ 0]  r←gerat04b;re;quais;t1;t2;t3;t4;t5;p;rx
[ 1]  re←7 78⍴' '
[ 2]  r←2⍴0
[ 3]  quais←5?1↑⍴SOMAT
```

```
[ 4]  t1←trim SOMAT[quais[1];]
[ 5]  t2←trim SOMAT[quais[2];]
[ 6]  t3←trim SOMAT[quais[3];]
[ 7]  t4←trim SOMAT[quais[4];]
[ 8]  t5←trim SOMAT[quais[5];]
[ 9]  re[1;]←78↑'Suponha as seguintes somatórias:⍀⍀*'
[10]  p←(?5),(5+?4),9+?11
[11]  re[2;]←78↑'6. $',(t1 substitui p),'$'
[12]  rx←⍠'S',('OO'⍕quais[1]),4 0⍕p
[13]  p←(?5),(5+?4),9+?11
[14]  re[3;]←78↑'7. $',(t2 substitui p),'$'
[15]  rx←rx,⍠'S',('OO'⍕quais[2]),4 0⍕p
[16]  p←(?5),(5+?4),9+?11
[17]  re[4;]←78↑'8. $',(t3 substitui p),'$'
[18]  rx←rx,⍠'S',('OO'⍕quais[3]),4 0⍕p
[19]  p←(?5),(5+?4),9+?11
[20]  re[5;]←78↑'9. $',(t4 substitui p),'$'
[21]  rx←rx,⍠'S',('OO'⍕quais[4]),4 0⍕p
[22]  p←(?5),(5+?4),9+?11
[23]  re[6;]←78↑'10. $',(t5 substitui p),'$'
[24]  rx←rx,⍠'S',('OO'⍕quais[5]),4 0⍕p
[25]  re[7;]←78↑'Calcule as somatórias pedidas e responda no local adequado.⍀⍀*'
[26]  r[1]←⊂'⍞-'edit re
[27]  r[2]←⊂rx
-------------------------------------------------------------
[ 0]  r←t substitui x;rt;z;j;i
[ 1]  rt←t
[ 2]  z←(⍕x[1]),(⍕x[2]),⍕x[3]
[ 3]  j←1
[ 4]  i←1
[ 5] t1:→(i>⍴t)/fim
[ 6]  →(t[i]='?')/next
[ 7] soma:i←i+1
[ 8]  →t1
[ 9] next:rt[i]←z[j]
[10]  i←i+1
[11]  j←j+1
[12]  →(j>4)/fim
[13]  →t1
[14] fim:r←rt
-------------------------------------------------------------
[ 0]  opesq vivot04a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLt04   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAt04←ajusta80 FOLHALAt04
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAt04)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 11⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←26 80⍴' '
[16]  f←FOLHALAt04
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.06
```

```
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[25;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[26;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerat04a
[35]  esse[7+⍳10;⍳78]←10 78↑⊃xx[1]
[36]  resp←resp,,⊃xx[2]
[37]  xx←gerat04b
[38]  esse[17+⍳7;⍳78]←7 78↑⊃xx[1]
[39]  resp←resp,,⊃xx[2]
[40]  resu←resu,[1]1 11⍴resp
[41]  acuja←(f[;2]='#')/⍳1↑⍴f
[42]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[44]  ⍞←(⍕xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+⍴f)⍴' '
[47]  →(1=≡n)/elafa
[48]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[49]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[50]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←4 0 6 0,(8⍴6 0),10 0,8⍴6 0)⍕resu
[51]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[52]  →terminando
[53] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[54] elafa:aaa←(ylu[;⍳36],0 1↓'¯-'edit((10⍴6 0),10 0,8⍴6 0)⍕0 1↓resu)
[55] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[56]  lixonol←aaa ⎕FM('c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.gpa')
[57]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[58] terminando:
[59]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[60]  relat[1↑⍴relat;;]←upag
[61]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[62] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[63]  lixonol←lixonol ⎕FM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.tex'
[64]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[65]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivot07

```
[ 0]  r←diva;a;b;ra;la;pc;cc
[ 1]  r←2⍴0
[ 2]  ra←''
[ 3]  →(1=?3)/pula
[ 4] comeco:
[ 5]  ra←(pc←⌊⎕'[?2]),'((',(⍕b←1+?4),'× (z * ',(cc←'23'[?2]),')) ÷ ',(⍕a←1+?7),')'
[ 6]  →(pc='⌈')/teto
[ 7]  la←'⍀lfloor ((',(⍕b),'⍀times z ∧ ',cc,') ⍀div ',(⍕a),')'
[ 8]  →fim
[ 9] teto:
[10]  la←'⍀lceil ((',(⍕b),'⍀times z ∧ ',cc,') ⍀div ',(⍕a),')'
[11]  →(a=b)/comeco
```

```
[12]  →fim
[13] pula:
[14]  ra←(pc←'⌊⌈'[?2]),'((',(⍕b←1+?4),'× z ) ÷ ',(⍕a←1+?7),')'
[15]  →(pc='⌈')/teto1
[16]  la←'\lfloor ((',(⍕b),'\times z ) \div ',(⍕a),')'
[17]  →fim
[18] teto1:
[19]  la←'\lceil ((',(⍕b),'\times z ) \div ',(⍕a),')'
[20]  →(a=b)/pula
[21]  →fim
[22] fim:r[1]←⊂ra
[23]  r[2]←⊂la
------------------------------------------------------------
[ 0]  r←esquis;aa;bb;cc;dd;la;ra;sem;v;va
[ 1]  r←2⍴0
[ 2]  ra←''
[ 3]  v←'(',(aa←⍕1+?5),'× z)'
[ 4]  va←'(',aa,' \times z)'
[ 5]  sem←?7
[ 6]  →(sem=2)/dois
[ 7]  →(sem=3)/tres
[ 8]  →(sem=4)/quatro
[ 9]  →(sem=5)/cinco
[10]  →(sem=6)/seis
[11]  →(sem=7)/sete
[12] um:
[13]  ra←'⌊|(',(bb←⍕3+?6),'×(','1○',v,'))'   ⍝ seno de v
[14]  la←'\lfloor | (',bb,' \times (\sin ',va,')) |'
[15]  →fim
[16] dois:
[17]  ra←'⌈|(',(cc←⍕3+?6),'×(','2○',v,'))'   ⍝ cosseno de v
[18]  la←'\lceil | (',cc,' \times (\cos ',va,')) |'
[19]  →fim
[20] tres:
[21]  ra←'⌈(10⍟','(',v,'*',(dd←⍕1+?3),'))' ⍝ teto do logaritmo base 10
[22]  la←'\lceil( \log_{10} (',va,' ^ ',dd,'))'
[23]  →fim
[24] quatro:
[25]  ra←'⌊(2⍟',v,')' ⍝ chao do logaritmo base 2
[26]  la←'\lfloor( \log_2 ',va,')'
[27]  →fim
[28] cinco:
[29]  ra←'⌈(',v,'*0.5',')' ⍝  teto da raiz quadrada
[30]  la←'\lceil(\sqrt{',va,'})'
[31]  →fim
[32] seis:
[33]  ra←'⌊(',v,'*1÷3',')' ⍝  teto da raiz cubica
[34]  la←'\lfloor\sqrt[3]{',va,'}'
[35]  →fim
[36] sete:
[37]  ra←'|',v   ⍝  modulo
[38]  la←'|',va,'|'
[39]  →fim
[40] fim:
[41]  r[1]←⊂ra
[42]  r[2]←⊂la
------------------------------------------------------------
[ 0]  r←geract07;a;b;cola;coma;este;la;sem;uva;x;z
[ 1]  r←2⍴0
[ 2]  sem←?3
[ 3]  →(sem=2)/dois
[ 4]  →(sem=3)/tres
[ 5] um:
```

```
[ 6]  x←polin
[ 7]  a←?3
[ 8]  b←a+1+?3
[ 9]  →vamos
[10] dois:
[11]  x←diva
[12]  →junta
[13] tres:
[14]  x←esquis
[15] junta:
[16]  a←?4
[17]  b←a+1+?6
[18] vamos:
[19]  uva←0
[20]  z←a
[21]  coma←⊃x[1]
[22]  cola←⊃x[2]
[23]  la←2 79⍴' '
[24]  la[1;]←79↑'$⍀sum⍀limits_{z=',(⍕a),'}^{',(⍕b),'}'
[25]  la[2;]←79↑cola,'$'
[26] t1:
[27]  →(z>b)/fim
[28]  este←⍎coma
[29]  uva←uva+este
[30]  z←z+1
[31]  →t1
[32] fim:
[33]  r[1]←⊂uva
[34]  r[2]←⊂la
------------------------------------------------------------
[ 0]  r←geract07prod;a;b;cola;coma;este;la;sem;uva;x;z
[ 1] oba:
[ 2]  r←2⍴0
[ 3]  x←polinpeq
[ 4]  a←?2
[ 5]  b←a+1+?2
[ 6]  uva←1
[ 7]  z←a
[ 8]  coma←⊃x[1]
[ 9]  cola←⊃x[2]
[10]  la←2 79⍴' '
[11]  la[1;]←79↑'$⍀prod⍀limits_{z=',(⍕a),'}^{',(⍕b),'}'
[12]  la[2;]←79↑cola,'$'
[13] t1:
[14]  →(z>b)/fim
[15]  este←⍎coma
[16]  uva←uva×este
[17]  z←z+1
[18]  →t1
[19] fim:
[20]  →(uva>99999)/oba
[21]  r[1]←⊂uva
[22]  r[2]←⊂la
------------------------------------------------------------
[ 0]  r←polin;ra;la;aa;bb;cc;dd;ee
[ 1]  r←2⍴0
[ 2]  ra←''
[ 3]  la←''
[ 4] ⍝ grau 4:
[ 5] comeco:
[ 6]  →(1=?2)/p1
[ 7]  ra←'(',(⍕aa←1+?3),'×','(z*4))+'
[ 8]  la←'(',(⍕aa),'⍀times z ^ 4)+'
```

```
[ 9] p1:
[10]  →(1=?2)/p2
[11]  ra←ra,'((',(bb←('+-'[?2]),(⍕1+?5)),')×','(z*3))+'
[12]  la←la,'(',bb,' ⍀times z ∧ 3)+'
[13] p2:
[14]  →(1=?2)/p3
[15]  ra←ra,'((',(cc←('+-'[?2]),(⍕1+?5)),')×','(z*2))+'
[16]  la←la,'(',cc,' ⍀times z ∧ 2)+'
[17] p3:
[18]  →(1=?2)/p4
[19]  ra←ra,'((',(dd←('+-'[?2]),(⍕1+?5)),')×','z)+'
[20]  la←la,'(',dd,' ⍀times z)+'
[21] p4:
[22]  →(0=ρra)/comeco
[23]  ra←ra,(ee←⍕1+?30)
[24]  la←la,ee
[25] p5:
[26]  z←11
[27]  →(99999<⍎ra)/comeco
[28]  r[1]←⊂ra
[29]  r[2]←⊂la
-------------------------------------------------------------
[ 0]  r←polinpeq;ra;la;aa;bb;cc;dd;ee
[ 1]  r←2ρ0
[ 2]  ra←''
[ 3]  la←''
[ 4]  ra←ra,'((',(cc←⍕1+?3),')×','(z*2))+'
[ 5]  la←la,'(',cc,' ⍀times z ∧ 2)+'
[ 6] p3:
[ 7]  →(1=?2)/p4
[ 8]  ra←ra,'((',(dd←('+-'[?2]),(⍕1+?3)),')×','z)+'
[ 9]  la←la,'(',dd,' ⍀times z)+'
[10] p4:
[11]  ra←ra,(ee←⍕1+?3)
[12]  la←la,ee
[13] p5:
[14]  r[1]←⊂ra
[15]  r[2]←⊂la
-------------------------------------------------------------
[0]  ra
-------------------------------------------------------------
[ 0]  opesq vivot07c n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;qui;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLt07c  '
[ 6]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAt07c←ajusta80 FOLHALAt07c
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALAt07c)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 6ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←39 80ρ' '
[16]  f←FOLHALAt07c
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
```

```
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[38;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[39;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  qui←0
[35] t3:→(qui>11)/uha
[36]  xx←geract07
[37]  esse[7+(qui×2)+⍳2;]←2 80↑⊃xx[2]
[38]  resp←resp,,⊃xx[1]
[39]  qui←qui+1
[40]  →t3
[41] uha:
[42] t4:→(qui>14)/uhafin
[43]  xx←geract07prod
[44]  esse[7+(qui×2)+⍳2;]←2 80↑⊃xx[2]
[45]  resp←resp,,⊃xx[1]
[46]  qui←qui+1
[47]  →t4
[48] uhafin:
[49]  resu←resu,[1]1 6⍴resp[1],(+/resp[2 3 4]),(+/resp[5 6 7]),(+/resp[8 9 10]),(+/resp[11
       12 13]),+/resp[14 15 16]
[50]  acuja←(f[;2]='#')/⍳1↑⍴f
[51]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[52]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[53]  ⎕←(⍕xk←xk+1),'-'
[54]  →testa
[55] fim:upag←(1 0+⍴f)⍴' '
[56]  →(1=≡n)/elafa
[57]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[58]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[59]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯'-'edit(lixo1←3 0 12 0 8 0 8 0 8 0 8 0)⍕resu
[60]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[61]  →terminando
[62] elafa:aaa←(ylu[;⍳36],'¯'-'edit 9 0⍕0 1↓resu)
[63]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍬∧⍀⍬EVENTO=' ')/EVENTO),'.gpa')
[64]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[65] terminando:
[66]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[67]  relat[1↑⍴relat;;]←upag
[68]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[69]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍬∧⍀⍬EVENTO=' ')/EVENTO),'.tex'
[70]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[71]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
[ 0]  opesq vivot07p n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;qui;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLt07p  '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
```

```
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAt07p←ajusta80 FOLHALAt07p
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAt07p)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 6⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←39 80⍴' '
[16]  f←FOLHALAt07p
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[38;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[39;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  qui←0
[35] t3:→(qui>11)/uha
[36]  xx←geract07
[37]  esse[7+(qui×2)+⍳2;]←2 80↑⊃xx[2]
[38]  resp←resp,,⊃xx[1]
[39]  qui←qui+1
[40]  →t3
[41] uha:
[42] t4:→(qui>14)/uhafin
[43]  xx←geract07prod
[44]  esse[7+(qui×2)+⍳2;]←2 80↑⊃xx[2]
[45]  resp←resp,,⊃xx[1]
[46]  qui←qui+1
[47]  →t4
[48] uhafin:
[49]  resu←resu,[1]1 6⍴resp[1],(+/resp[2 3 4]),(+/resp[5 6 7]),(+/resp[8 9 10]),(+/resp[11
       12 13]),+/resp[14 15 16]
[50]  acuja←(f[;2]='#')/⍳1↑⍴f
[51]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[52]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[53]  ⍞←(⍕xk←xk+1),'-'
[54]  →testa
[55] fim:upag←(1 0+⍴f)⍴' '
[56]  →(1=≡n)/elafa
[57]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[58]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[59]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←3 0 12 0 8 0 8 0 8 0 8 0)⍕resu
[60]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[61]  →terminando
[62] elafa:aaa←(ylu[;⍳36],'¯-'edit 9 0⍕0 1↓resu)
[63]  lixonol←aaa ΔFM('c:\apl2\',((~∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[64]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[65] terminando:
[66]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[67]  relat[1↑⍴relat;;]←upag
[68]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
```

```
[69]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[70]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[71]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivot10

```
[0]  AVISO
[1]  'Limitado a 70 paginas, mais ou menos'
-------------------------------------------------------------
[ 0]  r←geradirt x;lin;i;tam
[ 1]  r←(((+/(,x[;1])='%')÷3),20)⍴' '
[ 2]  tam←0
[ 3]  lin←1
[ 4]  i←1
[ 5] t1:→(i>1↑⍴x)/fim
[ 6]  →((x[i;1]='%')∧(x[i;2]='i'))/comeca
[ 7]  →((x[i;1]='%')∧(x[i;2]='f'))/termina
[ 8]  →((x[i;1]='%')∧(x[i;2]='r'))/resposta
[ 9]  tam←tam+1
[10]  i←i+1
[11]  →t1
[12] comeca:r[lin;⍳3]←x[i;3 4 5]
[13]  r[lin;5+⍳5]←5 0⍕i
[14]  tam←0
[15]  i←i+1
[16]  →t1
[17] resposta:r[lin;10+⍳5]←5 0⍕tam
[18]  i←i+1
[19]  →t1
[20] termina:r[lin;15+⍳5]←5 0⍕i-1
[21]  lin←lin+1
[22]  i←i+1
[23]  →t1
[24] fim:
-------------------------------------------------------------
[ 0]  re←geraquestao209;⎕IO;a1;r;n;pa;aspa
[ 1]  aspa←''''
[ 2]  ⎕IO←0
[ 3]  a1←¯10+?20
[ 4] novo:
[ 5]  r←¯5+?11
[ 6]  →(0=r)/novo
[ 7]  n←9+?7
[ 8] ⍝ 'a1 ',⍕a1
[ 9] ⍝ 'r ',⍕r
[10] ⍝ 'n ',⍕n
[11]  pa←((⍳n)×r)+a1
[12]  'Suponha uma Progress⍀~ao aritm⍀',aspa,'etica de ',(⍕n),' termos.'
[13]  'O termo inicial ⍀',aspa,'e ',('¯'-'edit⍕a1),'.'⍝ e a raz⍀~ao ⍀',aspa,'e ','¯'-' edit⍕
      r
[14]  'A soma de todos os termos dessa progress⍀~ao ⍀',aspa,'e ',('¯'-'edit⍕+/pa),'.'
[15]  'Calcule e informe a soma dos termos $a_7$ e $a_9$.'
[16]  'a resposta e ','¯'-'edit⍕pa[6]+pa[8]
-------------------------------------------------------------
[ 0]  re←geraquestao209b;⎕IO;a1;r;n;pa;aspa;inds
[ 1]  aspa←''''
[ 2]  ⎕IO←0
[ 3]  a1←¯10+?20
[ 4] novo:
[ 5]  r←¯5+?11
[ 6]  →(0=r)/novo
```

```
[ 7]  n←9+?7
[ 8] ⍝'a1 ',⍕a1
[ 9] ⍝ 'r ',⍕r
[10] ⍝ 'n ',⍕n
[11]  pa←((⍳n)×r)+a1
[12] ⍝ pa
[13]  'Suponha uma Progress⍀~ao aritm⍀',aspa,'etica de ',(⍕n),' termos.'
[14] ⍝ 'O termo inicial ⍀',aspa,'e ',('¯-' edit⍕a1),'.'⍝ e a raz⍀~ao ⍀',aspa,'e ','¯-' edi
      t⍕r
[15]  'A raz⍀~ao ⍀',aspa,'e ',('¯-'edit⍕r),'.'
[16]  'A soma de todos os termos dessa progress⍀~ao ⍀',aspa,'e ',('¯-'edit⍕+/pa),'.'
[17]  inds←2?n
[18]  inds←inds[⍋inds]
[19]  'Calcule e informe a soma dos termos $a_',(⍕1+inds[0]),'$ e $a_',(⍕1+inds[1]),'$.'
[20]  'a resposta e ','¯-'edit⍕pa[inds[0]]+pa[inds[1]]
-------------------------------------------------------------
[ 0]  re←geraquestao209c;⎕IO;a1;r;n;pa;aspa;inds
[ 1]  aspa←''''
[ 2]  ⎕IO←0
[ 3]  a1←¯10+?20
[ 4] novo:
[ 5]  r←¯5+?11
[ 6]  →(0=r)/novo
[ 7]  n←9+?7
[ 8] ⍝'a1 ',⍕a1
[ 9] ⍝ 'r ',⍕r
[10] ⍝ 'n ',⍕n
[11]  pa←((⍳n)×r)+a1
[12] ⍝ pa
[13]  'Suponha uma Progress⍀~ao aritm⍀',aspa,'etica de ',(⍕n),' termos.'
[14] ⍝ 'O termo inicial ⍀',aspa,'e ',('¯-' edit⍕a1),'.'⍝ e a raz⍀~ao ⍀',aspa,'e ','¯-' edi
      t⍕r
[15]  'A raz⍀~ao ⍀',aspa,'e ',('¯-'edit⍕r),'.'
[16]  inds←2?n
[17]  inds←inds[⍋inds]
[18]  'A soma dos termos $a_{',(⍕1+inds[0]),'}$ e $a_{',(⍕1+inds[1]),'}$ ⍀',aspa,'e ','¯-'
      edit⍕pa[inds[0]]+pa[inds[1]]
[19]  'Quanto ⍀',aspa,'e a soma de todos os termos dessa progress⍀~ao ?'
[20]  'a resposta e ','¯-'edit⍕+/pa
-------------------------------------------------------------
[ 0]  r←gerat10 n;x;quais;i;y;resps;defs;uca
[ 1]  DEFIt10←ajusta80 DEFIt10
[ 2]  x←geradirt DEFIt10
[ 3]  y←((1↑⍴x),4)⍴⍕,x,' '
[ 4]  quais←n?1↑⍴y
[ 5]  resps←''
[ 6]  defs←0 80⍴' '
[ 7]  i←1
[ 8] t1:→(i>n)/fim
[ 9]  defs←defs,[1]DEFIt10[y[quais[i];2]+⍳y[quais[i];3];]
[10]  uca←'|',trim DEFIt10[y[quais[i];4];]
[11]  →((i-1)≠⌊n÷2)/boa
[12]  uca←'|',uca
[13] boa:
[14]  resps←resps,uca
[15]  i←i+1
[16]  →t1
[17] fim:r←2⍴0
[18]  r[1]←⊂defs
[19]  r[2]←⊂1↓resps
[20] ⍝'Tamanho ',⍕1↑⍴r
-------------------------------------------------------------
[ 0]  todost10;r;lixo
```

```
[ 1] ⍝ esta funcao imprime todos os exercicios do banco de dados
[ 2]  DEFIt10←ajusta80 DEFIt10
[ 3]  r←ajusta80 ΔFM'c:⍀apl2⍀VIVOBLO1'
[ 4]  r←r,[1]1 80ρ80↑'⍀section*{Listagem de todos os problemas de t10}'
[ 5]  r←r,[1]1 80ρ80↑'⍀begin{enumerate}'
[ 6]  r←r,[1]DEFIt10
[ 7]  r←r,[1]1 80ρ80↑'⍀end{enumerate}'
[ 8]  r←r,[1]1 80ρ80↑'⍀end{document}'
[ 9]  lixo←r ΔFM'c:⍀apl2⍀todost10.tex'
[10]  'Salvo em c:⍀apl2⍀ com o nome de todost10.tex'
-------------------------------------------------------------
[ 0]  opesq vivot10a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLt10   '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAt10←ajusta80 FOLHALAt10
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALAt10)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 254ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←172 80ρ' '
[16]  f←FOLHALAt10
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.08
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑ρf),4)ρ'⍀#05')/⍳1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[171;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[172;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerat10 10
[35]  →(163≥1↑ρ⊃xx[1])/blz88
[36]  ⍞←'$'
[37]  →inica
[38] blz88:
[39]  →(250≥1↑ρ⊃xx[2])/blz89
[40]  ⍞←'%'
[41]  →inica
[42] blz89:
[43]  esse[7+⍳163;]←163 80↑⊃xx[1]
[44]  resp←(3 0⍎resp),':',250↑⊃xx[2]
[45]  resu←resu,[1]1 254ρresp
[46]  acuja←(f[;2]='#')/⍳1↑ρf
[47]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4 5],' ';]
[48]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'⍀clearpage'
[49]  ⍞←(⍎xk←xk+1),'-'
```

```
[50]  →testa
[51] fim:upag←(1 0+⍴f)⍴' '
[52]  →(1=≡n)/elafa
[53]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[54]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO,'  so os primeiros 80
      bytes'
[55]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑resu
[56]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[57]  →terminando
[58] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[59]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[60]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[61] terminando:
[62]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[63]  relat[1↑⍴relat;;]←upag
[64]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[65]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[66]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[67]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivot13

```
[0]  r←coeftripa x
[1]  r←(TRIPA[x;]≠0)/TRIPA[x;]
------------------------------------------------------------
[0]  r←geracasot13;a
[1]  r←3⍴0
[2]  r[1]←⊂a←(2+?6)
[3]  r[2]←⊂10+?89
[4]  r[3]←⊂coeftripa a
------------------------------------------------------------
[ 0]  opesq vivot13a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLt13   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAt13←ajusta80 FOLHALAt13
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAt13)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←12 80⍴' '
[16]  f←FOLHALAt13
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
```

```
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[11;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[12;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracasot13
[35]  esse[8;]←80↑1 0⍕⊃xx[1]
[36]  esse[9;]←80↑2 0⍕⊃xx[2]
[37]  esse[10;]←80↑4 0⍕⊃xx[3]
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[41]  ⎕←(⍕xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44] terminando:
[45]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[46]  relat[1↑⍴relat;;]←upag
[47]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[48]  lixonol←lixonol ΔFM'c:\apl2\',((~⊖∧\⊖EVENTO=' ')/EVENTO),'.tex'
[49]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[50]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'    .tex'
-------------------------------------------------------------
```

vivot16

```
[ 0]  r←geratipo1a;x;y;t;k;m;s
[ 1] ⍝ gera matriz 2 x 3
[ 2]  r←2⍴0
[ 3]  t←11 78⍴' '
[ 4]  t[1;]←78↑'\item Suponha a matriz $A$ definida por $\left( \begin{array}{ccc}'
[ 5]  x←2 3⍴?20⍴9
[ 6]  t[2;]←78↑(¯1↓,'55&'⍕x[1;]),'\\',(¯1↓,'55&'⍕x[2;]),'\\'
[ 7]  t[3;]←78↑'\end{array} \right)$'
[ 8]  t[4;]←78↑'e suponha a matriz $B$ definida por $\left( \begin{array}{ccc}'
[ 9]  y←2 3⍴?20⍴9
[10]  t[5;]←78↑(¯1↓,'55&'⍕y[1;]),'\\',(¯1↓,'55&'⍕y[2;]),'\\'
[11]  t[6;]←78↑'\end{array} \right)$'
[12]  k←1+?5
[13] novo:m←1+?5
[14]  →(k=m)/novo
[15]  t[7;]←78↑'Considere ainda $k=',(⍕k),'$ e $m=',(⍕m),'$.'
[16]  t[8;]←78↑'Calcule:\\'
[17]  t[9;]←78↑'a) a soma da terceira coluna de $A+B$\\'
[18]  t[10;]←78↑'b) o maior valor da segunda linha de $kA$\\'
[19]  t[11;]←78↑'c) a soma de todos os elementos de $(kA)+(mB)$'
[20]  s←(+/,(x+y)[;3]),(⌈/,(k×x)[2;]),+/,(k×x)+(m×y)
[21]  r[1]←⊂t
[22]  r[2]←⊂s
-------------------------------------------------------------
[ 0]  r←geratipo1b;x;y;t;k;m;s
[ 1] ⍝ gera matriz 3 x 3
[ 2]  r←2⍴0
[ 3]  t←11 78⍴' '
[ 4]  t[1;]←78↑'\item Suponha a matriz $A$ definida por $\left( \begin{array}{ccc}'
[ 5]  x←3 3⍴?20⍴9
[ 6]  t[2;]←78↑(¯1↓,'55&'⍕x[1;]),'\\',(¯1↓,'55&'⍕x[2;]),'\\',(¯1↓,'55&'⍕x[3;]),'\\'
[ 7]  t[3;]←78↑'\end{array} \right)$'
[ 8]  t[4;]←78↑'e suponha a matriz $B$ definida por $\left( \begin{array}{ccc}'
[ 9]  y←3 3⍴?20⍴9
[10]  t[5;]←78↑(¯1↓,'55&'⍕y[1;]),'\\',(¯1↓,'55&'⍕y[2;]),'\\',(¯1↓,'55&'⍕y[3;]),'\\'
```

```
[11]  t[6;]←78↑'\end{array} \right)$'
[12]  k←1+?5
[13] novo:m←1+?5
[14]  →(k=m)/novo
[15]  t[7;]←78↑'Considere ainda $k=',(⍕k),'$ e $m=',(⍕m),'$.'
[16]  t[8;]←78↑'Calcule:\\'
[17]  t[9;]←78↑'a) a soma da terceira coluna de $A+B$\\'
[18]  t[10;]←78↑'b) o maior valor da segunda linha de $kA$\\'
[19]  t[11;]←78↑'c) a soma de todos os elementos de $(kA)+(mB)$'
[20]  s←(+/,(x+y)[;3]),(⌈/,(k×x)[2;]),+/,(k×x)+(m×y)
[21]  r[1]←⊂t
[22]  r[2]←⊂s
-------------------------------------------------------------
[ 0]  r←geratipo1c;x;y;t;k;m;s
[ 1] ⍝ gera matriz 3 x 4
[ 2]  r←2⍴0
[ 3]  t←11 78⍴' '
[ 4]  t[1;]←78↑'\item Suponha a matriz $A$ definida por $\left( \begin{array}{cccc}'
[ 5]  x←3 4⍴?20⍴9
[ 6]  t[2;]←78↑(¯1↓,'55&'⍕x[1;]),'\\',(¯1↓,'55&'⍕x[2;]),'\\',(¯1↓,'55&'⍕x[3;]),'\\'
[ 7]  t[3;]←78↑'\end{array} \right)$'
[ 8]  t[4;]←78↑'e suponha a matriz $B$ definida por $\left( \begin{array}{cccc}'
[ 9]  y←3 4⍴?20⍴9
[10]  t[5;]←78↑(¯1↓,'55&'⍕y[1;]),'\\',(¯1↓,'55&'⍕y[2;]),'\\',(¯1↓,'55&'⍕y[3;]),'\\'
[11]  t[6;]←78↑'\end{array} \right)$'
[12]  k←1+?5
[13] novo:m←1+?5
[14]  →(k=m)/novo
[15]  t[7;]←78↑'Considere ainda $k=',(⍕k),'$ e $m=',(⍕m),'$.'
[16]  t[8;]←78↑'Calcule:\\'
[17]  t[9;]←78↑'a) a soma da segunda coluna de $A+B$\\'
[18]  t[10;]←78↑'b) o maior valor da terceira linha de $kA$\\'
[19]  t[11;]←78↑'c) a soma de todos os elementos de $(kA)+(mB)$'
[20]  s←(+/,(x+y)[;2]),(⌈/,(k×x)[3;]),+/,(k×x)+(m×y)
[21]  r[1]←⊂t
[22]  r[2]←⊂s
-------------------------------------------------------------
[ 0]  r←geratipo2a;x;y;t;k;m;s;z
[ 1] ⍝ multiplica 2x3 com 3x2 dando 2x2
[ 2]  r←2⍴0
[ 3]  t←10 78⍴' '
[ 4]  t[1;]←78↑'\item Suponha a matriz $A$ definida por $\left( \begin{array}{ccc}'
[ 5]  x←2 3⍴?20⍴9
[ 6]  t[2;]←78↑(¯1↓,'55&'⍕x[1;]),'\\',(¯1↓,'55&'⍕x[2;]),'\\'
[ 7]  t[3;]←78↑'\end{array} \right)$'
[ 8]  t[4;]←78↑'e suponha a matriz $B$ definida por $\left( \begin{array}{cc}'
[ 9]  y←3 2⍴?20⍴9
[10]  t[5;]←78↑(¯1↓,'55&'⍕y[1;]),'\\',(¯1↓,'55&'⍕y[2;]),'\\',(¯1↓,'55&'⍕y[3;]),'\\'
[11]  t[6;]←78↑'\end{array} \right)$\\*'
[12]  t[7;]←78↑'Calcule o produto matricial $A.B$. Daí, Calcule:\\'
[13]  t[8;]←78↑'a) a soma da segunda coluna de $A.B$\\'
[14]  t[9;]←78↑'b) o maior valor da primeira linha de $A.B$\\'
[15]  t[10;]←78↑'c) a soma de todos os elementos de $A.B$'
[16]  z←x+.×y
[17]  s←(+/z[;2]),(⌈/,z[1;]),+/,z
[18]  r[1]←⊂t
[19]  r[2]←⊂s
-------------------------------------------------------------
[ 0]  r←geratipo2b;x;y;t;k;m;s;z
[ 1] ⍝ multiplica 3x3 com 3x3 dando 3x3
[ 2]  r←2⍴0
[ 3]  t←10 78⍴' '
[ 4]  t[1;]←78↑'\item Suponha a matriz $A$ definida por $\left( \begin{array}{ccc}'
```

```
[ 5]  x←3 3⍴?20⍴9
[ 6]  t[2;]←78↑(¯1↓,'55&'⍕x[1;]),'⍀⍀',(¯1↓,'55&'⍕x[2;]),'⍀⍀',(¯1↓,'55&'⍕x[3;]),'⍀⍀'
[ 7]  t[3;]←78↑'⍀end{array} ⍀right)$'
[ 8]  t[4;]←78↑'e suponha a matriz $B$ definida por $⍀left( ⍀begin{array}{ccc}'
[ 9]  y←3 3⍴?20⍴9
[10]  t[5;]←78↑(¯1↓,'55&'⍕y[1;]),'⍀⍀',(¯1↓,'55&'⍕y[2;]),'⍀⍀',(¯1↓,'55&'⍕y[3;]),'⍀⍀'
[11]  t[6;]←78↑'⍀end{array} ⍀right)$⍀⍀*'
[12]  t[7;]←78↑'Calcule o produto matricial $A.B$. Daí, calcule:⍀⍀'
[13]  t[8;]←78↑'a) a soma da terceira coluna de $A.B$⍀⍀'
[14]  t[9;]←78↑'b) o maior valor da segunda linha de $A.B$⍀⍀'
[15]  t[10;]←78↑'c) a soma de todos os elementos de $A.B$'
[16]  z←x+.×y
[17]  s←(+/z[;3]),(⌈/,z[2;]),+/,z
[18]  r[1]←⊂t
[19]  r[2]←⊂s
-------------------------------------------------------------
[ 0]  r←geratipo2c;x;y;t;k;m;s;z
[ 1] ⍝ multiplica 3x4 com 4x2 dando 3x2
[ 2]  r←2⍴0
[ 3]  t←10 78⍴' '
[ 4]  t[1;]←78↑'⍀item Suponha a matriz $A$ definida por $⍀left( ⍀begin{array}{cccc}'
[ 5]  x←3 4⍴?20⍴9
[ 6]  t[2;]←78↑(¯1↓,'55&'⍕x[1;]),'⍀⍀',(¯1↓,'55&'⍕x[2;]),'⍀⍀',(¯1↓,'55&'⍕x[3;]),'⍀⍀'
[ 7]  t[3;]←78↑'⍀end{array} ⍀right)$'
[ 8]  t[4;]←78↑'e suponha a matriz $B$ definida por $⍀left( ⍀begin{array}{cc}'
[ 9]  y←4 2⍴?20⍴9
[10]  t[5;]←78↑(¯1↓,'55&'⍕y[1;]),'⍀⍀',(¯1↓,'55&'⍕y[2;]),'⍀⍀',(¯1↓,'55&'⍕y[3;]),'⍀⍀',(¯1↓,'
      55&'⍕y[4;]),'⍀⍀'
[11]  t[6;]←78↑'⍀end{array} ⍀right)$⍀⍀*'
[12]  t[7;]←78↑'Calcule o produto matricial $A.B$. Daí, calcule:⍀⍀'
[13]  t[8;]←78↑'a) a soma da terceira linha de $A.B$⍀⍀'
[14]  t[9;]←78↑'b) o maior valor da segunda coluna de $A.B$⍀⍀'
[15]  t[10;]←78↑'c) a soma de todos os elementos de $A.B$'
[16]  z←x+.×y
[17]  s←(+/z[3;]),(⌈/,z[;2]),+/,z
[18]  r[1]←⊂t
[19]  r[2]←⊂s
-------------------------------------------------------------
[ 0]  r←geratipo3a;t;x;a;w
[ 1] ⍝ propoe um sistema linear 2x2
[ 2]  r←2⍴0
[ 3]  t←5 78⍴' '
[ 4]  x←1+2?8
[ 5]  a←(-1+?3),1+3?8
[ 6]  a←a[4?4]  ⍝ embaralha a
[ 7]  w←((a[1]×x[1])+a[2]×x[2]),(a[3]×x[1])+a[4]×x[2]
[ 8]  t[1;]←78↑'⍀item Suponha a equaç⍀~ao matricial definida por $⍀left( ⍀begin{array}{cc}
      '
[ 9]  t[2;]←78↑(⍕a[1]),'&',(⍕a[2]),'⍀⍀',(⍕a[3]),'&',(⍕a[4]),'⍀end{array} ⍀right)'
[10]  t[3;]←78↑'⍀left( ⍀begin{array}{c} x⍀⍀y⍀⍀ ⍀end{array} ⍀right)='
[11]  t[4;]←78↑'⍀left( ⍀begin{array}{c} ',(⍕w[1]),'⍀⍀',(⍕w[2]),'⍀⍀ ⍀end{array} ⍀right)$⍀⍀*
      '
[12]  t[5;]←78↑'Resolva o sistema de equaç⍀~oes e ache os valores de $x$ e $y$.'
[13]  r[1]←⊂'¯-'edit t
[14]  r[2]←⊂x
-------------------------------------------------------------
[ 0]  r←geratipo3b;t;x;a;w
[ 1] ⍝ propoe um sistema linear 3x3
[ 2]  r←2⍴0
[ 3] nogo:
[ 4]  t←6 78⍴' '
[ 5]  x←1+3?8
[ 6]  a←(-1+4?5),1+5?8
```

```
[ 7]  a←a[9?9]  ⍝ embaralha a
[ 8]  w←((a[1]×x[1])+(a[2]×x[2])+a[3]×x[3]),((a[4]×x[1])+(a[5]×x[2])+a[6]×x[3]),((a[7]×x[1
      ])+(a[8]×x[2])+a[9]×x[3])
[ 9]  →(0∈w)/nogo
[10]  t[1;]←78↑'\item Suponha a equaç\~ao matricial definida por $\left( \begin{array}{ccc
      }'
[11]  t[2;]←78↑(⍕a[1]),'&',(⍕a[2]),'&',(⍕a[3]),'\\',(⍕a[4]),'&',(⍕a[5]),'&',(⍕a[6]),'\\'
[12]  t[3;]←78↑(⍕a[7]),'&',(⍕a[8]),'&',(⍕a[9]),'\\ \end{array} \right)'
[13]  t[4;]←78↑'\left( \begin{array}{c} x\\y\\z\\ \end{array} \right)='
[14]  t[5;]←78↑'\left( \begin{array}{c} ',(⍕w[1]),'\\',(⍕w[2]),'\\',(⍕w[3]),' \end{array}
      \right)$\\*'
[15]  t[6;]←78↑'Resolva o sistema de equaç\~oes e ache o valor de $x$.'
[16]  r[1]←⊂'¯-'edit t
[17]  r[2]←⊂x[1]
------------------------------------------------------------
[ 0]  r←geratipo4a;t;x;s;d1;d2;d;y;z;caracoroa
[ 1] ⍝ propoe um polinomio matricial 2x2
[ 2]  r←2⍴0
[ 3]  t←4 78⍴' '
[ 4] ujo:
[ 5]  s←3+?6
[ 6]  d1←(s-d),(d←?s)
[ 7]  d2←(s-d),(d←?s)
[ 8]  x←2 2⍴d1[1],d2[1],d2[2],d1[2]
[ 9]  →(2=+/x[1;]=x[2;])/ujo
[10]  →(0∈x)/ujo
[11]  y←x+.×x
[12]  z←y+(-s)×x
[13]  →((z[1;1]≠z[2;2])∨(z[1;2]≠0)∨(z[2;1]≠0))/deuxabu
[14]  t[2;]←78↑'e suponha $A=\left( \begin{array}{cc}'
[15]  t[3;]←78↑(¯1↓'55&'⍕x[1;]),'\\',(¯1↓'55&'⍕x[2;]),'\\ \end{array} \right)$.\\*'
[16]  t[4;]←78↑'Informe 1 se $A$ for raiz de $h(x)$ ou informe 0 se n\~o for'
[17]  caracoroa←¯1+?2
[18]  →(caracoroa=0)/naoe
[19]  →(z[1;1]>0)/pos
[20] neg:t[1;]←78↑'\item Suponha o polinômio matricial definida por $h(x)=x^2-',(⍕s),'x+',
      (⍕|z[1;1]),'$'
[21]  →ju
[22] pos:t[1;]←78↑'\item Suponha o polinômio matricial definida por $h(x)=x^2-',(⍕s),'x-',
      (⍕z[1;1]),'$'
[23] ju:
[24]  r[1]←⊂t
[25]  r[2]←⊂1
[26]  →0
[27] naoe:
[28]  →(z[1;1]>0)/pos0
[29] neg0:t[1;]←78↑'\item Suponha o polinômio matricial definida por $h(x)=x^2-',(⍕s),'x+'
      ,(⍕|z[1;1]-2),'$'
[30]  →ju0
[31] pos0:t[1;]←78↑'\item Suponha o polinômio matricial definida por $h(x)=x^2-',(⍕s),'x-'
      ,(⍕z[1;1]+2),'$'
[32] ju0:
[33]  r[1]←⊂t
[34]  r[2]←⊂0
[35]  →0
[36] deuxabu:'iiiiii'
------------------------------------------------------------
[0]  lixo
[1]  x←geratipo3b
[2]  x[1]
[3]  x[2]
------------------------------------------------------------
[ 0]  q←qprovamat;a1;a2;ar;x
```

```
[ 1]  a1←2 3⍴6?9 ⋄ a2←3 2⍴6?9
[ 2]  ar←a1+.×a2
[ 3]  x←8 79⍴' '
[ 4]  x[1;]←79↑'Seja a matriz A de 2 linhas por 3 colunas, definida por'
[ 5]  x[2;]←79↑' $\left(\begin{array}{ccc} ',(⍕a1[1;1]),'&',(⍕a1[1;2]),'&',(⍕a1[1;3]),'\\'
[ 6]  x[3;]←79↑(⍕a1[2;1]),'&',(⍕a1[2;2]),'&',(⍕a1[2;3]),'\\ \end{array} \right)$\\'
[ 7]  x[4;]←79↑'E a matriz B de 3 linhas por duas colunas, definida por'
[ 8]  x[5;]←79↑' $\left(\begin{array}{cc} ',(⍕a2[1;1]),'&',(⍕a2[1;2]),'\\'
[ 9]  x[6;]←79↑(⍕a2[2;1]),'&',(⍕a2[2;2]),'\\'
[10]  x[7;]←79↑(⍕a2[3;1]),'&',(⍕a2[3;2]),'\\ \end{array} \right)$\\'
[11]  x[8;]←79↑'Calcule e escreva a multiplicaç\~ao matricial de $A$ por $B$.'
[12]  x
[13]  ar
------------------------------------------------------------
[ 0]  opesq vivot16a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivot16 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PLt16   '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[47]  zz←⍤'geratipo2',xx
[48]  esse[18+⍳10;]←10 80↑⊃zz[1]
[49]  resp←resp,,⊃zz[2]
[50]  zz←geratipo3a
[51]  esse[28+⍳5;]←5 80↑⊃zz[1]
[52]  resp←resp,,⊃zz[2]
[53]  zz←geratipo3b
[54]  esse[33+⍳6;]←6 80↑⊃zz[1]
[55]  resp←resp,,⊃zz[2]
[56]  zz←geratipo4a
[57]  esse[39+⍳4;]←4 80↑⊃zz[1]
[58]  resp←resp,,⊃zz[2]
[59]  resu←resu,[1]1 11⍴resp
[60]  acuja←(f[;2]='#')/⍳1↑⍴f
[61]  f[acuja;⍳80]←esse[⍤,f[acuja;3 4],' ';]
[62]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[63]  ⎕←(⍕xk←xk+1),'-'
[64]  →testa
[65] fim:upag←(1 0+⍴f)⍴' '
[66]  →(1=≡n)/elafa
[67]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[68]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[69]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←8 0 4 0 4 0 5 0 8 0 4 0 5 0 6 0 3 0 6 0 5 0)⍕resu
[70]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[71]  →terminando
[72] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[73] elafa:aaa←(ylu[;⍳36],4 0 4 0 5 0 8 0 4 0 5 0 6 0 3 0 6 0 5 0⍕0 1↓resu)
[74] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[75]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[76]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[77] terminando:
[78]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[79]  relat[1↑⍴relat;;]←upag
[80]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[81] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[82]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[83]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[84]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivot17

```
[ 0]  r←gerama17 nome;a;b;c;co;i;li;ma;mb;mr;soma;z;lixo
[ 1]  a←(15+?6)
[ 2]  b←(8+?6)
[ 3]  c←(14+?6)
[ 4]  ma←(a,b)⍴?999⍴99
[ 5]  mb←(b,c)⍴?999⍴99
[ 6]  MR←mr←ma+.×mb
[ 7]  z←((1+a+b),60)⍴' '
[ 8]  z[1;]←60↑3 0⍕a,b,b,c
[ 9]  z[1+⍳a;]←(a,60)↑3 0⍕ma
[10]  z[1+a+⍳b;]←(b,60)↑3 0⍕mb
[11]  i←1
[12]  soma←0
[13]  r←a,b,b,c
[14] t1:→(i>3)/fim
[15]  li←5+?1↑¯5+⍴mr
[16]  co←5+?1↓¯5+⍴mr
[17]  →((i=1)∨(li≠r[¯1+⍴r])∨(co≠r[⍴r]))/oha
[18]  ⎕←'□'
[19]  →t1
```

```
[20] oha:
[21]  soma←soma+,mr[li;co]
[22]  r←r,li,co
[23]  i←i+1
[24]  →t1
[25] fim:
[26]  lixo←z ΔFM'c:\apl2\',nome,'.myd'
[27]  r←r,(+/,ma),(+/,mb),soma,+/,mr∈PRIMO
------------------------------------------------------------
[ 0]  opesq vivot17a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz;S
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLt17   '
[ 6]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ S←⍕n[5]
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕ιn ⋄ S←'0'
[ 9]  ylu←n grupo ylu
[10]  FOLHALAt17←ajusta80 FOLHALAt17
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALAt17)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 5ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←14 80ρ' '
[16]  f←FOLHALAt17
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.09
[20]  esse[4;]←80↑ylu[xk;ι6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;ι4]=((1↑ρf),4)ρ'\#05')/ι1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+ι30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[13;ι10]←'@',esse[6;5+ι3],esse[4;1+ι5],'@'
[32]  esse[14;]←80↑esse[6;5+ι3],'-',esse[4;1+ι5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerama17'T17F',S,'00'⍕xk
[35]  esse[8;]←1 80ρ80↑'T17F',S,('00'⍕xk),'.myd'
[36]  esse[9 10 11;]←3 80ρ(80↑(⍕xx[5]),',',⍕xx[6]),(80↑(⍕xx[7]),',',⍕xx[8]),80↑(⍕xx[9]),',
      ',⍕xx[10]
[37]  esse[12;]←1 80ρ80↑⍕xx[1 2 3 4]
[38]  resp←resp,,xx[11 12 13 14]
[39]  resu←resu,[1]1 5ρresp
[40]  acuja←(f[;2]='#')/ι1↑ρf
[41]  f[acuja;ι80]←esse[±,f[acuja;3 4],' ';]
[42]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'\clearpage'
[43]  ⍞←(⍕xk←xk+1),'-'
[44]  →testa
[45] fim:upag←(1 0+ρf)ρ' '
[46]  →(1=≡n)/elafa
[47]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[48]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[49]  upag[2+ι1↑ρresu;ι+/lixo1]←(lixo1←5 0 10 0 8 0 8 0 8 0)⍕resu
[50]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
```

```
[51]  →terminando
[52] elafa:aaa←(ylu[;⍳36],9 0⍕0 1↓resu)
[53]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[54]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[55] terminando:
[56]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[57]  relat[1↑⍴relat;;]←upag
[58]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[59]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[60]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[61]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivot19

```
[ 0]  r←gerareta1;p0;p1;x0;x1;y0;y1;a;b;re
[ 1] novo:p0←¯5+?2⍴15
[ 2]  p1←¯5+?2⍴15
[ 3]  x0←p0[1] ⋄ x1←p1[1] ⋄ y0←p0[2] ⋄ y1←p1[2]
[ 4]  →(2=+/p0=p1)/novo
[ 5]  →(x1=x0)/novo
[ 6]  a←(y1-y0)÷(x1-x0)
[ 7]  →(a≠⌊a)/novo
[ 8]  →(a<0)/aneg
[ 9] apos:
[10]  b←(a×x0)-y0
[11]  →(b<0)/bneg
[12] bpos:
[13]  re←'y=',(⍕a),'x-',⍕b
[14]  →final
[15] bneg:
[16]  re←'y=',(⍕a),'x+',⍕|b
[17]  →final
[18] aneg:
[19]  b←(a×x0)-y0
[20]  →(b<0)/bneg1
[21] bpos1:
[22]  re←'y=',(⍕a),'x-',⍕b
[23]  →final
[24] bneg1:
[25]  re←'y=',(⍕a),'x+',⍕|b
[26]  →final
[27] final:
[28] ⍝ 'a=',⍕a
[29] ⍝ 'b=',⍕b
[30] ⍝ 'x0=',(⍕p0[1]),'  y0=',⍕p0[2]
[31] ⍝ 'x1=',(⍕p1[1]),'  y1=',⍕p1[2]
[32]  r←2⍴' '
[33]  r[1]←⊂'$',('¯-'edit re),'$⍀⍀*'
[34]  r[2]←⊂'¯-'edit(⍕x0),',',(⍕y0),'; ',(⍕x1),',',(⍕y1),'.'
-------------------------------------------------------------
[ 0]  r←gerasis2;x;y;a1;b1;c1;d1;ti1;ti2;eq1;eq2;fat
[ 1] novo:x←¯9+?19
[ 2]  y←¯9+?19
[ 3]  →((x=0)∨(y=0))/novo
[ 4]  →(1=?3)/infinitas
[ 5]  a1←((¯9+⍳7),1+⍳8)[?15] ⋄ b1←((¯9+⍳7),1+⍳8)[?15] ⋄ c1←((¯9+⍳7),1+⍳8)[?15]
[ 6]  d1←((¯9+⍳7),1+⍳8)[?15]
[ 7]  ti1←(a1×x)+(b1×y)
[ 8]  ti2←(c1×x)+(d1×y)
[ 9]  eq1←(⍕a1),'x',('-+'[1+b1>0]),(⍕|b1),'y=',⍕ti1
[10]  eq2←(⍕c1),'x',('-+'[1+d1>0]),(⍕|d1),'y=',⍕ti2
```

```
[11]  →junta
[12] infinitas:
[13]  a1←((¯9+⍳7),1+⍳8)[?15] ⋄ b1←((¯9+⍳7),1+⍳8)[?15]
[14]  ti1←(a1×x)+(b1×y)
[15]  fat←((¯9+⍳8),1+⍳8)[?16]
[16]  c1←a1×fat ⋄ d1←b1×fat
[17]  ti2←(c1×x)+(d1×y)
[18]  eq1←(⍕a1),'x',('-+'[1+b1>0]),(⍕|b1),'y=',⍕ti1
[19]  eq2←(⍕c1),'x',('-+'[1+d1>0]),(⍕|d1),'y=',⍕ti2
[20]  x←y←99
[21] junta:
[22]  r←2⍴0
[23]  r[1]←⊂2 60⍴'¯-'edit 60↑'$',eq1,'$⍀⍀*'),60↑'$',eq2,'$⍀⍀*'
[24]  r[2]←⊂'¯-'edit(⍕x),' ',⍕y
-------------------------------------------------------------
[ 0]  r←gerasis3;x;y;z;a;b;c;d;e;f;g;h;i;eq1;eq2;eq3
[ 1] novo:x←¯9+?19
[ 2]  y←¯9+?19
[ 3]  z←¯9+?19
[ 4]  →((x=0)∨(y=0)∨(z=0))/novo
[ 5]  a←((¯10+⍳8),1+⍳8)[?16]
[ 6]  b←((¯10+⍳8),1+⍳8)[?16]
[ 7]  c←((¯10+⍳8),1+⍳8)[?16]
[ 8]  e←((¯10+⍳8),1+⍳8)[?16]
[ 9]  f←((¯10+⍳8),1+⍳8)[?16]
[10]  h←((¯10+⍳8),1+⍳8)[?16]
[11]  i←h×z
[12]  g←(e×y)+(f×z)
[13]  d←(a×x)+(b×y)+(c×z)
[14]  eq1←'$',(⍕a),'x',('-+'[1+b>0]),(⍕|b),'y',('-+'[1+c>0]),(⍕|c),'z=',(⍕d),'$⍀⍀*'
[15]  eq2←'$0x',('-+'[1+e>0]),(⍕|e),'y',('-+'[1+f>0]),(⍕|f),'z=',(⍕g),'$⍀⍀*'
[16]  eq3←'$0x+0y',('-+'[1+h>0]),(⍕|h),'z=',(⍕i),'$⍀⍀*'
[17]  r←2⍴' '
[18]  r[1]←⊂'¯-'edit 3 60⍴(60↑eq1),(60↑eq2),60↑eq3
[19]  r[2]←⊂'¯-'edit(⍕x)
-------------------------------------------------------------
[ 0]  r←gerasis4;x;y;z;a;b;c;d;e;f;g;h;i;j;k;l;eq1;eq2;eq3
[ 1] novo:x←¯9+?19
[ 2]  y←¯9+?19
[ 3]  z←¯9+?19
[ 4]  →((x=0)∨(y=0)∨(z=0))/novo
[ 5]  a←((¯10+⍳8),1+⍳8)[?16]
[ 6]  b←((¯10+⍳8),1+⍳8)[?16]
[ 7]  c←((¯10+⍳8),1+⍳8)[?16]
[ 8]  e←((¯10+⍳8),1+⍳8)[?16]
[ 9]  f←((¯10+⍳8),1+⍳8)[?16]
[10]  g←((¯10+⍳8),1+⍳8)[?16]
[11]  i←((¯10+⍳8),1+⍳8)[?16]
[12]  j←((¯10+⍳8),1+⍳8)[?16]
[13]  k←((¯10+⍳8),1+⍳8)[?16]
[14]  d←(a×x)+(b×y)+(c×z)
[15]  h←(e×x)+(f×y)+(g×z)
[16]  l←(i×x)+(j×y)+(k×z)
[17]  eq1←'$',(⍕a),'x',('-+'[1+b>0]),(⍕|b),'y',('-+'[1+c>0]),(⍕|c),'z=',(⍕d),'$⍀⍀*'
[18]  eq2←'$',(⍕e),'x',('-+'[1+f>0]),(⍕|f),'y',('-+'[1+g>0]),(⍕|g),'z=',(⍕h),'$⍀⍀*'
[19]  eq3←'$',(⍕i),'x',('-+'[1+j>0]),(⍕|j),'y',('-+'[1+k>0]),(⍕|k),'z=',(⍕l),'$⍀⍀*'
[20]  r←2⍴' '
[21]  r[1]←⊂'¯-'edit 3 60⍴(60↑eq1),(60↑eq2),60↑eq3
[22]  r[2]←⊂'¯-'edit(⍕x),',',(⍕y),',',⍕z
-------------------------------------------------------------
[ 0]  r←gerasis5;a;b;c;d;e;f;g;h;i;j;k;l;m;n;o;p;q;r;s;t;t1;w;x;y;z
[ 1]  t1←6 78⍴' '
[ 2] novo:x←¯9+?19
```

```
[ 3]  y←¯9+?19
[ 4]  z←¯9+?19
[ 5]  w←¯9+?19
[ 6]  →((x=0)∨(y=0)∨(z=0)∨(w=0))/novo
[ 7]  a←((¯10+⍳8),1+⍳8)[?16]
[ 8]  b←((¯10+⍳8),1+⍳8)[?16]
[ 9]  c←((¯10+⍳8),1+⍳8)[?16]
[10]  d←((¯10+⍳8),1+⍳8)[?16]
[11]  e←((¯10+⍳8),1+⍳8)[?16]
[12]  f←((¯10+⍳8),1+⍳8)[?16]
[13]  g←((¯10+⍳8),1+⍳8)[?16]
[14]  h←((¯10+⍳8),1+⍳8)[?16]
[15]  i←((¯10+⍳8),1+⍳8)[?16]
[16]  j←((¯10+⍳8),1+⍳8)[?16]
[17]  k←((¯10+⍳8),1+⍳8)[?16]
[18]  l←((¯10+⍳8),1+⍳8)[?16]
[19]  m←((¯10+⍳8),1+⍳8)[?16]
[20]  n←((¯10+⍳8),1+⍳8)[?16]
[21]  o←((¯10+⍳8),1+⍳8)[?16]
[22]  p←((¯10+⍳8),1+⍳8)[?16]
[23]  q←(a×x)+(b×y)+(c×z)+d×w
[24]  r←(e×x)+(f×y)+(g×z)+h×w
[25]  s←(i×x)+(j×y)+(k×z)+l×w
[26]  t←(m×x)+(n×y)+(o×z)+p×w
[27]  t1[1;]←78↑'$$\left( \begin{array}{cccc}',(⍕a),'&',(⍕b),'&',(⍕c),'&',(⍕d),'\\'
[28]  t1[2;]←78↑(⍕e),'&',(⍕f),'&',(⍕g),'&',(⍕h),'\\',(⍕i),'&',(⍕j),'&',(⍕k),'&',(⍕l),'\\'
[29]  t1[3;]←78↑(⍕m),'&',(⍕n),'&',(⍕o),'&',(⍕p),'\\ \end{array} \right)'
[30]  t1[4;]←78↑'\left( \begin{array}{c} x \\ y \\ z \\ w \\ \end{array} \right) = '
[31]  t1[5;]←78↑'\left( \begin{array}{c}',(⍕q),'\\ ',(⍕r),'\\ ',(⍕s),'\\ ',(⍕t),' \\'
[32]  t1[6;]←78↑'\end{array} \right)$$'
[33]  r←2⍴' '
[34]  r[1]←⊂'¯-'edit t1
[35]  r[2]←⊂'¯-'edit(⍕x),',',(⍕y),',',(⍕z),',',(⍕w)
-------------------------------------------------------------
[ 0]  opesq vivot19a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLt19   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9] ΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[10]  ylu←n grupo ylu
[11] ΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑ
[12]  FOLHALAt19←ajusta80 FOLHALAt19
[13]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAt19)⍴' '
[14]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[15]  xk←1 ⋄ resu←0 60⍴' '
[16] testa:→(xk>1↑⍴ylu)/fim
[17]  esse←24 80⍴' '
[18]  f←FOLHALAt19
[19]  esse[1;]←80↑dhx[1;]
[20]  esse[2;]←80↑dhx[2;]
[21]  esse[3;]←80↑4 2⍎VERSAOa←1.07
[22]  esse[4;]←80↑ylu[xk;⍳6]
[23] ΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑΑ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[24]  →(36=1↓⍴ylu)/zebra
[25]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[26]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
```

```
[27]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[28]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[29]  →maiszebra
[30] ⍝⍝⍝
```

```
[1]  r←(x[1;1]×x[2;2])-x[1;2]×x[2;1]
-------------------------------------------------------------
[0]  r←det3 x;y;a;b
[1]  y←x,[2]x[;1 2]
[2]  a←(y[1;1]×y[2;2]×y[3;3])+(y[1;2]×y[2;3]×y[3;4])+(y[1;3]×y[2;4]×y[3;5])
[3]  b←(y[3;1]×y[2;2]×y[1;3])+(y[3;2]×y[2;3]×y[1;4])+(y[3;3]×y[2;4]×y[1;5])
[4]  r←a-b
-------------------------------------------------------------
[ 0]  r←geradet1;a;d;x
[ 1]  a←2 2⍴?9⍴9
[ 2]  d←det2 a
[ 3]  x←2 78⍴' '
[ 4]  x[1;]←78↑'$\left| \begin{array}{cc}',(⍕a[1;1]),'&',(⍕a[1;2]),'\\'
[ 5]  x[2;]←78↑(⍕a[2;1]),'&',(⍕a[2;2]),'\\ \end{array} \right|$'
[ 6]  r←2⍴' '
[ 7]  r[1]←⊂x
[ 8]  r[2]←⊂4↑'¯-'edit⍕d
-------------------------------------------------------------
[ 0]  r←geradet3;d;i;t;x
[ 1]  i←0⍴0
[ 2] t1:→((⍴i)>9)/oba
[ 3]  i←i,((¯10+⍳8),1+⍳8)[?16]
[ 4]  →t1
[ 5] oba:
[ 6]  x←3 3⍴i
[ 7]  d←det3 x
[ 8]  r←2⍴0
[ 9]  t←3 78⍴' '
[10]  t[1;]←78↑'$\left| \begin{array}{ccc}',(⍕x[1;1]),'&',(⍕x[1;2]),'&',(⍕x[1;3]),'\\'
[11]  t[2;]←78↑,(⍕x[2;1]),'&',(⍕x[2;2]),'&',(⍕x[2;3]),'\\'
[12]  t[3;]←78↑,(⍕x[3;1]),'&',(⍕x[3;2]),'&',(⍕x[3;3]),'\\ \end{array} \right|$'
[13]  r[1]←⊂'¯-'edit t
[14]  r[2]←⊂'¯-'edit 6 0⍕d
-------------------------------------------------------------
[ 0]  r←geraminv5;mi;t;x
[ 1] novo:
[ 2]  x←2 2⍴(((¯10+⍳8),1+⍳8)[?16]),(((¯10+⍳8),1+⍳8)[?16]),(((¯10+⍳8),1+⍳8)[?16]),(((¯10+⍳8
      ),1+⍳8)[?16])
[ 3]  →(0=det2 x)/novo
[ 4]  mi←⌹x
[ 5]  r←2⍴0
[ 6]  t←2 78⍴' '
[ 7]  t[1;]←78↑'$\left( \begin{array}{cc}',(⍕x[1;1]),'&',(⍕x[1;2]),'\\'
[ 8]  t[2;]←78↑(⍕x[2;1]),'&',(⍕x[2;2]),'\\ \end{array} \right)$\\*'
[ 9]  r[1]←⊂'¯-'edit t
[10]  r[2]←⊂'¯-'edit(6 2⍕mi[1;2]),' ',(6 2⍕mi[2;2])
-------------------------------------------------------------
[ 0]  r←geraminv6;mi;t;x
[ 1] novo:
[ 2]  x←(((¯10+⍳8),1+⍳8)[?16]),(((¯10+⍳8),1+⍳8)[?16]),(((¯10+⍳8),1+⍳8)[?16])
[ 3]  x←x,(((¯10+⍳8),1+⍳8)[?16]),(((¯10+⍳8),1+⍳8)[?16]),(((¯10+⍳8),1+⍳8)[?16])
[ 4]  x←x,(((¯10+⍳8),1+⍳8)[?16]),(((¯10+⍳8),1+⍳8)[?16]),(((¯10+⍳8),1+⍳8)[?16])
[ 5]  x←3 3⍴x
[ 6]  →(0=det3 x)/novo
[ 7]  mi←⌹x
[ 8]  r←2⍴0
[ 9]  t←3 78⍴' '
[10]  t[1;]←78↑'$\left( \begin{array}{ccc}',(⍕x[1;1]),'&',(⍕x[1;2]),'&',(⍕x[1;3]),'\\'
[11]  t[2;]←78↑(⍕x[2;1]),'&',(⍕x[2;2]),'&',(⍕x[2;3]),'\\'
[12]  t[3;]←78↑(⍕x[3;1]),'&',(⍕x[3;2]),'&',(⍕x[3;3]),'\\ \end{array} \right)$\\*'
[13]  r[1]←⊂'¯-'edit t
[14]  r[2]←⊂'¯-'edit 6 2⍕+/,mi[;2]
-------------------------------------------------------------
```

```
[ 0]  r←gerasis2;x;y;a;b;c;d;e;f;m1;d1;m2;d2;m3;d3;t
[ 1]  x←((¯10+⍳8),1+⍳8)[?16]
[ 2]  y←((¯10+⍳8),1+⍳8)[?16]
[ 3]  a←((¯10+⍳8),1+⍳8)[?16]
[ 4]  b←((¯10+⍳8),1+⍳8)[?16]
[ 5]  d←((¯10+⍳8),1+⍳8)[?16]
[ 6]  e←((¯10+⍳8),1+⍳8)[?16]
[ 7]  c←(a×x)+(b×y)
[ 8]  f←(d×x)+(e×y)
[ 9]  m1←2 2⍴a,b,d,e
[10]  d1←det2 m1
[11]  m2←m1
[12]  m2[;1]←2 1⍴c,f
[13]  d2←det2 m2
[14]  m3←m1
[15]  m3[;2]←2 1⍴c,f
[16]  d3←det2 m3
[17] ⍝x   =   d2÷d1
[18] ⍝ y  =   d3÷d1
[19]  r←2⍴' '
[20]  t←2 78⍴' '
[21]  t[1;]←78↑'$ \left\{ \begin{array}{c}',(⍕a),'x',('-+'[1+b>0]),(⍕|b),'y=',(⍕c),'\\'
[22]  t[2;]←78↑(⍕d),'x',('-+'[1+e>0]),(⍕|e),'y=',(⍕f),'\\ \end{array} \right.$\\*'
[23]  r[1]←⊂'¯-'edit t
[24]  r[2]←⊂'¯-'edit(4 0⍕d2),' ',4 0⍕d3÷d1
------------------------------------------------------------
[ 0]  r←gerasis4;a;b;c;d;d0;d1;d2;d3;e;f;g;h;i;j;k;l;m0;m1;m2;m3;t;x;y;z
[ 1]  r←2⍴0
[ 2]  x←((¯10+⍳8),1+⍳8)[?16]
[ 3]  y←((¯10+⍳8),1+⍳8)[?16]
[ 4]  z←((¯10+⍳8),1+⍳8)[?16]
[ 5]  a←((¯10+⍳8),1+⍳8)[?16]
[ 6]  b←((¯10+⍳8),1+⍳8)[?16]
[ 7]  c←((¯10+⍳8),1+⍳8)[?16]
[ 8]  e←((¯10+⍳8),1+⍳8)[?16]
[ 9]  f←((¯10+⍳8),1+⍳8)[?16]
[10]  g←((¯10+⍳8),1+⍳8)[?16]
[11]  i←((¯10+⍳8),1+⍳8)[?16]
[12]  j←((¯10+⍳8),1+⍳8)[?16]
[13]  k←((¯10+⍳8),1+⍳8)[?16]
[14]  d←(a×x)+(b×y)+(c×z)
[15]  h←(e×x)+(f×y)+(g×z)
[16]  l←(i×x)+(j×y)+(k×z)
[17]  t←5 78⍴' '
[18]  t[1;]←78↑'$ \left\{ \begin{array}{c}'
[19]  t[2;]←78↑(⍕a),'x',('-+'[1+b>0]),(⍕|b),'y',('-+'[1+c>0]),(⍕|c),'z=',(⍕d),'\\'
[20]  t[3;]←78↑(⍕e),'x',('-+'[1+f>0]),(⍕|f),'y',('-+'[1+g>0]),(⍕|g),'z=',(⍕h),'\\'
[21]  t[4;]←78↑(⍕i),'x',('-+'[1+j>0]),(⍕|j),'y',('-+'[1+k>0]),(⍕|k),'z=',(⍕l),'\\'
[22]  t[5;]←78↑'\end{array} \right.$\\*'
[23]  d0←det3 m0←3 3⍴a,b,c,e,f,g,i,j,k
[24]  m1←m0
[25]  m1[;1]←3 1⍴d,h,l
[26]  d1←det3 m1
[27]  m2←m0
[28]  m2[;2]←3 1⍴d,h,l
[29]  d2←det3 m2
[30]  m3←m0
[31]  m3[;3]←3 1⍴d,h,l
[32]  d3←det3 m3
[33]  r[1]←⊂'¯-'edit t
[34]  r[2]←⊂'¯-'edit(5 0⍕d1),' ',(2 0⍕y),' ',(5 0⍕d3)
------------------------------------------------------------
[0]  lixo
```

```
[1]  'Calcule o valor de determinante abaixo:⍀⍀*'
[2]  x←geradet3
[3]  x[1]
[4]  x[2]
-------------------------------------------------------------
[ 0]  questprova207;v1;v2;a;b;c;m2;q
[ 1]  v1←v2←?9⍴12
[ 2]  →(1=?2)/cara
[ 3]  b←?6
[ 4]  a←2×b
[ 5]  v2[q←2?9]←a,b
[ 6]  m2←3 3⍴v2
[ 7]  v1←3 0⍕v1
[ 8]  v1[(⍳3)+¯3+q[1]×3]←' a '
[ 9]  v1[(⍳3)+¯3+q[2]×3]←' b '
[10]  v1←3 9⍴v1
[11]  'Suponha uma matriz $M$ de 3 linhas por 3 colunas. Seu determinante vale'
[12]  '¯-'edit⍕det3 m2
[13]  'e seus elementos s⍀~ao '
[14]  ' $⍀left( ⍀begin{array}{ccc}',v1[1;1 2 3],'&',v1[1;4 5 6],'&',v1[1;7 8 9],'⍀⍀'
[15]  ' ',v1[2;1 2 3],'&',v1[2;4 5 6],'&',v1[2;7 8 9],'⍀⍀'
[16]  ' ',v1[3;1 2 3],'&',v1[3;4 5 6],'&',v1[3;7 8 9],'⍀⍀ ⍀end{array} ⍀right)$⍀⍀*'
[17]  'Sabendo que $a$ vale o dobro de $b$,'
[18]  'determine o valor de $b$. ($a$ e $b$ s⍀~ao positivos).'
[19]  'b vale ',⍕b
[20]  →0
[21] cara:
[22]  b←?6
[23]  a←b+1
[24]  v2[q←2?9]←a,b
[25]  m2←3 3⍴v2
[26]  v1←3 0⍕v1
[27]  v1[(⍳3)+¯3+q[1]×3]←' a '
[28]  v1[(⍳3)+¯3+q[2]×3]←' b '
[29]  v1←3 9⍴v1
[30]  'Suponha uma matriz $M$ de 3 linhas por 3 colunas. Seu determinante vale'
[31]  '¯-'edit⍕det3 m2
[32]  'e seus elementos s⍀~ao '
[33]  ' $⍀left( ⍀begin{array}{ccc}',v1[1;1 2 3],'&',v1[1;4 5 6],'&',v1[1;7 8 9],'⍀⍀'
[34]  ' ',v1[2;1 2 3],'&',v1[2;4 5 6],'&',v1[2;7 8 9],'⍀⍀'
[35]  ' ',v1[3;1 2 3],'&',v1[3;4 5 6],'&',v1[3;7 8 9],'⍀⍀ ⍀end{array} ⍀right)$⍀⍀*'
[36]  'Sabendo que $a$ vale $b+1$, '
[37]  'determine o valor de $b$. ($a$ e $b$ s⍀~ao positivos)'
[38]  'b vale ',⍕b
[39]  →0
-------------------------------------------------------------
[ 0]  opesq vivot22a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivot22 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PLt22   '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[15]  FOLHALAt22←ajusta80 FOLHALAt22
[16]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAt22)⍴' '
[17]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[18]  xk←1 ⋄ resu←0 75⍴' '
[19] testa:→(xk>1↑⍴ylu)/fim
[20]  esse←26 80⍴' '
[21]  f←FOLHALAt22
[22]  esse[1;]←80↑dhx[1;]
[23]  esse[2;]←80↑dhx[2;]
[24]  esse[3;]←80↑4 2⍕VERSAOa←1.06
[25]  esse[4;]←80↑ylu[xk;⍳6]
[26] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[27]  →(36=1↓⍴ylu)/zebra
[28]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[29]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[30]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[31]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[32]  →maiszebra
[33] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[78] terminando:
[79]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[80]  relat[1↑⍴relat;;]←upag
[81]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[82] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[83]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵=' ')/EVENTO),'.tex'
[84]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[85]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivot25

```
[ 0]  r←ti desenvolva n;i
[ 1] ⍝ti=coeficiente de x, expoente de x, coeficiente de y, expoente de y
[ 2] ⍝n=a qual expoente a expressao deve ser elevada (n<=20)
[ 3] ⍝exemplo: 5 desenvolva 2 3 4 6 => (2x∧3 + 4y∧6)∧5
[ 4]  i←1
[ 5]  r←((n+1),3)⍴0
[ 6] t1:→(i>n+1)/fim
[ 7]  r[i;1]←(ti[1]*n+1-i)×(ti[3]*i-1)×PASCAL22[n+1;i]
[ 8]  r[i;2]←ti[2]×n+1-i
[ 9]  r[i;3]←ti[4]×i-1
[10]  i←i+1
[11]  →t1
[12] fim:
------------------------------------------------------------
[0]  r←geracoef1;t;x
[1]  r←2⍴0
[2] novo:x←(6+?6),(3+?4)
[3]  →(3>x[1]-x[2])/novo
[4]  t←2 78⍴' '
[5]  t[1;]←78↑'$\left( \begin{array}{c}',(⍕x[1]),'\\',(⍕x[2]),'\\'
[6]  t[2;]←78↑'\end{array} \right)$'
[7]  r[1]←⊂t
[8]  r[2]←⊂x[2]!x[1]
------------------------------------------------------------
[0]  r←geracoef2;t;x
[1]  r←2⍴0
[2] novo:x←(10+?6),(9+?4)
[3]  →(x[1]<x[2])/novo
[4]  t←2 78⍴' '
[5]  t[1;]←78↑'$\left( \begin{array}{c}',(⍕x[1]),'\\',(⍕x[2]),'\\'
[6]  t[2;]←78↑'\end{array} \right)$'
[7]  r[1]←⊂t
[8]  r[2]←⊂x[2]!x[1]
------------------------------------------------------------
[ 0]  r←geratede4;linha;n;t;ti;z
[ 1]  ti←(?4),(1+?4),(?4),1+?4
[ 2]  n←8+?4
[ 3]  z←ti desenvolva n
[ 4]  linha←4+?n-4
[ 5]  t←2 78⍴' '
[ 6]  r←2⍴' '
[ 7]  →((ti[1]≠1)∧(ti[3]≠1))/os2
[ 8]  →(ti[1]≠1)/soo3
[ 9]  →(ti[3]≠1)/soo1
[10] ambos:t[1;]←78↑'Desenvolva $(x∧{',(⍕ti[2]),'}+y∧{',(⍕ti[4]),'})∧{',(⍕n),'}$'
[11]  →junta
[12] soo1:t[1;]←78↑'Desenvolva $(x∧{',(⍕ti[2]),'}+',(⍕ti[3]),'y∧{',(⍕ti[4]),'})∧{',(⍕n),'}
      $'
[13]  →junta
[14] soo3:t[1;]←78↑'Desenvolva $(',(⍕ti[1]),'x∧{',(⍕ti[2]),'}+y∧{',(⍕ti[4]),'})∧{',(⍕n),'}
```

```
      $'
[15]  →junta
[16] os2:t[1;]←78↑'Desenvolva $(',(⍕ti[1]),'x^{',(⍕ti[2]),'}+',(⍕ti[3]),'y^{',(⍕ti[4]),'})
      ^{',(⍕n),'}$'
[17] junta:t[2;]←78↑'e informe qual o ',ordinais[linha;],' termo da série'
[18]  r[1]←⊂t
[19]  r[2]←⊂z[linha;1],z[linha;2],z[linha;3]
-------------------------------------------------------------
[ 0]  r←geratede5;linha;n;t;ti;z
[ 1]  ti←(?4),(1+?4),(?4),1+?4
[ 2]  n←8+?4
[ 3]  z←ti desenvolva n
[ 4]  linha←4+?n-4
[ 5]  t←2 78⍴' '
[ 6]  r←2⍴' '
[ 7]  →((ti[1]≠1)∧(ti[3]≠1))/os2
[ 8]  →(ti[1]≠1)/soo3
[ 9]  →(ti[3]≠1)/soo1
[10] ambos:t[1;]←78↑'Desenvolva $(x^{',(⍕ti[2]),'}+y^{',(⍕ti[4]),'})^{',(⍕n),'}$'
[11]  →junta
[12] soo1:t[1;]←78↑'Desenvolva $(x^{',(⍕ti[2]),'}+',(⍕ti[3]),'y^{',(⍕ti[4]),'})^{',(⍕n),'}
      $'
[13]  →junta
[14] soo3:t[1;]←78↑'Desenvolva $(',(⍕ti[1]),'x^{',(⍕ti[2]),'}+y^{',(⍕ti[4]),'})^{',(⍕n),'}
      $'
[15]  →junta
[16] os2:t[1;]←78↑'Desenvolva $(',(⍕ti[1]),'x^{',(⍕ti[2]),'}+',(⍕ti[3]),'y^{',(⍕ti[4]),'})
      ^{',(⍕n),'}$'
[17] junta:t[2;]←78↑'e informe qual o coeficiente do termo que tem $x^{',(⍕z[linha;2]),'}$
       e $y^{',(⍕z[linha;3]),'}$'
[18]  r[1]←⊂t
[19]  r[2]←⊂z[linha;1]
-------------------------------------------------------------
[ 0]  r←geratede6;linha;n;t;ti;z
[ 1]  ti←(?3),(1+?3),(?3),1+?3
[ 2]  n←4+?4
[ 3]  z←ti desenvolva n
[ 4]  linha←3+?n-2
[ 5]  t←2 78⍴' '
[ 6]  r←2⍴' '
[ 7]  →((ti[1]≠1)∧(ti[3]≠1))/os2
[ 8]  →(ti[1]≠1)/soo3
[ 9]  →(ti[3]≠1)/soo1
[10] ambos:t[1;]←78↑'Desenvolva $(x^{',(⍕ti[2]),'}+y^{',(⍕ti[4]),'})^{',(⍕n),'}$'
[11]  →junta
[12] soo1:t[1;]←78↑'Desenvolva $(x^{',(⍕ti[2]),'}+',(⍕ti[3]),'y^{',(⍕ti[4]),'})^{',(⍕n),'}
      $'
[13]  →junta
[14] soo3:t[1;]←78↑'Desenvolva $(',(⍕ti[1]),'x^{',(⍕ti[2]),'}+y^{',(⍕ti[4]),'})^{',(⍕n),'}
      $'
[15]  →junta
[16] os2:t[1;]←78↑'Desenvolva $(',(⍕ti[1]),'x^{',(⍕ti[2]),'}+',(⍕ti[3]),'y^{',(⍕ti[4]),'})
      ^{',(⍕n),'}$'
[17] junta:t[2;]←78↑'e informe qual o coeficiente do termo que tem $x^{',(⍕z[linha;2]),'}$
       e $y^{',(⍕z[linha;3]),'}$'
[18]  r[1]←⊂t
[19]  r[2]←⊂z[linha;1]
-------------------------------------------------------------
[ 0]  r←geratria3;t;x;y
[ 1] novo:x←6+?6
[ 2]  y←3+?5
[ 3]  →(y>x-2)/novo
[ 4]  r←2⍴0
```

```
[ 5]  t←2 78ρ' '
[ 6]  t[1;]←78↑'Desenvolva o triângulo de Pascal até a linha ',(⍕x),' e informe'
[ 7]  t[2;]←78↑'qual o ',(trim ordinais[y;]),' elemento dessa linha. (Ela começa com ',(⍕P
      ASCAL22[x;⍳2]),').'
[ 8]  r[1]←⊂t
[ 9]  r[2]←⊂PASCAL22[x;y]
-------------------------------------------------------------
[ 0]  montapascal tam;i;j
[ 1]  PASCAL←tamρ0
[ 2]  PASCAL[;1]←1
[ 3]  PASCAL[2;1 2]←1
[ 4]  i←2
[ 5] t1:→(i>tam[1])/acabou
[ 6]  j←2
[ 7] t2:→(j>tam[2])/nov
[ 8]  PASCAL[i;j]←PASCAL[i-1;j-1]+PASCAL[i-1;j]
[ 9]  j←j+1
[10]  →t2
[11] nov:i←i+1
[12]  →t1
[13] acabou:
-------------------------------------------------------------
[ 0]  opesq vivot25a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivot25 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10ρ' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PLt25   '
[ 9]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
[15]  FOLHALAt25←ajusta80 FOLHALAt25
[16]  relat←((2+1↑ρylu),1 0+ρFOLHALAt25)ρ' '
[17]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[18]  xk←1 ⋄ resu←0 9ρ0
[19] testa:→(xk>1↑ρylu)/fim
[20]  esse←21 80ρ' '
[21]  f←FOLHALAt25
[22]  esse[1;]←80↑dhx[1;]
[23]  esse[2;]←80↑dhx[2;]
[24]  esse[3;]←80↑4 2⍎VERSAOa←1.07
[25]  esse[4;]←80↑ylu[xk;⍳6]
[26] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[27]  →(36=1↓ρylu)/zebra
[28]  qlinha←(1=∧/[2]f[;⍳4]=((1↑ρf),4)ρ'⍀#05')/⍳1↑ρf
[29]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[30]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[31]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[32]  →maiszebra
[33] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
[34] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[35] ⍝ ↓↓↓↓ e ↑↑↑↑↑ idem
[36] maiszebra:
[37]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[38]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
```

```
[39]  esse[20;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[40]  esse[21;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[41] inica:
[42]  xx←geracoef1
[43]  esse[7+⍳2;]←2 80↑⊃xx[1]
[44]  resp←resp,⊃xx[2]
[45]  xx←geracoef2
[46]  esse[9+⍳2;]←2 80↑⊃xx[1]
[47]  resp←resp,⊃xx[2]
[48]  xx←geratria3
[49]  esse[11+⍳2;]←2 80↑⊃xx[1]
[50]  resp←resp,⊃xx[2]
[51]  xx←geratede4
[52]  esse[13+⍳2;]←2 80↑⊃xx[1]
[53]  resp←resp,⊃xx[2]
[54]  xx←geratede5
[55]  esse[15+⍳2;]←2 80↑⊃xx[1]
[56]  resp←resp,⊃xx[2]
[57]  xx←geratede6
[58]  esse[17+⍳2;]←2 80↑⊃xx[1]
[59]  resp←resp,⊃xx[2]
[60]  resu←resu,[1]1 9⍴resp
[61]  acuja←(f[;2]='#')/⍳1↑⍴f
[62]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[63]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[64]  ⍞←(⍕xk←xk+1),'-'
[65]  →testa
[66] fim:upag←(1 0+⍴f)⍴' '
[67]  →(1=≡n)/elafa
[68]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[69]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[70]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 8 0 8 0 8 0 13 0 3 0 3 0 13 0 10 0)⍀resu
[71]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[72]  →terminando
[73] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[74] elafa:aaa←(ylu[;⍳36],8 0 8 0 8 0 13 0 3 0 3 0 13 0 10 0⍀0 1↓resu)
[75] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[76]  lixonol←aaa ⎕FM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[77]  '!!!!!  Arquivo GPA com ',(⍀1↑⍴aaa),' linhas e ',(⍀1↓⍴aaa),' colunas'
[78] terminando:
[79]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[80]  relat[1↑⍴relat;;]←upag
[81]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[82] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[83]  lixonol←lixonol ⎕FM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[84]  lixonol←⍞EX 2 10⍴'quantos   matriz    '
[85]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivot30

```
[0]  AVISO
[1]  'Limitado a 70 copias ou perto disso...'
------------------------------------------------------------
[ 0]  r←geradirt x;lin;i;tam
[ 1]  r←(((+/(,x[;1])='%')÷3),20)⍴' '
[ 2]  tam←0
[ 3]  lin←1
[ 4]  i←1
[ 5] t1:→(i>1↑⍴x)/fim
[ 6]  →((x[i;1]='%')∧(x[i;2]='i'))/comeca
[ 7]  →((x[i;1]='%')∧(x[i;2]='f'))/termina
```

```
[ 8]  →((x[i;1]='%')∧(x[i;2]='r'))/resposta
[ 9]  tam←tam+1
[10]  i←i+1
[11]  →t1
[12] comeca:r[lin;⍳3]←x[i;3 4 5]
[13]  r[lin;5+⍳5]←5 0⍕i
[14]  tam←0
[15]  i←i+1
[16]  →t1
[17] resposta:r[lin;10+⍳5]←5 0⍕tam
[18]  i←i+1
[19]  →t1
[20] termina:r[lin;15+⍳5]←5 0⍕i-1
[21]  lin←lin+1
[22]  i←i+1
[23]  →t1
[24] fim:
-------------------------------------------------------------
[ 0]  r←gerat30 n;x;quais;i;y;resps;defs
[ 1]  DEFIt30←ajusta80 DEFIt30
[ 2]  x←geradirt DEFIt30
[ 3]  y←((1↑⍴x),4)⍴⍉,x,' '
[ 4]  quais←n?1↑⍴y
[ 5]  resps←''
[ 6]  defs←0 80⍴' '
[ 7]  i←1
[ 8] t1:→(i>n)/fim
[ 9]  defs←defs,[1]DEFIt30[y[quais[i];2]+⍳y[quais[i];3];]
[10]  resps←resps,'|',trim DEFIt30[y[quais[i];4];]
[11]  →(i≠n÷2)/pula
[12]  resps←resps,'|'
[13] pula:
[14]  i←i+1
[15]  →t1
[16] fim:r←2⍴0
[17]  r[1]←⊂defs
[18]  r[2]←⊂1↓resps
[19] ⍝'Tamanho ',⍕1↑⍴r
-------------------------------------------------------------
[ 0]  todost30;r;lixo
[ 1] ⍝ esta funcao imprime todos os exercicios do banco de dados
[ 2]  DEFIt30←ajusta80 DEFIt30
[ 3]  r←ajusta80 ΔFM'c:\apl2\VIVOBLO1'
[ 4]  r←r,[1]1 80⍴80↑'\section*{Listagem de todos os problemas de t30}'
[ 5]  r←r,[1]1 80⍴80↑'\begin{enumerate}'
[ 6]  r←r,[1]DEFIt30
[ 7]  r←r,[1]1 80⍴80↑'\end{enumerate}'
[ 8]  r←r,[1]1 80⍴80↑'\end{document}'
[ 9]  lixo←r ΔFM'c:\apl2\todost30.tex'
[10]  'Salvo em c:\apl2\ com o nome de todost30.tex'
-------------------------------------------------------------
[ 0]  opesq vivot30a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLt30   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
```

```
[10]  FOLHALAt30←ajusta80 FOLHALAt30
[11]  relat←((2+1↑⍴ylu),1 30+⍴FOLHALAt30)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 254⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←172 80⍴' '
[16]  f←FOLHALAt30
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[171;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[172;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerat30 10
[35]  →(163≥1↑⍴⊃xx[1])/blz88
[36]  ⍞←'$'
[37]  →inica
[38] blz88:
[39]  →(250≥1↑⍴⊃xx[2])/blz89
[40]  ⍞←'%'
[41]  →inica
[42] blz89:
[43]  esse[7+⍳163;]←163 80↑⊃xx[1]
[44]  resp←(3 0⍕resp),':',250↑⊃xx[2]
[45]  resu←resu,[1]1 254⍴resp
[46]  acuja←(f[;2]='#')/⍳1↑⍴f
[47]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4 5],' ';]
[48]  relat[1+xk;;]←(((⍴f)+0 30)↑f),[1](1,30+1↓⍴f)⍴200↑'\clearpage'
[49]  ⍞←(⍕xk←xk+1),'-'
[50]  →testa
[51] fim:upag←(1 30+⍴f)⍴' '
[52]  →(1=≡n)/elafa
[53]  upag[1;]←(1↓⍴upag)↑'\scriptsize \begin{verbatim}'
[54]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO,'  so os primeiros 110
       bytes'
[55]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),110)↑resu
[56]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[57]  →terminando
[58] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[59]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[60]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[61] terminando:
[62]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[63]  relat[1↑⍴relat;;]←upag
[64]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[65]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[66]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[67]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivot35

```
[0]  AVISO
[1]  'Limitado a 70 copias ou perto disso...'
[2]  'DICA:'
[3]  ' Para descrever a soluçto escrever o texto entre %f e o %i do próximo. O gerador de
      '
[4]  ' exercícios do vivoxxx nto toma conhecimento disso e o todosxxx imprime-o normalmen
     te.'
-------------------------------------------------------------
[ 0]  exemplost35;r;lixo
[ 1] ⍝ esta funcao imprime todos os exercicios do banco de dados
[ 2]  EXEMPLOSt35←ajusta80 EXEMPLOSt35
[ 3]  r←ajusta80 ΔFM'c:\apl2\VIVOBLO1'
[ 4]  r←r,[1]1 80⍴80↑'\section*{Exemplos de t35}'
[ 5]  r←r,[1]EXEMPLOSt35
[ 6]  r←r,[1]1 80⍴80↑'\end{document}'
[ 7]  lixo←r ΔFM'c:\apl2\exemt35.tex'
[ 8]  'Salvo em c:\apl2\ com o nome de exemt35.tex'
-------------------------------------------------------------
[ 0]  r←geradirt x;lin;i;tam
[ 1]  r←(((+/(,x[;1])='%')÷3),20)⍴' '
[ 2]  tam←0
[ 3]  lin←1
[ 4]  i←1
[ 5] t1:→(i>1↑⍴x)/fim
[ 6]  →((x[i;1]='%')∧(x[i;2]='i'))/comeca
[ 7]  →((x[i;1]='%')∧(x[i;2]='f'))/termina
[ 8]  →((x[i;1]='%')∧(x[i;2]='r'))/resposta
[ 9]  tam←tam+1
[10]  i←i+1
[11]  →t1
[12] comeca:r[lin;⍳3]←x[i;3 4 5]
[13]  r[lin;5+⍳5]←5 0⍕i
[14]  tam←0
[15]  i←i+1
[16]  →t1
[17] resposta:r[lin;10+⍳5]←5 0⍕tam
[18]  i←i+1
[19]  →t1
[20] termina:r[lin;15+⍳5]←5 0⍕i-1
[21]  lin←lin+1
[22]  i←i+1
[23]  →t1
[24] fim:
-------------------------------------------------------------
[  0]  geraquestao208
[  1]  'situacao atual ',⍕cara,cara2,cara3,cara4,cara5
[  2]  ' Nesta quest\~ao voc\^e deve construir uma distribuiç\~ao de frequ\^encia.'
[  3]  ' Lembrando, isto é uma tabela onde na primeira linha aparecem os valores'
[  4]  ' possíveis da variável e abaixo a probabilidade esperada para cada um dos'
[  5]  ' valores da variável. '
[  6]  ' Observaç\~ao importante: opere com no mínimo 3 casas decimais. '
[  7]  cara←1+4|cara
[  8]  →(cara=1)/dados
[  9]  →(cara=2)/baralho
[ 10]  →(cara=3)/moedas
[ 11]  →(cara=4)/loteria
[ 12] dados:
[ 13]  ' Jogue 2 dados convencionais honestos e examine a variável '
[ 14]  cara2←1+5|cara2
[ 15]  →(cara2=1)/doisum
[ 16]  →(cara2=2)/doisdois
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[ 17]  →(cara2=3)/doistres
[ 18]  →(cara2=4)/doisquatro
[ 19]  →(cara2=5)/doiscinco
[ 20] doisum:
[ 21]  ' X=a soma dos dois dados. Considere entł~ao a primeira linha da '
[ 22]  ' distribuiçł~ao '
[ 23]  ' como 2,3,4,5,6,7,8,9,10,11,12. Escreva a segunda linha.'
[ 24]  ' a resposta e den=36; num=1,2,3,4,5,6,5,4,3,2,1'
[ 25]  →0
[ 26] doisdois:
[ 27]  ' X=o menor valor dos dois dados. Considere entł~ao a primeira linha da'
[ 28]  ' distribuiçł~ao como 1,2,3,4,5,6. Escreva a segunda linha.'
[ 29]  ' a resposta e den=36, num=11,9,7,5,3,1'
[ 30]  →0
[ 31] doistres:
[ 32]  ' X=o maior valor dos dois dados. Considere entł~ao a primeira linha da'
[ 33]  ' distribuiçł~ao como 1,2,3,4,5,6. Escreva a segunda linha.'
[ 34]  ' a resposta e den=36, num=1,3,5,7,9,11'
[ 35]  →0
[ 36] doisquatro:
[ 37]  ' X=o número de primos mostrados nos dois dados. Considere entł~ao a primeira'
[ 38]  ' linha da distribuiçł~ao como 0,1,2. Escreva a segunda linha.'
[ 39]  ' (lembre que 1 nł~ao é primo!). '
[ 40]  ' a resposta e 9/36, 18/36 e 9/36'
[ 41]  →0
[ 42] doiscinco:
[ 43]  ' X=o número de primos ímpares mostrados nos dois dados. Considere entł~ao'
[ 44]  ' a primeira linha da distribuiçł~ao como 0,1,2. Escreva a segunda linha.'
[ 45]  ' (lembre que 1 nł~ao é primo!). '
[ 46]  ' a resposta e 16/36, 16/36 e 4/36'
[ 47]  →0
[ 48] baralho:
[ 49]  ' Pego 3 baralhos convencionais honestos e de cada um deles extraio uma carta. '
[ 50]  ' totalizando 3 cartas. Baralho: naipes=paus, copas, espadas e ouros; ł  '
[ 51]  '   cartas: A,2,3,4,5,6,7,8,9,10,J,Q,K. ł '
[ 52]  ' e examine a variável '
[ 53]  cara3←1+5|cara3
[ 54]  →(cara3=1)/tresum
[ 55]  →(cara3=2)/tresdois
[ 56]  →(cara3=3)/trestres
[ 57]  →(cara3=4)/tresquatro
[ 58]  →(cara3=5)/trescinco
[ 59] tresum:
[ 60]  ' X=quantidade de cartas pretas com número. Considere entł~ao a primeira '
[ 61]  ' linha como sendo 0,1,2,3. Escreva a segunda linha. '
[ 62]  ' a resposta e (18/52) dai... 0.279 0.443 0.233 0.041'
[ 63]  →0
[ 64] tresdois:
[ 65]  ' X=quantidade de figuras de paus. Considere entł~ao a primeira '
[ 66]  ' linha como sendo 0,1,2,3. Escreva a segunda linha. '
[ 67]  ' a resposta e (3/52) dai... 0.836 0.151 0.084 e 0.00019 '
[ 68]  →0
[ 69] trestres:
[ 70]  ' X=quantidade de cartas vermelhas com letra. Considere entł~ao a primeira '
[ 71]  ' linha como sendo 0,1,2,3. Escreva a segunda linha. '
[ 72]  ' a resposta e (8/52) dai... 0.605 0.328 0.058 0.0036'
[ 73]  →0
[ 74] tresquatro:
[ 75]  ' X=quantidade de cartas com número. Considere entł~ao a primeira '
[ 76]  ' linha como sendo 0,1,2,3. Escreva a segunda linha. '
[ 77]  ' a resposta e (36/52) dai... 0.029 0.195 0.441 0.331 '
[ 78]  →0
[ 79] trescinco:
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[ 80]  ' X=quantidade de cartas com letra. Considere ent\~ao a primeira '
[ 81]  ' linha como sendo 0,1,2,3. Escreva a segunda linha. '
[ 82]  ' a resposta e (16/52) dai... 0.331 0.441 0.195 0.029'
[ 83]  →0
[ 84] moedas:
[ 85]  cara4←1+6|cara4
[ 86]  →(cara4=1)/quaum
[ 87]  →(cara4=2)/quadois
[ 88]  →(cara4=3)/quatres
[ 89]  →(cara4=4)/quaquatro
[ 90]  →(cara4=5)/quacinco
[ 91]  →(cara4=6)/quaseis
[ 92] quaum:
[ 93]  ' Considere o lançamento de 4 moedas honestas. Examine a variável '
[ 94]  ' X=quantidade de caras mostradas. A primeira linha da distribuiç\~ao vai'
[ 95]  ' ser: 0,1,2,3,4. Escreva a segunda linha. '
[ 96]  ' a resposta e 0.0625 0.25 0.375 0.25 0.0625 '
[ 97]  →0
[ 98] quadois:
[ 99]  ' Considere o lançamento de 4 moedas honestas. Examine a variável '
[100]  ' X=quantidade de coroas mostradas. A primeira linha da distribuiç\~ao vai'
[101]  ' ser: 0,1,2,3,4. Escreva a segunda linha. '
[102]  ' a resposta e 0.0625 0.25 0.375 0.25 0.0625 '
[103]  →0
[104] quatres:
[105]  ' Considere o lançamento de 3 moedas honestas. Examine a variável '
[106]  ' X=quantidade de caras mostradas. A primeira linha da distribuiç\~ao vai'
[107]  ' ser: 0,1,2,3. Escreva a segunda linha. '
[108]  ' a resposta e 0.125 0.375 0.375 0.125'
[109]  →0
[110] quaquatro:
[111]  ' Considere o lançamento de 3 moedas honestas. Examine a variável '
[112]  ' X=quantidade de coroas mostradas. A primeira linha da distribuiç\~ao vai'
[113]  ' ser: 0,1,2,3. Escreva a segunda linha. '
[114]  ' a resposta e 0.125 0.375 0.375 0.125'
[115]  →0
[116] quacinco:
[117]  ' Considere o lançamento de 5 moedas honestas. Examine a variável '
[118]  ' X=quantidade de caras mostradas. A primeira linha da distribuiç\~ao vai'
[119]  ' ser: 0,1,2,3,4,5. Escreva a segunda linha. '
[120]  ' a resposta e 0.031 0.156 0.312 0.312 0.156 0.031'
[121]  →0
[122] quaseis:
[123]  ' Considere o lançamento de 5 moedas honestas. Examine a variável '
[124]  ' X=quantidade de coroas mostradas. A primeira linha da distribuiç\~ao vai'
[125]  ' ser: 0,1,2,3,4,5. Escreva a segunda linha. '
[126]  ' a resposta e 0.031 0.156 0.312 0.312 0.156 0.031'
[127]  →0
[128] loteria:
[129]  ' Considere 5 extraç\~oes consecutivas da Loteria Federal do Brasil '
[130]  ' e nestas considere apenas o primeiro pr\^emio (um número menor do'
[131]  ' que 100.000).'
[132]  cara5←1+5|cara5
[133]  →(cara5=1)/cinum
[134]  →(cara5=2)/cindois
[135]  →(cara5=3)/cintres
[136]  →(cara5=4)/cinquatro
[137]  →(cara5=5)/cincinco
[138] cinum:
[139]  ' Examine a variável X=extraç\~oes cujo resultado foi um número par '
[140]  ' A primeira linha da distribuiçto é 0,1,2,3,4,5. Escreva a segunda linha '
[141]  ' a resposta e 0.031 0.156 0.312 0.312 0.156 0.031'
[142]  →0
```

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[143] cindois:
[144]  ' Examine a variável X=extraç⍀~oes que deram um número divisivel por 3.'
[145]  ' A primeira linha da distribuiçto é 0,1,2,3,4,5. Escreva a segunda linha '
[146]  ' a resposta e 0.131 0.329 0.329 0.164 0.041 0.0041 '
[147]  →0
[148] cintres:
[149]  ' Examine a variável X=extraç⍀~oes que deram um número divisivel por 7.'
[150]  ' A primeira linha da distribuiçto é 0,1,2,3,4,5. Escreva a segunda linha '
[151]  ' a resposta e 0.462 0.385 0.128 0.021 0.0017 0.000059'
[152]  →0
[153] cinquatro:
[154]  ' Examine a variável X=extraç⍀~oes que deram um número menor que 10.000'
[155]  ' A primeira linha da distribuiçto é 0,1,2,3,4,5. Escreva a segunda linha '
[156]  ' a resposta e 0.590 0.328 0.0729 0.0081 0.00045 0.00001'
[157]  →0
[158] cincinco:
[159]  ' Examine a variável X=extraç⍀~oes que deram um número maior que 90.000'
[160]  ' A primeira linha da distribuiçto é 0,1,2,3,4,5. Escreva a segunda linha '
[161]  ' a resposta e 0.00001 0.00045 0.0081 0.0729 0.328 0.590'
[162]  →0
-------------------------------------------------------------
[ 0]  r←gerat35 n;x;quais;i;y;resps;defs
[ 1]  DEFIt35←ajusta80 DEFIt35
[ 2]  x←geradirt DEFIt35
[ 3]  y←((1↑⍴x),4)⍴⍕,x,' '
[ 4]  quais←n?1↑⍴y
[ 5]  resps←''
[ 6]  defs←0 80⍴' '
[ 7]  i←1
[ 8] t1:→(i>n)/fim
[ 9]  defs←defs,[1]DEFIt35[y[quais[i];2]+⍳y[quais[i];3];]
[10]  resps←resps,' | ',trim DEFIt35[y[quais[i];4];]
[11]  i←i+1
[12]  →(i≠6)/t1
[13]  resps←resps,'|'
[14]  →t1
[15] fim:r←2⍴0
[16]  r[1]←⊂defs
[17]  r[2]←⊂1↓resps
[18] ⍝'Tamanho ',⍕1↑⍴r
-------------------------------------------------------------
[ 0]  todost35;r;lixo
[ 1] ⍝ esta funcao imprime todos os exercicios do banco de dados
[ 2]  DEFIt35←ajusta80 DEFIt35
[ 3]  r←ajusta80 ΔFM'c:⍀apl2⍀VIVOBLO1'
[ 4]  r←r,[1]1 80⍴80↑'⍀section*{Listagem de todos os problemas de t35}'
[ 5]  r←r,[1]1 80⍴80↑'⍀begin{enumerate}'
[ 6]  r←r,[1]DEFIt35
[ 7]  r←r,[1]1 80⍴80↑'⍀end{enumerate}'
[ 8]  r←r,[1]1 80⍴80↑'⍀end{document}'
[ 9]  lixo←r ΔFM'c:⍀apl2⍀todost35.tex'
[10]  'Salvo em c:⍀apl2⍀ com o nome de todost35.tex'
-------------------------------------------------------------
[ 0]  opesq vivot35a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLt35   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
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[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAt35←ajusta80 FOLHALAt35
[11]  relat←((2+1↑⍴ylu),1 30+⍴FOLHALAt35)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 254⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←172 80⍴' '
[16]  f←FOLHALAt35
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[171;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[172;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerat35 10
[35]  →(163≥1↑⍴⊃xx[1])/blz88
[36]  ⎕←'$'
[37]  →inica
[38] blz88:
[39]  →(250≥1↑⍴⊃xx[2])/blz89
[40]  ⎕←'%'
[41]  →inica
[42] blz89:
[43]  esse[7+⍳163;]←163 80↑⊃xx[1]
[44]  resp←(3 0⍕resp),':',250↑⊃xx[2]
[45]  resu←resu,[1]1 254⍴resp
[46]  acuja←(f[;2]='#')/⍳1↑⍴f
[47]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4 5],' ';]
[48]  relat[1+xk;;]←(((⍴f)+0 30)↑f),[1](1,30+1↓⍴f)⍴200↑'\clearpage'
[49]  ⎕←(⍕xk←xk+1),'-'
[50]  →testa
[51] fim:upag←(1 30+⍴f)⍴' '
[52]  →(1=≡n)/elafa
[53]  upag[1;]←(1↓⍴upag)↑'\scriptsize \begin{verbatim}'
[54]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO,'  so os primeiros 110
       bytes'
[55]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),110)↑resu
[56]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[57]  →terminando
[58] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[59]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[60]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[61] terminando:
[62]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[63]  relat[1↑⍴relat;;]←upag
[64]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[65]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[66]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[67]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivot36

```
[ 0]  r←aumentaprimog sem;x;z
[ 1]  z←⍳0
[ 2]  x←sem
[ 3] vorta:→(9<⍴z)/fim
[ 4]  →(primolento x)/sim
[ 5]  x←x+2
[ 6]  →vorta
[ 7] sim:z←z,x
[ 8]  x←x+2
[ 9]  →vorta
[10] fim:r←z
------------------------------------------------------------
[ 0]  criacasot36;i;j
[ 1]  PRIMOG←⍳0
[ 2]  PRIMOG←PRIMOG,aumentaprimog⍤('123456789'[?9⍴9]),'731'[?3]
[ 3]  PRIMOG←PRIMOG,aumentaprimog⍤('123456789'[?9⍴9]),'731'[?3]
[ 4]  PRIMOG←PRIMOG,aumentaprimog⍤('123456789'[?9⍴9]),'731'[?3]
[ 5]  PRIMOG←PRIMOG,aumentaprimog⍤('123456789'[?9⍴9]),'731'[?3]
[ 6]  PRIMOG←PRIMOG,aumentaprimog⍤('123456789'[?9⍴9]),'731'[?3]
[ 7]  PRIMOG←PRIMOG,aumentaprimog⍤('123456789'[?9⍴9]),'731'[?3]
[ 8]  PRIMOG←PRIMOG,aumentaprimog⍤('123456789'[?9⍴9]),'731'[?3]
[ 9]  PRIMOG←PRIMOG,aumentaprimog⍤('123456789'[?9⍴9]),'731'[?3]
[10]  PRIMOG←PRIMOG,aumentaprimog⍤('123456789'[?9⍴9]),'731'[?3]
[11]  PRIMOG←PRIMOG,aumentaprimog⍤('123456789'[?9⍴9]),'731'[?3]
[12]  CASOt36←200 2⍴0
[13]  CASOt36[⍳100;1]←100↑PRIMOG
[14]  CASOt36[⍳100;2]←1
[15]  i←101
[16] t1:→(i>200)/fim
[17]  j←5000+2?10000
[18]  j←j[⍋j]
[19]  CASOt36[i;1]←PRIMO[j[1]]×PRIMO[j[2]]
[20]  CASOt36[i;2]←PRIMO[j[2]]
[21]  i←i+1
[22]  →t1
[23] fim:
[24]  CASOt36←CASOt36[200?200;]
[25]  CASOt36←CASOt36[⍋CASOt36[;1];]
------------------------------------------------------------
[0]  r←geracasot36;i
[1]  r←2⍴0
[2]  i←4?1↑⍴CASOt36
[3]  r[1]←⊂CASOt36[i;1]
[4]  r[2]←⊂CASOt36[i;2]
------------------------------------------------------------
[ 0]  r←ini aumentaprimog;x;PRIMOG
[ 1]  PRIMOG←x←ini
[ 2] vorta:→(9<⍴PRIMOG)/fim
[ 3]  →(primolento x)/sim
[ 4]  x←x+2
[ 5]  →vorta
[ 6] sim:PRIMOG←PRIMOG,x
[ 7]  x←x+2
[ 8]  →vorta
[ 9] fim:r←PRIMOG
------------------------------------------------------------
[ 0]  r←primolento x;y;i
[ 1]  →((0=2|x)∧(x≠2))/comp
[ 2]  y←⌈x*0.5
[ 3]  i←3
[ 4] t1:→(i>y)/fim
```

```
[ 5]  →(0=i|x)/comp
[ 6]  i←i+2
[ 7]  →t1
[ 8] comp:r←0
[ 9]  →0
[10] fim:r←1
[11]  →0
------------------------------------------------------------
[ 0]  resp←k rabin n;w;i;s;x;j;resp;d
[ 1]  →(n>999999999999)/overf
[ 2]  resp←1 ⍝ 1=primo
[ 3]  →((n=2)∨(n=3))/fim
[ 4]  →(0=2|n)/composto
[ 5]  i←1
[ 6]  s←0
[ 7]  d←n-1
[ 8] vorta:
[ 9]  →(0≠2|d)/fui
[10]  d←d÷2
[11]  s←s+1
[12]  →vorta
[13] fui:
[14] t1:→(i>k)/fim
[15]  w←1+?n-2
[16]  x←xyn(w,d,n)
[17]  →((x=1)∨(x=n-1))/soma
[18] t2:j←1
[19] t3:→(j>s)/zerao
[20]  x←xyn(x,2,n)
[21]  →(x=1)/composto
[22]  →(x=n-1)/soma
[23]  j←j+1
[24]  →t3
[25] zerao:
[26]  →(x≠n-1)/composto
[27]  →soma
[28] composto:
[29]  resp←0
[30]  →0
[31] soma:
[32]  i←i+1
[33]  →t1
[34] fim:
[35]  →0
[36] overf:'deu overflow'
------------------------------------------------------------
[ 0]  testa k;i;w;x1;x2
[ 1]  i←10
[ 2] t1:→(i>k)/fim
[ 3]  w←i
[ 4]  x1←primolento w
[ 5]  x2←2 rabin w
[ 6]  →(x1=x2)/soma
[ 7]  w,x1,x2
[ 8] soma:i←i+1
[ 9]  →t1
[10] fim:
------------------------------------------------------------
[ 0]  opesq vivot36a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
```

```
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLt36   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAt36←ajusta80 FOLHALAt36
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAt36)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 5⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←13 80⍴' '
[16]  f←FOLHALAt36
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[12;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[13;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracasot36
[35]  esse[7+⍳4;]←4 80⍴4 80↑15 0⍎4 1⍴⊃xx[1]
[36]  resp←resp,,⊃xx[2]
[37]  resu←resu,[1]1 5⍴resp
[38]  acuja←(f[;2]='#')/⍳1↑⍴f
[39]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[40]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[41]  ⍞←(⍎xk←xk+1),'-'
[42]  →testa
[43] fim:upag←(1 0+⍴f)⍴' '
[44]  →(1=≡n)/elafa
[45]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[46]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[47]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0 8 0 8 0)⍎resu
[48]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[49]  →terminando
[50] elafa:aaa←(ylu[;⍳36],9 0⍎0 1↓resu)
[51]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[ 0]  r←xyn oper;x;y;n;tmp
[ 1] ⍝ xyn calcula (x*y) mod n, atraves do alg. addition chaining sch96p.244
[ 2]  x←oper[1] ⋄ y←oper[2] ⋄ n←oper[3]
[ 3]  →(y≠1)/difa
[ 4]  r←n|x
```

```
[ 5]  →fim
[ 6] difa:→(0=2|y)/par
[ 7] impar:tmp←xyn(x,((y-1)÷2),n)
[ 8]  tmp←n|(tmp×tmp)
[ 9]  tmp←n|(tmp×x)
[10]  r←tmp
[11]  →fim
[12] par:tmp←xyn(x,(y÷2),n)
[13]  r←n|(tmp×tmp)
[14] fim:
------------------------------------------------------------
```

vivot45

```
[0]  AVISO
[1]  'Limitado a 70 copias ou perto disso...'
[2]  'separador de respostas eh |||||||'
------------------------------------------------------------
[ 0]  r←geradirt x;lin;i;tam
[ 1]  r←(((+/(,x[;1])='%')÷3),20)⍴' '
[ 2]  tam←0
[ 3]  lin←1
[ 4]  i←1
[ 5] t1:→(i>1↑⍴x)/fim
[ 6]  →((x[i;1]='%')∧(x[i;2]='i'))/comeca
[ 7]  →((x[i;1]='%')∧(x[i;2]='f'))/termina
[ 8]  →((x[i;1]='%')∧(x[i;2]='r'))/resposta
[ 9]  tam←tam+1
[10]  i←i+1
[11]  →t1
[12] comeca:r[lin;⍳3]←x[i;3 4 5]
[13]  r[lin;5+⍳5]←5 0⍕i
[14]  tam←0
[15]  i←i+1
[16]  →t1
[17] resposta:r[lin;10+⍳5]←5 0⍕tam
[18]  i←i+1
[19]  →t1
[20] termina:r[lin;15+⍳5]←5 0⍕i-1
[21]  lin←lin+1
[22]  i←i+1
[23]  →t1
[24] fim:
------------------------------------------------------------
[ 0]  r←gerat45 n;x;quais;i;y;resps;defs
[ 1]  DEFIt45←ajusta80 DEFIt45
[ 2]  x←geradirt DEFIt45
[ 3]  y←((1↑⍴x),4)⍴⍉x,' '
[ 4]  quais←n?1↑⍴y
[ 5]  resps←''
[ 6]  defs←0 80⍴' '
[ 7]  i←1
[ 8] t1:→(i>n)/fim
[ 9]  defs←defs,[1]DEFIt45[y[quais[i];2]+⍳y[quais[i];3];]
[10]  resps←resps,' | ',trim DEFIt45[y[quais[i];4];]
[11]  i←i+1
[12]  →t1
[13] fim:r←2⍴0
[14]  r[1]←⊂defs
[15]  r[2]←⊂1↓resps
[16] ⍝'Tamanho ',⍕1↑⍴r
------------------------------------------------------------
```

```
[ 0]  todost45;r;lixo
[ 1] ⍝ esta funcao imprime todos os exercicios do banco de dados
[ 2]  DEFIt45←ajusta80 DEFIt45
[ 3]  r←ajusta80 ΔFM'c:\apl2\VIVOBLO1'
[ 4]  r←r,[1]1 80⍴80↑'\section*{Listagem de todos os problemas de t45}'
[ 5]  r←r,[1]1 80⍴80↑'\begin{enumerate}'
[ 6]  r←r,[1]DEFIt45
[ 7]  r←r,[1]1 80⍴80↑'\end{enumerate}'
[ 8]  r←r,[1]1 80⍴80↑'\end{document}'
[ 9]  lixo←r ΔFM'c:\apl2\todost45.tex'
[10]  'Salvo em c:\apl2\ com o nome de todost45.tex'
------------------------------------------------------------
[ 0]  opesq vivot45a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLt45   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAt45←ajusta80 FOLHALAt45
[11]  relat←((2+1↑⍴ylu),1 30+⍴FOLHALAt45)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 254⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←172 80⍴' '
[16]  f←FOLHALAt45
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.06
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[171;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[172;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerat45 10
[35]  →(163≥1↑⍴⊃xx[1])/blz88
[36]  ⍞←'$'
[37]  →inica
[38] blz88:
[39]  →(250≥1↑⍴⊃xx[2])/blz89
[40]  ⍞←'%'
[41]  →inica
[42] blz89:
[43]  esse[7+⍳163;]←163 80↑⊃xx[1]
[44]  resp←(3 0⍕resp),':',250↑⊃xx[2]
[45]  resu←resu,[1]1 254⍴resp
[46]  acuja←(f[;2]='#')/⍳1↑⍴f
[47]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4 5],' ';]
[48]  relat[1+xk;;]←(((⍴f)+0 30)↑f),[1](1,30+1↓⍴f)⍴200↑'\clearpage'
```

```
[49]  □←(⍕xk←xk+1),'-'
[50]  →testa
[51] fim:upag←(1 30+⍴f)⍴' '
[52]  →(1=≡n)/elafa
[53]  upag[1;]←(1↓⍴upag)↑'\scriptsize \begin{verbatim}'
[54]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO,'  so os primeiros 110
       bytes'
[55]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),110)↑resu
[56]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[57]  →terminando
[58] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[59]  lixonol←aaa ⎕FM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[60]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[61] terminando:
[62]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[63]  relat[1↑⍴relat;;]←upag
[64]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[65]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[66]  lixonol←□EX 2 10⍴'quantos   matriz    '
[67]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivot50

```
[0]  r←desvpadgru a;m;s
[1]  m←mediagru a
[2]  s←+/((((a[;1]+a[;2])÷2)-m)*2)×a[;3]
[3]  r←(s÷+/a[;3])*0.5
-------------------------------------------------------------
[0]  r←desvpadis x;m
[1]  m←(+/x)÷⍴x
[2]  r←((+/(x-m)*2)÷⍴x)*0.5
-------------------------------------------------------------
[ 0]  r←formatat50 a;i
[ 1]  r←''
[ 2]  i←1
[ 3] t1:→(i>⍴a)/fim
[ 4]  r←r,(⍕a[i]),', '
[ 5]  i←i+1
[ 6]  →(i≠7)/t1
[ 7]  r←r,'\\ '
[ 8]  →t1
[ 9] fim:r←¯2↓r
-------------------------------------------------------------
[ 0]  r←geradagru;a;caracoroa;pi;d;bb
[ 1]  pi←¯1+?4
[ 2]  a←((9+pi),3)⍴0
[ 3]  caracoroa←?3
[ 4]  →(caracoroa=1)/eum
[ 5]  →(caracoroa=2)/edois
[ 6] etres:
[ 7]  a[;1]←¯1↓bb←(10+1+?8)+(6+?7)×⍳10+pi
[ 8]  a[;2]←1↓bb
[ 9]  d←(9+pi)⍴20+?(9+pi)⍴20
[10]  d[4 5 6 7]←d[4 5 6 7]+2 5 5 2+?d[4 5 6 7]
[11]  d[1,⍴d]←?d[1,⍴d]
[12]  a[;3]←d
[13]  →junta
[14] eum:
[15]  a[;1]←¯1↓bb←(0.1×10+1+?8)+(0.1×6+?7)×⍳10+pi
[16]  a[;2]←1↓bb
[17]  d←(9+pi)⍴30+?(9+pi)⍴30
```

```
[18]  d[4 5 6 7]←d[4 5 6 7]+2 5 8 3+?d[4 5 6 7]
[19]  d[1,ρd]←?d[1,ρd]
[20]  a[;3]←d
[21]  →junta
[22] edois:
[23]  a[;1]←¯1↓bb←(10+1+?8)+(6+?7)×⍳10+pi
[24]  a[;2]←1↓bb
[25]  d←(9+pi)ρ20+?(9+pi)ρ20
[26]  d[4 5 6 7]←d[4 5 6 7]+2 5 5 2+?d[4 5 6 7]
[27]  d[1 2 3,¯2 ¯1 0+ρd]←?d[1 2 3,¯2 ¯1 0+ρd]
[28]  d[1,ρd]←?d[1,ρd]
[29]  a[;3]←d
[30]  →junta
[31] junta:r←a
------------------------------------------------------------
[ 0]  r←geradisol;x;a;pi
[ 1]  pi←¯1+?3
[ 2]  x←5+?5 ⍝ cara ou coroa
[ 3]  →(x=2)/edois
[ 4]  →(x=3)/etres
[ 5]  →(x=4)/equatro
[ 6]  →(x=5)/ecinco
[ 7] eum:
[ 8]  a←0.1×?(pi+11)ρ100
[ 9]  a←a[⍋a]
[10]  a[3 4 8]←a[5 6 7]×1+(?2 3 4)÷10
[11]  a[5 6]←a[4]
[12]  a←⍪10 1⍉a
[13]  a←a[(ρa)?ρa]
[14]  →junta
[15] edois:
[16]  a←200+?(pi+11)ρ799
[17]  a←a[⍋a]
[18]  a[3 4 8]←a[5 6 7]+?20 30 40
[19]  a←a[(ρa)?ρa]
[20]  →junta
[21] etres:
[22]  a←0.01×100+?(pi+11)ρ899
[23]  a←a[⍋a]
[24]  a[3 4 8]←a[5 6 7]×1+(?2 3 4)÷30
[25]  a[5 6]←a[4]
[26]  a←⍪10 2⍉a
[27]  a←a[(ρa)?ρa]
[28]  →junta
[29] equatro:
[30]  a←0.1×10+?(pi+11)ρ89
[31]  a←a[⍋a]
[32]  a[3 4 8]←a[5 6 7]×1+(?2 3 4)÷10
[33]  a←⍪10 1⍉a
[34]  a←a[(ρa)?ρa]
[35]  →junta
[36] ecinco:
[37]  a←0.1×100+?(pi+11)ρ899
[38]  a←a[⍋a]
[39]  a[3 4 8]←a[5 6 7]×1+(?2 3 4)÷10
[40]  a←⍪10 1⍉a
[41]  a←a[(ρa)?ρa]
[42]  →junta
[43] junta:r←a
------------------------------------------------------------
[ 0]  r←gerat50a;re;a;b;rx
[ 1]  re←8 78ρ' '
[ 2]  r←2ρ0
```

```
[ 3]  a←geradisol
[ 4]  b←formatat50 a
[ 5]  re[1;]←78↑'Considere a seguinte distribuiçto isolada:'
[ 6]  re[2;]←78↑'$X_i=\{',b,'\}$\\*'
[ 7]  re[3;]←78↑'1. Calcule a média aritmética\\*'
[ 8]  re[4;]←78↑'2. Calcule a mediana\\*'
[ 9]  re[5;]←78↑'3. Calcule a moda (se nto houver: -1 e se empate: o menor)\\*'
[10]  re[6;]←78↑'4. Calcule o desvio padrto\\*'
[11]  re[7;]←78↑'5. Calcule a variancia\\*'
[12]  re[8;]←78↑'Use apenas 1 decimal, e escreva a resposta no local adequado\\[0.5cm]'
[13]  rx←⍕10 1⍕(+/a)÷⍴a ⍝ media
[14]  rx←rx,⍕10 1⍕medianais a
[15]  rx←rx,modais a
[16]  rx←rx,⍕10 1⍕desvpadis a
[17]  rx←rx,⍕10 1⍕variancis a
[18]  r[1]←⊂re
[19]  r[2]←⊂rx
-------------------------------------------------------------
[ 0]  r←gerat50b;re;a;b;rx;i
[ 1]  r←2⍴0
[ 2]  a←geradagru
[ 3]  re←((10+1↑⍴a),78)⍴' '
[ 4]  re[1;]←78↑'Considere a seguinte distribuiçto agrupada:\\*'
[ 5]  re[2;]←78↑'\begin{tabular}{|p{1cm}|p{1cm}|p{1cm}|} \hline '
[ 6]  re[3;]←78↑'$L_{inf}$&$L_{sup}$&$n_i$\\ \hline'
[ 7]  i←1
[ 8] t1:→(i>1↑⍴a)/fim
[ 9]  re[3+i;]←78↑(⍕a[i;1]),'&',(⍕a[i;2]),'&',(⍕a[i;3]),' \\ \hline'
[10]  i←i+1
[11]  →t1
[12] fim:
[13]  re[3+i;]←78↑'\end{tabular}\\*'
[14]  re[4+i;]←78↑'6. Calcule a média\\*'
[15]  re[5+i;]←78↑'7. Calcule a mediana\\*'
[16]  re[6+i;]←78↑'8. Calcule a moda\\*'
[17]  re[7+i;]←78↑'9. Calcule o desvio padrto\\*'
[18]  re[8+i;]←78↑'10. Calcule a variância\\*'
[19]  re[9+i;]←78↑'Use apenas 1 decimal, e escreva a resposta no local adequado.\\*'
[20]  rx←⍕10 1⍕mediagru a
[21]  rx←rx,⍕10 1⍕medianagru a
[22]  rx←rx,modagru a
[23]  rx←rx,⍕10 1⍕desvpadgru a
[24]  rx←rx,⍕10 1⍕variancgru a
[25]  r[1]←⊂re
[26]  r[2]←⊂⍕10 1⍕rx
-------------------------------------------------------------
[0]  r←mediagru a
[1]  r←(+/((a[;1]+a[;2])÷2)×a[;3])÷+/a[;3]
-------------------------------------------------------------
[ 0]  r←medianagru a;b;i;s;md
[ 1]  b←a,0
[ 2]  i←1 ⋄ s←0
[ 3] t1:→(i>1↑⍴a)/fim
[ 4]  s←s+a[i;3]
[ 5]  b[i;4]←s
[ 6]  i←i+1
[ 7]  →t1
[ 8] fim:
[ 9]  s←s÷2
[10]  i←1
[11] t2:→(i>1↑⍴a)/fimz
[12]  →(b[i;4]>s)/achei
[13]  i←i+1
```

```
[14]  →t2
[15] achei:
[16] ⍝'i =',⍕i
[17]  md←a[i;1]+((s-b[i-1;4])÷a[i;3])×a[1;2]-a[1;1]
[18]  r←md
[19]  →0
[20] fimz:'deu xabu'
-------------------------------------------------------------
[0]  r←medianais a
[1]  b←a
[2]  b←b[⍋b]
[3]  →(0=2|⍴b)/epar
[4] eimpar:r←b[⌈0.5×⍴b]
[5]  →0
[6] epar:r←(b[0.5×⍴b]+b[1+0.5×⍴b])÷2
[7]  →0
-------------------------------------------------------------
[ 0]  r←modagru a;max;i;imax;mo
[ 1]  max←-999999
[ 2]  i←1
[ 3] t1:→(i>1↑⍴a)/fim
[ 4]  →(a[i;3]>max)/troca
[ 5]  i←i+1
[ 6]  →t1
[ 7] troca:
[ 8]  max←a[i;3]
[ 9]  imax←i
[10]  i←i+1
[11]  →t1
[12] fim:
[13]  mo←a[imax;1]+((a[imax-1;3]-a[imax;3])÷(a[imax-1;3]+a[imax+1;3]-2×a[imax;3]))×a[1;2]-
      a[1;1]
[14]  r←mo
-------------------------------------------------------------
[ 0]  r←modais a;u;ct;i
[ 1]  u←((a⍳a)=⍳⍴a)/a
[ 2]  ct←(⍴u)⍴0
[ 3]  i←1
[ 4] t1:→(i>⍴a)/fim
[ 5]  ct[u⍳a[i]]←ct[u⍳a[i]]+1
[ 6]  i←i+1
[ 7]  →t1
[ 8] fim:
[ 9]  →(1=⌈/ct)/naotem
[10]  r←u[ct⍳⌈/ct]
[11]  →0
[12] naotem:r←-1
-------------------------------------------------------------
[0]  r←variancgru a
[1]  r←(desvpadgru a)*2
-------------------------------------------------------------
[0]  r←variancis x;m
[1]  m←(+/x)÷⍴x
[2]  r←((+/(x-m)*2)÷⍴x)
-------------------------------------------------------------
[ 0]  opesq vivot50a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLt50   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
```

```
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ◇ ylu←ΔFM'c:⍀apl2⍀',(5⍕n),'.ALU' ◇ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ◇ ylu←(n,36)⍉(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAt50←ajusta80 FOLHALAt50
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAt50)⍴' '
[12]  relat[1;;]←(1↓⍴relat)⍉ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ◇ resu←0 11⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←39 80⍴' '
[16]  f←FOLHALAt50
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)⍉((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ◇ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[38;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[39;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerat50a
[35]  esse[7+⍳8;]←8 80↑⊃xx[1]
[36]  resp←resp,⊃xx[2]
[37]  xx←gerat50b
[38]  esse[15+⍳22;]←22 80↑⊃xx[1]
[39]  resp←resp,⊃xx[2]
[40]  resu←resu,[1]1 11⍴resp
[41]  acuja←(f[;2]='#')/⍳1↑⍴f
[42]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[44]  ⍞←(⍕xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+⍴f)⍴' '
[47]  →(1=≡n)/elafa
[48]  upag[1;]←(1↓⍴upag)⍉'⍀begin{verbatim}'
[49]  upag[2;]←(1↓⍴upag)⍉(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[50]  upag[2+⍳1↑⍴resu;⍳¯10++/lixo1]←(lixo1←4 0 7 1 5 1 5 1 5 1 5 1 10 1 7 1 7 1 7 1 8 1)⍕r
      esu
[51]  upag[3+1↑⍴resu;]←(1↓⍴upag)⍉'⍀end{verbatim}'
[52]  →terminando
[53] elafa:aaa←(ylu[;⍳36],7 1 5 1 5 1 5 1 5 1 10 1 7 1 7 1 7 1 8 1⍕0 1↓resu)
[54]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[55]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[56] terminando:
[57]  upag[1↑⍴upag;]←(1↓⍴upag)⍉'⍀end{document}'
[58]  relat[1↑⍴relat;;]←upag
[59]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[60]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[61]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[62]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivot51

```
[0]  r←desvpadgru a;m;s
[1]  m←mediagru a
[2]  s←+/((((a[;1]+a[;2])÷2)-m)*2)×a[;3]
[3]  r←(s÷+/a[;3])*0.5
------------------------------------------------------------
[ 0]  r←geraalup;aa;i;ep;bb;sem
[ 1]  r←1000 6⍴0
[ 2]  r[;1]←17+?1000⍴10
[ 3]  r[80?1000;1]←17+?80⍴40
[ 4]  r[;2]←?1000⍴2
[ 5]  r[(8+?4)?1000;2]←3
[ 6] denovo:
[ 7]  r[;3]←?1000⍴6
[ 8]  i←1
[ 9]  ep←6⍴0
[10] t1:→(i>6)/vu
[11]  ep[i]←+/r[;3]=i
[12]  i←i+1
[13]  →t1
[14] vu:
[15]  →(1<+/ep=⌈/ep)/denovo
[16]  r[;4]←?1000⍴6
[17]  r[;5]←1500+100×?1000⍴40
[18]  r[50?1000;5]←100×?50⍴1000
[19]  sem←?150
[20]  r[bb;5]←r[bb←sem?1000;5]+10×(sem?1000)
[21]  r[;6]←(?1000⍴100)÷10
[22]  →(1=?3)/0
[23]  sem←?200
[24]  r[bb;6]←r[bb←sem?1000;6]+(sem?1000)÷10
------------------------------------------------------------
[ 0]  r←gerapes;est;ba;i;aa;j;aux
[ 1]  r←0 60⍴' '
[ 2]  est←6 2⍴'SPPRSCRSMGRJ'
[ 3]  est←est,[1]1 2⍴(8 2⍴'ALRNACTOSEESMSMT')[?8;]
[ 4]  est←est[⍋AV⍋est;]
[ 5]  j←1
[ 6] comeco:→(j>7)/fim
[ 7]  ba←15 3⍴0
[ 8]  ba[;1]←(0,14⍴1)+1000×0,⍳14
[ 9]  ba[;2]←1000×⍳15
[10]  ba[15;2]←14500
[11]  i←1
[12] t1:→(i>15)/fi
[13]  aa←(90000+?90000)-10000×i
[14]  →(aa>0)/poe
[15]  aa←⌈(|aa)÷10
[16] poe:
[17]  ba[i;3]←aa
[18]  i←i+1
[19]  →t1
[20] fi:
[21]  →(ba[1;3]<ba[2;3])/oki
[22]  aux←ba[1;3]
[23]  ba[1;3]←ba[2;3]
[24]  ba[2;3]←aux
[25] oki:
[26]  →(2≠+/est[j;]='SP')/joia
[27]  ba[;3]←ba[;3]×3
[28] joia:
[29]  →((2≠+/est[j;]='AC')∧(2≠+/est[j;]='AL')∧(2≠+/est[j;]='TO'))/liko
```

```
[30]  ba[;3]←⌊ba[;3]÷3
[31] liko:
[32]  r←r,[1](15 2⍴est[j;]),[2]' ',[2](15 57↑⍕ba)
[33]  j←j+1
[34]  →comeco
[35] fim:
-------------------------------------------------------------
[ 0]  r←geratemp;sem;mxt;mnt;i
[ 1]  r←365 7⍴0
[ 2]  r[;1]←(⍳31),(⍳28),(⍳31),(⍳30),(⍳31),(⍳30),(⍳31),(⍳31),(⍳30),(⍳31),(⍳30),(⍳31)
[ 3]  r[;2]←(31⍴1),(28⍴2),(31⍴3),(30⍴4),(31⍴5),(30⍴6),(31⍴7),(31⍴8),(30⍴9),(31⍴10),(30⍴11)
      ,(31⍴12)
[ 4]  mxt←33,34,29,26,25,22,19,18,24,26,28,30
[ 5]  mnt←22,24,19,16,15,12,6,7,14,16,18,20
[ 6]  sem←270?365
[ 7]  r[sem;3]←4+?(⍴sem)⍴7
[ 8]  i←1
[ 9] t1:→(i>365)/fi
[10]  r[i;4]←mxt[r[i;2]]-¯1+?5
[11]  r[i;5]←mnt[r[i;2]]+¯1+?5
[12]  r[i;6]←?60
[13]  →(1<?4)/soma
[14]  r[i;7]←?20
[15] soma:
[16]  →(1=?3)/mesmo
[17]  r[i;6]←⌊r[i;6]÷1+?3
[18] mesmo:
[19]  i←i+1
[20]  →t1
[21] fi:
-------------------------------------------------------------
[ 0]  r←gravaarq i;z;xx;lixo
[ 1]  z←geraalup
[ 2]  r←resoalup z
[ 3]  xx←1000 60↑⍕z
[ 4]  z←geratemp
[ 5]  r←r,resotemp z
[ 6]  xx←xx,[1]365 60↑⍕z
[ 7]  z←gerapes
[ 8]  r←r,medianagru 15 3⍴⍬,(0 3↓(2=+/z[;⍳2]=(105 2⍴'PR'))/[1]z)
[ 9]  r←r,modagru 15 3⍴⍬,(0 3↓(2=+/z[;⍳2]=(105 2⍴'SC'))/[1]z)
[10]  r←r,desvpadgru 15 3⍴⍬,(0 3↓(2=+/z[;⍳2]=(105 2⍴'SP'))/[1]z)
[11]  xx←xx,[1]105 60↑z
[12]  lixo←xx ΔFM i
-------------------------------------------------------------
[0]  r←mediagru a
[1]  r←(+/((a[;1]+a[;2])÷2)×a[;3])÷+/a[;3]
-------------------------------------------------------------
[ 0]  r←medianagru a;b;i;s;md
[ 1]  b←a,0
[ 2]  i←1 ⋄ s←0
[ 3] t1:→(i>1↑⍴a)/fim
[ 4]  s←s+a[i;3]
[ 5]  b[i;4]←s
[ 6]  i←i+1
[ 7]  →t1
[ 8] fim:
[ 9]  s←s÷2
[10]  i←1
[11] t2:→(i>1↑⍴a)/fimz
[12]  →(b[i;4]>s)/achei
[13]  i←i+1
[14]  →t2
```

```
[15] achei:
[16] ⍝'i =',⍕i
[17]  md←a[i;1]+((s-b[i-1;4])÷a[i;3])×a[1;2]-a[1;1]
[18]  r←md
[19]  →0
[20] fimz:'deu xabu'
-------------------------------------------------------------
[ 0]  r←modagru a;max;i;imax;mo
[ 1]  max←-999999
[ 2]  i←1
[ 3] t1:→(i>1↑⍴a)/fim
[ 4]  →(a[i;3]>max)/troca
[ 5]  i←i+1
[ 6]  →t1
[ 7] troca:
[ 8]  max←a[i;3]
[ 9]  imax←i
[10]  i←i+1
[11]  →t1
[12] fim:
[13]  mo←a[imax;1]+((a[imax-1;3]-a[imax;3])÷(a[imax-1;3]+a[imax+1;3]-2×a[imax;3]))×a[1;2]-
      a[1;1]
[14]  r←mo
-------------------------------------------------------------
[ 0]  r←resoalup x;z;ep;i;m;y
[ 1]  z←((x[;2]=2)/[1]x)[;1]
[ 2]  r←(+/z)÷⍴z
[ 3]  r←r,(+/x[;5])÷1000
[ 4]  ep←6⍴0
[ 5]  i←1
[ 6] t1:→(i>6)/vu
[ 7]  ep[i]←+/x[;3]=i
[ 8]  i←i+1
[ 9]  →t1
[10] vu:r←r,epι(⌈/ep)
[11]  y←x[;6]
[12]  m←(+/y)÷1000
[13]  r←r,((+/(y-m)*2)÷1000)*0.5
-------------------------------------------------------------
[0]  r←resotemp x;am;z;m;in
[1]  am←x[;4]-x[;5]
[2]  r←(+/am)÷365
[3]  z←x[;6]
[4]  z←z[⍋z]
[5]  r←r,z[183]
[6]  in←x[;3]
[7]  m←(+/in)÷365
[8]  r←r,(+/(in-m)*2)÷365
-------------------------------------------------------------
[0]  r←variancgru a
[1]  r←(desvpadgru a)*2
-------------------------------------------------------------
[ 0]  opesq vivot51a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLt51   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←⍙FM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕ιn
```

```
[ 9]  ylu←n grupo ylu
[10]  FOLHALAt51←ajusta80 FOLHALAt51
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAt51)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 11⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←10 80⍴' '
[16]  f←FOLHALAt51
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  esse[8;]←1 80⍴80↑'FT51D',('00'⍕xk),'.myd'
[35]  resp←resp,gravaarq'c:\apl2\FT51D',('00'⍕xk),'.myd'
[36]  resu←resu,[1]1 11⍴resp
[37]  acuja←(f[;2]='#')/⍳1↑⍴f
[38]  f[acuja;⍳80]←esse[⌷,f[acuja;3 4],' ';]
[39]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[40]  ⍞←(⍕xk←xk+1),'-'
[41]  →testa
[42] fim:upag←(1 0+⍴f)⍴' '
[43]  →(1=≡n)/elafa
[44]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[45]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[46]  upag[2+⍳1↑⍴resu;⍳¯9++/lixo1]←(lixo1←4 0 7 1 9 1 3 0 7 1 9 1 6 1 6 1 11 1 9 1 9 1)⍕re
      su
[47]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[48]  →terminando
[49] elafa:aaa←(ylu[;⍳36],7 1 9 1 3 0 7 1 9 1 6 1 6 1 11 1 9 1 9 1⍕0 1↓resu)
[50]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[51]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[52] terminando:
[53]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[54]  relat[1↑⍴relat;;]←upag
[55]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[56]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[57]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[58]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivot60

```
[0]  AVISO
[1]  'Limitado a 70 exemplares'
------------------------------------------------------------
[ 0]  r←faztabelanormal;i;j
[ 1] ⍝ esta funcao coincide com spi73, pag. 47
[ 2]  r←41 11⍴0
[ 3]  r[;1]←0,0.1×¯1+⍳40
```

```
[ 4]  r[1;]←0,0.01×¯1+⍳10
[ 5]  i←2
[ 6] t1:→(i>41)/fim
[ 7]  j←2
[ 8] t2:→(j>11)/soma
[ 9]  r[i;j]←⍟12 4⍕¯0.5+unorm r[i;1]+r[1;j]
[10]  j←j+1
[11]  →t2
[12] soma:
[13]  i←i+1
[14]  →t1
[15] fim:
-------------------------------------------------------------
[ 0]  r←geraba1;n;x;it;p;q;re;ra
[ 1]  ra←5 79⍴' '
[ 2]  ra[1;]←79↑'\item Suponha um baralho convencional de 52 cartas.'
[ 3]  ra[2;]←79↑'Voce vai retirar ',(⍕n←2+?6),' cartas. Qual a probabilidade'
[ 4]  x←?n-2
[ 5]  →(x=1)/singular
[ 6] plural:
[ 7]  ra[3;]←79↑'de que ',(⍕x),' cartas sejam'
[ 8]  →junta
[ 9] singular:
[10]  ra[3;]←79↑'de que uma carta seja'
[11] junta:
[12]  it←?1↑⍴TABBARA
[13]  ra[4;]←79↑(trim,TABBARA[it;⍳40]),'.'
[14]  ra[5;]←79↑'Note que a cada retirada, a carta volta para o baralho.'
[15]  p←(⍟,TABBARA[it;41+⍳2])÷52
[16]  q←1-p
[17]  re←((!n)÷(!x)×!n-x)×(p*x)×q*n-x
[18]  r←2⍴' '
[19]  r[1]←⊂ra
[20]  r[2]←⊂8 3⍕re
-------------------------------------------------------------
[ 0]  r←geraba2;n;x;it;p;q;re;ra
[ 1]  ra←5 79⍴' '
[ 2]  ra[1;]←79↑'\item Imagine um baralho convencional de 52 cartas.'
[ 3]  ra[2;]←79↑'Voce vai retirar ',(⍕n←2+?6),' cartas. Qual média aritmética'
[ 4]  ra[3;]←79↑' e a variância da distribuiçto binomial se o nosso conceito'
[ 5]  it←?1↑⍴TABBARA
[ 6]  ra[4;]←79↑'de sucesso equivale a tirar ',(trim,TABBARA[it;⍳40]),'.'
[ 7]  ra[5;]←79↑'Note que a cada retirada, a carta volta para o baralho.'
[ 8]  p←(⍟,TABBARA[it;41+⍳2])÷52
[ 9]  re←(n×p),n×p×1-p
[10]  r←2⍴' '
[11]  r[1]←⊂ra
[12]  r[2]←⊂8 3⍕re
-------------------------------------------------------------
[ 0]  r←geraba3;n;x;it;p;q;re;ra
[ 1]  ra←4 79⍴' '
[ 2]  ra[1;]←79↑'\item Faça de conta que tem muitos dados honestos com 6 faces.'
[ 3]  ra[2;]←79↑'Voce vai jogar ',(⍕n←2+?6),' dados. Qual a probabilidade'
[ 4]  x←?n-2
[ 5]  →(x=1)/singular
[ 6] plural:
[ 7]  ra[3;]←79↑'de que ',(⍕x),' dados sejam'
[ 8]  →junta
[ 9] singular:
[10]  ra[3;]←79↑'de que apenas um dado seja'
[11] junta:
[12]  it←?1↑⍴TABDADO
[13]  ra[4;]←79↑(trim,TABDADO[it;⍳40]),'.'
```

```
[14]  p←(⍳,TABDADO[it;41+⍳2])÷6
[15]  q←1-p
[16]  re←((!n)÷(!x)×!n-x)×(p*x)×q*n-x
[17]  r←2ρ' '
[18]  r[1]←⊂ra
[19]  r[2]←⊂8 3⍕re
------------------------------------------------------------
[ 0]  r←geraba4;ra;media;dp;mais;z;re
[ 1]  ra←4 79ρ' '
[ 2]  ra[1;]←79↑'\item Suponha que o peso dos alunos desta sala é normalmente'
[ 3]  ra[2;]←79↑'distribuído. A média é ',(⍕media←70+?30),' quilos.'
[ 4]  ra[3;]←79↑'e o desvio padrão é de ',(⍕dp←(?4)+0.1×?9),' quilos.'
[ 5]  ra[4;]←79↑'Encontre a probabilidade de alguem pesar mais de ',⍕mais←media+?10
[ 6]  z←(mais-media)÷dp
[ 7]  re←1-unorm z
[ 8]  r←2ρ' '
[ 9]  r[1]←⊂ra
[10]  r[2]←⊂8 3⍕re
------------------------------------------------------------
[ 0]  r←geraba5;aux;dp;mais;media;menos;ra;z1;z2
[ 1]  ra←5 79ρ' '
[ 2]  ra[1;]←79↑'\item Imagine que a altura dos alunos desta sala é normalmente'
[ 3]  ra[2;]←79↑'distribuída. A média é ',(⍕media←150+?40),' cm.'
[ 4]  ra[3;]←79↑'e o desvio padrão é de ',(⍕dp←10+?20),' cm.'
[ 5]  ra[4;]←79↑'Encontre a probabilidade de alguém medir entre ',⍕menos←media-?20
[ 6]  ra[5;]←79↑'cm e ',(⍕mais←media+?20),' cm.'
[ 7]  z1←(media-menos)÷dp
[ 8]  aux←¯0.5+unorm z1
[ 9]  z2←(mais-media)÷dp
[10]  aux←aux+¯0.5+unorm z2
[11]  r←2ρ' '
[12]  r[1]←⊂ra
[13]  r[2]←⊂8 3⍕aux
------------------------------------------------------------
[ 0]  r←geraba6;ra;pregos;dp;men;aux;alfa
[ 1]  ra←6 79ρ' '
[ 2]  ra[1;]←79↑'\item A fábrica do vizinho vende pregos em pacotes de 1Kg'
[ 3]  ra[2;]←79↑'de pregos. Para um determinado tipo de pregos, este peso equivale'
[ 4]  ra[3;]←79↑'a ',(⍕pregos←1700+?500),' pregos. Supondo que este número é distribuído'
[ 5]  ra[4;]←79↑'de maneira normal, com a média igual a este número e dp=',⍕dp←50+?150
[ 6]  ra[5;]←79↑'pregos. Ache a probabilidade de um determinado saco ter menos '
[ 7]  ra[6;]←79↑'de ',(⍕men←pregos-50+?200),' pregos.'
[ 8]  aux←1-unorm(pregos-men)÷dp
[ 9]  r←2ρ' '
[10]  alfa←trim,OBJETOS[?1↑ρOBJETOS;]
[11]  r[1]←⊂ra replace('pregos'alfa)
[12]  r[2]←⊂8 3⍕aux
------------------------------------------------------------
[ 0]  r←geraba7;dp;emp;mai;med;men;ra;z1;z2
[ 1]  ra←6 79ρ' '
[ 2]  ra[1;]←79↑'\item Em uma grande indústria, com  ',(⍕emp←10000+?10000)
[ 3]  ra[2;]←79↑'empregados, a média salarial é de R\$=',(⍕med←4200+?3000),' e o'
[ 4]  ra[3;]←79↑'desvio padrão é de R\$=',(⍕dp←500+?1000),'. Ache a quantidade '
[ 5]  ra[4;]←79↑'esperada de empregados que ganham entre R\$=',(⍕men←med-200+?1000),' e '
[ 6]  ra[5;]←79↑'R\$=',(⍕mai←med+200+?1000),' .'
[ 7]  ra[6;]←79↑'Note que os salários nesta indústria são distribuídos de maneira normal.'
[ 8]  z1←¯0.5+unorm(med-men)÷dp
[ 9]  z2←¯0.5+unorm(mai-med)÷dp
[10]  r←2ρ' '
[11]  r[1]←⊂ra
[12]  r[2]←⊂8 0⍕⌊emp×z1+z2
------------------------------------------------------------
[ 0]  r←gerat60 n;x;quais;i;y;resps;defs
```

```
[ 1]  DEFIt60←ajusta80 DEFIt60
[ 2]  x←geradirt DEFIt60
[ 3]  y←((1↑⍴x),4)⍴⍕,x,' '
[ 4]  quais←n?1↑⍴y
[ 5]  resps←''
[ 6]  defs←0 80⍴' '
[ 7]  i←1
[ 8] t1:→(i>n)/fim
[ 9]  defs←defs,[1]DEFIt60[y[quais[i];2]+⍳y[quais[i];3];]
[10]  resps←resps,',',trim DEFIt60[y[quais[i];4];]
[11]  i←i+1
[12]  →t1
[13] fim:r←2⍴0
[14]  r[1]←⊂defs
[15]  r[2]←⊂1↓resps
[16] ⍝'Tamanho ',⍕1↑⍴r
-------------------------------------------------------------
[ 0]  r←quem replace depara;de;i;j;k;onde;para
[ 1] ⍝ forma de usar: texto replace 'strin-de' 'string para'
[ 2] ⍝ obviamente eles nao precisam ter o mesmo tamanho
[ 3]  de←,⊃depara[1] ⋄ para←,⊃depara[2]
[ 4]  i←1 ⋄ r←((1↑⍴quem),200)⍴' '
[ 5] t1:→(i>1↑⍴quem)/fim
[ 6]  →(0=∨/onde←de⍷quem[i;])/naotem
[ 7]  j←1 ⋄ k←1
[ 8] t2:→(k>⍴quem[i;])/acabou
[ 9]  →(onde[k]=0)/soma
[10]  r[i;(j-1)+⍳⍴para]←para
[11]  j←j+⍴para
[12]  k←k+⍴de
[13]  →t2
[14] soma:r[i;j]←quem[i;k]
[15]  k←k+1
[16]  →(j=j←j+1)/t2
[17] naotem:r[i;]←200↑quem[i;]
[18] acabou:→(i=i←i+1)/t1
[19] fim:r←trim4 r
-------------------------------------------------------------
[0]  r←trim4 x;z
[1] ⍝f corta as colunas direitas que sao brancos
[2]  →(2≠⍴⍴x)/erro
[3]  z←+/[1]x=' '
[4]  r←(z≠1↑⍴x)/[2]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
-------------------------------------------------------------
[ 0]  r←unorm z;c1;c2;c3;c4;c5;c6;w;y
[ 1]  c1←2.506628
[ 2]  c2←0.3193815
[ 3]  c3←¯0.3565638
[ 4]  c4←1.7814779
[ 5]  c5←¯1.821256
[ 6]  c6←1.3302744
[ 7]  →(z<0)/menos
[ 8]  w←1
[ 9]  →junta
[10] menos:w←¯1
[11] junta:
[12]  y←1÷(1+0.2316419×w×z)
[13]  r←0.5+w×(0.5-((*(-z)×z÷2)÷c1)×(y×(c2+y×(c3+y×(c4+y×(c5+y×c6))))))
-------------------------------------------------------------
[ 0]  opesq vivot60a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
```

```
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLt60   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAt60←ajusta80 FOLHALAt60
[11]  relat←((2+1↑⍴ylu),1 30+⍴FOLHALAt60)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 60⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←44 80⍴' '
[16]  f←FOLHALAt60
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[43;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[44;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geraba1
[35]  esse[7+⍳5;]←5 80↑⊃xx[1]
[36]  resp←(3 0⍎resp),':',⊃xx[2]
[37]  xx←geraba2
[38]  esse[12+⍳5;]←5 80↑⊃xx[1]
[39]  resp←resp,⊃xx[2]
[40]  xx←geraba3
[41]  esse[17+⍳4;]←4 80↑⊃xx[1]
[42]  resp←resp,⊃xx[2]
[43]  xx←geraba4
[44]  esse[21+⍳4;]←4 80↑⊃xx[1]
[45]  resp←resp,⊃xx[2]
[46]  xx←geraba5
[47]  esse[25+⍳5;]←5 80↑⊃xx[1]
[48]  resp←resp,⊃xx[2]
[49]  xx←geraba6
[50]  esse[30+⍳6;]←6 80↑⊃xx[1]
[51]  resp←resp,⊃xx[2]
[52]  xx←geraba7
[53]  esse[36+⍳6;]←6 80↑⊃xx[1]
[54]  resp←resp,⊃xx[2]
[55]  resu←resu,[1]1 60⍴resp
[56]  acuja←(f[;2]='#')/⍳1↑⍴f
[57]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[58]  relat[1+xk;;]←(((⍴f)+0 30)↑f),[1](1,30+1↓⍴f)⍴200↑'\clearpage'
[59]  ⍞←(⍎xk←xk+1),'-'
[60]  →testa
[61] fim:upag←(1 30+⍴f)⍴' '
[62]  →(1=≡n)/elafa
```

```
[63]  upag[1;]←(1↓⍴upag)↑'\scriptsize \begin{verbatim}'
[64]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO,'  so os primeiros 110
       bytes'
[65]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),110)↑resu
[66]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[67]  →terminando
[68] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[69]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[70]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[71] terminando:
[72]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[73]  relat[1↑⍴relat;;]←upag
[74]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[75]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[76]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[77]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivot70

```
[0]  AVISO
[1]  'ta dando erro na l48 de vivot70 (numero nao cabe em 5 1⍕)'
-------------------------------------------------------------
[0]  r←determ a;e;d
[1]  d←(a[1;1]×a[2;2]×a[3;3])+(a[1;2]×a[2;3]×a[3;1])+a[2;1]×a[3;2]×a[1;3]
[2]  e←(a[3;1]×a[2;2]×a[1;3])+(a[3;2]×a[2;3]×a[1;1])+a[2;1]×a[1;2]×a[3;3]
[3]  r←d-e
-------------------------------------------------------------
[0]  r←a dp b
[1]  r←(((a[1]-b[1])*2)+((a[2]-b[2])*2))*0.5
-------------------------------------------------------------
[0]  r←gerapts n;i;a
[1]  r←0 2⍴0
[2]  i←1
[3] t1:→(i>n)/fim
[4]  a←1 2⍴((¯11+⍳21)[?21]),(¯11+⍳21)[?21]
[5]  r←r,[1]a
[6]  i←i+1
[7]  →t1
[8] fim:
-------------------------------------------------------------
[ 0]  r←gerat70a;re;a;n;d;rx;rp
[ 1]  re←5 78⍴' '
[ 2]  n←gerapts 5
[ 3]  r←2⍴0
[ 4]  re[1;]←78↑'\item Dados 5 pontos, cujas coordenadas sto:'
[ 5]  a←'$P_1=\{',(⍕n[1;1]),',',(⍕n[1;2]),'\}$,'
[ 6]  a←a,'$P_2=\{',(⍕n[2;1]),',',(⍕n[2;2]),'\}$,'
[ 7]  a←a,'$P_3=\{',(⍕n[3;1]),',',(⍕n[3;2]),'\}$,'
[ 8]  re[2;]←78↑'¯-'edit a
[ 9]  a←'$P_4=\{',(⍕n[4;1]),',',(⍕n[4;2]),'\}$,'
[10]  a←a,'$P_5=\{',(⍕n[5;1]),',',(⍕n[5;2]),'\}$.'
[11]  re[3;]←78↑'¯-'edit a
[12]  re[4;]←78↑'Indique qual par de pontos estto mais próximos e qual'
[13]  re[5;]←78↑'par de pontos estto mais distantes.'
[14]  d←10⍴0
[15]  rp←12 13 14 15 23 24 25 34 35 45
[16]  d[1]←n[1;]dp n[2;]
[17]  d[2]←n[1;]dp n[3;]
[18]  d[3]←n[1;]dp n[4;]
[19]  d[4]←n[1;]dp n[5;]
[20]  d[5]←n[2;]dp n[3;]
```

```
[21]  d[6]←n[2;]dp n[4;]
[22]  d[7]←n[2;]dp n[5;]
[23]  d[8]←n[3;]dp n[4;]
[24]  d[9]←n[3;]dp n[5;]
[25]  d[10]←n[4;]dp n[5;]
[26]  rx←rp[dι⌊/d],rp[dι⌈/d]
[27]  r[1]←⊂re
[28]  r[2]←⊂rx
-------------------------------------------------------------
[ 0]  r←gerat70b;re;a;n;d;rx;rp
[ 1]  re←4 78⍴' '
[ 2]  n←gerapts 2
[ 3]  r←2⍴0
[ 4]  re[1;]←78↑'\item Dados 2 pontos, cujas coordenadas sto:'
[ 5]  a←'$P_1=\{',(⍕n[1;1]),',',(⍕n[1;2]),'\}$ e '
[ 6]  a←a,'$P_2=\{',(⍕n[2;1]),',',(⍕n[2;2]),'\}$.'
[ 7]  re[2;]←78↑'¯-'edit a
[ 8]  re[3;]←78↑'Ache o retângulo em $\alpha$ cujas extremidades opostas '
[ 9]  re[4;]←78↑'estto dadas por $P_1$ e $P_2$. Ache a área desse polígono.'
[10]  rx←(|n[1;1]-n[2;1])×|n[1;2]-n[2;2]
[11]  r[1]←⊂re
[12]  r[2]←⊂rx
-------------------------------------------------------------
[ 0]  r←gerat70c;re;a;n;d;rx;rp
[ 1]  re←3 78⍴' '
[ 2]  n←gerapts 2
[ 3]  r←2⍴0
[ 4]  re[1;]←78↑'\item Dados 2 pontos, cujas coordenadas sto:'
[ 5]  a←'$P_1=\{',(⍕n[1;1]),',',(⍕n[1;2]),'\}$ e '
[ 6]  a←a,'$P_2=\{',(⍕n[2;1]),',',(⍕n[2;2]),'\}$.'
[ 7]  re[2;]←78↑'¯-'edit a
[ 8]  re[3;]←78↑'Ache a distância Manhattan entre eles. '
[ 9]  rx←n[1;]manhat n[2;]
[10]  r[1]←⊂re
[11]  r[2]←⊂rx
-------------------------------------------------------------
[ 0]  r←gerat70d;re;a;n;d;rx;rp;ar
[ 1]  re←4 78⍴' '
[ 2]  n←gerapts 4
[ 3]  r←2⍴0
[ 4]  re[1;]←78↑'\item Suponha um polígono definido por seus 4 pontos:'
[ 5]  a←'$A=\{',(⍕n[1;1]),',',(⍕n[1;2]),'\}$, $B=\{',(⍕n[2;1]),',',(⍕n[2;2]),'\}$,'
[ 6]  re[2;]←78↑'¯-'edit a
[ 7]  a←'$C=\{',(⍕n[3;1]),',',(⍕n[3;2]),'\}$ e $D=\{',(⍕n[4;1]),',',(⍕n[4;2]),'\}$,'
[ 8]  re[3;]←78↑'¯-'edit a
[ 9]  re[4;]←78↑'Ache a área do polígono em $\alpha$ formado por ABCD nessa ordem. '
[10]  rx←resolvet70d n
[11]  r[1]←⊂re
[12]  r[2]←⊂rx
-------------------------------------------------------------
[ 0]  r←gerat70e;a;ar;caracoroa;d;j;n;re;rp;rx
[ 1] novo:
[ 2]  re←4 78⍴' '
[ 3]  n←gerapts 3
[ 4]  j←,n
[ 5]  r←2⍴0
[ 6]  re[1;]←78↑'\item Suponha três pontos $A$, $B$ e $C$ cujas coordenadas sto:'
[ 7]  re[4;]←78↑'Ache a incógnita pedida para que os 3 pontos sejam colineares. '
[ 8]  caracoroa←?6
[ 9]  →(caracoroa=1)/eum
[10]  →(caracoroa=2)/edois
[11]  →(caracoroa=3)/etres
[12]  →(caracoroa=4)/equatro
```

```
[13]  →(caracoroa=5)/ecinco
[14] eseis:
[15]  a←'$A=\{',(⍕n[1;1]),',',(⍕n[1;2]),'\}$, $B=\{',(⍕n[2;1]),',',(⍕n[2;2]),'\}$ e '
[16]  re[2;]←78↑'¯-'edit a
[17]  a←'$C=\{',(⍕n[3;1]),',$x$\}$'
[18]  re[3;]←78↑'¯-'edit a
[19]  →(0=j[3]-j[1])/novo
[20]  rx←(((-j[1])×j[4])+(-(j[2]×j[5]))+j[5]×j[4]+(j[3]×j[2]))÷(j[3]-j[1])
[21]  →junta
[22] ecinco:
[23]  a←'$A=\{',(⍕n[1;1]),',',(⍕n[1;2]),'\}$, $B=\{',(⍕n[2;1]),',',(⍕n[2;2]),'\}$ e '
[24]  re[2;]←78↑'¯-'edit a
[25]  a←'$C=\{$x$,',(⍕n[3;2]),'\}$'
[26]  re[3;]←78↑'¯-'edit a
[27]  →(0=j[2]-j[4])/novo
[28]  rx←-((j[1]×j[4])+(-(j[3]×j[2]))+(j[3]×j[6])-(j[1]×j[6]))÷(j[2]-j[4])
[29]  →junta
[30] equatro:
[31]  a←'$A=\{',(⍕n[1;1]),',',(⍕n[1;2]),'\}$, $B=\{',(⍕n[2;1]),',$x$\}$ e '
[32]  re[2;]←78↑'¯-'edit a
[33]  a←'$C=\{',(⍕n[3;1]),',',(⍕n[3;2]),'\}$'
[34]  re[3;]←78↑'¯-'edit a
[35]  →(0=j[5]-j[1])/novo
[36]  rx←((-(j[1]×j[6]))+(j[2]×j[5])+(j[3]×j[6])-(j[3]×j[2]))÷(j[5]-j[1])
[37]  →junta
[38] etres:
[39]  a←'$A=\{',(⍕n[1;1]),',',(⍕n[1;2]),'\}$, $B=\{$x$,',(⍕n[2;2]),'\}$ e '
[40]  re[2;]←78↑'¯-'edit a
[41]  a←'$C=\{',(⍕n[3;1]),',',(⍕n[3;2]),'\}$'
[42]  re[3;]←78↑'¯-'edit a
[43]  →(0=j[6]-j[2])/novo
[44]  rx←((-(j[1]×j[4]))+(-(j[2]×j[5]))+(j[5]×j[4])+(j[1]×j[6]))÷(j[6]-j[2])
[45]  →junta
[46] edois:
[47]  a←'$A=\{',(⍕n[1;1]),',$x$\}$, $B=\{',(⍕n[2;1]),',',(⍕n[2;2]),'\}$ e '
[48]  re[2;]←78↑'¯-'edit a
[49]  a←'$C=\{',(⍕n[3;1]),',',(⍕n[3;2]),'\}$'
[50]  re[3;]←78↑'¯-'edit a
[51]  →(0=j[3]-j[5])/novo
[52]  rx←((j[1]×j[4])+(j[3]×j[6])+(-(j[4]×j[5]))+(-(j[1]×j[6])))÷(j[3]-j[5])
[53]  →junta
[54] eum:
[55]  a←'$A=\{$x$,',(⍕n[1;2]),'\}$, $B=\{',(⍕n[2;1]),',',(⍕n[2;2]),'\}$ e '
[56]  re[2;]←78↑'¯-'edit a
[57]  a←'$C=\{',(⍕n[3;1]),',',(⍕n[3;2]),'\}$'
[58]  re[3;]←78↑'¯-'edit a
[59]  →(0=j[6]-j[4])/novo
[60]  →(j[5]=0)/novo
[61]  rx←((j[2]÷j[5])+(j[3]×j[6])+(-(j[5]×j[4]))+(-(j[3]×j[2])))÷(j[6]-j[4])
[62]  →junta
[63] junta:
[64]  r[1]←⊂re
[65]  r[2]←⊂rx
-------------------------------------------------------------
[ 0]  r←gerat70f;re;a;n;d;rx;rp;ar
[ 1]  re←3 78⍴' '
[ 2]  n←gerapts 2
[ 3]  r←2⍴0
[ 4]  re[1;]←78↑'\item Suponha dois pontos $A$ e $B$ cujas coordenadas sto:'
[ 5]  a←'$A=\{',(⍕n[1;1]),',',(⍕n[1;2]),'\}$ e $B=\{',(⍕n[2;1]),',',(⍕n[2;2]),'\}$.'
[ 6]  re[2;]←78↑'¯-'edit a
[ 7]  re[3;]←78↑'Ache $P(x,y)$ para que P seja equidistante de $A$ e de $B$.'
[ 8]  rx←((n[1;1]+n[2;1])÷2),(n[1;2]+n[2;2])÷2
```

```
[ 9]  r[1]←⊂re
[10]  r[2]←⊂rx
-------------------------------------------------------------
[ 0]  r←gerat70g;re;a;n;d;rx;p1;p2
[ 1]  re←5 78⍴' '
[ 2]  n←gerapts 4
[ 3]  r←2⍴0
[ 4]  re[1;]←78↑'\item Suponha o segmento $M$ dado por '
[ 5]  a←'$M_1=\{',(⍕n[1;1]),',',(⍕n[1;2]),'\}$ e $M_2=\{',(⍕n[2;1]),',',(⍕n[2;2]),'\}$.'
[ 6]  re[2;]←78↑'¯-'edit a
[ 7]  re[3;]←78↑'Suponha o segmento $N$ dado por '
[ 8]  a←'$N_1=\{',(⍕n[3;1]),',',(⍕n[3;2]),'\}$ e $N_2=\{',(⍕n[4;1]),',',(⍕n[4;2]),'\}$.'
[ 9]  re[4;]←78↑'¯-'edit a
[10]  re[5;]←78↑'Ache a distância entre os pontos médios de $M$ e $N$. '
[11]  p1←((n[1;1]+n[2;1])÷2),(n[1;2]+n[2;2])÷2
[12]  p2←((n[3;1]+n[4;1])÷2),(n[3;2]+n[4;2])÷2
[13]  rx←p1 dp p2
[14]  r[1]←⊂re
[15]  r[2]←⊂rx
-------------------------------------------------------------
[0]  r←a manhat b
[1]  r←(|a[1]-b[1])+|a[2]-b[2]
-------------------------------------------------------------
[ 0]  r←resolvet70d n;ar;rx;z;m
[ 1] ⍝ ar←(0.5×|determ 3 3⍴(n[1;],1),(n[2;],1),(n[4;1],1))
[ 2] ⍝ rx←ar+(0.5×|determ 3 3⍴(n[2;],1),(n[3;],1),(n[4;1],1))
[ 3] ⍝ rx
[ 4] ⍝ r←ar
[ 5] ⍝ --------- segundo jeito (vide f:/p/n/t70/...)
[ 6]  m←n,[1]1 2⍴n[1;]
[ 7]  z←(m[1;1]×m[2;2])-m[2;1]×m[1;2]
[ 8]  z←z+(m[2;1]×m[3;2])-m[3;1]×m[2;2]
[ 9]  z←z+(m[3;1]×m[4;2])-m[4;1]×m[3;2]
[10]  z←z+(m[4;1]×m[5;2])-m[5;1]×m[4;2]
[11]  r←|z÷2
-------------------------------------------------------------
[ 0]  opesq vivot70a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLt70   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAt70←ajusta80 FOLHALAt70
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAt70)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 10⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←37 80⍴' '
[16]  f←FOLHALAt70
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.09
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
```

```
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[36;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[37;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerat70a
[35]  esse[7+⍳5;]←5 80↑⊃xx[1]
[36]  resp←resp,⊃xx[2]
[37]  xx←gerat70b
[38]  esse[12+⍳4;]←4 80↑⊃xx[1]
[39]  resp←resp,⍪7 1⍕⊃xx[2]
[40]  xx←gerat70c
[41]  esse[16+⍳3;]←3 80↑⊃xx[1]
[42]  resp←resp,⍪4 0⍕⊃xx[2]
[43]  xx←gerat70d
[44]  esse[19+⍳4;]←4 80↑⊃xx[1]
[45]  resp←resp,⍪6 1⍕⊃xx[2]
[46]  xx←gerat70e
[47]  esse[23+⍳4;]←4 80↑⊃xx[1]
[48]  resp←resp,⍪7 1⍕⊃xx[2]
[49]  xx←gerat70f
[50]  esse[27+⍳3;]←3 80↑⊃xx[1]
[51]  resp←resp,⍪5 1⍕⊃xx[2]
[52]  xx←gerat70g
[53]  esse[30+⍳5;]←5 80↑⊃xx[1]
[54]  resp←resp,⍪5 1⍕⊃xx[2]
[55]  resu←resu,[1]1 10⍴resp
[56]  acuja←(f[;2]='#')/⍳1↑⍴f
[57]  f[acuja;⍳80]←esse[⍪,f[acuja;3 4],' ';]
[58]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[59]  ⎕←(⍕xk←xk+1),'-'
[60]  →testa
[61] fim:upag←(1 0+⍴f)⍴' '
[62]  →(1=≡n)/elafa
[63]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[64]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[65]  upag[2+⍳1↑⍴resu;⍳¯6++/lixo1]←'¯-'edit(lixo1←4 0 3 0 3 0 8 1 5 0 7 1 11 1 6 1 6 1 6 1
      )⍕resu
[66]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[67]  →terminando
[68] elafa:aaa←(ylu[;⍳36],'¯-'edit 3 0 3 0 8 1 5 0 7 1 11 1 6 1 6 1 6 1⍕0 1↓resu)
[69]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[70]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[71] terminando:
[72]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[73]  relat[1↑⍴relat;;]←upag
[74]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[75]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[76]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[77]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivot80

```
[0]  AVISO
[1]  'Limitado a 70 copias ou perto disso...'
------------------------------------------------------------
[ 0]  r←geradirt x;lin;i;tam
```

```
[ 1]  r←(((+/(,x[;1])='%')÷3),20)⍴' '
[ 2]  tam←0
[ 3]  lin←1
[ 4]  i←1
[ 5] t1:→(i>1↑⍴x)/fim
[ 6]  →((x[i;1]='%')∧(x[i;2]='i'))/comeca
[ 7]  →((x[i;1]='%')∧(x[i;2]='f'))/termina
[ 8]  →((x[i;1]='%')∧(x[i;2]='r'))/resposta
[ 9]  tam←tam+1
[10]  i←i+1
[11]  →t1
[12] comeca:r[lin;⍳3]←x[i;3 4 5]
[13]  r[lin;5+⍳5]←5 0⍕i
[14]  tam←0
[15]  i←i+1
[16]  →t1
[17] resposta:r[lin;10+⍳5]←5 0⍕tam
[18]  i←i+1
[19]  →t1
[20] termina:r[lin;15+⍳5]←5 0⍕i-1
[21]  lin←lin+1
[22]  i←i+1
[23]  →t1
[24] fim:
------------------------------------------------------------
[ 0]  r←gerat80 n;x;quais;i;y;resps;defs
[ 1]  DEFIt80←ajusta80 DEFIt80
[ 2]  x←geradirt DEFIt80
[ 3]  y←((1↑⍴x),4)⍴⍕,x,' '
[ 4]  quais←n?1↑⍴y
[ 5]  resps←''
[ 6]  defs←0 80⍴' '
[ 7]  i←1
[ 8] t1:→(i>n)/fim
[ 9]  defs←defs,[1]DEFIt80[y[quais[i];2]+⍳y[quais[i];3];]
[10]  resps←resps,' | ',trim DEFIt80[y[quais[i];4];]
[11]  i←i+1
[12]  →t1
[13] fim:r←2⍴0
[14]  r[1]←⊂defs
[15]  r[2]←⊂1↓resps
[16] ⍝'Tamanho ',⍕1↑⍴r
------------------------------------------------------------
[ 0]  todost80;r;lixo
[ 1] ⍝ esta funcao imprime todos os exercicios do banco de dados
[ 2]  DEFIt80←ajusta80 DEFIt80
[ 3]  r←ajusta80 ⎕FM'c:\apl2\VIVOBLO1'
[ 4]  r←r,[1]1 80⍴80↑'\section*{Listagem de todos os problemas de t80}'
[ 5]  r←r,[1]1 80⍴80↑'\begin{enumerate}'
[ 6]  r←r,[1]DEFIt80
[ 7]  r←r,[1]1 80⍴80↑'\end{enumerate}'
[ 8]  r←r,[1]1 80⍴80↑'\end{document}'
[ 9]  lixo←r ⎕FM'c:\apl2\todost80.tex'
[10]  'Salvo em c:\apl2\ com o nome de todost80.tex'
------------------------------------------------------------
[ 0]  opesq vivot80a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLt80   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
```

```
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAt80←ajusta80 FOLHALAt80
[11]  relat←((2+1↑⍴ylu),1 30+⍴FOLHALAt80)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 254⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←172 80⍴' '
[16]  f←FOLHALAt80
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[171;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[172;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerat80 8
[35]  →(163≥1↑⍴⊃xx[1])/blz88
[36]  ⍞←'$'
[37]  →inica
[38] blz88:
[39]  →(250≥1↑⍴⊃xx[2])/blz89
[40]  ⍞←'%'
[41]  →inica
[42] blz89:
[43]  esse[7+⍳163;]←163 80↑⊃xx[1]
[44]  resp←(3 0⍕resp),':',250↑⊃xx[2]
[45]  resu←resu,[1]1 254⍴resp
[46]  acuja←(f[;2]='#')/⍳1↑⍴f
[47]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4 5],' ';]
[48]  relat[1+xk;;]←(((⍴f)+0 30)↑f),[1](1,30+1↓⍴f)⍴200↑'\clearpage'
[49]  ⍞←(⍕xk←xk+1),'-'
[50]  →testa
[51] fim:upag←(1 30+⍴f)⍴' '
[52]  →(1=≡n)/elafa
[53]  upag[1;]←(1↓⍴upag)↑'\scriptsize \begin{verbatim}'
[54]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO,'  so os primeiros 110
       bytes'
[55]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),110)↑resu
[56]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[57]  →terminando
[58] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[59]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[60]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[61] terminando:
[62]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[63]  relat[1↑⍴relat;;]←upag
[64]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[65]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[66]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[67]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
```

```
------------------------------------------------------------
```

vivot82

```
[ 0]  r←acertamul x;zica;z;re;xr;gaba;lin;i;tam
[ 1]  zica←1 0↓x
[ 2]  lin←0 80ρ' '
[ 3]  zica←zica[(1↑ρzica)?1↑ρzica;]
[ 4]  zica←(4,1↓ρzica)↑zica
[ 5]  z←x[1;],[1]zica
[ 6]  re←'ABCDE'[5?5]
[ 7]  xr←(5 1ρre),')',z
[ 8]  gaba←xr[1;1]
[ 9]  xr←xr[⍋AV⍋xr[;1];]
[10] ⍝ comprime na linha
[11]  i←1
[12] t22:→(i>5)/fim
[13]  lin←lin,[1]1 80ρ80↑xr[i;]
[14]  i←i+1
[15]  →t22
[16] fim:lin[1↑ρlin;78 79 80]←'   '
[17]  r←2ρ0
[18]  r[1]←⊂lin
[19]  r[2]←⊂gaba
------------------------------------------------------------
[ 0]  r←a dif b;i
[ 1]  r←''
[ 2]  i←1
[ 3] t1:→(i>ρa)/fim
[ 4]  →(~a[i]∈b)/sim
[ 5] nao:i←i+1
[ 6]  →t1
[ 7] sim:r←r,a[i]
[ 8]  →nao
[ 9] fim:
------------------------------------------------------------
[ 0]  exemplost82;r;lixo
[ 1] ⍝ esta funcao imprime todos os exercicios do banco de dados
[ 2]  EXEMPLOSt82←ajusta80 EXEMPLOSt82
[ 3]  r←ajusta80 ⎕FM'c:\apl2\VIVOBLO1'
[ 4]  r←r,[1]1 80ρ80↑'\section*{Exemplos de t82}'
[ 5]  r←r,[1]EXEMPLOSt82
[ 6]  r←r,[1]1 80ρ80↑'\end{document}'
[ 7]  lixo←r ⎕FM'c:\apl2\exemt82.tex'
[ 8]  'Salvo em c:\apl2\ com o nome de exemt82.tex'
------------------------------------------------------------
[ 0]  r←geradefi x;lin;i;tam;tre
[ 1]  r←(((+/(,x[;1])='%')÷3),30)ρ' '
[ 2]  tam←0
[ 3]  lin←1
[ 4]  tre←0
[ 5]  i←1
[ 6] t1:→(i>1↑ρx)/fim
[ 7]  →((x[i;1]='%')∧(x[i;2]='i'))/comeca
[ 8]  →((x[i;1]='%')∧(x[i;2]='f'))/termina
[ 9]  →((x[i;1]='%')∧(x[i;2]='r'))/resposta
[10]  tam←tam+1
[11]  tre←tre+1
[12]  i←i+1
[13]  →t1
[14] comeca:r[lin;⍳3]←x[i;3 4 5]    ⍝ numero da questao
[15]  r[lin;5+⍳5]←5 0⍕i
```

```
[16]  tam←0
[17]  i←i+1
[18]  →t1
[19] resposta:r[lin;10+⍳5]←5 0⍕tam  ⍝ tamanho do enunciado
[20]  r[lin;15+⍳5]←5 0⍕i ⍝ onde comecam as respostas (e esta a certa)
[21]  tre←0
[22]  i←i+1
[23]  →t1
[24] termina:
[25]  r[lin;20+⍳5]←5 0⍕tre ⍝ tamanho das respostas
[26]  r[lin;25+⍳5]←5 0⍕i-1  ⍝ onde termina tudo
[27]  lin←lin+1
[28]  i←i+1
[29]  →t1
[30] fim:
-------------------------------------------------------------
[ 0]  r←geramult n;quais;i;y;defs;x;zz;gaba
[ 1]  gaba←''
[ 2]  DEFIt82←ajusta80 DEFIt82
[ 3]  x←geradefi DEFIt82
[ 4]  y←((1↑⍴x),6)⍴⍕,x,' '
[ 5]  quais←n?1↑⍴y
[ 6]  defs←0 80⍴' '
[ 7]  i←1
[ 8] t1:→(i>n)/fim
[ 9]  defs←defs,[1]1 80⍴80↑'\paragraph{Exercício ',(⍕i),'}'
[10]  defs←defs,[1]DEFIt82[y[quais[i];2]+⍳y[quais[i];3];]
[11]  defs←defs,[1]1 80⍴80↑'\\[0.05cm]'
[12]  zz←acertamul DEFIt82[y[quais[i];4]+⍳y[quais[i];5];]
[13]  defs←defs,[1]⊃zz[1]
[14]  gaba←gaba,⊃zz[2]
[15]  i←i+1
[16]  →t1
[17] fim:r←2⍴0
[18]  r[1]←⊂defs
[19]  r[2]←⊂gaba
[20] ⍝'Tamanho ',⍕1↑⍴r
-------------------------------------------------------------
[ 0]  todost82;r;lixo
[ 1] ⍝ esta funcao imprime todos os exercicios do banco de dados
[ 2]  DEFIt82←ajusta80 DEFIt82
[ 3]  r←ajusta80 ⎕FM'c:\apl2\VIVOBLO1'
[ 4]  r←r,[1]1 80⍴80↑'\section*{Listagem de todos os problemas de t82}'
[ 5]  r←r,[1]1 80⍴80↑'\begin{enumerate}'
[ 6]  r←r,[1]DEFIt82
[ 7]  r←r,[1]1 80⍴80↑'\end{enumerate}'
[ 8]  r←r,[1]1 80⍴80↑'\end{document}'
[ 9]  lixo←r ⎕FM'c:\apl2\todost82.tex'
[10]  'Salvo em c:\apl2\ com o nome de todost82.tex'
-------------------------------------------------------------
[ 0]  r←a uniao b;i
[ 1]  r←a
[ 2]  i←1
[ 3] t1:→(i>⍴b)/fim
[ 4]  →(~b[i]∊a)/sim
[ 5] nao:i←i+1
[ 6]  →t1
[ 7] sim:r←r,b[i]
[ 8]  →nao
[ 9] fim:
-------------------------------------------------------------
[ 0]  opesq vivot82a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
```

```
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLt82   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAt82←ajusta80 FOLHALAt82
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAt82)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 13⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←209 80⍴' '
[16]  f←FOLHALAt82
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[208;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[209;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geramult 10
[35]  →(200<1↑⍴⊃xx[1])/naodeu
[36]  →foi
[37] naodeu:⍞←'¿'
[38]  →inica
[39] foi:
[40]  esse[7+⍳200;]←200 80↑⊃xx[1]
[41]  resp←(3 0⍎resp),,⊃xx[2]
[42]  resu←resu,[1]1 13⍴resp
[43]  acuja←(f[;2]='#')/⍳1↑⍴f
[44]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4 5],' ';]
[45]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[46]  ⍞←(⍎xk←xk+1),'-'
[47]  →testa
[48] fim:upag←(1 0+⍴f)⍴' '
[49]  →(1=≡n)/elafa
[50]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[51]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[52]  upag[2+⍳1↑⍴resu;⍳16]←((3⍴1),0,0,(5⍴1),0,(5⍴1))\[2]resu
[53]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[54]  →terminando
[55] elafa:aaa←(ylu[;⍳36],0 3↓resu)
[56]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[57]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[58] terminando:
[59]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[60]  relat[1↑⍴relat;;]←upag
[61]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[62]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
```

```
[63]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[64]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivot85

```
[ 0]  r←gerat85e1;e;t;s
[ 1] denovo:
[ 2]  e←(1000+100×?10),(1+?5),30+5×?9
[ 3]  →(e[3]<e[1]÷e[2]+1)/ok1
[ 4]  ⍞←'*'
[ 5]  →denovo
[ 6] ok1:
[ 7]  t←6 80ρ' '
[ 8]  t[1;]←80↑'Um fazendeiro tem ',(⍕e[1]),' m de cerca guardados em seu celeiro.'
[ 9]  t[2;]←80↑'Ele pretende cercar um pasto retangular dividido em ',(⍕e[2])
[10]  t[3;]←80↑'regiões por uma cerca perpendicular a um lado e paralela a outra.'
[11]  t[4;]←80↑'Todas as regiões devem ter a mesma área. Expresse a área do pasto'
[12]  t[5;]←80↑'cercado como uma função de seu comprimento $x$. Depois calcule a'
[13]  t[6;]←80↑'área se $x=',(⍕e[3]),' m$.'
[14]  s←resolt85e1 e
[15]  r←3ρ0
[16]  r[1]←⊂e
[17]  r[2]←⊂s
[18]  r[3]←⊂t
------------------------------------------------------------
[ 0]  r←gerat85e10;e;t;s;x
[ 1] denovo:
[ 2]  e←(300+10×?20),30+?30
[ 3]  s←resolt85e10 e
[ 4]  →(s>0)/ok
[ 5]  ⍞←'%'
[ 6]  →denovo
[ 7] ok:
[ 8]  t←6 80ρ' '
[ 9]  t[1;]←80↑'Uma janela de igreja deve ter a forma de um retângulo encimado por semicír
      culo.'
[10]  t[2;]←80↑'Se o perímetro da janela é de ',(⍕e[1]),' cm, expresse a área como uma fun
      ção'
[11]  t[3;]←80↑'do raio semicircular $r$, conforme\\*'
[12]  t[4;]←80↑'\includegraphics[scale=0.5]{t85a08.jpg}'
[13]  t[5;]←80↑'E depois calcule a área de uma instância onde $r=',(⍕e[2]),' cm$.\\[0.8cm]
      '
[14]  r←3ρ0
[15]  r[1]←⊂e
[16]  r[2]←⊂s
[17]  r[3]←⊂t
------------------------------------------------------------
[ 0]  r←gerat85e2;e;t;s
[ 1] denovo:e←(200+10×?20),10+5×?10
[ 2]  →(e[2]<e[1]÷○2)/ok
[ 3]  ⍞←'o'
[ 4]  →denovo
[ 5] ok:
[ 6]  t←6 80ρ' '
[ 7]  t[1;]←80↑'Uma pista de corrida tem ',(⍕e[1]),' metros. A pista é similar a'
[ 8]  t[2;]←80↑'um campo de futebol, mas nas extremidades mais afastadas (onde '
[ 9]  t[3;]←80↑'estariam as linhas de fundo) há dois semicirculos conectando as'
[10]  t[4;]←80↑'laterais. Expresse a área fechada pela trilha como uma função do'
[11]  t[5;]←80↑'raio semicircular. Depois calcule essa área para um raio de '
[12]  t[6;]←80↑(⍕e[2]),' metros.'
[13]  s←resolt85e2 e
```

```
[14]  r←3ρ0
[15]  r[1]←⊂e
[16]  r[2]←⊂s
[17]  r[3]←⊂t
-------------------------------------------------------------
[ 0]  r←gerat85e3;e;t;s
[ 1] denovo:e←(1+?5),(100+5×?9),5×?9    ⍝ quantas vezes mais comprida,volume,largura do ca
      so numerico
[ 2]  →(1)/ok
[ 3]  □←'□'
[ 4]  →denovo
[ 5] ok:
[ 6]  t←6 80ρ' '
[ 7]  t[1;]←80↑'Uma caixa fechada tem uma base que é ',(⍕e[1]),' vezes mais comprida'
[ 8]  t[2;]←80↑'que a largura. Se o seu volume é de ',(⍕e[2]),' $cm^3$, expresse sua'
[ 9]  t[3;]←80↑'área de superfície como uma funçto de sua largura. Depois calcule'
[10]  t[4;]←80↑'a área de superfície para uma caixa de largura igual a ',(⍕e[3])
[11]  t[5;]←80↑'centímetros.'
[12]  s←resolt85e3 e
[13]  r←3ρ0
[14]  r[1]←⊂e
[15]  r[2]←⊂s
[16]  r[3]←⊂t
-------------------------------------------------------------
[ 0]  r←gerat85e4;e;t;s
[ 1] denovo:e←(150×1+?7),6+2×?10
[ 2]  t←6 80ρ' '
[ 3]  t[1;]←80↑'Um cilindro com uma base circular tem uma área total de '
[ 4]  t[2;]←80↑(⍕e[1]),' $cm^2$. Expresse seu volume como uma funçto de seu'
[ 5]  t[3;]←80↑'raio $r$ e depois calcule o volume de um cilindro de raio'
[ 6]  t[4;]←80↑'igual a ',(⍕e[2]),' centímetros. '
[ 7]  s←resolt85e4 e
[ 8]  →(s<0)/denovo
[ 9]  r←3ρ0
[10]  r[1]←⊂e
[11]  r[2]←⊂s
[12]  r[3]←⊂t
-------------------------------------------------------------
[ 0]  r←gerat85e5;e;t;s;xx;oq
[ 1]  xx←5 20ρ(20↑'água'),(20↑'cerveja'),(20↑'benzina'),(20↑'cachaça'),20↑'gasolina'
[ 2] denovo:e←(9+?5),(2+?5),4+?5
[ 3]  →(1)/ok
[ 4]  □←'□'
[ 5]  →denovo
[ 6] ok:
[ 7]  t←6 80ρ' '
[ 8]  oq←trim xx[?5;]
[ 9]  t[1;]←80↑oq,' é armazenada em um tanque com a forma de um cone invertido de '
[10]  t[2;]←80↑'altura igual a ',(⍕e[1]),' pés e diâmetro de ',(⍕e[2]),' pés.⍀⍀*'
[11]  t[3;]←80↑'⍀includegraphics[scale=0.5]{t85a05.jpg}'
[12]  t[4;]←80↑'Expresse o volume de ',oq,' como uma funçto da altura $h$ do nível '
[13]  t[5;]←80↑'de ',oq,'. Depois calcule o volume para um $h=',(⍕e[3]),'$ pés.'
[14]  t[6;]←80↑'              Lembre que $V_{cone}= ⍀frac 13 ⍀pi r^2 h$.'
[15]  s←resolt85e5 e
[16]  r←3ρ0
[17]  r[1]←⊂e
[18]  r[2]←⊂s
[19]  r[3]←⊂t
-------------------------------------------------------------
[ 0]  r←gerat85e6;e;t;s;xx;oq;ob
[ 1]  xx←5 20ρ(20↑'barro'),(20↑'concreto'),(20↑'refugo'),(20↑'plástico'),20↑'papelto'
[ 2]  oq←trim xx[?5;]
[ 3]  xx←4 20ρ(20↑'potes'),(20↑'vasos'),(20↑'enfeites'),20↑'objetos'
```

```
[ 4]  ob←trim xx[?4;]
[ 5] denovo:e←(8+2×?4),(300+50×?6),(4+2×?5),(2×?6),(14+?4),(90+5×?9)
[ 6]  t←6 80ρ' '
[ 7]  t[1;]←80↑'Uma máquina pode produzir ',(⍕e[1]),' ',ob,' de ',oq,' por hora.'
[ 8]  t[2;]←80↑'Custa ↑$ ',(⍕e[2]),' para preparar a máquina e ↑$ ',(⍕e[3]),' por hora'
[ 9]  t[3;]←80↑'o uso da máquina. Cada ',(¯1↓ob),' exige ↑$ ',(⍕e[4]),' de ',oq,'. Se o ',
      ¯1↓ob
[10]  t[4;]←80↑'pode ser vendido a ↑$ ',(⍕e[5]),' expresse o lucro produzindo operando a'
[11]  t[5;]←80↑'$t$ horas. Depois calcule o lucro operando por ',(⍕e[6]),' horas '
[12]  t[6;]←80↑' ininterruptas de produçto de ',ob,'.'
[13]  s←resolt85e6 e
[14]  →(s>0)/ok
[15]  ⍞←'ω'
[16]  →denovo :
[17] ok:
[18]  r←3ρ0
[19]  r[1]←⊂e
[20]  r[2]←⊂s
[21]  r[3]←⊂t
-------------------------------------------------------------
[ 0]  r←gerat85e7;e;t;s;xx;oq;ob
[ 1]  xx←3 20ρ(20↑'rio'),(20↑'vale'),(20↑'desfiladeiro')
[ 2]  oq←,trim xx[?3;]
[ 3] denovo:e←(80+10×?6),(500+50×?8),(5+?5),(1+?4),300+10×?15  ⍝ entre margens, comprim, p
      reco rio, preco seco, caso
[ 4]  t←6 80ρ' '
[ 5]  t[1;]←80↑'Um ',oq,' tem ',(⍕e[1]),' m de largura. A companhia local de telefonia'
[ 6]  t[2;]←80↑'precisa passar um cabo entre os pontos $A$ e $B$. $A$ está em um lado '
[ 7]  t[3;]←80↑'do ',oq,' e $B$ do outro lado a uma distância de ',(⍕e[2]),' m conforme↑↑*
      '
[ 8]  t[4;]←80↑'↑includegraphics[scale=0.5]{t85a06.jpg}'
[ 9]  t[5;]←80↑'Custa ↑$',(⍕e[3]),'/m extender o cabo sob o ',oq,' e ↑$',(⍕e[4]),'/m na'
[10]  t[6;]←80↑'outra margem. Ache o custo em funçto de $x$ e depois calcule se $x=',(⍕e[5
      ]),'m.$'
[11]  s←resolt85e7 e
[12]  →(s>0)/ok
[13]  ⍞←'ω'
[14]  →denovo :
[15] ok:
[16]  r←3ρ0
[17]  r[1]←⊂e
[18]  r[2]←⊂s
[19]  r[3]←⊂t
-------------------------------------------------------------
[ 0]  r←gerat85e8;e;t;s;x
[ 1] denovo:x←(100+5×?9)
[ 2]  e←x,(?40)+⌊x×0.55
[ 3]  →(e[2]<e[1])/ok
[ 4]  ⍞←'x'
[ 5]  →denovo :
[ 6] ok:
[ 7]  t←6 80ρ' '
[ 8]  t[1;]←80↑'Um retângulo deve ser inscrito em um semicírculo de raio ',(⍕e[1])
[ 9]  t[2;]←80↑'com a base do retângulo repousando ao longo da base do semicírculo.'
[10]  t[3;]←80↑'Expresse a área do retângulo como uma funçto de sua largura e depois'
[11]  t[4;]←80↑'calcule a área do retângulo se a largura dele é de ',(⍕e[2]),'.'
[12]  s←resolt85e8 e
[13]  r←3ρ0
[14]  r[1]←⊂e
[15]  r[2]←⊂s
[16]  r[3]←⊂t
-------------------------------------------------------------
[ 0]  r←gerat85e9;e;t;s;x
```

```
[ 1]  e←(8+?8),(14+?8),0.5×?7 ⍝ largura,comprimento e x
[ 2]  t←6 80⍴' '
[ 3]  t[1;]←80↑'Uma caixa aberta deve ser construída a partir de uma peça retangular de'
[ 4]  t[2;]←80↑'metal de ',(⍕e[1]),' por ',(⍕e[2]),' cortando-se peças quadradas de lado'
[ 5]  t[3;]←80↑'$x$ em cada um dos 4 cantos e dobrando-se os lados, conforme a figura\\*'
[ 6]  t[4;]←80↑'\includegraphics[scale=0.5]{t85a07.jpg}'
[ 7]  t[5;]←80↑'Expresse o volume da caixa em função de $x$ e depois calcule o volume'
[ 8]  t[6;]←80↑'de uma instância onde $x$ vale ',(⍕e[3]),'.'
[ 9]  s←resolt85e9 e
[10]  r←3⍴0
[11]  r[1]←⊂e
[12]  r[2]←⊂s
[13]  r[3]←⊂t
------------------------------------------------------------
[0]  r←resolt85e1 e
[1]  r←((e[1]÷2)×e[3])-((e[2]+1)÷2)×e[3]*2
------------------------------------------------------------
[0]  r←resolt85e10 e
[1]  r←±20 0⍕(e[1]×e[2])-(2×e[2]*2)+0.5×○e[2]*2
------------------------------------------------------------
[0]  r←resolt85e2 e
[1]  r←±10 0⍕(×/e)-○e[2]*2
------------------------------------------------------------
[0]  r←resolt85e3 e
[1]  r←±20 0⍕((2×e[1])×e[3]*2)+(2×(e[2]÷(e[3]×e[1])))+(2×(e[2]÷e[3]))
------------------------------------------------------------
[0]  r←resolt85e4 e
[1]  r←±20 0⍕((e[1]÷2)×e[2])-0.5×○e[2]*3
------------------------------------------------------------
[0]  r←resolt85e5 e
[1]  r←±20 0⍕(1÷12)×((○(e[2]*2)×e[3]*3))÷e[1]*2
------------------------------------------------------------
[0]  r←resolt85e6 e
[1]  r←(e[5]×e[1]×e[6])-e[2]+((e[3]+e[4]×e[1])×e[6])
------------------------------------------------------------
[0]  r←resolt85e7 e
[1]  r←±20 0⍕(e[3]×(((e[5]*2)+(e[1]*2))*0.5))+(e[4]×e[2])-(e[4]×e[5])
------------------------------------------------------------
[0]  r←resolt85e8 e
[1]  r←±20 0⍕2×e[2]×((4×e[1]*2)-4×e[2]*2)*0.5
------------------------------------------------------------
[0]  r←resolt85e9 e
[1]  r←±20 0⍕(e[3]×e[1]×e[2])+(4×e[3]*3)-((2×e[1]×e[3]*2)+(2×e[2]×e[3]*2))
------------------------------------------------------------
[ 0]  opesq vivot85a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLt85   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAt85←ajusta80 FOLHALAt85
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAt85)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 11⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←69 80⍴' '
[16]  f←FOLHALAt85
```

```
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;ι6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;ι4]=((1↑⍴f),4)⍴'⍀#05')/ι1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+ι30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[68;ι10]←'@',esse[6;5+ι3],esse[4;1+ι5],'@'
[32]  esse[69;]←80↑esse[6;5+ι3],'-',esse[4;1+ι5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerat85e1
[35]  esse[7+ι6;]←⊃xx[3]
[36]  resp←resp,,⊃xx[2]
[37]  xx←gerat85e2
[38]  esse[13+ι6;]←⊃xx[3]
[39]  resp←resp,,⊃xx[2]
[40]  xx←gerat85e3
[41]  esse[19+ι6;]←⊃xx[3]
[42]  resp←resp,,⊃xx[2]
[43]  xx←gerat85e4
[44]  esse[25+ι6;]←⊃xx[3]
[45]  resp←resp,,⊃xx[2]
[46]  xx←gerat85e5
[47]  esse[31+ι6;]←⊃xx[3]
[48]  resp←resp,,⊃xx[2]
[49]  xx←gerat85e6
[50]  esse[37+ι6;]←⊃xx[3]
[51]  resp←resp,,⊃xx[2]
[52]  xx←gerat85e7
[53]  esse[43+ι6;]←⊃xx[3]
[54]  resp←resp,,⊃xx[2]
[55]  xx←gerat85e8
[56]  esse[49+ι6;]←⊃xx[3]
[57]  resp←resp,,⊃xx[2]
[58]  xx←gerat85e9
[59]  esse[55+ι6;]←⊃xx[3]
[60]  resp←resp,,⊃xx[2]
[61]  xx←gerat85e10
[62]  esse[61+ι6;]←⊃xx[3]
[63]  resp←resp,,⊃xx[2]
[64]  resu←resu,[1]1 11⍴resp
[65]  acuja←(f[;2]='#')/ι1↑⍴f
[66]  f[acuja;ι80]←esse[⍋,f[acuja;3 4],' ';]
[67]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[68]  ⍞←(⍕xk←xk+1),'-'
[69]  →testa
[70] fim:upag←(1 0+⍴f)⍴' '
[71]  →(1=≡n)/elafa
[72]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[73]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[74]  upag[2+ι1↑⍴resu;ι+/lixo1]←(lixo1←5 0,20⍴7 0)⍕resu
[75]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[76]  →terminando
[77] elafa:aaa←(ylu[;ι36],9 0⍕0 1↓resu)
[78]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[79]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
```

```
[80] terminando:
[81]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[82]  relat[1↑⍴relat;;]←upag
[83]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[84]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[85]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[86]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivot87

```
[ 0]  r←gerat87e1;e;t;s
[ 1] denovo:
[ 2]  e←1+?30
[ 3] ⍝ →(e[3]<e[1]÷e[2]+1)/ok1  ⍝ acertar
[ 4] ⍝ ⎕←'*'
[ 5] ⍝ →denovo
[ 6] ok1:
[ 7]  t←6 80⍴' '
[ 8]  t[1;]←80↑'Ache a taxa de mudança do volume de uma esfera '
[ 9]  t[2;]←80↑'com relaçto a seu raio $r$ '
[10]  t[3;]←80↑'quando seu raio é ',(⍕e),'.'
[11]  t[4;]←80↑'Lembre que $$V_e=\frac{4}{3}\pi r^3$$'
[12]  t[5;]←80↑' '
[13]  t[6;]←80↑'\\[0.4cm] '
[14]  s←resolt87e1 e
[15]  r←3⍴0
[16]  r[1]←⊂e
[17]  r[2]←⊂s
[18]  r[3]←⊂t
------------------------------------------------------------
[ 0]  r←gerat87e10;e;t;s;aspa
[ 1] denovo:
[ 2]  e←(0.001×?9),(0.01×?9),(0.01×?9),(0.1×?99),?9
[ 3]  t←6 80⍴' '
[ 4]  t[1;]←80↑'O Relatório de Impacto Ambiental (RIMA) de um emprendimento industrial'
[ 5]  t[2;]←80↑'em uma pequena cidade indica que em $t$ anos o nível de Monóxido de'
[ 6]  t[3;]←80↑'Carbono será $$q(t)=',(⍕e[1]),'t^3+',(⍕e[2]),'t^2+',(⍕e[3]),'t+',(⍕e[4]),'
      $$'
[ 7]  t[4;]←80↑'partes por milhto (ppm). A taxa de crescimento do CO após ',(⍕e[5]),' anos
      '
[ 8]  t[5;]←80↑'deverá ser igual a quantas ppMIL por ano ? (nto esqueça de multiplicar por
       1000).'
[ 9]  t[6;]←80↑'Note que a taxa de mudança de CO/ano é igual a derivada de $q(t)$.\\[0.8cm
      ] '
[10]  s←⍤20 0⍕resolt87e10 e
[11]  r←3⍴0
[12]  r[1]←⊂e
[13]  r[2]←⊂s
[14]  r[3]←⊂t
------------------------------------------------------------
[ 0]  r←gerat87e2;e;t;s
[ 1] denovo:
[ 2]  e←(1+?15),(1+?20),(1+?50),(1+?15)
[ 3] ⍝ →(e[3]<e[1]÷e[2]+1)/ok1  ⍝ acertar
[ 4] ⍝ ⎕←'*'
[ 5] ⍝ →denovo
[ 6] ok1:
[ 7]  t←6 80⍴' '
[ 8]  t[1;]←80↑'A posiçto de uma partícula (em metros) ao longo do eixo $x$'
[ 9]  t[2;]←80↑'após $t$ segundos é dada pela equaçto'
[10]  t[3;]←80↑'$$x=',(⍕e[1]),'t^2-',(⍕e[2]),'t^3+',(⍕e[3]),'$$'
```

```
[11]  t[4;]←80↑'Desenhe no verso desta folha um gráfico descrevendo o movimento'
[12]  t[5;]←80↑'da partícula nos primeiros 20 segundos. '
[13]  t[6;]←80↑'Qual a velocidade da partícula no segundo ',(⍕e[4]),' ?⍀⍀[0.4cm]'
[14]  s←resolt87e2 e
[15]  r←3⍴0
[16]  r[1]←⊂e
[17]  r[2]←⊂s
[18]  r[3]←⊂t
-------------------------------------------------------------
[ 0]  r←gerat87e3;e;t;s
[ 1] denovo:
[ 2]  e←(1+?15),(100+?100),(1+?10)
[ 3]  t←6 80⍴' '
[ 4]  t[1;]←80↑'A altura em pés em qualquer instante $t$ de um projétil'
[ 5]  t[2;]←80↑'lançado verticalmente é'
[ 6]  t[3;]←80↑'$$h(t)=-',(⍕e[1]),'t^2+',(⍕e[2]),'t$$'
[ 7]  t[4;]←80↑'Quto alto ele está no tempo ',(⍕e[3]),' ?'
[ 8]  t[5;]←80↑' '
[ 9]  t[6;]←80↑'⍀⍀[0.4cm] '
[10]  s←resolt87e3 e
[11]  →(s>0)/ok
[12]  ⍞←'O'
[13]  →denovo
[14] ok:
[15]  r←3⍴0
[16]  r[1]←⊂e
[17]  r[2]←⊂s
[18]  r[3]←⊂t
-------------------------------------------------------------
[ 0]  r←gerat87e4;e;t;s
[ 1] denovo:
[ 2]  e←(1+?15),(10+?10),(1+?10),1+?8
[ 3]  t←6 80⍴' '
[ 4]  t[1;]←80↑'O movimento de elétrons através de um fio produz corrente elétrica.'
[ 5]  t[2;]←80↑'Se $Q$ é a carga medida em Coulombs, entto a corrente $I$ medida em '
[ 6]  t[3;]←80↑'Ampéres é a taxa de mudança de $Q$ em relaçto ao tempo medido em seg.'
[ 7]  t[4;]←80↑'A carga em Coulombs que passa em um fio é dada pela funçto '
[ 8]  t[5;]←80↑'$$Q(t)=t^3-',(⍕e[1]),'t^2+',(⍕e[2]),'t+',(⍕e[3]),'$$'
[ 9]  t[6;]←80↑'Determine a corrente ao final de ',(⍕e[4]),' segundos.⍀⍀[0.4cm]'
[10]  s←resolt87e4 e
[11]  →(s>0)/ok
[12]  ⍞←'O'
[13]  →denovo
[14] ok:
[15]  r←3⍴0
[16]  r[1]←⊂e
[17]  r[2]←⊂s
[18]  r[3]←⊂t
-------------------------------------------------------------
[ 0]  r←gerat87e5;e;t;s
[ 1] denovo:
[ 2]  e←(1+?15),(10+?10),(1+?10),1+?8
[ 3]  t←6 80⍴' '
[ 4]  t[1;]←80↑'O número de bactérias em uma placa de petri após $t$ horas é de'
[ 5]  t[2;]←80↑'$$n(t)=',(⍕e[1]),'t^3+',(⍕e[2]),'t+',(⍕e[3]),'$$'
[ 6]  t[3;]←80↑'Quto rápido a populaçto cresce após ',(⍕e[4]),' horas, '
[ 7]  t[4;]←80↑'medida em bactérias por hora ? '
[ 8]  t[5;]←80↑' '
[ 9]  t[6;]←80↑'⍀⍀[0.4cm] '
[10]  s←resolt87e5 e
[11]  →(s>0)/ok
[12]  ⍞←'O'
[13]  →denovo
```

```
[14] ok:
[15]  r←3⍴0
[16]  r[1]←⊂e
[17]  r[2]←⊂s
[18]  r[3]←⊂t
-------------------------------------------------------------
[ 0]  r←gerat87e6;e;t;s
[ 1] denovo:
[ 2]  e←(1000+100×?15),(30+?10),(10+?20)
[ 3]  t←6 80⍴' '
[ 4]  t[1;]←80↑'Um tanque de ',(⍕e[1]),' litros de água drena em ',(⍕e[2]),' minutos.'
[ 5]  t[2;]←80↑'A Lei de Torricelli diz:'
[ 6]  t[3;]←80↑'$$V(t)=',(⍕e[1]),'\left(1-\frac{1}{',(⍕e[2]),'}\right)^2 \ \ 0\le t \le',(
      ⍕e[2]),'$$'
[ 7]  t[4;]←80↑'Quto rápido a água drena após ',(⍕e[3]),' minutos ?\\[0.1cm]'
[ 8]  t[5;]←80↑'A lei de Torricelli  estuda o fluxo de um líquido contido em'
[ 9]  t[6;]←80↑'um recipiente escapando através de um orifício pela açto da gravidade.\\[0
      .4cm]'
[10]  s←⍪20 0⍕resolt87e6 e
[11]  r←3⍴0
[12]  r[1]←⊂e
[13]  r[2]←⊂s
[14]  r[3]←⊂t
-------------------------------------------------------------
[ 0]  r←gerat87e7;e;t;s
[ 1] denovo:
[ 2]  e←(1+?4),(4+?5),(2+?20)
[ 3]  t←6 80⍴' '
[ 4]  t[1;]←80↑'Se $$f(x)=\sqrt[',(⍕e[1]),']{x^',(⍕e[2]),'}$$'
[ 5]  t[2;]←80↑'Qual a taxa de mudança em relaçto a $x$ quando $x=',(⍕e[3]),'$ ?'
[ 6]  t[3;]←80↑' '
[ 7]  t[4;]←80↑' '
[ 8]  t[5;]←80↑' '
[ 9]  t[6;]←80↑'Em Maple: f(x):=...; e depois diff(f(x),x);\\[0.4cm]'
[10]  s←⍪20 0⍕resolt87e7 e
[11]  r←3⍴0
[12]  r[1]←⊂e
[13]  r[2]←⊂s
[14]  r[3]←⊂t
-------------------------------------------------------------
[ 0]  r←gerat87e8;e;t;s
[ 1] denovo:
[ 2]  e←(20+10×?7),(20+10×?9),(10×?5)
[ 3]  t←6 80⍴' '
[ 4]  t[1;]←80↑'A Lei de Boyle afirma que quando um gás é comprimido a temperatura '
[ 5]  t[2;]←80↑'constante, o produto da pressto pelo volume permanece constante.'
[ 6]  t[3;]←80↑'Se a pressto de um gás é de $',(⍕e[1]),' lb/in^2$, quando o volume é'
[ 7]  t[4;]←80↑'$',(⍕e[2]),' in^3$, ache a taxa de variaçto da pressto em relaçto ao '
[ 8]  t[5;]←80↑'volume quando o volume é de $',(⍕e[3]),' in^3$.\\[0.4cm] '
[ 9]  t[6;]←80↑' '
[10]  s←⍪20 0⍕resolt87e8 e
[11]  r←3⍴0
[12]  r[1]←⊂e
[13]  r[2]←⊂s
[14]  r[3]←⊂t
-------------------------------------------------------------
[ 0]  r←gerat87e9;e;t;s;aspa
[ 1]  aspa←''''
[ 2] denovo:
[ 3]  e←(500+100×?9),(1000+100×?99),(10000+1000×?99),2+?8
[ 4]  t←6 80⍴' '
[ 5]  t[1;]←80↑'O valor de um torno industrial após $t$ anos de serviço é '
[ 6]  t[2;]←80↑'$$V(t)=',(⍕e[1]),'t^2-',(⍕e[2]),'t+',(⍕e[3]),'$$ reais.'
```

```
[ 7]  t[3;]←80↑'A qual taxa o torno deve ser depreciado após ',(⍕e[4]),' anos ?'
[ 8]  t[4;]←80↑'A taxa de depreciaçto é a taxa na qual o valor é perdido. Se $V(t)$'
[ 9]  t[5;]←80↑'representa o valor da máquina após $t$ anos, $V',aspa,'(t)$'
[10]  t[6;]←80↑'representa a taxa pela qual o valor muda. ⍀⍀[0.4cm]'
[11]  s←⍬20 0⍕resolt87e9 e
[12]  r←3⍴0
[13]  r[1]←⊂e
[14]  r[2]←⊂s
[15]  r[3]←⊂t
-------------------------------------------------------------
[0]  r←resolt87e1 e
[1]  r←○4×e*2
-------------------------------------------------------------
[0]  r←resolt87e10 e
[1]  r←1000×(e[1]×3×e[5]*2)+(e[2]×2×e[5])+e[3]
-------------------------------------------------------------
[0]  r←resolt87e2 e
[1]  x←e[1]×2
[2]  x←x,e[2]×3
[3]  r←(x[1]×e[4])-x[2]×e[4]*2
-------------------------------------------------------------
[0]  r←resolt87e3 e
[1]  r←(e[2]×e[3])-e[1]×e[3]*2
-------------------------------------------------------------
[0]  r←resolt87e4 e
[1]  r←(3×e[4]*2)+e[2]-2×e[1]×e[4]
-------------------------------------------------------------
[0]  r←resolt87e5 e
[1]  r←(3×e[1]×e[4]*2)+e[2]
-------------------------------------------------------------
[0]  r←resolt87e6 e
[1]  r←(-2)×(e[1]×(1-(e[3]÷e[2])))÷e[2]
-------------------------------------------------------------
[0]  r←resolt87e7 e
[1]  r←(e[2]×e[3]*(e[2]÷e[1]))÷e[1]×e[3]
-------------------------------------------------------------
[0]  r←resolt87e8 e
[1]  r←-(e[1]×e[2])÷e[3]*2
-------------------------------------------------------------
[0]  r←resolt87e9 e
[1]  r←(e[1]×2×e[4])-e[2]
-------------------------------------------------------------
[ 0]  opesq vivot87a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLt87   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAt87←ajusta80 FOLHALAt87
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAt87)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 11⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←69 80⍴' '
[16]  f←FOLHALAt87
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
```

```
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[68;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[69;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerat87e1
[35]  esse[7+⍳6;]←⊃xx[3]
[36]  resp←resp,,⊃xx[2]
[37]  xx←gerat87e2
[38]  esse[13+⍳6;]←⊃xx[3]
[39]  resp←resp,,⊃xx[2]
[40]  xx←gerat87e3
[41]  esse[19+⍳6;]←⊃xx[3]
[42]  resp←resp,,⊃xx[2]
[43]  xx←gerat87e4
[44]  esse[25+⍳6;]←⊃xx[3]
[45]  resp←resp,,⊃xx[2]
[46]  xx←gerat87e5
[47]  esse[31+⍳6;]←⊃xx[3]
[48]  resp←resp,,⊃xx[2]
[49]  xx←gerat87e6
[50]  esse[37+⍳6;]←⊃xx[3]
[51]  resp←resp,,⊃xx[2]
[52]  xx←gerat87e7
[53]  esse[43+⍳6;]←⊃xx[3]
[54]  resp←resp,,⊃xx[2]
[55]  xx←gerat87e8
[56]  esse[49+⍳6;]←⊃xx[3]
[57]  resp←resp,,⊃xx[2]
[58]  xx←gerat87e9
[59]  esse[55+⍳6;]←⊃xx[3]
[60]  resp←resp,,⊃xx[2]
[61]  xx←gerat87e10
[62]  esse[61+⍳6;]←⊃xx[3]
[63]  resp←resp,,⊃xx[2]
[64]  resu←resu,[1]1 11⍴resp
[65]  acuja←(f[;2]='#')/⍳1↑⍴f
[66]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[67]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[68]  ⍞←(⍕xk←xk+1),'-'
[69]  →testa
[70] fim:upag←(1 0+⍴f)⍴' '
[71]  →(1=≡n)/elafa
[72]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[73]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[74]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯'-'edit(lixo1←5 0,20⍴7 0)⍕resu
[75]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[76]  →terminando
[77] elafa:aaa←(ylu[;⍳36],'¯'-'edit 9 0⍕0 1↓resu)
[78]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[79]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[80] terminando:
[81]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
```

```
[82]  relat[1↑⍴relat;;]←upag
[83]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[84]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[85]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[86]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivot89

```
[ 0]  r←gerat89e1;e;t;s
[ 1] denovo:
[ 2]  e←(10+?15),(1+0.5×?6)
[ 3]  e←e,?e[1]
[ 4]  →(e[3]<e[1]÷e[2]+1)/ok1  ⍝ acertar
[ 5]  ⎕←'*'
[ 6]  →denovo
[ 7] ok1:
[ 8]  t←6 80⍴' '
[ 9]  t[1;]←80↑'Uma escada de ',(⍕e[1]),' m é colocada contra um muro. O pé da escada'
[10]  t[2;]←80↑'começa a deslizar se afastando do muro à razto de ',(⍕e[2]),' m/seg.'
[11]  t[3;]←80↑'Quto rápido o topo da escada desliza para baixo no muro quando o pé da'
[12]  t[4;]←80↑'escada está a ',(⍕e[3]),' m do muro ?\\*'
[13]  t[5;]←80↑'Resposta em cm/seg (multiplique por 100).\\* '
[14]  t[6;]←80↑'\includegraphics[scale=',ESCALA,']{t89a02.jpg}'
[15]  s←resolt89e1 e
[16]  r←3⍴0
[17]  r[1]←⊂e
[18]  r[2]←⊂s
[19]  r[3]←⊂t
------------------------------------------------------------
[ 0]  r←gerat89e10;e;t;s
[ 1] denovo:
[ 2]  e←(1+?9),3+?9
[ 3]  t←6 80⍴' '
[ 4]  t[1;]←80↑'Areia está sendo descarregada de uma esteira à taxa de ',(⍕e[1]),' metros'
[ 5]  t[2;]←80↑'cúbicos por minuto e forma uma pilha similar a um cone cuja altura é'
[ 6]  t[3;]←80↑'sempre metade do seu raio. Quto rápido a altura varia quando a pilha'
[ 7]  t[4;]←80↑'tem ',(⍕e[2]),' metros de altura ?\\*'
[ 8]  t[5;]←80↑'Resposta em $cm/hora \ (multiplique \ por \ 100 \times 60 = 6000)$.\\* '
[ 9]  t[6;]←80↑'\includegraphics[scale=0.85]{t89a10.jpg}'
[10]  s←resolt89e10 e
[11]  r←3⍴0
[12]  r[1]←⊂e
[13]  r[2]←⊂s
[14]  r[3]←⊂t
------------------------------------------------------------
[ 0]  r←gerat89e2;e;t;s
[ 1] denovo:
[ 2]  e←(10+?15),(1+0.5×?6)
[ 3]  e←e,?e[1]
[ 4]  →(e[3]<e[1]÷e[2]+1)/ok1
[ 5]  ⎕←'*'
[ 6]  →denovo
[ 7] ok1:
[ 8]  t←6 80⍴' '
[ 9]  t[1;]←80↑'Em um certo instante o carro $A$ está a ',(⍕e[1]),' km ao norte do carro'
[10]  t[2;]←80↑'$B$. $A$ viaja a sul com velocidade de ',(⍕e[2]),' km/h, enquanto $B$ viaj
      a a'
[11]  t[3;]←80↑'este a ',(⍕e[3]),' km/h. Quto rápido a distância entre eles variou 1 hora
      mais'
[12]  t[4;]←80↑'tarde ?\\*'
[13]  t[5;]←80↑'Resposta em metros/segundo (multiplique por 1000).\\*'
```

```
[14]  t[6;]←80↑'\includegraphics[scale=',ESCALA,']{t89a03.jpg}'
[15]  s←resolt89e2 e
[16]  r←3ρ0
[17]  r[1]←⊂e
[18]  r[2]←⊂s
[19]  r[3]←⊂t
-------------------------------------------------------------
[ 0]  r←gerat89e3;e;t;s
[ 1] denovo:
[ 2]  e←(?8),(400+10×?15),(?6)
[ 3]  t←6 80ρ' '
[ 4]  t[1;]←80↑'Um avião $P$ viaja horizontalmente em uma altitude de ',(⍕e[1]),' km, com
      uma'
[ 5]  t[2;]←80↑'velocidade de ',(⍕e[2]),' km/h. Em certo momento ele passa pela vertical d
      e uma'
[ 6]  t[3;]←80↑'estação de radar. Quão rápido a distância entre avião e radar aumenta '
[ 7]  t[4;]←80↑(⍕e[3]),' minutos mais tarde ?\\*'
[ 8]  t[5;]←80↑'\includegraphics[scale=',ESCALA,']{t89a04.jpg}'
[ 9]  t[6;]←80↑' '
[10]  s←resolt89e3 e
[11]  r←3ρ0
[12]  r[1]←⊂e
[13]  r[2]←⊂s
[14]  r[3]←⊂t
-------------------------------------------------------------
[ 0]  r←gerat89e4;e;t;s;as
[ 1]  as←''''
[ 2] denovo:
[ 3]  e←(1+2?4),(25+?10),1+?3
[ 4]  t←6 80ρ' '
[ 5]  t[1;]←80↑'As dimensÕes de um retângulo estão continuamente se modificando. A largura
      '
[ 6]  t[2;]←80↑'cresce a ',(⍕e[1]),' cm/seg enquanto o comprimento diminui a ',(⍕e[2]),'.'
[ 7]  t[3;]←80↑'Em um instante o retângulo é um quadrado de lado ',(⍕e[3]),' $cm^2$. Quão
      rápido '
[ 8]  t[4;]←80↑'ele está mudando sua área ',(⍕e[4]),' segundos mais tarde ?'
[ 9]  t[5;]←80↑'Dica1: use a regra do produto: $(fg)',as,'=f',as,'g.fg',as,'$'
[10]  t[6;]←80↑'Dica2: no resultado, se $>0$ área aumentando e se $<0$, área diminuindo.\\
      * '
[11]  s←resolt89e4 e
[12]  r←3ρ0
[13]  r[1]←⊂e
[14]  r[2]←⊂s
[15]  r[3]←⊂t
-------------------------------------------------------------
[ 0]  r←gerat89e5;e;t;s;as;e2
[ 1]  as←''''
[ 2] denovo:
[ 3]  e2←10+10×?4
[ 4]  e←(100×1+?4),e2,(e2+10×?3),(10+10×?5),(500+100×?4),10+?20
[ 5]  t←6 80ρ' '
[ 6]  t[1;]←80↑'Um cocho preenchido com água tem ',(⍕e[1]),' $cm$ de comprimento e uma ses
      são em '
[ 7]  t[2;]←80↑'forma de trapezóide isósceles com ',(⍕e[2]),' $cm$ de largura no chão e ',
      ⍕e[3]
[ 8]  t[3;]←80↑'$cm$ no alto, além de uma altura de ',(⍕e[4]),' $cm$. Se o cocho perde águ
      a à taxa '
[ 9]  t[4;]←80↑'de ',(⍕e[5]),' $cm^3/min$, quão rápido o nível da água diminui quando a ág
      ua tem'
[10]  t[5;]←80↑'profundidade de ',(⍕e[6]),' $cm $ ? Obs: multiplique a resposta por 1000.\
      \*'
[11]  t[6;]←80↑'\includegraphics[scale=',ESCALA,']{t89a05.jpg}\\*\includegraphics[scale=',
      ESCALA,']{t89a06.jpg}'
```

```
[12]  s←resolt89e5 e
[13]  r←3⍴0
[14]  r[1]←⊂e
[15]  r[2]←⊂s
[16]  r[3]←⊂t
------------------------------------------------------------
[ 0]  r←gerat89e6;e;t;s
[ 1] denovo:
[ 2]  e←(100+10×?6),(20+3×?8),(5+2×?8),10+2×?5
[ 3]  t←6 80⍴' '
[ 4]  t[1;]←80↑'⍝gua é bombeada para uma tanque cônico à taxa de ',(⍕e[1]),' pés$^3$/min.'
[ 5]  t[2;]←80↑'A altura do tanque é de ',(⍕e[2]),' pés e seu raio é de ',(⍕e[3]),' pés.'
[ 6]  t[3;]←80↑'Quto rápida é a mudança de nível da água quando a altura da água é de ',⍕e
      [4]
[ 7]  t[4;]←80↑'pés ?  (resposta em pés/segundo, ou seja multiplique por 60).⍀⍀*'
[ 8]  t[5;]←80↑'⍀includegraphics[scale=',ESCALA,']{t89a07.jpg}⍀⍀*'
[ 9]  t[6;]←80↑'⍀includegraphics[scale=',ESCALA,']{t89a08.jpg}'
[10]  s←resolt89e6 e
[11]  r←3⍴0
[12]  r[1]←⊂e
[13]  r[2]←⊂s
[14]  r[3]←⊂t
------------------------------------------------------------
[ 0]  r←gerat89e7;e;t;s
[ 1] denovo:
[ 2]  e←(?7),3+?7
[ 3]  t←6 80⍴' '
[ 4]  t[1;]←80↑'Uma bola de neve perfeitamente esférica está derretendo de modo que sua'
[ 5]  t[2;]←80↑'superfície diminui à taxa de ',(⍕e[1]),' $cm^2/min$.'
[ 6]  t[3;]←80↑'Quto rápido seu volume diminui quando ele é de ',(⍕e[2]),' cm ?'
[ 7]  t[4;]←80↑'Superfície da esfera: $S=4 ⍀pi r^2$. (Obs: derretendo $⍀to$ negativo)'
[ 8]  t[5;]←80↑'Resposta em mm/seg, ou seja multiplique por 600.⍀⍀* '
[ 9]  t[6;]←80↑'⍀includegraphics[scale=0.75]{t89a09.jpg}'
[10]  s←resolt89e7 e
[11]  r←3⍴0
[12]  r[1]←⊂e
[13]  r[2]←⊂s
[14]  r[3]←⊂t
------------------------------------------------------------
[ 0]  r←gerat89e8;e;t;s
[ 1] denovo:
[ 2]  e←(70+10×?7),(3+?7),1+?5
[ 3]  t←6 80⍴' '
[ 4]  t[1;]←80↑'Os dois lados de um triângulo retângulo têm cada um ',(⍕e[1]),' cm.'
[ 5]  t[2;]←80↑'Se um lado cresce à taxa de ',(⍕e[2]),' cm/min e o outro diminui com a mes
      ma taxa,'
[ 6]  t[3;]←80↑'Quto rápido a hipotenusa varia ',(⍕e[3]),' minutos após ?'
[ 7]  t[4;]←80↑'A resposta é em cm/seg, ou seja multiplique por 60. '
[ 8]  t[5;]←80↑' '
[ 9]  t[6;]←80↑' '
[10]  s←resolt89e8 e
[11]  r←3⍴0
[12]  r[1]←⊂e
[13]  r[2]←⊂s
[14]  r[3]←⊂t
------------------------------------------------------------
[ 0]  r←gerat89e9;e;t;s
[ 1] denovo:
[ 2]  e←(70+10×?7),(3+?7),1+?5
[ 3]  t←6 80⍴' '
[ 4]  t[1;]←80↑'Os dois lados de um triângulo retângulo têm cada um ',(⍕e[1]),' cm.'
[ 5]  t[2;]←80↑'Se um lado cresce à taxa de ',(⍕e[2]),' cm/min e o outro diminui com a mes
      ma taxa,'
```

```
[ 6]  t[3;]←80↑'Quto rápido a área do triângulo varia ',(⍕e[3]),' minutos após ?'
[ 7]  t[4;]←80↑'Resposta em $cm^2/min$. '
[ 8]  t[5;]←80↑' '
[ 9]  t[6;]←80↑' '
[10]  s←resolt89e9 e
[11]  r←3⍴0
[12]  r[1]←⊂e
[13]  r[2]←⊂s
[14]  r[3]←⊂t
------------------------------------------------------------
[0]  r←resolt89e1 e
[1]  r←⍪20 0⍕100×(-e[3]×e[2])÷((e[1]*2)-e[3]*2)*0.5
------------------------------------------------------------
[0]  r←resolt89e10 e
[1]  r←⍪20 0⍕6000×e[1]÷○4×e[2]*2
------------------------------------------------------------
[0]  r←resolt89e2 e;z
[1]  z←((e[3]*2)+(e[1]-e[2])*2)*0.5
[2]  r←⍪20 0⍕1000×((e[3]*2)+(e[1]-e[2])×-e[2])÷z
------------------------------------------------------------
[0]  r←resolt89e3 e;x
[1]  x←e[2]×e[3]÷60
[2]  r←⍪20 0⍕(x×e[2])÷((e[1]*2)+x*2)*0.5
------------------------------------------------------------
[0]  r←resolt89e4 e;x;y
[1]  e[2]←-e[2]
[2]  x←e[3]+e[4]×e[1]
[3]  y←e[3]+e[4]×e[2]
[4]  r←⍪20 0⍕(x×e[2])+y×e[1]
------------------------------------------------------------
[0]  r←resolt89e5 e;t1;t2
[1]  t1←e[1]×(e[3]-e[2])÷e[4]
[2]  t2←e[1]×e[2]
[3]  r←⍪20 0⍕1000×(-e[5])÷(t1×e[6])+t2
------------------------------------------------------------
[0]  r←resolt89e6 e;t1
[1]  r←⍪20 0⍕60×(e[1]×e[2]*2)÷○(e[4]*2)×e[3]*2
------------------------------------------------------------
[0]  r←resolt89e7 e
[1]  r←⍪20 0⍕600×(-e[1])÷(○8)×e[2]
------------------------------------------------------------
[0]  r←resolt89e8 e;x;y;z
[1]  x←e[1]+e[3]×e[2]
[2]  y←e[1]-e[3]×e[2]
[3]  z←((x*2)+y*2)*0.5
[4]  r←⍪20 0⍕60×((x×e[2])-y×e[2])÷z
------------------------------------------------------------
[0]  r←resolt89e9 e;x;y
[1]  x←e[1]+e[3]×e[2]
[2]  y←e[1]-e[3]×e[2]
[3]  r←⍪20 0⍕((-x×e[2])+y×e[2])÷2
------------------------------------------------------------
[ 0]  opesq vivot89a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLt89   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
```

```
[ 9]  ylu←n grupo ylu
[10]  FOLHALAt89←ajusta80 FOLHALAt89
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAt89)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 11⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←69 80⍴' '
[16]  f←FOLHALAt89
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[68;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[69;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerat89e1
[35]  esse[7+⍳6;]←⊃xx[3]
[36]  resp←resp,,⊃xx[2]
[37]  xx←gerat89e2
[38]  esse[13+⍳6;]←⊃xx[3]
[39]  resp←resp,,⊃xx[2]
[40]  xx←gerat89e3
[41]  esse[19+⍳6;]←⊃xx[3]
[42]  resp←resp,,⊃xx[2]
[43]  xx←gerat89e4
[44]  esse[25+⍳6;]←⊃xx[3]
[45]  resp←resp,,⊃xx[2]
[46]  xx←gerat89e5
[47]  esse[31+⍳6;]←⊃xx[3]
[48]  resp←resp,,⊃xx[2]
[49]  xx←gerat89e6
[50]  esse[37+⍳6;]←⊃xx[3]
[51]  resp←resp,,⊃xx[2]
[52]  xx←gerat89e7
[53]  esse[43+⍳6;]←⊃xx[3]
[54]  resp←resp,,⊃xx[2]
[55]  xx←gerat89e8
[56]  esse[49+⍳6;]←⊃xx[3]
[57]  resp←resp,,⊃xx[2]
[58]  xx←gerat89e9
[59]  esse[55+⍳6;]←⊃xx[3]
[60]  resp←resp,,⊃xx[2]
[61]  xx←gerat89e10
[62]  esse[61+⍳6;]←⊃xx[3]
[63]  resp←resp,,⊃xx[2]
[64]  resu←resu,[1]1 11⍴resp
[65]  acuja←(f[;2]='#')/⍳1↑⍴f
[66]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[67]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[68]  ⎕←(⍕xk←xk+1),'-'
[69]  →testa
[70] fim:upag←(1 0+⍴f)⍴' '
[71]  →(1=≡n)/elafa
```

```
[72]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[73]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[74]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯'-'edit(lixo1←5 0,20⍴7 0)⍪resu
[75]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[76]  →terminando
[77] elafa:aaa←(ylu[;⍳36],'¯'-'edit 9 0⍪0 1↓resu)
[78]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[79]  '!!!!!  Arquivo GPA com ',(⍪1↑⍴aaa),' linhas e ',(⍪1↓⍴aaa),' colunas'
[80] terminando:
[81]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[82]  relat[1↑⍴relat;;]←upag
[83]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[84]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[85]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[86]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivot90

```
[ 0]  r←gerat90e1;e;t;s
[ 1] denovo:
[ 2]  e←,(?30)*2
[ 3] ok1:
[ 4]  t←6 80⍴' '
[ 5]  t[1;]←80↑'Aroldo pretende usar ',(⍪e[1]),'$m$ de cerca para fechar um '
[ 6]  t[2;]←80↑'jardim retangular. Determine a área máxima do jardim.'
[ 7]  t[3;]←80↑' '
[ 8]  t[4;]←80↑' '
[ 9]  t[5;]←80↑' '
[10]  t[6;]←80↑' '
[11]  s←resolt90e1 e
[12]  r←3⍴0
[13]  r[1]←⊂e
[14]  r[2]←⊂s
[15]  r[3]←⊂t
-------------------------------------------------------------
[ 0]  r←gerat90e10;e;t;s
[ 1] denovo:
[ 2]  e←,3500+50×?150
[ 3] ok1:
[ 4]  t←6 80⍴' '
[ 5]  t[1;]←80↑'Uma lata cilíndrica de pimentões deve conter ',(⍪e[1]),' $cm^3$'
[ 6]  t[2;]←80↑'de conteúdo praticamente líquido. Qual o raio da lata que minimiza'
[ 7]  t[3;]←80↑'a quantidade de folha de flandres usado para construir a lata ?'
[ 8]  t[4;]←80↑'A resposta deve ser dada em milímetros (multiplique por 10).\\*'
[ 9]  t[5;]←80↑'\includegraphics[scale=0.5]{t90a07.jpg} '
[10]  s←⍎20 0⍪resolt90e10,e
[11]  r←3⍴0
[12]  r[1]←⊂e
[13]  r[2]←⊂s
[14]  r[3]←⊂t
-------------------------------------------------------------
[ 0]  r←gerat90e2;e;t;s
[ 1] denovo:
[ 2]  e←,(20+?30)*2
[ 3] ok1:
[ 4]  t←6 80⍴' '
[ 5]  t[1;]←80↑'Qual o perímetro mínimo possível para um retângulo cuja área seja'
[ 6]  t[2;]←80↑(⍪e[1]),' $m^2$ ?'
[ 7]  t[3;]←80↑' '
[ 8]  t[4;]←80↑' '
[ 9]  t[5;]←80↑' '
```

```
[10]  t[6;]←80↑' '
[11]  s←resolt90e2 e
[12]  r←3ρ0
[13]  r[1]←⊂e
[14]  r[2]←⊂s
[15]  r[3]←⊂t
-------------------------------------------------------------
[ 0]  r←gerat90e3;e;t;s
[ 1] denovo:
[ 2]  e←(10+2?600)
[ 3] ok1:
[ 4]  t←6 80ρ' '
[ 5]  t[1;]←80↑'Uma caixa aberta é formada cortando quatro quadrados de igual tamanho'
[ 6]  t[2;]←80↑'nos cantos de uma chapa retangular de ',(⍕e[1]),' por ',(⍕e[2]),' $m$'
[ 7]  t[3;]←80↑'e dobrando os lados⍀⍀* '
[ 8]  t[4;]←80↑'⍀includegraphics[scale=0.5]{t90a01.jpg}'
[ 9]  t[5;]←80↑' '
[10]  t[6;]←80↑'Determine as dimensªes do corte que maximizam o volume da caixa. '
[11]  s←resolt90e3 e
[12]  r←3ρ0
[13]  r[1]←⊂e
[14]  r[2]←⊂s
[15]  r[3]←⊂t
-------------------------------------------------------------
[ 0]  r←gerat90e4;e;t;s
[ 1] denovo:
[ 2]  e←(50+?40),1+?9
[ 3] ok1:
[ 4]  t←6 80ρ' '
[ 5]  t[1;]←80↑'Ache a dimens↑o $y$ do retângulo de maior área cuja base está no'
[ 6]  t[2;]←80↑'eixo $x$ e cujos dois vértices superiores est↑o sobre a parábola'
[ 7]  t[3;]←80↑'$y=',(⍕e[1]),'-',(⍕e[2]),'x^2$.⍀⍀*'
[ 8]  t[4;]←80↑'⍀includegraphics[scale=0.5]{t90a02.jpg}'
[ 9]  t[5;]←80↑' '
[10]  t[6;]←80↑' '
[11]  s←⍪20 0⍕resolt90e4 e
[12]  r←3ρ0
[13]  r[1]←⊂e
[14]  r[2]←⊂s
[15]  r[3]←⊂t
-------------------------------------------------------------
[ 0]  r←gerat90e5;e;t;s
[ 1] denovo:
[ 2]  e←,(90+?90)
[ 3] ok1:
[ 4]  t←6 80ρ' '
[ 5]  t[1;]←80↑'Uma janela de igreja tem a forma de um retângulo embaixo de um '
[ 6]  t[2;]←80↑'semicírculo. Se o perímetro da janela é de ',(⍕e[1]),' $cm$,'
[ 7]  t[3;]←80↑'qual a sua área máxima em $cm^2$ ?⍀⍀*'
[ 8]  t[4;]←80↑'⍀includegraphics[scale=0.5]{t90a03.jpg}'
[ 9]  t[5;]←80↑' '
[10]  t[6;]←80↑' '
[11]  s←⍪20 0⍕resolt90e5 e
[12]  r←3ρ0
[13]  r[1]←⊂e
[14]  r[2]←⊂s
[15]  r[3]←⊂t
-------------------------------------------------------------
[ 0]  r←gerat90e6;e;t;s
[ 1] denovo:
[ 2]  e←,(20+2×?50)
[ 3] ok1:
[ 4]  t←6 80ρ' '
```

```
[ 5]  t[1;]←80↑'Ache o retângulo com a maior área possível que pode ser inscrito'
[ 6]  t[2;]←80↑'em um triângulo equilátero de lado ',⍕e[1]
[ 7]  t[3;]←80↑'qual a sua área máxima ?⍀⍀*'
[ 8]  t[4;]←80↑'⍀includegraphics[scale=0.5]{t90a04.jpg}'
[ 9]  t[5;]←80↑' '
[10]  t[6;]←80↑' '
[11]  s←⍎20 0⍕resolt90e6 e
[12]  r←3⍴0
[13]  r[1]←⊂e
[14]  r[2]←⊂s
[15]  r[3]←⊂t
-------------------------------------------------------------
[ 0]  r←gerat90e7;e;t;s;eca
[ 1] denovo:
[ 2]  eca←1+2?7
[ 3]  eca←eca[⍒eca]
[ 4]  e←(?4),(7+?7),eca
[ 5] ok1:
[ 6]  t←6 80⍴' '
[ 7]  t[1;]←80↑'A nadadora e atleta Priscila quer ir do ponto $A$ ao $B$ em lados'
[ 8]  t[2;]←80↑'opostos de um rio com largura de ',(⍕e[1]),' km. $B$ está a '
[ 9]  t[3;]←80↑(⍕e[2]),' km a jusante de $A$. Se Priscila pode correr a ',(⍕e[3])
[10]  t[4;]←80↑'km/h e pode nadar a ',(⍕e[4]),' km/h, qual a menor quantidade de'
[11]  t[5;]←80↑'tempo que ela deve gastar para ir de $A$ até $B$ (em minutos) ?⍀⍀* '
[12]  t[6;]←80↑'⍀includegraphics[scale=0.5]{t90a05.jpg} '
[13]  s←⍎20 0⍕resolt90e7 e
[14]  r←3⍴0
[15]  r[1]←⊂e
[16]  r[2]←⊂s
[17]  r[3]←⊂t
-------------------------------------------------------------
[ 0]  r←gerat90e8;e;t;s
[ 1] denovo:
[ 2]  e←,(1+?14)
[ 3] ok1:
[ 4]  t←6 80⍴' '
[ 5]  t[1;]←80↑'Qual o maior volume possível para um cilindro inscrito em uma esfera'
[ 6]  t[2;]←80↑'de raio ',(⍕e[1]),' ?⍀⍀*'
[ 7]  t[3;]←80↑'⍀includegraphics[scale=0.5]{t90a06.jpg} '
[ 8]  s←⍎20 0⍕resolt90e8,e
[ 9]  r←3⍴0
[10]  r[1]←⊂e
[11]  r[2]←⊂s
[12]  r[3]←⊂t
-------------------------------------------------------------
[ 0]  r←gerat90e9;e;t;s
[ 1] denovo:
[ 2]  e←,3500+50×?150
[ 3] ok1:
[ 4]  t←6 80⍴' '
[ 5]  t[1;]←80↑'Uma lata cilíndrica de pêssegos em calda deve conter ',(⍕e[1]),' $cm^3$'
[ 6]  t[2;]←80↑'de conteúdo praticamente líquido. Qual a altura da lata que minimiza'
[ 7]  t[3;]←80↑'a quantidade de folha de flandres usado para construir a lata ?'
[ 8]  t[4;]←80↑'A resposta deve ser dada em milímetros (multiplique por 10).⍀⍀*'
[ 9]  t[5;]←80↑'⍀includegraphics[scale=0.5]{t90a07.jpg} '
[10]  s←⍎20 0⍕resolt90e9,e
[11]  r←3⍴0
[12]  r[1]←⊂e
[13]  r[2]←⊂s
[14]  r[3]←⊂t
-------------------------------------------------------------
[0]  r←resolt90e1 e
[1]  r←(e[1]÷4)*2
```

```
------------------------------------------------------------
[0]  r←resolt90e10 e;h;raio
[1]  raio←(e[1]÷○2)*÷3
[2] ⍝ h←e[1]÷○raio*2
[3]  r←⍕20 0⍕10×raio
------------------------------------------------------------
[0]  r←resolt90e2 e
[1]  r←4×e[1]*0.5
------------------------------------------------------------
[ 0]  r←resolt90e3 e;coefv;deriv;x1;x2
[ 1]  coefv←4,(-(2×e[1])+2×e[2]),e[1]×e[2]
[ 2]  deriv←12,(2×coefv[2]),coefv[3]
[ 3] baskara:
[ 4]  x1←((-deriv[2])+((deriv[2]*2)-4×deriv[1]×deriv[3])*0.5)÷2×deriv[1]
[ 5]  x2←((-deriv[2])-((deriv[2]*2)-4×deriv[1]×deriv[3])*0.5)÷2×deriv[1]
[ 6]  →((0>e[1]-2×x1)∨(0>e[2]-2×x1))/ex2
[ 7]  r←⍕20 0⍕x1
[ 8]  →0
[ 9] ex2:
[10]  r←⍕20 0⍕x2
------------------------------------------------------------
[0]  r←resolt90e4 e;area;deriv;raiz
[1]  area←(2×e[1]),-2×e[2]
[2]  deriv←(-3×area[2]),area[1]
[3]  raiz←(deriv[2]÷deriv[1])*0.5
[4]  r←e[1]-raiz*2
------------------------------------------------------------
[0]  r←resolt90e5 e;raio
[1]  raio←e[1]÷4+○1
[2]  r←⍕20 0⍕(e[1]×raio)-(2×raio*2)+0.5×(raio*2)×○1
------------------------------------------------------------
[0]  r←resolt90e6 e;x;y
[1]  x←e[1]÷4
[2]  y←((0.5×3*0.5)×e[1])-(3*0.5)×x
[3]  r←⍕20 0⍕(2×x)×y
------------------------------------------------------------
[0]  r←resolt90e7 e;t0;te2;tx;x
[1]  x←-(e[4]×e[1]×(((e[3]*2)-e[4]*2)*0.5))÷(e[4]*2)-e[3]*2
[2] ⍝  tx←((((x*2)+e[1]*2)*0.5)÷e[4])+(e[2]-x)÷e[3]
[3]  t0←((((0*2)+e[1]*2)*0.5)÷e[4])+(e[2]-0)÷e[3]
[4]  tx←((((x*2)+e[1]*2)*0.5)÷e[4])+(e[2]-x)÷e[3]
[5]  te2←((((e[2]*2)+e[1]*2)*0.5)÷e[4])+(e[2]-e[2])÷e[3]
[6] ⍝ indica qual dos 3 foi o menor... (t0,tx,te2)⍳⌊/t0,tx,te2
[7]  r←60×⌊/t0,tx,te2
------------------------------------------------------------
[0]  r←resolt90e8 e;h
[1]  h←((e[1]×e[1]×4)÷3)*0.5
[2] ⍝ h
[3]  r←⍕20 0⍕○(e[1]×e[1]×h)-(1÷4)×h*3
------------------------------------------------------------
[0]  r←resolt90e9 e;h;raio
[1]  raio←(e[1]÷○2)*÷3
[2]  h←e[1]÷○raio*2
[3]  r←⍕20 0⍕10×h
------------------------------------------------------------
[ 0]  opesq vivot90a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLt90   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
```

```
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAt90←ajusta80 FOLHALAt90
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAt90)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 11⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←69 80⍴' '
[16]  f←FOLHALAt90
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[68;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[69;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerat90e1
[35]  esse[7+⍳6;]←⊃xx[3]
[36]  resp←resp,,⊃xx[2]
[37]  xx←gerat90e2
[38]  esse[13+⍳6;]←⊃xx[3]
[39]  resp←resp,,⊃xx[2]
[40]  xx←gerat90e3
[41]  esse[19+⍳6;]←⊃xx[3]
[42]  resp←resp,,⊃xx[2]
[43]  xx←gerat90e4
[44]  esse[25+⍳6;]←⊃xx[3]
[45]  resp←resp,,⊃xx[2]
[46]  xx←gerat90e5
[47]  esse[31+⍳6;]←⊃xx[3]
[48]  resp←resp,,⊃xx[2]
[49]  xx←gerat90e6
[50]  esse[37+⍳6;]←⊃xx[3]
[51]  resp←resp,,⊃xx[2]
[52]  xx←gerat90e7
[53]  esse[43+⍳6;]←⊃xx[3]
[54]  resp←resp,,⊃xx[2]
[55]  xx←gerat90e8
[56]  esse[49+⍳6;]←⊃xx[3]
[57]  resp←resp,,⊃xx[2]
[58]  xx←gerat90e9
[59]  esse[55+⍳6;]←⊃xx[3]
[60]  resp←resp,,⊃xx[2]
[61]  xx←gerat90e10
[62]  esse[61+⍳6;]←⊃xx[3]
[63]  resp←resp,,⊃xx[2]
[64]  resu←resu,[1]1 11⍴resp
[65]  acuja←(f[;2]='#')/⍳1↑⍴f
[66]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[67]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[68]  ⍞←(⍕xk←xk+1),'-'
```

```
[69]  →testa
[70] fim:upag←(1 0+⍴f)⍴' '
[71]  →(1=≡n)/elafa
[72]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[73]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[74]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯'-'edit(lixo1←5 0,20⍴7 0)⍕resu
[75]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[76]  →terminando
[77] elafa:aaa←(ylu[;⍳36],'¯'-'edit 9 0⍕0 1↓resu)
[78]  lixonol←aaa ⍙FM('c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.gpa')
[79]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[80] terminando:
[81]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[82]  relat[1↑⍴relat;;]←upag
[83]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[84]  lixonol←lixonol ⍙FM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.tex'
[85]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[86]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivot92

```
[ 0]  r←gerat92e1;e;t;s
[ 1] denovo:
[ 2]  e←2+2?18
[ 3] ok1:
[ 4]  t←6 80⍴' '
[ 5]  t[1;]←80↑'Suponha um retângulo fixo de ',(⍕e[1]),' m por ',(⍕e[2]),' m. Agora '
[ 6]  t[2;]←80↑'imagine outro retângulo circunscrito (ou seja, por fora) do triângulo'
[ 7]  t[3;]←80↑'original. A pergunta é qual é a área máxima desse retângulo '
[ 8]  t[4;]←80↑'circunscrito em metros.⍀⍀* '
[ 9]  t[5;]←80↑'⍀includegraphics[scale=0.5]{t92a03.jpg} '
[10]  s←resolt92e1 e
[11]  r←3⍴0
[12]  r[1]←⊂e
[13]  r[2]←⊂s
[14]  r[3]←⊂t
------------------------------------------------------------
[ 0]  r←gerat92e2;e;t;s
[ 1] denovo:
[ 2]  e←,20+?80
[ 3] ok1:
[ 4]  t←6 80⍴' '
[ 5]  t[1;]←80↑'Um carro de polícia está a ',(⍕e[1]),' m de um muro. Seu giroflex'
[ 6]  t[2;]←80↑'faz 1 revoluçto por segundo. Quto rápido a mancha colorida passa '
[ 7]  t[3;]←80↑'no muro (em $m/seg$) no ponto mais próximo ao carro de polícia ?⍀⍀*'
[ 8]  t[4;]←80↑'⍀includegraphics[scale=0.5]{t92a04.jpg} '
[ 9]  s←resolt92e2 e
[10]  r←3⍴0
[11]  r[1]←⊂e
[12]  r[2]←⊂s
[13]  r[3]←⊂t
------------------------------------------------------------
[ 0]  r←gerat92e3;e;t;s
[ 1] denovo:
[ 2]  e←(100+10×?20),(10+10×?9),(300+10×?30)
[ 3] ok1:
[ 4]  t←6 80⍴' '
[ 5]  t[1;]←80↑'Um OVNI está voando a ',(⍕e[1]),' m acima do solo, movendo-se em'
[ 6]  t[2;]←80↑'direçto horizontal à taxa de ',(⍕e[2]),' m/seg. Quto rápido muda o'
[ 7]  t[3;]←80↑'ângulo entre a visada (observador-ovni) e a horizontal quando esta'
[ 8]  t[4;]←80↑'visada tem ',(⍕e[3]),' m de comprimento ? (Resposta em $rad/min$,)'
```

```
[ 9]  t[5;]←80↑' ou seja, multiplique a resposta achada por 60).⍀⍀*'
[10]  t[6;]←80↑'⍀includegraphics[scale=0.5]{t92a05.jpg} '
[11]  s←resolt92e3 e
[12]  r←3⍴0
[13]  r[1]←⊂e
[14]  r[2]←⊂s
[15]  r[3]←⊂t
-------------------------------------------------------------
[ 0]  r←gerat92e4;e;t;s
[ 1] denovo:
[ 2]  e←(10+?20),(?9),(1+?5)
[ 3] ok1:
[ 4]  t←6 80⍴' '
[ 5]  t[1;]←80↑'Uma escada de comprimento ',(⍕e[1]),' m está encostada em'
[ 6]  t[2;]←80↑'um prédio. Se o pé da escada desliza para longe da parede a uma'
[ 7]  t[3;]←80↑'taxa de ',(⍕e[2]),' m/min, quto rápido varia o ângulo entre a escada'
[ 8]  t[4;]←80↑'e o prédio quando o pé da escada está a ',(⍕e[3]),'m do prédio ?'
[ 9]  t[5;]←80↑'resposta em rad/hora, ou seja calcule rad/min e multiplique por 60.⍀⍀*'
[10]  t[6;]←80↑'⍀includegraphics[scale=0.5]{t92a06.jpg} '
[11]  s←resolt92e4 e
[12]  r←3⍴0
[13]  r[1]←⊂e
[14]  r[2]←⊂s
[15]  r[3]←⊂t
-------------------------------------------------------------
[ 0]  r←gerat92e5;e;t;s
[ 1] denovo:
[ 2]  e←(2?20),?9
[ 3] ok1:
[ 4]  t←6 80⍴' '
[ 5]  t[1;]←80↑'Um certo triângulo tem lados de ',(⍕e[1]),' e ',(⍕e[2]),' m respectivament
      e.'
[ 6]  t[2;]←80↑'Se o ângulo entre eles está aumentando a uma taxa de ',(⍕e[3]),' graus/seg
      ,'
[ 7]  t[3;]←80↑'quto rápido aumenta a área do triângulo quando o ângulo é de $⍀theta=⍀pi/4
      $?'
[ 8]  t[4;]←80↑'A resposta deve ser dada em $m^2/min$ (ou seja calcule $m^2/seg . 60$)⍀⍀*'
[ 9]  t[5;]←80↑'⍀includegraphics[scale=0.5]{t92a07.jpg} '
[10]  s←resolt92e5 e
[11]  r←3⍴0
[12]  r[1]←⊂e
[13]  r[2]←⊂s
[14]  r[3]←⊂t
-------------------------------------------------------------
[ 0]  r←gerat92e6;e;t;s
[ 1] denovo:
[ 2]  e←(4000+100×?37),(300+10×?20),1000+100×?19
[ 3] ok1:
[ 4]  t←6 80⍴' '
[ 5]  t[1;]←80↑'Uma câmera de TV está a ',(⍕e[1]),'m da base de um foguete na Barreira'
[ 6]  t[2;]←80↑'do Inferno (RN). A câmera vai seguir o caminho vertical do foguete.'
[ 7]  t[3;]←80↑'Se a velocidade do foguete é de ',(⍕e[2]),' m/seg, quando ele chegar a'
[ 8]  t[4;]←80↑(⍕e[3]),' m qual a taxa de variaçto do ângulo da câmera nesse instante ?'
[ 9]  t[5;]←80↑'Resposta em milésimos de graus/segundo, logo calcule rd/seg e converta.⍀⍀*
      '
[10]  t[6;]←80↑'⍀includegraphics[scale=0.5]{t92a08.jpg} '
[11]  s←resolt92e6 e
[12]  r←3⍴0
[13]  r[1]←⊂e
[14]  r[2]←⊂s
[15]  r[3]←⊂t
-------------------------------------------------------------
[0]  r←resolt92e1 e;ed;af;ea;dg
```

```
[1]  ed←e[2]×2oo0.25
[2]  af←e[1]×2oo0.25
[3]  ea←e[2]×1oo0.25
[4]  dg←e[1]×1oo0.25
[5]  r←(ed+dg)×(ea+af)
-------------------------------------------------------------
[0]  r←resolt92e2 e
[1]  r←⍕20 0⍕o2×e[1]
-------------------------------------------------------------
[0]  r←resolt92e3 e
[1]  r←⍕20 0⍕60×e[2]×(-(e[1]÷e[3])*2)÷e[1]
-------------------------------------------------------------
[0]  r←resolt92e4 e;y
[1]  y←((e[1]*2)-(e[3]*2))*0.5
[2] ⍝ y
[3]  r←⍕20 0⍕60×e[2]÷y
-------------------------------------------------------------
[0]  r←resolt92e5 e
[1]  r←⍕20 0⍕60×((2*0.5)×e[1]×e[2]×e[3]×o1)÷720
-------------------------------------------------------------
[0]  r←resolt92e6 e;sec2;tx
[1] ⍝ tan←e[3]÷e[1]
[2]  sec2←1+(e[3]*2)÷e[1]*2
[3]  tx←e[2]÷e[1]×sec2
[4]  r←⍕20 0⍕1000×(tx×180)÷o1
[5] ⍝ sec2,tx,r
-------------------------------------------------------------
[ 0]  opesq vivot92a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLt92   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAt92←ajusta80 FOLHALAt92
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAt92)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 11⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←69 80⍴' '
[16]  f←FOLHALAt92
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[68;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[69;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
```

```
[34]  xx←gerat92e1
[35]  esse[7+⍳6;]←⊃xx[3]
[36]  resp←resp,,⊃xx[2]
[37]  xx←gerat92e2
[38]  esse[13+⍳6;]←⊃xx[3]
[39]  resp←resp,,⊃xx[2]
[40]  xx←gerat92e3
[41]  esse[19+⍳6;]←⊃xx[3]
[42]  resp←resp,,⊃xx[2]
[43]  xx←gerat92e4
[44]  esse[25+⍳6;]←⊃xx[3]
[45]  resp←resp,,⊃xx[2]
[46]  xx←gerat92e5
[47]  esse[31+⍳6;]←⊃xx[3]
[48]  resp←resp,,⊃xx[2]
[49]  xx←gerat92e6
[50]  esse[37+⍳6;]←⊃xx[3]
[51]  resp←resp,,⊃xx[2]
[52] ⍝ xx←gerat92e7
[53] ⍝ esse[43+⍳6;]←⊃xx[3]
[54] ⍝ resp←resp,,⊃xx[2]
[55]  resp←resp,0
[56] ⍝ xx←gerat92e8
[57] ⍝ esse[49+⍳6;]←⊃xx[3]
[58] ⍝ resp←resp,,⊃xx[2]
[59]  resp←resp,0
[60] ⍝ xx←gerat92e9
[61] ⍝ esse[55+⍳6;]←⊃xx[3]
[62] ⍝ resp←resp,,⊃xx[2]
[63]  resp←resp,0
[64] ⍝ xx←gerat92e10
[65] ⍝ esse[61+⍳6;]←⊃xx[3]
[66] ⍝ resp←resp,,⊃xx[2]
[67]  resp←resp,0
[68]  resu←resu,[1]1 11⍴resp
[69]  acuja←(f[;2]='#')/⍳1↑⍴f
[70]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[71]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[72]  □←(⍕xk←xk+1),'-'
[73]  →testa
[74] fim:upag←(1 0+⍴f)⍴' '
[75]  →(1=≡n)/elafa
[76]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[77]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[78]  upag[2+⍳1↑⍴presu;⍳+/lixo1]←'¯-'edit(lixo1←5 0,20⍴7 0)⍕resu
[79]  upag[3+1↑⍴presu;]←(1↓⍴upag)↑'\end{verbatim}'
[80]  →terminando
[81] elafa:aaa←(ylu[;⍳36],'¯-'edit 9 0⍕0 1↓resu)
[82]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[83]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[84] terminando:
[85]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[86]  relat[1↑⍴relat;;]←upag
[87]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[88]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[89]  lixonol←□EX 2 10⍴'quantos   matriz    '
[90]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivot94

```
[ 0]  r←gerat94e1;e;t;s
```

```
[ 1] denovo:
[ 2]  e←(100+10×?10),(1+?8),(5000+1000×?30)
[ 3] ok1:
[ 4]  t←6 80⍴' '
[ 5]  t[1;]←80↑'A taxa de crescimento de um miasma é proporcional ao número de'
[ 6]  t[2;]←80↑'bactérias presentes. Se há uma populaçto inicial de ',(⍕e[1])
[ 7]  t[3;]←80↑'bactérias, e a bactéria dobra a cada ',(⍕e[2]),' horas,'
[ 8]  t[4;]←80↑'quanto tempo vai demorar até a cultura chegar a ',(⍕e[3])
[ 9]  t[5;]←80↑'bactérias (medido em horas) ?'
[10]  s←resolt94e1 e
[11]  r←3⍴0
[12]  r[1]←⊂e
[13]  r[2]←⊂s
[14]  r[3]←⊂t
------------------------------------------------------------
[ 0]  r←gerat94e2;e;t;s
[ 1] denovo:
[ 2]  e←(200+10×?20),(100+10×?9),10+?20
[ 3] ok1:
[ 4]  t←6 80⍴' '
[ 5]  t[1;]←80↑'Uma substância radioativa cuja massa é de ',(⍕e[1]),' mg decairá '
[ 6]  t[2;]←80↑'para ',(⍕e[2]),' mg, após ',(⍕e[3]),' anos. Determine a meia-vida'
[ 7]  t[3;]←80↑'desta substância, em anos.'
[ 8]  s←resolt94e2 e
[ 9]  r←3⍴0
[10]  r[1]←⊂e
[11]  r[2]←⊂s
[12]  r[3]←⊂t
------------------------------------------------------------
[ 0]  r←gerat94e3;e;t;s
[ 1] denovo:
[ 2]  e←,40+?30
[ 3]  →(e=65)/denovo
[ 4] ok1:
[ 5]  t←6 80⍴' '
[ 6]  t[1;]←80↑'Um papiro egípcio é descoberto e verifica-se que a proporçto de'
[ 7]  t[2;]←80↑'$^{14}C$ a $^{12}C$ é de ',(⍕e[1]),'⍀% da proporçto de '
[ 8]  t[3;]←80↑'$^{14}C$ a $^{12}C$ no ar hoje. A meia-vida do $^{14}C$ é de'
[ 9]  t[4;]←80↑'5730 anos. Quantos anos tem o papiro ?'
[10]  s←resolt94e3 e
[11]  r←3⍴0
[12]  r[1]←⊂e
[13]  r[2]←⊂s
[14]  r[3]←⊂t
------------------------------------------------------------
[ 0]  r←gerat94e4;e;t;s;no;nomes
[ 1]  nomes←⊃[2]'eduardo' 'ana' 'carlos' 'izidoro' 'asdrubal' 'quiteria'
[ 2]  no←trim,nomes[?1↑⍴nomes;]
[ 3] denovo:
[ 4]  e←(2+?8),(1000+100×?9),(8+?10)
[ 5] ok1:
[ 6]  t←6 80⍴' '
[ 7]  t[1;]←80↑'Quanto dinheiro ',no,' terá no Banco Queromeu após ',(⍕e[1])
[ 8]  t[2;]←80↑'anos se tiver investido ⍀$ ',(⍕e[2]),' a ',(⍕e[3]),' ⍀%'
[ 9]  t[3;]←80↑'de juros compostos continuamente ?'
[10]  s←resolt94e4 e
[11]  r←3⍴0
[12]  r[1]←⊂e
[13]  r[2]←⊂s
[14]  r[3]←⊂t
------------------------------------------------------------
[ 0]  r←gerat94e5;e;t;s;no;nomes
[ 1]  nomes←⊃[2]'eduardo' 'roberto' 'carlos' 'izidoro' 'asdrubal' 'henrique'
```

```
[ 2]  no←trim,nomes[?1↑ρnomes;]
[ 3] denovo:
[ 4]  e←(3000+100×?39),(8+?10),6+?12
[ 5] ok1:
[ 6]  t←6 80ρ' '
[ 7]  t[1;]←80↑no,' gostaria de comprar um anel de noivado que é vendido por'
[ 8]  t[2;]←80↑(⍕e[1]),' reais. Quanto ele deve colocar em uma conta poupança hoje'
[ 9]  t[3;]←80↑'que paga ',(⍕e[2]),' ⍀% de juros compostos anuais contínuos'
[10]  t[4;]←80↑'para ter grana suficiente para comprar o anel em ',(⍕e[3])
[11]  t[5;]←80↑' meses ?'
[12]  s←resolt94e5 e
[13]  r←3ρ0
[14]  r[1]←⊂e
[15]  r[2]←⊂s
[16]  r[3]←⊂t
-------------------------------------------------------------
[ 0]  r←gerat94e6;e;t;s;no;nomes
[ 1] denovo:
[ 2]  e←(5000+100×?999),(0.01×1+?49),?10
[ 3] ok1:
[ 4]  t←6 80ρ' '
[ 5]  t[1;]←80↑'Um estudo ecológico mostra que o Lago Azul pode suportar '
[ 6]  t[2;]←80↑'uma populaçto máxima de ',(⍕e[1]),' peixes.'
[ 7]  t[3;]←80↑'A funçto logística que governa o fenômeno é'
[ 8]  t[4;]←80↑'$$P(t)=⍀frac{',(⍕e[1]),'}{1+4e^{-',(⍕e[2]),'t}}$$'
[ 9]  t[5;]←80↑'onde $t$ é medido em meses. Quantos peixes existirto em '
[10]  t[6;]←80↑(⍕e[3]),' meses ?'
[11]  s←resolt94e6 e
[12]  r←3ρ0
[13]  r[1]←⊂e
[14]  r[2]←⊂s
[15]  r[3]←⊂t
-------------------------------------------------------------
[ 0]  r←gerat94e7;e;t;s;no;nomes
[ 1] denovo:
[ 2]  e←(10+?20),(0.1×5+?10),1+?5
[ 3] ok1:
[ 4]  t←6 80ρ' '
[ 5]  t[1;]←80↑'Um relatório da Secretaria Estadual de Saúde informa que semanas '
[ 6]  t[2;]←80↑'após a eclosto da COVID19 o número de pessoas que ficarto doentes '
[ 7]  t[3;]←80↑'é $$Q(t)=⍀frac{',(⍕e[1]),'}{1+100e^{-',(⍕e[2]),'t}}$$'
[ 8]  t[4;]←80↑'o número $Q(t)$ acima é em milhares de pessoas.'
[ 9]  t[5;]←80↑'Qual a taxa de contaminaçto das pessoas após ',(⍕e[3]),' semanas ?'
[10]  t[6;]←80↑'Importante: para melhorar a precisto, multiplique a taxa achada por 1000'
[11]  s←resolt94e7 e
[12]  r←3ρ0
[13]  r[1]←⊂e
[14]  r[2]←⊂s
[15]  r[3]←⊂t
-------------------------------------------------------------
[ 0]  r←gerat94e8;e;t;s;nomes;no;in
[ 1]  nomes←⊃[2]'duplicar' 'triplicar' 'quadruplicar' 'quintuplicar' 'sextuplicar' 'septup
      licar'
[ 2]  no←trim,nomes[in←?1↑ρnomes;]
[ 3] denovo:
[ 4]  e←(in+1),?15
[ 5] ok1:
[ 6]  t←6 80ρ' '
[ 7]  t[1;]←80↑'Quantos anos levará para ',no,' o dinheiro se ele for aplicado a '
[ 8]  t[2;]←80↑'juros compostos continuamente e uma taxa de ',(⍕e[2]),'⍀% ao ano ?'
[ 9]  e[2]←e[2]÷100
[10]  s←resolt94e8 e
[11]  r←3ρ0
```

```
[12]  r[1]←⊂e
[13]  r[2]←⊂s
[14]  r[3]←⊂t
------------------------------------------------------------
[0]  r←resolt94e1 e
[1]  r←⍎20 0⍕(e[2]×⍟e[3]÷e[1])÷⍟2
------------------------------------------------------------
[0]  r←resolt94e2 e;k
[1]  k←-(⍟e[2]÷e[1])÷e[3]
[2]  r←⍎20 0⍕(⍟2)÷k
------------------------------------------------------------
[0]  r←resolt94e3 e
[1]  r←⍎20 0⍕-(⍟(e[1]÷100))×(5730÷⍟2)
------------------------------------------------------------
[0]  r←resolt94e4 e
[1]  r←⍎20 0⍕e[2]××(e[3]÷100)×e[1]
------------------------------------------------------------
[0]  r←resolt94e5 e
[1]  r←⍎20 0⍕e[1]÷*(e[2]÷100)×(e[3]÷12)
------------------------------------------------------------
[0]  r←resolt94e6 e
[1]  r←⍎20 0⍕e[1]÷1+4××-e[2]×e[3]
------------------------------------------------------------
[0]  r←resolt94e7 e
[1]  r←⍎20 0⍕1000×100×(e[1]×e[2]××-e[2]×e[3])÷(1+100××(-e[2]×e[3]))*2
------------------------------------------------------------
[0]  r←resolt94e8 e
[1]  r←⍎20 0⍕(⍟e[1])÷e[2]
------------------------------------------------------------
[ 0]  opesq vivot94a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLt94   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAt94←ajusta80 FOLHALAt94
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAt94)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 11⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←69 80⍴' '
[16]  f←FOLHALAt94
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[68;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
```

```
[32]  esse[69;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerat94e1
[35]  esse[7+⍳6;]←⊃xx[3]
[36]  resp←resp,,⊃xx[2]
[37]  xx←gerat94e2
[38]  esse[13+⍳6;]←⊃xx[3]
[39]  resp←resp,,⊃xx[2]
[40]  xx←gerat94e3
[41]  esse[19+⍳6;]←⊃xx[3]
[42]  resp←resp,,⊃xx[2]
[43]  xx←gerat94e4
[44]  esse[25+⍳6;]←⊃xx[3]
[45]  resp←resp,,⊃xx[2]
[46]  xx←gerat94e5
[47]  esse[31+⍳6;]←⊃xx[3]
[48]  resp←resp,,⊃xx[2]
[49]  xx←gerat94e6
[50]  esse[37+⍳6;]←⊃xx[3]
[51]  resp←resp,,⊃xx[2]
[52]  xx←gerat94e7
[53]  esse[43+⍳6;]←⊃xx[3]
[54]  resp←resp,,⊃xx[2]
[55]  xx←gerat94e8
[56]  esse[49+⍳6;]←⊃xx[3]
[57]  resp←resp,,⊃xx[2]
[58] ⍝ xx←gerat94e9
[59] ⍝ esse[55+⍳6;]←⊃xx[3]
[60] ⍝ resp←resp,,⊃xx[2]
[61]  resp←resp,0
[62] ⍝ xx←gerat94e10
[63] ⍝ esse[61+⍳6;]←⊃xx[3]
[64] ⍝ resp←resp,,⊃xx[2]
[65]  resp←resp,0
[66]  resu←resu,[1]1 11⍴resp
[67]  acuja←(f[;2]='#')/⍳1↑⍴f
[68]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[69]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[70]  ⍞←(⍕xk←xk+1),'-'
[71]  →testa
[72] fim:upag←(1 0+⍴f)⍴' '
[73]  →(1=≡n)/elafa
[74]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[75]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[76]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯'-'edit(lixo1←5 0,20⍴7 0)⍕resu
[77]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[78]  →terminando
[79] elafa:aaa←(ylu[;⍳36],'¯'-'edit 9 0⍕0 1↓resu)
[80]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[81]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[82] terminando:
[83]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[84]  relat[1↑⍴relat;;]←upag
[85]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[86]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[87]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[88]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivot96

```
[0]  r←baskara x;del;re1;re2
```

```
[1]  del←(x[2]*2)-4×x[1]×x[3]
[2]  →(del<0)/ima
[3]  re1←((-x[2])+(del*0.5))÷2×x[1]
[4]  re2←((-x[2])-(del*0.5))÷2×x[1]
[5]  r←re1,re2
[6]  →0
[7] ima:r←-1
-------------------------------------------------------------
[ 0]  r←gerat96e1;e;t;s;xx
[ 1] denovo:
[ 2]  e←(5+?10),(-1+?4),(-3+?4)
[ 3] ok1:
[ 4]  t←6 80ρ' '
[ 5]  t[1;]←80↑'calcule a área da regiɬo limitada pela curva '
[ 6]  t[2;]←80↑'$$y=',(⍕e[1]),'-',(⍕|e[2]),'x^2-',(⍕|e[3]),'x$$ e o eixo $x$.'
[ 7]  xx←baskara e[2 3 1]
[ 8]  s←resolt96e1 e
[ 9]  r←3ρ0
[10]  r[1]←⊂e
[11]  r[2]←⊂s
[12]  r[3]←⊂t
-------------------------------------------------------------
[ 0]  r←gerat96e2;e;t;s;xx;ab
[ 1] denovo:
[ 2]  ab←2?9
[ 3]  e←1,(+/ab),(×/ab),(⌊/ab),⌈/ab
[ 4] ok1:
[ 5]  t←6 80ρ' '
[ 6]  t[1;]←80↑'calcule a área da regiɬo limitada pela curva '
[ 7]  t[2;]←80↑'$$y=x^3-',(⍕e[2]),'x^2+',(⍕e[3]),'x$$ e o eixo $x$'
[ 8]  t[3;]←80↑'no domínio $0 ≤le x ≤le ',(⍕⌈/ab),'$.'
[ 9]  s←resolt96e2 e
[10]  r←3ρ0
[11]  r[1]←⊂e
[12]  r[2]←⊂s
[13]  r[3]←⊂t
-------------------------------------------------------------
[ 0]  r←gerat96e3;e;t;s;asca;as;uca
[ 1] denovo:
[ 2]  e←(100+10×?20),4000+100×?50
[ 3]  asca←baskara 1,(-2×e[1]),-e[2]
[ 4]  →(¯1=1↑asca)/denovo
[ 5]  as←(|asca)*0.5
[ 6] ok1:
[ 7]  t←6 80ρ' '
[ 8]  t[1;]←80↑'Determine a área da regiɬo limitada pelas curvas'
[ 9]  t[2;]←80↑'$y=x^4-',(⍕e[1]),'x^2$ e $',(⍕e[1]),'x^2+',(⍕e[2]),'$.'
[10]  uca←⌊⌊/|as
[11]  t[3;]←80↑'no domínio $-',(⍕uca+1),' ≤le x ≤le ',(⍕uca+1),'$.'
[12]  s←resolt96e3 e,as
[13]  r←3ρ0
[14]  r[1]←⊂e,as
[15]  r[2]←⊂s
[16]  r[3]←⊂t
-------------------------------------------------------------
[ 0]  r←gerat96e4;e;t;s;asca;as;uca
[ 1] denovo:
[ 2]  e←1+2?8
[ 3] ok1:
[ 4]  t←6 80ρ' '
[ 5]  t[1;]←80↑'Determine a área da regiɬo limitada pelas curvas'
[ 6]  t[2;]←80↑'$',(⍕e[1]),'x-y^2=0$ e '
[ 7]  t[3;]←80↑'$y=',(⍕e[2]),'x-4$ em milésimos de unidade de área.'
```

```
[ 8]  t[4;]←80↑'Dica1: use retângulos horizontais infinitesimais. Fica mais fácil.'
[ 9]  t[5;]←80↑'Dica2: multiplique o resultado por 1000.'
[10]  s←resolt96e4 e
[11]  r←3⍴0
[12]  r[1]←⊂e
[13]  r[2]←⊂s
[14]  r[3]←⊂t
------------------------------------------------------------
[ 0]  r←gerat96e5;e;t;s;asca;as;uca
[ 1] denovo:
[ 2]  e←1+2?8
[ 3] ok1:
[ 4]  t←6 80⍴' '
[ 5]  t[1;]←80↑'Ache o volume do sólido de revoluçto obtido pela revoluçto da regito'
[ 6]  t[2;]←80↑'limitada por $y=',(⍕e[1]),'x-',(⍕e[2]),'x^2$ e o eixo $x$ sobre o '
[ 7]  t[3;]←80↑'eixo $x$. Por favor, multiplique a resposta por 1000.'
[ 8]  t[4;]←80↑'Para integrar use discos infinitesimais centrados em $x$.⍀⍀*'
[ 9]  t[5;]←80↑'Cada disco tem volume $⍀pi.r^2.dx$ e portanto $⍀int y^2$'
[10]  t[6;]←80↑'entre os limites onde o gráfico cruza o eixo $x$.'
[11]  s←resolt96e5 e
[12]  r←3⍴0
[13]  r[1]←⊂e
[14]  r[2]←⊂s
[15]  r[3]←⊂t
------------------------------------------------------------
[0]  r←resolt96e1 e;re;inte;aa;bb
[1]  re←baskara e[2 3 1]  ⍝ como foi gerado: 8-x^2+2x
[2]  inte←e[1],(e[2]÷3),e[3]÷2
[3]  re←re[⍋re]
[4]  r←⍪20 0⍕(aa←+/(re[2]*1 3 2)×inte)-bb←+/(re[1]*1 3 2)×inte
------------------------------------------------------------
[0]  r←resolt96e2 e;a;vv;li;ls;a1;a2
[1]  vv←0.25 ¯0.33333333333 0.5
[2] p1:ls←e[4]
[3]  a1←+/vv×e[⍳3]×ls*4 3 2
[4] p2:li←ls
[5]  ls←e[5]
[6]  a2←(+/vv×e[⍳3]×ls*4 3 2)-a1
[7]  r←⍪20 0⍕(|a1)+|a2
------------------------------------------------------------
[0]  r←resolt96e3 e;uca;li;vv
[1]  uca←-⌊/|e[3 4]
[2]  vv←0.2,(-(2×e[1])÷3),-e[2]
[3]  r←2×(+/vv×(|uca)*5 3 1)
------------------------------------------------------------
[0]  r←resolt96e4 e;li;ls;ii;is
[1]  li←(e[1]-((e[1]*2)+16×e[1]×e[2])*0.5)÷2×e[2]
[2]  ls←(e[1]+((e[1]*2)+16×e[1]×e[2])*0.5)÷2×e[2]
[3]  ii←(((0.5×li*2)+4×li)÷e[2])-(1÷3)×(li*3)÷e[1]
[4]  is←(((0.5×ls*2)+4×ls)÷e[2])-(1÷3)×(ls*3)÷e[1]
[5]  r←⍪20 0⍕1000×is-ii
------------------------------------------------------------
[0]  r←resolt96e5 e
[1]  r←⍪20 0⍕1000×(o÷30)×(e[1]*5)÷e[2]*3
------------------------------------------------------------
[ 0]  opesq vivot96a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLt96   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
```

```
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAt96←ajusta80 FOLHALAt96
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAt96)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 6⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←69 80⍴' '
[16]  f←FOLHALAt96
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[68;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[69;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←gerat96e1
[35]  esse[7+⍳6;]←⊃xx[3]
[36]  resp←resp,,⊃xx[2]
[37]  xx←gerat96e2
[38]  esse[13+⍳6;]←⊃xx[3]
[39]  resp←resp,,⊃xx[2]
[40]  xx←gerat96e3
[41]  esse[19+⍳6;]←⊃xx[3]
[42]  resp←resp,,⊃xx[2]
[43]  xx←gerat96e4
[44]  esse[25+⍳6;]←⊃xx[3]
[45]  resp←resp,,⊃xx[2]
[46]  xx←gerat96e5
[47]  esse[31+⍳6;]←⊃xx[3]
[48]  resp←resp,,⊃xx[2]
[49]  resu←resu,[1]1 6⍴resp
[50]  acuja←(f[;2]='#')/⍳1↑⍴f
[51]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[52]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[53]  ⍞←(⍕xk←xk+1),'-'
[54]  →testa
[55] fim:upag←(1 0+⍴f)⍴' '
[56]  →(1=≡n)/elafa
[57]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[58]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[59]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←5 0,10⍴11 0)⍕resu
[60]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[61]  →terminando
[62] elafa:aaa←(ylu[;⍳36],'¯-'edit 11 0⍕0 1↓resu)
[63]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[64]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[65] terminando:
[66]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[67]  relat[1↑⍴relat;;]←upag
[68]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
```

```
[69]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[70]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[71]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
```

---

vivou02

```
[0]  AVISO
[1]  'para gabarito veja as funcoes qualques e gabarito'
[2]  ''
[3]  ' Este WS esta em quarentena. Confirmar antes de botar fe'
[4]  ' '
[5]  ' Programei RPN1.C e RPN2.C - funcionando legal.'
```

```
[0]  r←achaniv y;inds
[1]  inds←(y=⍷,DBQUESTOES[;1 2],' ')/⍳1↑⍴DBQUESTOES
[2]  r←inds[?⍴inds]
```

```
[0]  r←arruma a
[1]  r←'××'edit'÷/'edit'*E'edit a
```

```
[0]  r←consultapilha
[1]  r←PILHA[TOPO;]
```

```
[0]  criapilha
[1]  PILHA←100 14⍴' '
[2]  TOPO←0
```

```
[0]  r←desdobra x;y
[1]  y←'*E'edit x
[2]  y←'××'edit y
[3]  y←'÷/'edit y
[4]  r←y
```

```
[0]  r←desempilha
[1]  →(TOPO<1)/erro
[2]  r←PILHA[TOPO;]
[3]  TOPO←TOPO-1
[4]  →0
[5] erro:r←'  ¯1',12⍴' '
```

```
[0]  r←empilha x
[1]  →(TOPO>99)/erro
[2]  TOPO←TOPO+1
[3]  PILHA[TOPO;]←x
[4]  r←0
[5]  →0
[6] erro:r←¯1
```

```
[ 0]  r←gabarito x;i;xx;prio1;prio2
[ 1]  x←16↓DBQUESTOES[x;]
[ 2]  VISSE←0 50⍴' '
[ 3]  x←trunca x
[ 4]  criapilha
[ 5]  x←x,')' ⋄ r←''
[ 6]  xx←empilha'(',13⍴' '
[ 7]  i←1
[ 8] testa:→(i>⍴x)/fim
[ 9]  VISSE←VISSE,[1]1 50⍴50↑⍵epilha
[10]  →(x[i]='(')/left
[11]  →(x[i]=')')/right
[12]  →(x[i]∈'+-÷××')/operador
```

```
[13] digito:r←r,x[i]
[14]  →soma
[15] left:xx←empilha 14↑'('
[16]  →soma
[17] operador:prio1←prioridade x[i]
[18]  prio2←prioridade 1↑consultapilha
[19] test22:→(prio2<prio1)/terma22
[20]  r←r,1↑desempilha
[21]  →operador
[22] terma22:xx←empilha 14↑x[i]
[23]  →soma
[24] right:→('('=1↑consultapilha)/deuok
[25]  r←r,1↑desempilha
[26]  →right
[27] deuok:xx←desempilha
[28]  →soma
[29] soma:→(i=i←i+1)/testa
[30] fim:
[31]  VISSE
-------------------------------------------------------------
[0]  r←prioridade y
[1]  r←1↑(('+-*/E'=y),1)/1 1 2 2 3 0
-------------------------------------------------------------
[0]  r←qualques x;ta
[1]  'esta funcao espera receber os primeiros caracteres da expressao'
[2]  'e devolve os numeros da(s) linha(s) em DBQUESTOES'
[3]  'lembre que a expressao deve ser traduzida PARA o APLes'
[4]  'por exemplo, entrar 1*0 ao inves de 1E0...'
[5]  ta←⍴x
[6]  r←(ta=+/[2]DBQUESTOES[;16+⍳ta]=(801,ta)⍴x)/⍳801
-------------------------------------------------------------
[ 0]  r←rpn x;i;xx;prio1;prio2
[ 1]  →('×'∈x)/erro
[ 2]  →('÷'∈x)/erro
[ 3]  x←trunca x
[ 4]  criapilha
[ 5]  x←x,')' ⋄ r←''
[ 6]  xx←empilha'(',13⍴' '
[ 7]  i←1
[ 8] testa:→(i>⍴x)/fim
[ 9]  →(x[i]='(')/left
[10]  →(x[i]=')')/right
[11]  →(x[i]∈'+-*/E')/operador
[12] digito:r←r,x[i]
[13]  →soma
[14] left:xx←empilha 14↑'('
[15]  →soma
[16] operador:prio1←prioridade x[i]
[17]  prio2←prioridade 1↑consultapilha
[18] test22:→(prio2<prio1)/terma22
[19]  r←r,1↑desempilha
[20]  →operador
[21] terma22:xx←empilha 14↑x[i]
[22]  →soma
[23] right:→('('=1↑consultapilha)/deuok
[24]  r←r,1↑desempilha
[25]  →right
[26] deuok:xx←desempilha
[27]  →soma
[28] soma:→(i=i←i+1)/testa
[29] fim:
[30]  →0
[31] erro:'usou-se × ou ÷ na entrada. Nao pode.'
```

```
------------------------------------------------------------
[0]  r←tam frase
[1]  r←ρ(~⍵∧⍀⍵frase=' ')/frase
------------------------------------------------------------
[0]  r←trunca y
[1]  r←(y≠' ')/y
------------------------------------------------------------
[0]  r←vepilha
[1]  r←⍵(PILHA[;1]≠' ')/,PILHA[;1]
------------------------------------------------------------
[ 0]  opesq vivou02a n;CORRECAO;EVENTO;aaa;aaa;acuja;dhx;esse;f;indl;j;linhax;lixo1;lixono
      l;nomes;ql39;qlinha;relat;reso;resp;resu;upag;xixo;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLu02   '
[ 6]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAu02←ajusta80 FOLHALAu02
[11]  qtdexercicios←4 ⋄ qtdconjuntos←8
[12]  relat←((2+1↑ρylu),1 0+ρFOLHALAu02)ρ' '
[13]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[14]  xk←1 ⋄ resu←0 69ρ0
[15] testa:→(xk>1↑ρylu)/fim
[16]  esse←17 80ρ' '
[17]  f←FOLHALAu02
[18]  esse[1;]←80↑dhx[1;]
[19]  esse[2;]←80↑dhx[2;]
[20]  esse[3;]←80↑4 2⍕VERSAOa←1.421
[21]  esse[4;]←80↑ylu[xk;⍳6]
[22]  →(36=1↓ρylu)/zebra
[23]  qlinha←(1=∧/[2]f[;⍳4]=((1↑ρf),4)ρ'⍀#05')/⍳1↑ρf
[24]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[25]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[26]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[27]  →maiszebra
[28] zebra:
[29]  esse[5;]←80↑ylu[xk;6+⍳30]
[30] maiszebra:
[31]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[32]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[33]  esse[16;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[34]  esse[17;⍳17]←esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[35] inica:
[36]  reso←''
[37]  j←1
[38] testa2:→(j>qtdexercicios)/fimtal
[39]  achou←achaniv qtdconjuntos-(qtdexercicios-j)
[40]  esse[7+j;]←80↑,linhax←,arruma DBQUESTOES[achou;16+⍳59]
[41]  indl←5+?(ρaaa←rpn linhax)-5
[42]  esse[11+j;]←80↑3 0⍕indl
[43]  reso←reso,,' ',aaa[indl],(,DBQUESTOES[achou;6+⍳10]),'    '
[44]  →(j=j←j+1)/testa2
[45] fimtal:resu←resu,[1]1 69ρ(4 0⍕resp),((20ρ1),0,(44ρ1))⍀reso
[46]  acuja←(f[;2]='#')/⍳1↑ρf
[47]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[48]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'⍀newpage'
[49]  ⍞←(⍕xk←xk+1),'-'
[50]  →testa
```

```
[51] fim:upag←(1 0+ρf)ρ' '
[52]  →(1=≡n)/elafa
[53]  upag[1;]←(1↓ρupag)↑'\begin{verbatim}'
[54]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[55]  upag[2+ι1↑ρresu;]←((1↑ρresu),80)↑'¯-'edit resu
[56]  upag[3+1↑ρresu;]←(1↓ρupag)↑'\end{verbatim}'
[57]  →terminando
[58] elafa:aaa←(ylu,0 4↓'¯-'edit resu)
[59]  lixonol←aaa ΔFM('c:\apl2\',((~⍬∧\⍬EVENTO=' ')/EVENTO),'.gpa')
[60]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[61] terminando:
[62]  upag[1↑ρupag;]←(1↓ρupag)↑'\end{document}'
[63]  relat[1↑ρrelat;;]←upag
[64]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[65] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[66]  lixonol←lixonol ΔFM'c:\apl2\',((~⍬∧\⍬EVENTO=' ')/EVENTO),'.tex'
[67]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[68]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivou04

```
[0]  r←a I b
[1]  →((a+b)>3)/sim
[2]  r←2
[3]  →0
[4] sim:r←1
------------------------------------------------------------
[0]  r←a T b
[1]  →(1=a I b)/sim
[2]  r←10
[3]  →0
[4] sim:r←5
------------------------------------------------------------
[0]  r←a U b
[1]  →(a>5)/sim
[2]  r←a
[3]  →0
[4] sim:
[5]  r←b
------------------------------------------------------------
[ 0]  r←ubloco6f;res;i;aa;ra;bb;lixo
[ 1]  r←2ρ0
[ 2]  ra←13 76ρ' '
[ 3]  ra[1;]←76↑'{ \normalsize \begin{algorithmic}'
[ 4]  ra[13;]←76↑'\end{algorithmic} }'
[ 5]  res←6ρ0
[ 6]  ra[1+ι5;]←ugeravars
[ 7]  i←7
[ 8] t1:→(i>12)/fim
[ 9] denovo:
[10]  bb←utraduz002f aa←ugeracom3f
[11]  →(1=ρ,bb)/denovo
[12]  ra[i;]←76↑bb,'!'
[13]  res[i-6]←⍎uexpandec aa
[14]  i←i+1
[15]  →t1
[16] fim:r[1]←⊂ra
[17]  r[2]←⊂res
[18]  lixo←⎕EX 5 1ρ'ABCDF'
------------------------------------------------------------
[0]  r←uexpandec x
```

```
[1]  r←((2×⍴x)⍴1 0)⍀x
```

```
[ 0]  r←ugcaso2f;aa;ra;resp
[ 1]  ra←5 13 76⍴' '
[ 2]  aa←ubloco6f
[ 3]  ra[1;;]←⊃aa[1]
[ 4]  resp←+/⊃aa[2]
[ 5]  aa←ubloco6f
[ 6]  ra[2;;]←⊃aa[1]
[ 7]  resp←resp,+/⊃aa[2]
[ 8]  aa←ubloco6f
[ 9]  ra[3;;]←⊃aa[1]
[10]  resp←resp,+/⊃aa[2]
[11]  aa←ubloco6f
[12]  ra[4;;]←⊃aa[1]
[13]  resp←resp,+/⊃aa[2]
[14]  aa←ubloco6f
[15]  ra[5;;]←⊃aa[1]
[16]  resp←resp,+/⊃aa[2]
[17]  r←2⍴0
[18]  r[1]←⊂ra
[19]  r[2]←⊂resp
```

```
[ 0]  r←ugeracom1f;ops;ra;qual
[ 1]  ops←'+-×ITU'
[ 2]  →(1=?2)/evar1
[ 3]  ra←1 0⍕1+?8
[ 4]  →junta1
[ 5] evar1:ra←'ABCDF'[?5]
[ 6] junta1:ra←ra,qual←ops[?6]
[ 7]  →(1=?2)/evar2
[ 8]  ra←ra,1 0⍕1+?8
[ 9]  →junta2
[10] evar2:
[11]  ra←ra,'ABCDF'[5]
[12] junta2:
[13]  r←ra
```

```
[0]  r←ugeracom2f;x;y
[1]  x←ugeracom1f
[2]  y←ugeracom1f
[3]  r←'(',x,')',('+-×ITU'[?6]),'(',y,')'
```

```
[ 0]  r←ugeracom3f;r1;x;ope;y
[ 1] uja:
[ 2]  →(1=?3)/mesmo
[ 3]  x←ugeracom1f
[ 4]  →kkk
[ 5] mesmo:
[ 6]  x←ugeracom2f
[ 7] kkk:
[ 8]  ope←'+-×ITU'[?6]
[ 9] uba:
[10]  y←ugeracom1f
[11]  →(1=?2)/para
[12]  r1←'(',x,')',ope,'(',y,')'
[13]  r←r1
[14]  →0
[15] para:
[16]  r1←'(',y,')',ope,'(',x,')'
[17]  r←r1
```

```
[0]  r←ugeravars
```

```
[1]  r←5 76⍴' '
[2]  r[1;]←76↑'⍀STATE A $= ',(1 0⍕A←1+?8),'$!'
[3]  r[2;]←76↑'⍀STATE B $= ',(1 0⍕B←1+?8),'$!'
[4]  r[3;]←76↑'⍀STATE C $= ',(1 0⍕C←1+?8),'$!'
[5]  r[4;]←76↑'⍀STATE D $= ',(1 0⍕D←1+?8),'$!'
[6]  r[5;]←76↑'⍀STATE F $= ',(1 0⍕F←1+?8),'$!'
------------------------------------------------------------
[ 0]  r←utraduz002f x;i
[ 1]  r←'⍀STATE ' ⍝ era STATE $
[ 2]  i←1
[ 3] t1:→(i>⍴x)/fim
[ 4]  →(x[i]='×')/evez
[ 5]  →(x[i]='I')/eiii
[ 6]  →(x[i]='T')/ettt
[ 7]  →(x[i]='U')/euuu
[ 8]  r←r,x[i]
[ 9] soma:i←i+1
[10]  →t1
[11] evez:r←r,' ⍀APLstar ⍀ '
[12]  →soma
[13] eiii:r←r,' ⍀APLI ⍀ '
[14]  →soma
[15] ettt:r←r,' ⍀APLT ⍀ '
[16]  →soma
[17] euuu:r←r,' ⍀APLU ⍀ '
[18]  →soma
[19] fim:r←r,' ' ⍝ era $
[20]  →(76≥⍴r)/oba
[21]  ⎕←'*'
[22]  r←'*'
[23]  →0
[24] oba:
------------------------------------------------------------
[ 0]  opesq vivou04a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLu04   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAu04←ajusta80 FOLHALAu04
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAu04)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 6⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←75 80⍴' '
[16]  f←FOLHALAu04
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
```

```
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[73;⍳8]←8↑'U4A','00000'⍕xk
[32]  esse[74;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[75;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] inica:
[35]  xx←ugcaso2f
[36]  esse[7+⍳5×13;]←65 80↑65 76⍴⊃xx[1]
[37]  resp←resp,,⊃xx[2]
[38]  resu←resu,[1]1 6⍴resp
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[42]  ⎕←(⍕xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴presu;⍳+/lixo1]←'⍝-'edit(lixo1←5 0 10 0 5 0 5 0 5 0 5 0)⍕resu
[49]  upag[3+1↑⍴presu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],'⍝-'edit 9 0⍕0 1↓resu)
[52]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),⍪1↑⍴relat)⍴relat)
[58] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[59]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[60]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[61]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivou05

```
[ 0]  ru←gerau05;a;a1;n;u;i;r;j;res;c1;c2;c3;xop;xpo
[ 1]  r←11 77⍴' '
[ 2]  n←5 20⍴' '
[ 3]  u←5⍴0
[ 4]  i←1
[ 5] t0:→(i>5)/oba
[ 6]  r[i;]←77↑(a←gnome),'=',(a1←gnum),'!'
[ 7]  u[i]←⍋a1
[ 8]  n[i;]←20↑a
[ 9]  i←i+1
[10]  →t0
[11] oba:
[12]  j←6
[13]  res←6⍴0
[14] t2:→(j>9)/tu
[15]  c1←n gu05com2 u
[16]  r[j;]←77↑(trim c1[1;]),'!'
[17]  res[j-5]←⍋c1[2;]
[18]  j←j+1
[19]  →t2
[20] tu:
[21]  c2←n gu05com2 u
[22]  c3←n gu05com1 u
[23]  r[10;]←77↑'(',((trim c2[1;]),')+(',(trim c3[1;]),')'),'!'
```

```
[24]  res[5]←⍕'(',(trim c2[2;]),')+(',(trim c3[2;]),')'
[25]  c2←n gu05com1 u
[26]  c3←n gu05com2 u
[27]  r[11;]←77↑'(',((trim c2[1;]),')-(',(trim c3[1;]),')'),'!'
[28]  res[6]←⍕'(',(trim c2[2;]),')-(',(trim c3[2;]),')'
[29]  RES←res
[30]  ru←12 77⍴' '
[31]  ru[⍳11;]←11 77↑r
[32]  ru[12;]←77 5⍕+/res
------------------------------------------------------------
[0]  r←gnome;alfa;alnu;tam
[1]  alfa←'ABCDFGHJKLMNPQRSTUVWYZ'
[2]  alnu←'ABCDFGHJKLMNPQRSTUVWYZ',50⍴'0123456789'
[3]  tam←1+?3
[4]  r←alfa[?⍴alfa],alnu[?tam⍴⍴alnu]
------------------------------------------------------------
[0]  r←gnum;t
[1]  →(1=?2)/flo
[2]  t←1+?2
[3]  r←('123456789'[?9]),'0123456789'[?t⍴10]
[4]  →0
[5] flo:
[6]  t←?2
[7]  r←('123456789'[?9]),('0123456789'[?t⍴10]),'.',('0123456789'[?t⍴10]),'123456789'[?9]
------------------------------------------------------------
[ 0]  r←n gu05com1 u;i1;cl;cr;top;x1;i2;x2;i;zop;tx;zp
[ 1]  i←2?5
[ 2]  →(1=?3)/lit
[ 3]  i1←i[1]
[ 4]  top←'++--*'
[ 5]  tx←top[?5]
[ 6]  cl←(trim n[i1;]),tx
[ 7]  cr←(⍕u[i1]),' ',tradapl tx
[ 8]  →junta
[ 9] lit:
[10]  zop←'++--*'
[11]  zp←zop[?5]
[12]  cl←(x1←gnum),zp
[13]  cr←x1,' ',tradapl zp
[14] junta:→(1=?2)/cara
[15]  i2←i[2]
[16]  cl←cl,trim n[i2;]
[17]  cr←cr,' ',⍕u[i2]
[18]  →fim
[19] cara:cl←cl,x2←gnum
[20]  cr←cr,' ',x2
[21] fim:
[22]  r←2 77⍴' '
[23]  r[1;]←77↑cl
[24]  r[2;]←77↑cr
------------------------------------------------------------
[ 0]  r←n gu05com2 u;cl;cr;pop;p1;p2;px
[ 1] vorta:p1←n gu05com1 u
[ 2]  p2←n gu05com1 u
[ 3]  pop←'+-'
[ 4]  px←pop[?2]
[ 5]  cl←'(',(trim p1[1;]),')',px,'(',(trim p2[1;]),')'
[ 6]  cr←'(',(trim p1[2;]),')',px,'(',(trim p2[2;]),')'
[ 7]  r←2 77⍴' '
[ 8]  r[1;]←77↑cl
[ 9]  r[2;]←77↑cr
------------------------------------------------------------
[0]  r←tradapl x
```

```
[1]  r←x
[2]  →(x='*')/vez
[3]  →(x='/')/div
[4]  →0
[5] vez:r←'×'
[6]  →0
[7] div:r←'÷'
[8]  →0
------------------------------------------------------------
[ 0]  opesq vivou05a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivou05 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PLu05   '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[52]  xx←gerau05
[53]  esse[40+⍳11;]←11 80↑xx[⍳11;]
[54]  resp←resp,,⍪xx[12;]
[55]  resu←resu,[1]1 5⍴resp
[56]  acuja←(f[;2]='#')/⍳1↑⍴f
[57]  f[acuja;⍳80]←esse[⍪,f[acuja;3 4],' ';]
[58]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[59]  ⎕←(⍕xk←xk+1),'-'
[60]  →testa
[61] fim:upag←(1 0+⍴f)⍴' '
[62]  →(1=≡n)/elafa
[63]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[64]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[65]  upag[2+⍳1↑⍴resu;⍳¯16++/lixo1]←'¯-'edit(lixo1←5 0 20 4,6⍴17 4)⍕resu
[66]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[67]  →terminando
[68] AAAAAAAAAAA↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[69] elafa:aaa←(ylu[;⍳36],'¯-'edit 18 2⍕0 1↓resu)
[70] AAAAAAAAAAA↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[71]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[72]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[73] terminando:
[74]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[75]  relat[1↑⍴relat;;]←upag
[76]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[77] A se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[78]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[79]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[80]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivou06

```
[0]  AVISO
[1]  'Tem um problema na impressao da imagem figu06...'
[2]  'Assim, chame dvipdfm e imprima na versao PDF'
[3]  ' '
[4]  '  Se bem que na impressao mesmo o arquivo DVI parece bom'
------------------------------------------------------------
[0]  x←gerau10;i
[1]  i←2?1↑⍴ijuca
[2]  x←ijuca[i;]
------------------------------------------------------------
[ 0]  opesq vivou06a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] A  )copy vivou06 grupo
[ 2] A  vars locais a mais=qlinha, nomes, ql39
[ 3] A  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PLu06   '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] AAAAAAAAAAAAAAAAAAAA incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
[15]  FOLHALAu06←ajusta80 FOLHALAu06
[16]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAu06)⍴' '
```

```
[17]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[18]  xk←1
[19] testa:→(xk>1↑⍴ylu)/fim
[20]  esse←11 80⍴' '
[21]  f←FOLHALAu06
[22]  esse[1;]←80↑dhx[1;]
[23]  esse[2;]←80↑dhx[2;]
[24]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[25]  esse[4;]←80↑ylu[xk;⍳6]
[26] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[27]  →(36=1↓⍴ylu)/zebra
[28]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[29]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[30]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[31]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[32]  →maiszebra
[33] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
[34] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[35] ⍝ ↓↓↓↓ e ↑↑↑↑↑ idem
[36] maiszebra:
[37]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[38]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[39]  esse[8;]←80↑'PRELA','000'⍕xk
[40]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[41]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[42] inica:
[43]  acuja←(f[;2]='#')/⍳1↑⍴f
[44]  f[acuja;⍳80]←esse[⌸,f[acuja;3 4],' ';]
[45]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[46]  ⍞←(⍕xk←xk+1),'-'
[47]  →testa
[48] fim:upag←(1 0+⍴f)⍴' '
[49]  'Nao ha arquivo GPA'
[50] terminando:
[51]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[52]  relat[1↑⍴relat;;]←upag
[53]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[54] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[55]  lixonol←lixonol ΔFM'c:\apl2\',((~⍬∧\⍬EVENTO=' ')/EVENTO),'.tex'
[56]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[57]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivou08

```
[ 0]  RRRR←E1;A;B;C;RRRR;Δ001;Δ002;Δ003
[ 1]  A←6
[ 2]  B←4
[ 3]  C←9
[ 4]  Δ001←((0=2|A+B+C))
[ 5]  →(~Δ001)/Δ002
[ 6]  A←A+C
[ 7]  B←B-2
[ 8] Δ002:
[ 9]  RRRR←A+B+C
------------------------------------------------------------
[ 0]  RRRR←E2;A;B;C;RRRR;Δ001;Δ002;Δ003
[ 1]  A←6
[ 2]  B←3
[ 3]  C←6
[ 4]  Δ001←(((A+B)≥C)∨(A≠B))
[ 5]  →(~Δ001)/Δ002
```

```
[ 6]  A←B-C
[ 7]  B←B-1
[ 8] Δ002:
[ 9]  RRRR←A+B+C
------------------------------------------------------------
[ 0]  RRRR←E3;A;B;C;RRRR;Δ001;Δ002;Δ003;Δ004
[ 1]  A←3
[ 2]  B←3
[ 3]  C←7
[ 4]  Δ001←(((B|A)≠C)∧(A≤C))
[ 5]  →(~Δ001)/Δ002
[ 6]  A←B+C
[ 7]  B←B-1
[ 8]  →Δ003
[ 9] Δ002:
[10]  A←C-4
[11]  B←A+1
[12] Δ003:
[13]  RRRR←A+B+C
------------------------------------------------------------
[ 0]  RRRR←E4;A;B;C;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ008
[ 1]  A←5
[ 2]  B←5
[ 3]  C←5
[ 4]  Δ001←(((A+B)≠C)∧(A=B))
[ 5]  →(~Δ001)/Δ002
[ 6]  Δ003←((B|A)≠C)
[ 7]  →(~Δ003)/Δ004
[ 8]  A←A+C
[ 9]  B←B-3
[10] Δ004:
[11]  →Δ005
[12] Δ002:
[13]  Δ006←((A>B)∨((B>A)∧(0=2|B)))
[14]  →(~Δ006)/Δ007
[15]  A←B-C
[16]  B←B-1
[17] Δ007:
[18] Δ005:
[19]  RRRR←A+B+C
------------------------------------------------------------
[ 0]  RRRR←E5;A;B;C;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ008
[ 1]  A←6
[ 2]  B←3
[ 3]  C←9
[ 4]  Δ001←(((B|A)≠C)∧(A≤C))
[ 5]  →(~Δ001)/Δ002
[ 6]  A←B+C
[ 7]  Δ003←((A≠B))
[ 8]  →(~Δ003)/Δ004
[ 9]  A←A+C
[10]  B←B-2
[11] Δ004:
[12]  B←B-2
[13]  →Δ005
[14] Δ002:
[15]  Δ006←(((B|A)≠C)∧(A≤C))
[16]  →(~Δ006)/Δ007
[17]  A←B-C
[18]  B←B-2
[19] Δ007:
[20]  A←C-1
[21]  B←A+2
```

```
[22] Δ005:
[23]  RRRR←A+B+C
-------------------------------------------------------------
[ 0]  r←geraexemplo
[ 1]  r←80 ajusta EXEMPLOS
[ 2]  r←r,[1]1 80ρ80↑'\paragraph{Exemplo 1}'
[ 3]  r←r,[1]((1↑ρexe1b),80)↑exe1b
[ 4]  r←r,[1]1 80ρ80↑'\begin{verbatim}'
[ 5]  r←r,[1]((1↑ρexe1d),80)↑exe1d
[ 6]  r←r,[1]1 80ρ80↑'\end{verbatim}'
[ 7]  r←r,[1]1 80ρ80↑'Deu como resultado ',⍕E1
[ 8]  r←r,[1]1 80ρ80↑'\paragraph{Exemplo 2}'
[ 9]  r←r,[1]((1↑ρexe2b),80)↑exe2b
[10]  r←r,[1]1 80ρ80↑'\begin{verbatim}'
[11]  r←r,[1]((1↑ρexe2d),80)↑exe2d
[12]  r←r,[1]1 80ρ80↑'\end{verbatim}'
[13]  r←r,[1]1 80ρ80↑'Deu como resultado ',⍕E2
[14]  r←r,[1]1 80ρ80↑'\paragraph{Exemplo 3}'
[15]  r←r,[1]((1↑ρexe3b),80)↑exe3b
[16]  r←r,[1]1 80ρ80↑'\begin{verbatim}'
[17]  r←r,[1]((1↑ρexe3d),80)↑exe3d
[18]  r←r,[1]1 80ρ80↑'\end{verbatim}'
[19]  r←r,[1]1 80ρ80↑'Deu como resultado ',⍕E3
[20]  r←r,[1]1 80ρ80↑'\paragraph{Exemplo 4}'
[21]  r←r,[1]((1↑ρexe4b),80)↑exe4b
[22]  r←r,[1]1 80ρ80↑'\begin{verbatim}'
[23]  r←r,[1]((1↑ρexe4d),80)↑exe4d
[24]  r←r,[1]1 80ρ80↑'\end{verbatim}'
[25]  r←r,[1]1 80ρ80↑'Deu como resultado ',⍕E4
[26]  r←r,[1]1 80ρ80↑'\paragraph{Exemplo 5}'
[27]  r←r,[1]((1↑ρexe5b),80)↑exe5b
[28]  r←r,[1]1 80ρ80↑'\begin{verbatim}'
[29]  r←r,[1]((1↑ρexe5d),80)↑exe5d
[30]  r←r,[1]1 80ρ80↑'\end{verbatim}'
[31]  r←r,[1]1 80ρ80↑'Deu como resultado ',⍕E5
[32]  r←r,[1]1 80ρ80↑'\end{document}'
-------------------------------------------------------------
[0]  r←a igual b;maior
[1]  maior←(1↑ρa)⌈1↑ρb
[2]  a←maior↑a ⋄ b←maior↑b
[3]  r←maior=+/a=b
-------------------------------------------------------------
[ 0]  r←ucondicao1;a;b;i
[ 1]  r←2ρ0
[ 2]  i←?7
[ 3]  →(i=1)/um
[ 4]  →(i=2)/dois
[ 5]  →(i=3)/tres
[ 6]  →(i=4)/quatro
[ 7]  →(i=5)/cinco
[ 8]  →(i=6)/seis
[ 9]  →(i=7)/sete
[10] um:a←'(A+B)≥C'
[11]  b←'((A + B) M C)'
[12]  →fim
[13] dois:a←'(B|A)≠C'
[14]  b←'((A L B) D C)'
[15]  →fim
[16] tres:a←'(A+B)≠C'
[17]  b←'((A + B) D C)'
[18]  →fim
[19] quatro:a←'(0=2|A+B+C)'
[20]  b←'(((A + B + C) L 2) = 0)'
```

```
[21]  →fim
[22] cinco:a←'(A>B)'
[23]  b←'(A $>$ B)'
[24]  →fim
[25] seis:a←'(A≠B)'
[26]  b←'(A D B)'
[27]  →fim
[28] sete:a←'(A=B)'
[29]  b←'(A = B)'
[30]  →fim
[31] fim:r[1]←⊂74↑a
[32]  r[2]←⊂74↑b
-------------------------------------------------------------
[ 0]  r←ucondicao2;a;b;i
[ 1]  r←2⍴0
[ 2]  i←?7
[ 3]  →(i=1)/um
[ 4]  →(i=2)/dois
[ 5]  →(i=3)/tres
[ 6]  →(i=4)/quatro
[ 7]  →(i=5)/cinco
[ 8]  →(i=6)/seis
[ 9]  →(i=7)/sete
[10] um:a←'((A+B)≥C) ∨ (A ≠ B)'
[11]  b←'((A + B) M C) O (A D B)'
[12]  →fim
[13] dois:a←'((B|A)≠C) ∧ (A ≤ C) '
[14]  b←'((A L B) D C) E (A N C)'
[15]  →fim
[16] tres:a←'((A+B)≠C) ∧ (A=B)'
[17]  b←'((A + B) D C) E (A = B)'
[18]  →fim
[19] quatro:a←'((2|(A+B+C))=0) ∨ ((A+B) ≠ C)'
[20]  b←'(((A + B + C) L 2) = 0) O ((A + B ) D C)'
[21]  →fim
[22] cinco:a←'(A>B) ∨ ((B>A) ∧ (0=2|B))'
[23]  b←'(A $>$ B) O ((B $>$ A) E ((B L 2)= 0))'
[24]  →fim
[25] seis:a←'(A≠B)∨((A+2)>C)'
[26]  b←'(A D B) O ((A+2) $>$ C)'
[27]  →fim
[28] sete:a←'(A=B) ∧ ((C-3)<B)'
[29]  b←'(A = B) E ((C-3) $<$ B)'
[30]  →fim
[31] fim:r[1]←⊂74↑a
[32]  r[2]←⊂74↑b
-------------------------------------------------------------
[ 0]  r←ugerase1;a;b;A;B;C;cc;e
[ 1]  r←2⍴0
[ 2]  a←10 74⍴' '
[ 3]  a[1;]←74↑'funcao E1'
[ 4]  a[2;]←74↑'A<-',1 0⍕A←2+?4
[ 5]  a[3;]←74↑'B<-',1 0⍕B←2+?3
[ 6]  a[4;]←74↑'C<-',1 0⍕C←4+?5
[ 7]  cc←ucondicao1
[ 8]  a[5;]←74↑'se (',(trim⊃cc[1]),') entao'
[ 9]  a[6;]←74↑'   A<-A+C'
[10]  a[7;]←74↑'   B<-B-',1 0⍕e←?3
[11]  a[8;]←74↑'fimse'
[12]  a[9;]←74↑'RRRR <- A+B+C'
[13]  a[10;]←74↑'fimfuncao'
[14]  r[1]←⊂a
[15]  b←10 74⍴' '
```

```
[16]  b[1;]←74↑'\begin{algorithmic}[1]'
[17]  b[2;]←74↑'\STATE A = ',(1 0⍕A),'!'
[18]  b[3;]←74↑'\STATE B = ',(1 0⍕B),'!'
[19]  b[4;]←74↑'\STATE C = ',(1 0⍕C),'!'
[20]  b[5;]←74↑'\IF{',(trim⊃cc[2]),'}'
[21]  b[6;]←74↑'\STATE A = A+C!'
[22]  b[7;]←74↑'\STATE B = B-',(1 0⍕e),'!'
[23]  b[8;]←74↑'\ENDIF'
[24]  b[9;]←74↑'\STATE escreva (A+B+C)!'
[25]  b[10;]←74↑'\end{algorithmic}'
[26]  r[2]←⊂b
-------------------------------------------------------------
[ 0]  r←ugerase2;a;b;A;B;C;cc;e
[ 1]  r←2⍴0
[ 2]  a←10 74⍴' '
[ 3]  a[1;]←74↑'funcao E2'
[ 4]  a[2;]←74↑'A<-',1 0⍕A←2+?4
[ 5]  a[3;]←74↑'B<-',1 0⍕B←2+?3
[ 6]  a[4;]←74↑'C<-',1 0⍕C←4+?5
[ 7]  cc←ucondicao2
[ 8]  a[5;]←74↑'se (',(trim⊃cc[1]),') entao'
[ 9]  a[6;]←74↑'   A<-B-C'
[10]  a[7;]←74↑'   B<-B-',1 0⍕e←?3
[11]  a[8;]←74↑'fimse'
[12]  a[9;]←74↑'RRRR <- A+B+C'
[13]  a[10;]←74↑'fimfuncao'
[14]  r[1]←⊂a
[15]  b←10 74⍴' '
[16]  b[1;]←74↑'\begin{algorithmic}[1]'
[17]  b[2;]←74↑'\STATE A = ',(1 0⍕A),'!'
[18]  b[3;]←74↑'\STATE B = ',(1 0⍕B),'!'
[19]  b[4;]←74↑'\STATE C = ',(1 0⍕C),'!'
[20]  b[5;]←74↑'\IF{',(trim⊃cc[2]),'}'
[21]  b[6;]←74↑'\STATE A = B-C!'
[22]  b[7;]←74↑'\STATE B = B-',(1 0⍕e),'!'
[23]  b[8;]←74↑'\ENDIF'
[24]  b[9;]←74↑'\STATE escreva (A+B+C)!'
[25]  b[10;]←74↑'\end{algorithmic}'
[26]  r[2]←⊂b
-------------------------------------------------------------
[ 0]  r←ugerase3;a;b;A;B;C;cc;e;f;g;t
[ 1]  r←2⍴0
[ 2]  a←13 74⍴' '
[ 3]  a[1;]←74↑'funcao E3'
[ 4]  a[2;]←74↑'A<-',1 0⍕A←2+?4
[ 5]  a[3;]←74↑'B<-',1 0⍕B←2+?3
[ 6]  a[4;]←74↑'C<-',1 0⍕C←4+?5
[ 7]  cc←ucondicao2
[ 8]  a[5;]←74↑'se (',(trim⊃cc[1]),') entao'
[ 9]  a[6;]←74↑'   A<-B',(t←'+-'[?2]),'C'
[10]  a[7;]←74↑'   B<-B-',1 0⍕e←?3
[11]  a[8;]←74↑'senao'
[12]  a[9;]←74↑'   A<-C-',1 0⍕f←?4
[13]  a[10;]←74↑'   B<-A+',1 0⍕g←?3
[14]  a[11;]←74↑'fimse'
[15]  a[12;]←74↑'RRRR <- A+B+C'
[16]  a[13;]←74↑'fimfuncao'
[17]  r[1]←⊂a
[18]  b←13 74⍴' '
[19]  b[1;]←74↑'\begin{algorithmic}[1]'
[20]  b[2;]←74↑'\STATE A = ',(1 0⍕A),'!'
[21]  b[3;]←74↑'\STATE B = ',(1 0⍕B),'!'
[22]  b[4;]←74↑'\STATE C = ',(1 0⍕C),'!'
```

```
[23]  b[5;]←74↑'⍀IF{',(trim⊃cc[2]),'}'
[24]  b[6;]←74↑'⍀STATE A = B',t,'C!'
[25]  b[7;]←74↑'⍀STATE B = B-',(1 0⍕e),'!'
[26]  b[8;]←74↑'⍀ELSE'
[27]  b[9;]←74↑'⍀STATE A = C-',(1 0⍕f),'!'
[28]  b[10;]←74↑'⍀STATE B = A+',(1 0⍕g),'!'
[29]  b[11;]←74↑'⍀ENDIF'
[30]  b[12;]←74↑'⍀STATE escreva (A+B+C)!'
[31]  b[13;]←74↑'⍀end{algorithmic}'
[32]  r[2]←⊂b
-------------------------------------------------------------
[ 0]  r←ugerase4;a;b;A;B;C;cc;e;f;g;t;x1;x2;x11;x12;x21;x22
[ 1]  r←2⍴0
[ 2]  a←17 74⍴' '
[ 3]  cc←ucondicao2
[ 4]  x1←ugerase1
[ 5]  x2←ugerase2
[ 6]  x11←⊃x1[1] ⋄ x12←⊃x1[2]
[ 7]  x21←⊃x2[1] ⋄ x22←⊃x2[2]
[ 8]  a[1;]←74↑'funcao E4'
[ 9]  a[2;]←74↑'A<-',1 0⍕A←2+?4
[10]  a[3;]←74↑'B<-',1 0⍕B←2+?3
[11]  a[4;]←74↑'C<-',1 0⍕C←4+?5
[12]  a[5;]←74↑'se (',(trim⊃cc[1]),') entao'
[13]  a[6 7 8 9;]←4 74↑x11[5 6 7 8;]
[14]  a[10;]←74↑'senao'
[15]  a[11 12 13 14;]←4 74↑x21[5 6 7 8;]
[16]  a[15;]←74↑'fimse'
[17]  a[16;]←74↑'RRRR <- A+B+C'
[18]  a[17;]←74↑'fimfuncao'
[19]  r[1]←⊂a
[20]  b←17 74⍴' '
[21]  b[1;]←74↑'⍀begin{algorithmic}[1]'
[22]  b[2;]←74↑'⍀STATE A = ',(1 0⍕A),'!'
[23]  b[3;]←74↑'⍀STATE B = ',(1 0⍕B),'!'
[24]  b[4;]←74↑'⍀STATE C = ',(1 0⍕C),'!'
[25]  b[5;]←74↑'⍀IF{',(trim⊃cc[2]),'}'
[26]  b[6 7 8 9;]←4 74↑x12[5 6 7 8;]
[27]  b[10;]←74↑'⍀ELSE'
[28]  b[11 12 13 14;]←4 74↑x22[5 6 7 8;]
[29]  b[15;]←74↑'⍀ENDIF'
[30]  b[16;]←74↑'⍀STATE escreva (A+B+C)!'
[31]  b[17;]←74↑'⍀end{algorithmic}'
[32]  r[2]←⊂b
-------------------------------------------------------------
[ 0]  r←ugerase5;a;b;A;B;C;cc;e;f;g;t;x1;x2;x11;x12;x21;x22
[ 1]  r←2⍴0
[ 2]  a←21 74⍴' '
[ 3]  cc←ucondicao2
[ 4]  x1←ugerase1
[ 5]  x2←ugerase2
[ 6]  x11←⊃x1[1] ⋄ x12←⊃x1[2]
[ 7]  x21←⊃x2[1] ⋄ x22←⊃x2[2]
[ 8]  a[1;]←74↑'funcao E5'
[ 9]  a[2;]←74↑'A<-',1 0⍕A←2+?4
[10]  a[3;]←74↑'B<-',1 0⍕B←2+?3
[11]  a[4;]←74↑'C<-',1 0⍕C←4+?5
[12]  a[5;]←74↑'se (',(trim⊃cc[1]),') entao'
[13]  a[6;]←74↑'   A<-B',(t←'+-'[?2]),'C'
[14]  a[7 8 9 10;]←4 74↑x11[5 6 7 8;]
[15]  a[11;]←74↑'   B<-B-',1 0⍕e←?3
[16]  a[12;]←74↑'senao'
[17]  a[13 14 15 16;]←4 74↑x21[5 6 7 8;]
```

```
[18]  a[17;]←74↑'   A<-C-',1 0⍕f←?4
[19]  a[18;]←74↑'   B<-A+',1 0⍕g←?3
[20]  a[19;]←74↑'fimse'
[21]  a[20;]←74↑'RRRR <- A+B+C'
[22]  a[21;]←74↑'fimfuncao'
[23]  r[1]←⊂a
[24]  b←21 74⍴' '
[25]  b[1;]←74↑'\begin{algorithmic}[1]'
[26]  b[2;]←74↑'\STATE A = ',(1 0⍕A),'!'
[27]  b[3;]←74↑'\STATE B = ',(1 0⍕B),'!'
[28]  b[4;]←74↑'\STATE C = ',(1 0⍕C),'!'
[29]  b[5;]←74↑'\IF{',(trim⊃cc[2]),'}'
[30]  b[6;]←74↑'\STATE A = B',t,'C!'
[31]  b[7 8 9 10;]←4 74↑x12[5 6 7 8;]
[32]  b[11;]←74↑'\STATE B = B-',(1 0⍕e),'!'
[33]  b[12;]←74↑'\ELSE'
[34]  b[13 14 15 16;]←4 74↑x22[5 6 7 8;]
[35]  b[17;]←74↑'\STATE A = C-',(1 0⍕f),'!'
[36]  b[18;]←74↑'\STATE B = A+',(1 0⍕g),'!'
[37]  b[19;]←74↑'\ENDIF'
[38]  b[20;]←74↑'\STATE escreva (A+B+C)!'
[39]  b[21;]←74↑'\end{algorithmic}'
[40]  r[2]←⊂b
-------------------------------------------------------------
[ 0]  r←vetoriza x;i;rr;letra;aspa;nume
[ 1] ⍝ versao 1.07
[ 2]  aspa←'''' ⋄ nume←'0123456789'
[ 3]  letra←'abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ()',aspa
[ 4] ⍝ tira os brancos
[ 5]  i←1 ⋄ rr←1
[ 6] t2:→(i>¯2+⍴x)/vaiz
[ 7]  →((x[i+1]=' ')∧(x[i]∈letra)∧(x[i+2]∈nume))/mataz
[ 8]  →((x[i+1]=' ')∧(x[i]∈nume)∧(x[i+2]∈letra))/mataz
[ 9]  →((x[i]∈letra)∧(x[i+2]∈letra))/naopode
[10]  →(((x[1]='p')∨(x[1]='P'))∧(x[2]='a')∧(x[i]∈letra)∧((x[i+2]='-')∨(x[i+2]='¯')))/naopo
      de  ⍝ comando incluido para o passo negativo
[11] ⍝ →((x[i]∈letra)∧((x[i+2]='-')∨(x[i+2]='¯')))/naopode  ⍝ comando incluido para o pass
      o negativo
[12] ⍝ os 3 testes iniciais (pPa) foram incluidos porque o comando acima estava
[13] ⍝ fazendo besteira: vetoriza 'A <- A -1' estava gerando 4 tokens e nao 3.
[14] ⍝ correcao em 13/03/12 - P.kantek
[15]  →(x[i+1]≠' ')/naopode
[16] pode:rr←rr,0
[17]  →(i=i←i+1)/t2
[18] mataz:x[i+1]←'!'
[19] naopode:rr←rr,1
[20]  →(i=i←i+1)/t2
[21] vaiz:rr←rr,1
[22]  x←rr/x
[23] ⍝ separa o sinal <-
[24]  →(2≠+/'<-'∈x)/faca
[25]  i←1 ⋄ rr←⍳0
[26] t1:→(i>¯1+⍴x)/vaix
[27]  →((x[i]='<')∧(x[i+1]='-'))/esim
[28]  rr←rr,1
[29]  →(i=i←i+1)/t1
[30] esim:rr←rr,0 1 1 0
[31]  →(i=i←i+2)/t1
[32] vaix:rr←rr,1
[33]  x←rr\x
[34] faca:x←'! 'edit x
[35]  r←(~' '=x)⊂x
-------------------------------------------------------------
```

```
[ 0]  opesq vivou08a n;CORRECAO;EVENTO;aa;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;ql
      inha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLu08   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAu08←ajusta80 FOLHALAu08
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAu08)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 6⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←81 80⍴' '
[16]  f←FOLHALAu08
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.08
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[79;⍳8]←8↑'U8A','00000'⍎xk
[32]  esse[80;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[81;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] inica:
[35]  xx←ugerase1
[36]  aa←⎕FX cpc⊃xx[1]
[37]  resp←resp,⍪aa
[38]  esse[7+⍳10;]←10 80↑⊃xx[2]
[39]  xx←ugerase2
[40]  aa←⎕FX cpc⊃xx[1]
[41]  resp←resp,⍪aa
[42]  esse[17+⍳10;]←10 80↑⊃xx[2]
[43]  xx←ugerase3
[44]  aa←⎕FX cpc⊃xx[1]
[45]  resp←resp,⍪aa
[46]  esse[27+⍳13;]←13 80↑⊃xx[2]
[47]  xx←ugerase4
[48]  aa←⎕FX cpc⊃xx[1]
[49]  resp←resp,⍪aa
[50]  esse[40+⍳17;]←17 80↑⊃xx[2]
[51]  xx←ugerase5
[52]  aa←⎕FX cpc⊃xx[1]
[53]  resp←resp,⍪aa
[54]  esse[57+⍳21;]←21 80↑⊃xx[2]
[55]  resu←resu,[1]1 6⍴resp
[56]  acuja←(f[;2]='#')/⍳1↑⍴f
[57]  f[acuja;⍳80]←esse[⍪,f[acuja;3 4],' ';]
[58]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[59]  ⍞←(⍎xk←xk+1),'-'
[60]  →testa
```

```
[61] fim:upag←(1 0+⍴f)⍴' '
[62]  →(1=≡n)/elafa
[63]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[64]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[65]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯'-'edit(lixo1←5 0 10 0 5 0 5 0 5 0 5 0)⍪resu
[66]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[67]  →terminando
[68] elafa:aaa←(ylu[;⍳36],'¯'-'edit 9 0⍪0 1↓resu)
[69]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[70]  '!!!!!  Arquivo GPA com ',(⍪1↑⍴aaa),' linhas e ',(⍪1↓⍴aaa),' colunas'
[71] terminando:
[72]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[73]  relat[1↑⍴relat;;]←upag
[74]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[75] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[76]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[77]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[78]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivou10

```
[0]  AVISO
[1]  'Nao tem gpa.'
[2]  ' A referencia para esta aula e PDF explicado, de Whitington, J. O Reilly - novatec'
[3]  'alem do padrao pdf_reference_1-7.pdf disponivel em '
[4]  'www.adobe.com/devnet/acrobat/pdfs/pdf_reference_1-7.pdf'
------------------------------------------------------------
[ 0]  r←geracasou10;pl;vv;pags;res;i;palavra;j
[ 1]  pl←'ola vamos ver se esta coisa funciona mesmo ou apenas e uma '
[ 2]  pl←pl,'traquitana que gosta dizer bom dia boa noite sempre '
[ 3]  pl←pl,'todas as noites comer um cheese salada prato bordas '
[ 4]  pl←pl,'prato de sopa carne agora pode se satisfazer com um suco maracuja '
[ 5]  pl←pl,'sanduiche de gororoba e alface com feijao arroz enfeitado '
[ 6]  pl←pl,'sexta feira na praca ozorio havia um gato na corrente saltitante '
[ 7]  pl←pl,'descobriu um livro fantastico na biblioteca e dai comprou borracha '
[ 8]  pl←pl,'o que era um uniforme vistoso agente policia rodoviaria '
[ 9]  pl←pl,'nunca se sabe casa vai cair ou vai ficar sobre os trem '
[10]  pl←pl,'alicerces concreto areia com pedras cortadas rente fio '
[11]  pl←pl,'casinha pequenina onde chuva caiu bastante volume enorme '
[12]  vv←(pl≠' ')⊂pl
[13]  pags←5+?4
[14]  res←(((14×pags),24)⍴' '),[1]((?10),24)⍴' '
[15]  i←1
[16] t1:→(i>1↑⍴res)/fim
[17]  j←1
[18] t22:
[19]  palavra←,⊃vv[?⍴vv]
[20]  →((j+⍴palavra)>24)/over
[21]  res[i;j+⍳⍴palavra]←palavra
[22]  j←j+1+⍴palavra
[23]  →t22
[24] over:
[25]  i←i+1
[26]  →t1
[27] fim:r←res
------------------------------------------------------------
[ 0]  opesq vivou10a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nofi;nomes;ql39;
      qlinha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivou10 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
```

```
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PLu10   '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

vivou11

```
[ 0]  opesq vivou11a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivou11 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PLu11   '
[ 9]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[59]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'.tex'
```

---

vivou12

```
[0]  r←a B b
[1]  r←a=b
```

```
[0]  r←a C b
[1]  r←(a=b)∨((a=0)∧(b=1))
```

```
[0]  r←a E b
[1]  r←a∧b
```

```
[0]  r←N a
[1]  r←~a
```

```
[0]  r←a O b
[1]  r←a∨b
```

```
[ 0]  r←corta75 x;ind
[ 1]  r←0 75⍴' '
[ 2]  →((⍴x)<75)/ultimo
[ 3] testa:ind←75
[ 4] vorta:→(x[ind]=' ')/ok1
[ 5]  ind←ind-1
[ 6]  →vorta
[ 7] ok1:r←r,[1]1 75⍴75↑ind↑x
[ 8]  x←ind↓x
[ 9]  →((⍴x)<75)/ultimo
[10]  →testa
[11] ultimo:r←r,[1]1 75⍴75↑x
[12]  r←' ',[2]r
```

```
[ 0]  rx←qtdv geratv12 qtdops;coma;i;vv;p1;p2;r1;p;q;r;s;j;vvaux;aux;p3;p4;ziza;qtcon
[ 1] ⍝ gera uma tabela verdade contendo uma expressao envolvendo qtdv variaveis e qtdops o
      peracoes logica
[ 2] denovo:coma←''
[ 3]  i←1
[ 4]  vv←qtdv↑'pqrs'
[ 5] t1:→(i≥qtdops)/vai
[ 6]  →(1≠?5)/naopoe
[ 7]  p1←'(N ',(aux←vv[?⍴vv]),')'
[ 8]  →pula
[ 9] naopoe:p1←' ',aux←vv[?⍴vv]
[10] pula:vvaux←vv menos aux
[11]  →(1≠?4)/np2
[12]  p2←'(N ',vvaux[?⍴vvaux],')'
[13]  →pula2
[14] np2:p2←' ',vvaux[?⍴vvaux]
[15] pula2:
[16]  →(1≠?5)/np3
[17]  p3←'(N ',(aux←vv[?⍴vv]),')'
[18]  →pu4
[19] np3:p3←' ',aux←vv[?⍴vv]
[20] pu4:vvaux←vv,vv menos aux
[21]  →(1≠?3)/np4
[22]  p4←'(N ',vvaux[?⍴vvaux],')'
[23]  →pu5
[24] np4:p4←' ',vvaux[?⍴vvaux]
[25] pu5:
[26]  →(i≠1)/ufaa
```

```
[27]  coma←'(',p1,' ','EOCBEO'[?6],' ',p2,')'
[28] ufaa:
[29]  coma←'(',coma,'EOCBEO'[?6],' (',p3,' ','EOCBE'[?5],' ',p4,'))'
[30]  i←i+1
[31]  →t1
[32] vai:
[33]  →(qtdv≠2)/tenta3
[34]  p←1 1 0 0 ◇ q←1 0 1 0
[35]  →juntara
[36] tenta3:
[37]  →(qtdv≠3)/tenta4
[38]  p←1 1 1 1 0 0 0 0 ◇ q←1 1 0 0 1 1 0 0 ◇ r←1 0 1 0 1 0 1 0
[39]  →juntara
[40] tenta4:
[41]  →(qtdv≠4)/tenta5
[42]  p←(8ρ1),8ρ0 ◇ q←16ρ(4ρ1),4ρ0 ◇ r←16ρ(2ρ1),2ρ0 ◇ s←16ρ1 0
[43]  →juntara
[44] tenta5:'qtdv invalido... saindo'
[45]  →0
[46] juntara:rx←3ρ0
[47] ⍝ r1
[48]  →(qtdv=qtcon←('p'∈coma)+('q'∈coma)+('r'∈coma)+('s'∈coma))/fiuz
[49]  ⎕←'#'
[50]  →denovo
[51] fiuz:
[52]  rx[1]←⊂coma
[53]  rx[2]←⊂'01'[1+≠coma]
[54]  ziza←tradlog coma
[55]  →(150>ρziza)/deucerto
[56]  ⎕←'o'
[57]  →denovo
[58] deucerto:
[59]  rx[3]←⊂ziza
------------------------------------------------------------
[0]  r←a menos b
[1]  r←(a≠b)/a
------------------------------------------------------------
[0]  r←mostracaso1 a;i
[1]  r←0 70ρ' '
[2]  i←1
[3] t1:→(i>10)/fim
[4]  r←r,[1]1 70ρ70↑⊃casocorrecao2[i;a]
[5]  i←i+1
[6]  →t1
[7] fim:
------------------------------------------------------------
[ 0]  r←tradlog x;i;y
[ 1]  i←1
[ 2]  y←''
[ 3] t1:→(i>ρx)/fim
[ 4]  →(x[i]='E')/ehe
[ 5]  →(x[i]='O')/eho
[ 6]  →(x[i]='B')/ehb
[ 7]  →(x[i]='C')/ehc
[ 8]  →(x[i]='N')/ehn
[ 9]  y←y,x[i]
[10]  →soma
[11] ehe:y←y,'∧land '
[12]  →soma
[13] eho:y←y,'∨lor '
[14]  →soma
[15] ehc:y←y,'~to '
[16]  →soma
```

```
[17] ehb:y←y,'↔leftrightarrow '
[18]  →soma
[19] ehn:y←y,'↔sim '
[20]  →soma
[21] soma:i←i+1
[22]  →t1
[23] fim:r←'$',y,'$'
-------------------------------------------------------------
[ 0]  opesq vivou12a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivou12 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  CORRECAO←1 ⋄ EVENTO←'PLu12   '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:↔apl2↔',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[53]  esse[23+⍳4;]←4 80↑corta75⊃xx[3]
[54]  esse[27+⍳4;]←4 80↑corta75⊃xx[1]
[55]  resp←resp,' ',⊃xx[2]
[56]  xx←4 geratv12 6
[57]  esse[31+⍳4;]←4 80↑corta75⊃xx[3]
[58]  esse[35+⍳4;]←4 80↑corta75⊃xx[1]
[59]  resp←resp,' ',⊃xx[2]
[60]  resu←resu,[1]1 39⍴resp
[61]  acuja←(f[;2]='#')/⍳1↑⍴f
[62]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[63]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[64]  ⎕←(⍕xk←xk+1),'-'
[65]  →testa
[66] fim:upag←(1 0+⍴f)⍴' '
[67]  →(1=≡n)/elafa
[68]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[69]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO,'/',opesq
[70]  upag[2+⍳1↑⍴resu;⍳39]←resu
[71]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[72]  →terminando
[73] AAAAAAAAAAA↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[74] elafa:aaa←(ylu[;⍳36],0 3↓resu)
[75] AAAAAAAAAAA↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[76]  lixonol←aaa ⍙FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[77]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[78] terminando:
[79]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[80]  relat[1↑⍴relat;;]←upag
[81]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[82] A se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[83]  lixonol←lixonol ⍙FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[84]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[85]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivou16

```
[0]  r←geratabu16 x;t
[1]  r←(t←×/x)⍴'.'
[2]  r[(⌊0.1×t)?t]←'X'
[3]  r[(⌊0.1×t)?t]←'X'
[4]  r[(⌊0.1×t)?t]←'X'
[5]  r[(⌊0.1×t)?t]←'X'
[6]  r←x⍴r
------------------------------------------------------------
[ 0]  rr←jogovidau16 m;m1;mlar;i;j;qt;ct;r
[ 1]  ct←1
[ 2]  r←(4,⍴m)⍴' '
[ 3]  r[1;;]←m
[ 4] testa:
[ 5]  m1←(⍴m)⍴'.'
[ 6]  mlar←'.',[2]('.',[1]m,[1]'.'),[2]'.'
[ 7]  i←1
[ 8] t1:→(i>1↑⍴m)/aca
[ 9]  j←1
[10] t2:→(j>1↓⍴m)/fi
[11]  qt←+/'X'=mlar[i;¯1+j+⍳3],mlar[i+1;j],mlar[i+1;j+2],mlar[i+2;¯1+j+⍳3]
[12]  →((qt<2)∨(qt>3))/morre
[13]  →(qt=3)/vive
[14] fica:m1[i;j]←m[i;j]
[15]  →soma
[16] morre:m1[i;j]←'.'
```

```
[17]  →soma
[18] vive:m1[i;j]←'X'
[19] soma:→(j=j←j+1)/t2
[20] fi:→(i=i←i+1)/t1
[21] aca:
[22]  m←m1
[23]  →((ct=50)∨(ct=100)∨(ct=200))/guarda   ⍝ era 100,500,1000
[24] volta:
[25]  ct←ct+1
[26]  →testa
[27] guarda:→(ct=200)/mil
[28]  →(ct=100)/quin
[29] cem:r[2;;]←m1
[30]  →volta
[31] quin:r[3;;]←m1
[32]  →volta
[33] mil:r[4;;]←m1
[34] acabou:
[35]  rr←2⍴0
[36]  rr[1]←⊂r[1;;]
[37]  rr[2]←⊂(+/'X'=,r[2;;]),(+/'X'=,r[3;;]),(+/'X'=,r[4;;])
-------------------------------------------------------------
[ 0]  opesq vivou16a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLu16   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[10]  ylu←n grupo ylu
[11] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[39] inica:
[40]  xx←jogovidau16 geratabu16 20 20
[41]  esse[7+⍳20;]←20 80↑1 numera⊃xx[1]
[42]  resp←resp,,⊃xx[2]
[43]  resu←resu,[1]1 4⍴resp
[44]  acuja←(f[;2]='#')/⍳1↑⍴f
[45]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[46]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[47]  ⎕←(⍕xk←xk+1),'-'
[48]  →testa
[49] fim:upag←(1 0+⍴f)⍴' '
[50]  →(1=≡n)/elafa
[51]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[52]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[53]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←4 0 7 0 3 0 3 0)⍕resu
[54]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[55]  →terminando
[56] AAAAAAAAAAA↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[57] elafa:aaa←(ylu[;⍳36],6 0⍕0 1↓resu)
[58] AAAAAAAAAAA↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[59]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[60]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[61] terminando:
[62]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[63]  relat[1↑⍴relat;;]←upag
[64]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[65] A se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[66]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[67]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[68]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivou20

```
[ 0]  RRRR←E1;A;B;C;RRRR;Δ001;Δ002;Δ003;Δ004
[ 1]  A←4
[ 2]  B←4
[ 3]  C←25
[ 4] Δ001:
[ 5]  Δ003←((A+B)≤C)
[ 6]  →(~Δ003)/Δ002
[ 7]  A←A+5
[ 8]  B←B-1
[ 9]  →Δ001
[10] Δ002:
[11]  RRRR←A+B+C
-------------------------------------------------------------
[ 0]  RRRR←E2;A;B;C;RRRR;Δ001;Δ002;Δ003;Δ004
[ 1]  A←6
[ 2]  B←3
[ 3]  C←6
[ 4]  X←4
[ 5] Δ001:
[ 6]  Δ003←X≤19
[ 7]  →(~Δ003)/Δ002
[ 8]  A←C+X
[ 9]  B←B-1
[10]  X←X+2
[11]  →Δ001
[12] Δ002:
[13]  RRRR←A+B+C
-------------------------------------------------------------
```

```
[ 0]  RRRR←E3;A;B;C;RRRR;Δ001;Δ002;Δ003;Δ004
[ 1]  A←3
[ 2]  B←9
[ 3]  C←5
[ 4] Δ001:
[ 5]  A←B-C
[ 6]  B←B-1
[ 7]  Δ003←B<2
[ 8]  →(Δ003)/Δ002
[ 9]  →Δ001
[10] Δ002:
[11]  A←C-1
[12]  B←A+3
[13]  C←C+1
[14]  RRRR←A+B+C
-------------------------------------------------------------
[ 0]  RRRR←E4;A;B;C;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007
[ 1]  A←5
[ 2]  B←4
[ 3]  C←6
[ 4]  X←3
[ 5] Δ001:
[ 6]  Δ003←X≤17
[ 7]  →(~Δ003)/Δ002
[ 8]  A←A+X
[ 9]  B←B+3
[10] Δ004:
[11]  Δ006←C>3
[12]  →(~Δ006)/Δ005
[13]  A←A-1
[14]  C←C-1
[15]  →Δ004
[16] Δ005:
[17]  B←B+3
[18]  X←X+3
[19]  →Δ001
[20] Δ002:
[21]  C←C-1
[22]  B←B+1
[23]  RRRR←A+B+C
-------------------------------------------------------------
[ 0]  RRRR←E5;A;B;C;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ008;Δ009;Δ010
[ 1]  A←8
[ 2]  B←7
[ 3]  C←8
[ 4] Δ001:
[ 5]  Δ003←A>2
[ 6]  →(~Δ003)/Δ002
[ 7]  C←C+1
[ 8]  B←B+C
[ 9] Δ004:
[10]  Δ006←C>0
[11]  →(~Δ006)/Δ005
[12]  B←B+1
[13]  C←C-1
[14] Δ007:
[15]  Δ009←B>2
[16]  →(~Δ009)/Δ008
[17]  B←B-2
[18]  →Δ007
[19] Δ008:
[20]  B←B+1
[21]  C←C-2
```

```
[22]  →Δ004
[23] Δ005:
[24]  A←A-2
[25]  →Δ001
[26] Δ002:
[27]  C←A+B+C
[28]  RRRR←A+B+C
------------------------------------------------------------
[ 0]  r←geraexemplo
[ 1]  r←80 ajusta EXEMPLOS
[ 2]  r←r,[1]1 80ρ80↑'\paragraph{Exemplo 1}'
[ 3]  r←r,[1]((1↑ρexe1b),80)↑exe1b
[ 4]  r←r,[1]1 80ρ80↑'\begin{verbatim}'
[ 5]  r←r,[1]((1↑ρexe1d),80)↑exe1d
[ 6]  r←r,[1]1 80ρ80↑'\end{verbatim}'
[ 7]  r←r,[1]1 80ρ80↑'Deu como resultado ',⍕E1
[ 8]  r←r,[1]1 80ρ80↑'\paragraph{Exemplo 2}'
[ 9]  r←r,[1]((1↑ρexe2b),80)↑exe2b
[10]  r←r,[1]1 80ρ80↑'\begin{verbatim}'
[11]  r←r,[1]((1↑ρexe2d),80)↑exe2d
[12]  r←r,[1]1 80ρ80↑'\end{verbatim}'
[13]  r←r,[1]1 80ρ80↑'Deu como resultado ',⍕E2
[14]  r←r,[1]1 80ρ80↑'\paragraph{Exemplo 3}'
[15]  r←r,[1]((1↑ρexe3b),80)↑exe3b
[16]  r←r,[1]1 80ρ80↑'\begin{verbatim}'
[17]  r←r,[1]((1↑ρexe3d),80)↑exe3d
[18]  r←r,[1]1 80ρ80↑'\end{verbatim}'
[19]  r←r,[1]1 80ρ80↑'Deu como resultado ',⍕E3
[20]  r←r,[1]1 80ρ80↑'\paragraph{Exemplo 4}'
[21]  r←r,[1]((1↑ρexe4b),80)↑exe4b
[22]  r←r,[1]1 80ρ80↑'\begin{verbatim}'
[23]  r←r,[1]((1↑ρexe4d),80)↑exe4d
[24]  r←r,[1]1 80ρ80↑'\end{verbatim}'
[25]  r←r,[1]1 80ρ80↑'Deu como resultado ',⍕E4
[26]  r←r,[1]1 80ρ80↑'\paragraph{Exemplo 5}'
[27]  r←r,[1]((1↑ρexe5b),80)↑exe5b
[28]  r←r,[1]1 80ρ80↑'\begin{verbatim}'
[29]  r←r,[1]((1↑ρexe5d),80)↑exe5d
[30]  r←r,[1]1 80ρ80↑'\end{verbatim}'
[31]  r←r,[1]1 80ρ80↑'Deu como resultado ',⍕E5
[32]  r←r,[1]1 80ρ80↑'\end{document}'
------------------------------------------------------------
[0]  r←a igual b;maior
[1]  maior←(1↑ρa)⌈1↑ρb
[2]  a←maior↑a ⋄ b←maior↑b
[3]  r←maior=+/a=b
------------------------------------------------------------
[ 0]  r←ugera1;a;b;A;B;C;cc;e;f
[ 1]  r←2ρ0
[ 2]  a←10 74ρ' '
[ 3]  a[1;]←74↑'funcao E1'
[ 4]  a[2;]←74↑'A<-',1 0⍕A←2+?4
[ 5]  a[3;]←74↑'B<-',1 0⍕B←2+?3
[ 6]  a[4;]←74↑'C<-',2 0⍕C←21+?11
[ 7]  a[5;]←74↑'enquanto ((A+B) ≤ C)'
[ 8]  a[6;]←74↑'   A<-A+',1 0⍕f←3+?2
[ 9]  a[7;]←74↑'   B<-B-',1 0⍕e←?2
[10]  a[8;]←74↑'fimenquanto'
[11]  a[9;]←74↑'RRRR <- A+B+C'
[12]  a[10;]←74↑'fimfuncao'
[13]  r[1]←⊂a
[14]  b←10 74ρ' '
[15]  b[1;]←74↑'\begin{algorithmic}[1]'
```

```
[16]  b[2;]←74↑'\STATE A $\gets$ ',(1 0⍕A),'!'
[17]  b[3;]←74↑'\STATE B $\gets$ ',(1 0⍕B),'!'
[18]  b[4;]←74↑'\STATE C $\gets$ ',(2 0⍕C),'!'
[19]  b[5;]←74↑'\WHILE{((A+B) $\le$ C)}'
[20]  b[6;]←74↑'\STATE A $\gets$ A+',(1 0⍕f),'!'
[21]  b[7;]←74↑'\STATE B $\gets$ B-',(1 0⍕e),'!'
[22]  b[8;]←74↑'\ENDWHILE'
[23]  b[9;]←74↑'\STATE escreva (A+B+C)!'
[24]  b[10;]←74↑'\end{algorithmic}'
[25]  r[2]←⊂b
------------------------------------------------------------
[ 0]  r←ugera2;a;b;A;B;C;cc;e;v1;v2;pa
[ 1]  r←2⍴0
[ 2]  a←10 74⍴' '
[ 3]  →(1=?3)/negativo
[ 4]  a[1;]←74↑'funcao E2'
[ 5]  a[2;]←74↑'A<-',1 0⍕A←2+?4
[ 6]  a[3;]←74↑'B<-',1 0⍕B←2+?3
[ 7]  a[4;]←74↑'C<-',1 0⍕C←4+?5
[ 8]  a[5;]←74↑'para X de ',(1 0⍕v1←2+?5),' ate ',(2 0⍕v2←13+?8),' passo ',1 0⍕pa←?3
[ 9]  a[6;]←74↑'   A<-C+X'
[10]  a[7;]←74↑'   B<-B-',1 0⍕e←?3
[11]  a[8;]←74↑'fimpara'
[12]  a[9;]←74↑'RRRR <- A+B+C'
[13]  a[10;]←74↑'fimfuncao'
[14]  r[1]←⊂a
[15]  b←10 74⍴' '
[16]  b[1;]←74↑'\begin{algorithmic}[1]'
[17]  b[2;]←74↑'\STATE A $\gets$ ',(1 0⍕A),'!'
[18]  b[3;]←74↑'\STATE B $\gets$ ',(1 0⍕B),'!'
[19]  b[4;]←74↑'\STATE C $\gets$ ',(1 0⍕C),'!'
[20]  →(pa=1)/pula
[21]  b[5;]←74↑'\FOR{X de ',(1 0⍕v1),' ate ',(2 0⍕v2),' passo ',(1 0⍕pa),'}'
[22]  →junta
[23] pula:
[24]  b[5;]←74↑'\FOR{X de ',(1 0⍕v1),' ate ',(2 0⍕v2),'}'
[25] junta:
[26]  b[6;]←74↑'\STATE A $\gets$ C+X!'
[27]  b[7;]←74↑'\STATE B $\gets$ B-',(1 0⍕e),'!'
[28]  b[8;]←74↑'\ENDFOR'
[29]  b[9;]←74↑'\STATE escreva (A+B+C)!'
[30]  b[10;]←74↑'\end{algorithmic}'
[31]  r[2]←⊂b
[32]  →0
[33] negativo:
[34]  a[1;]←74↑'funcao E2'
[35]  a[2;]←74↑'A<-',1 0⍕A←2+?4
[36]  a[3;]←74↑'B<-',1 0⍕B←2+?3
[37]  a[4;]←74↑'C<-',1 0⍕C←4+?5
[38]  a[5;]←74↑'para X de ',(2 0⍕v1←13+?8),' ate ',(1 0⍕v2←3+?5),' passo ',2 0⍕pa←-?3
[39]  a[6;]←74↑'   A<-C+X'
[40]  a[7;]←74↑'   B<-B-',1 0⍕e←?3
[41]  a[8;]←74↑'fimpara'
[42]  a[9;]←74↑'RRRR <- A+B+C'
[43]  a[10;]←74↑'fimfuncao'
[44]  r[1]←⊂a
[45]  b←10 74⍴' '
[46]  b[1;]←74↑'\begin{algorithmic}[1]'
[47]  b[2;]←74↑'\STATE A $\gets$ ',(1 0⍕A),'!'
[48]  b[3;]←74↑'\STATE B $\gets$ ',(1 0⍕B),'!'
[49]  b[4;]←74↑'\STATE C $\gets$ ',(1 0⍕C),'!'
[50]  b[5;]←74↑'\FOR{X de ',(2 0⍕v1),' ate ',(1 0⍕v2),' passo -',(1 0⍕|pa),'}'
[51]  b[6;]←74↑'\STATE A $\gets$ C+X!'
```

```
[52]  b[7;]←74↑'\STATE B $\gets$ B-',(1 0⍕e),'!'
[53]  b[8;]←74↑'\ENDFOR'
[54]  b[9;]←74↑'\STATE escreva (A+B+C)!'
[55]  b[10;]←74↑'\end{algorithmic}'
[56]  r[2]←⊂b
-------------------------------------------------------------
[ 0]  r←ugera3;a;b;A;B;C;cc;e;f;g;t;lim;co
[ 1]  r←2ρ0
[ 2]  a←13 74ρ' '
[ 3]  a[1;]←74↑'funcao E3'
[ 4]  a[2;]←74↑'A<-',1 0⍕A←2+?4
[ 5]  a[3;]←74↑'B<-',1 0⍕B←6+?3
[ 6]  a[4;]←74↑'C<-',1 0⍕C←4+?5
[ 7]  a[5;]←74↑'repita '
[ 8]  a[6;]←74↑'   A<-B',(t←'+-'[?2]),'C'
[ 9]  a[7;]←74↑'   B<-B-',1 0⍕e←?2
[10]  a[8;]←74↑'ate ',co←'B < ',1 0⍕lim←?3
[11]  a[9;]←74↑'   A<-C-',1 0⍕f←?4
[12]  a[10;]←74↑'   B<-A+',1 0⍕g←?3
[13]  a[11;]←74↑'   C <- C + 1'
[14]  a[12;]←74↑'RRRR <- A+B+C'
[15]  a[13;]←74↑'fimfuncao'
[16]  r[1]←⊂a
[17]  b←13 74ρ' '
[18]  b[1;]←74↑'\begin{algorithmic}[1]'
[19]  b[2;]←74↑'\STATE A $\gets$ ',(1 0⍕A),'!'
[20]  b[3;]←74↑'\STATE B $\gets$ ',(1 0⍕B),'!'
[21]  b[4;]←74↑'\STATE C $\gets$ ',(1 0⍕C),'!'
[22]  b[5;]←74↑'\REPEAT'
[23]  b[6;]←74↑'\STATE A $\gets$ B',t,'C!'
[24]  b[7;]←74↑'\STATE B $\gets$ B-',(1 0⍕e),'!'
[25]  b[8;]←74↑'\UNTIL{$',co,'$}'
[26]  b[9;]←74↑'\STATE A $\gets$ C-',(1 0⍕f),'!'
[27]  b[10;]←74↑'\STATE B $\gets$ A+',(1 0⍕g),'!'
[28]  b[11;]←74↑'\STATE C $\gets$ C + 1'
[29]  b[12;]←74↑'\STATE escreva (A+B+C)!'
[30]  b[13;]←74↑'\end{algorithmic}'
[31]  r[2]←⊂b
-------------------------------------------------------------
[ 0]  r←ugera4;a;b;A;B;C;cc;e;f;g;t;x1;x2;x11;x12;x21;x22;v1;v2;pa
[ 1]  r←2ρ0
[ 2]  a←17 74ρ' '
[ 3]  a[1;]←74↑'funcao E4'
[ 4]  a[2;]←74↑'A<-',1 0⍕A←2+?4
[ 5]  a[3;]←74↑'B<-',1 0⍕B←2+?3
[ 6]  a[4;]←74↑'C<-',1 0⍕C←4+?5
[ 7]  a[5;]←74↑'para X de ',(1 0⍕v1←?3),' ate ',(2 0⍕v2←13+?5),' passo ',1 0⍕pa←1+?3
[ 8]  a[6;]←74↑'   A<-A+X '
[ 9]  a[7;]←74↑'   B<-B+',1 0⍕e←?3
[10]  a[8;]←74↑'   enquanto C > ',1 0⍕f←?3
[11]  a[9;]←74↑'      A<-A-1 '
[12]  a[10;]←74↑'     C<-C-',1 0⍕g←?3
[13]  a[11;]←74↑'  fimenquanto'
[14]  a[12;]←74↑'  B<-B+',1 0⍕t←?3
[15]  a[13;]←74↑'fimpara'
[16]  a[14;]←74↑'C<-C-1 '
[17]  a[15;]←74↑'B<-B+1'
[18]  a[16;]←74↑'RRRR <- A+B+C'
[19]  a[17;]←74↑'fimfuncao'
[20]  r[1]←⊂a
[21]  b←17 74ρ' '
[22]  b[1;]←74↑'\begin{algorithmic}[1]'
[23]  b[2;]←74↑'\STATE A $\gets$ ',(1 0⍕A),'!'
```

```
[24]  b[3;]←74↑'\STATE B $\gets$ ',(1 0⍕B),'!'
[25]  b[4;]←74↑'\STATE C $\gets$ ',(1 0⍕C),'!'
[26]  b[5;]←74↑'\FOR{ X de ',(2 0⍕v1),' ate ',(2 0⍕v2),' passo ',(1 0⍕pa),'}'
[27]  b[6;]←74↑'\STATE A $\gets$ A + X! '
[28]  b[7;]←74↑'\STATE B $\gets$ B + ',(1 0⍕e),'!'
[29]  b[8;]←74↑'\WHILE {C $>$ ',(1 0⍕f),'}'
[30]  b[9;]←74↑'\STATE A $\gets$ A - 1! '
[31]  b[10;]←74↑'\STATE C $\gets$ C - ',(1 0⍕g),'!'
[32]  b[11;]←74↑'\ENDWHILE '
[33]  b[12;]←74↑'\STATE B $\gets$ B + ',(1 0⍕t),'!'
[34]  b[13;]←74↑'\ENDFOR '
[35]  b[14;]←74↑'\STATE C $\gets$ C - 1! '
[36]  b[15;]←74↑'\STATE B $\gets$ B + 1!'
[37]  b[16;]←74↑'\STATE escreva (A+B+C)!'
[38]  b[17;]←74↑'\end{algorithmic}'
[39]  r[2]←⊂b
-------------------------------------------------------------
[ 0]  r←ugera5;a;b;A;B;C;cc;e;f;g;t;li1;li2;li3;li4
[ 1]  r←2⍴0
[ 2]  a←21 74⍴' '
[ 3]  a[1;]←74↑'funcao E5'
[ 4]  a[2;]←74↑'A<-',1 0⍕A←5+?4
[ 5]  a[3;]←74↑'B<-',1 0⍕B←6+?3
[ 6]  a[4;]←74↑'C<-',1 0⍕C←4+?5
[ 7]  a[5;]←74↑'enquanto A > ',1 0⍕li1←?3
[ 8]  a[6;]←74↑'   C<-C+1'
[ 9]  a[7;]←74↑'   B<-B+C'
[10]  a[8;]←74↑'   enquanto C > ',1 0⍕li2←¯1+?3
[11]  a[9;]←74↑'      B<-B+1'
[12]  a[10;]←74↑'      C<-C-',1 0⍕li3←?2
[13]  a[11;]←74↑'      enquanto B > ',1 0⍕li4←?3
[14]  a[12;]←74↑'         B<-B-2'
[15]  a[13;]←74↑'      fimenquanto'
[16]  a[14;]←74↑'      B<-B+1'
[17]  a[15;]←74↑'      C<-C-2'
[18]  a[16;]←74↑'   fimenquanto'
[19]  a[17;]←74↑'   A<-A-2'
[20]  a[18;]←74↑'fimenquanto'
[21]  a[19;]←74↑'C<-A+B+C'
[22]  a[20;]←74↑'RRRR <- A+B+C'
[23]  a[21;]←74↑'fimfuncao'
[24]  r[1]←⊂a
[25]  b←21 74⍴' '
[26]  b[1;]←74↑'\begin{algorithmic}[1]'
[27]  b[2;]←74↑'\STATE A $\gets$ ',(1 0⍕A),'!'
[28]  b[3;]←74↑'\STATE B $\gets$ ',(1 0⍕B),'!'
[29]  b[4;]←74↑'\STATE C $\gets$ ',(1 0⍕C),'!'
[30]  b[5;]←74↑'\WHILE{ A $>$ ',(1 0⍕li1),'}'
[31]  b[6;]←74↑'\STATE C $\gets$ C + 1!'
[32]  b[7;]←74↑'\STATE B $\gets$ B+C! '
[33]  b[8;]←74↑'\WHILE{ C $>$',(1 0⍕li2),'}'
[34]  b[9;]←74↑'\STATE B $\gets$ B+1! '
[35]  b[10;]←74↑'\STATE C $\gets$ C - ',(1 0⍕li3),'! '
[36]  b[11;]←74↑'\WHILE {B $>$ ',(1 0⍕li4),'}'
[37]  b[12;]←74↑'\STATE B $\gets$ B - 2!'
[38]  b[13;]←74↑'\ENDWHILE '
[39]  b[14;]←74↑'\STATE B $\gets$ B + 1! '
[40]  b[15;]←74↑'\STATE C $\gets$ C - 2! '
[41]  b[16;]←74↑'\ENDWHILE '
[42]  b[17;]←74↑'\STATE A $\gets$ A - 2!'
[43]  b[18;]←74↑'\ENDWHILE '
[44]  b[19;]←74↑'\STATE C $\gets$ A+B+C!'
[45]  b[20;]←74↑'\STATE escreva (A+B+C)!'
```

```
[46]  b[21;]←74↑'⍀end{algorithmic}'
[47]  r[2]←⊂b
-------------------------------------------------------------
[ 0]  r←vetoriza x;i;rr;letra;aspa;nume
[ 1] ⍝ versao 1.07
[ 2]  aspa←'''' ⋄ nume←'0123456789'
[ 3]  letra←'abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ()',aspa
[ 4] ⍝ tira os brancos
[ 5]  i←1 ⋄ rr←1
[ 6] t2:→(i>¯2+⍴x)/vaiz
[ 7]  →((x[i+1]=' ')∧(x[i]∈letra)∧(x[i+2]∈nume))/mataz
[ 8]  →((x[i+1]=' ')∧(x[i]∈nume)∧(x[i+2]∈letra))/mataz
[ 9]  →((x[i]∈letra)∧(x[i+2]∈letra))/naopode
[10]  →(((x[1]='p')∨(x[1]='P'))∧(x[2]='a')∧(x[i]∈letra)∧((x[i+2]='-')∨(x[i+2]='¯')))/naopo
      de  ⍝ comando incluido para o passo negativo
[11] ⍝ →((x[i]∈letra)∧((x[i+2]='-')∨(x[i+2]='¯')))/naopode  ⍝ comando incluido para o pass
      o negativo
[12] ⍝ os 3 testes iniciais (pPa) foram incluidos porque o comando acima estava
[13] ⍝ fazendo besteira: vetoriza 'A <- A -1' estava gerando 4 tokens e nao 3.
[14] ⍝ correcao em 13/03/12 - P.kantek
[15]  →(x[i+1]≠' ')/naopode
[16] pode:rr←rr,0
[17]  →(i=i←i+1)/t2
[18] mataz:x[i+1]←'!'
[19] naopode:rr←rr,1
[20]  →(i=i←i+1)/t2
[21] vaiz:rr←rr,1
[22]  x←rr/x
[23] ⍝ separa o sinal <-
[24]  →(2≠+/'<-'∈x)/faca
[25]  i←1 ⋄ rr←⍳0
[26] t1:→(i>¯1+⍴x)/vaix
[27]  →((x[i]='<')∧(x[i+1]='-'))/esim
[28]  rr←rr,1
[29]  →(i=i←i+1)/t1
[30] esim:rr←rr,0 1 1 0
[31]  →(i=i←i+2)/t1
[32] vaix:rr←rr,1
[33]  x←rr⍀x
[34] faca:x←'! 'edit x
[35]  r←(~' '=x)⊂x
-------------------------------------------------------------
[ 0]  opesq vivou20a n;CORRECAO;EVENTO;aa;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;ql
      inha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLu20   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAu20←ajusta80 FOLHALAu20
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAu20)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 6⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←81 80⍴' '
[16]  f←FOLHALAu20
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
```

```
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[79;⍳8]←8↑'U20A','0000'⍕xk
[32]  esse[80;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[81;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] inica:
[35]  xx←ugera1
[36]  aa←⎕FX cpc⊃xx[1]
[37]  resp←resp,⍪aa
[38]  esse[7+⍳10;]←10 80↑⊃xx[2]
[39]  xx←ugera2
[40]  aa←⎕FX cpc⊃xx[1]
[41]  resp←resp,⍪aa
[42]  esse[17+⍳10;]←10 80↑⊃xx[2]
[43]  xx←ugera3
[44]  aa←⎕FX cpc⊃xx[1]
[45]  resp←resp,⍪aa
[46]  esse[27+⍳13;]←13 80↑⊃xx[2]
[47]  xx←ugera4
[48]  aa←⎕FX cpc⊃xx[1]
[49]  resp←resp,⍪aa
[50]  esse[40+⍳17;]←17 80↑⊃xx[2]
[51]  xx←ugera5
[52]  aa←⎕FX cpc⊃xx[1]
[53]  resp←resp,⍪aa
[54]  esse[57+⍳21;]←21 80↑⊃xx[2]
[55]  resu←resu,[1]1 6⍴resp
[56]  acuja←(f[;2]='#')/⍳1↑⍴f
[57]  f[acuja;⍳80]←esse[⍪,f[acuja;3 4],' ';]
[58]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[59]  ⍞←(⍕xk←xk+1),'-'
[60]  →testa
[61] fim:upag←(1 0+⍴f)⍴' '
[62]  →(1=≡n)/elafa
[63]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[64]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[65]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←'¯-'edit(lixo1←5 0 10 0 5 0 5 0 5 0 5 0)⍕resu
[66]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[67]  →terminando
[68] elafa:aaa←(ylu[;⍳36],'¯-'edit 9 0⍕0 1↓resu)
[69]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍬∧⍀⍬EVENTO=' ')/EVENTO),'.gpa')
[70]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[71] terminando:
[72]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[73]  relat[1↑⍴relat;;]←upag
[74]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[75] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[76]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍬∧⍀⍬EVENTO=' ')/EVENTO),'.tex'
[77]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[78]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivou24

```
[ 0]  opesq vivou24a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivou24 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PLu24   '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

vivou28

```
[ 0]  RRRR←E1;A;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006
[ 1]  A←582
[ 2] Δ001:
[ 3]  Δ003←((17|A)≠0)
[ 4]  →(~Δ003)/Δ002
[ 5]  A←A+1
[ 6]  →Δ001
[ 7] Δ002:
[ 8]  Δ004←((2|A)=0)
[ 9]  →(~Δ004)/Δ005
[10]  A←A-1
[11] Δ005:
[12]  RRRR←A
------------------------------------------------------------
[ 0]  RRRR←E2;A;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006
[ 1]  A←42
[ 2]  X←13
[ 3] Δ001:
[ 4]  Δ003←X≤82
[ 5]  →(~Δ003)/Δ002
[ 6]  Δ004←((2|X)=0)
[ 7]  →(~Δ004)/Δ005
[ 8]  A←A+X
[ 9] Δ005:
[10]  X←X+5
[11]  →Δ001
[12] Δ002:
[13]  RRRR←A
------------------------------------------------------------
[ 0]  RRRR←E4 AAAA;F;C;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007
[ 1]  F←AAAA[1]
[ 2]  C←1
[ 3] Δ001:
[ 4]  Δ003←(F≠1)
[ 5]  →(~Δ003)/Δ002
[ 6]  Δ004←(0=2|F)
[ 7]  →(~Δ004)/Δ005
[ 8]  F←F÷2
[ 9]  →Δ006
[10] Δ005:
[11]  F←(3×F)+1
[12] Δ006:
[13]  C←C+1
[14]  →Δ001
[15] Δ002:
[16]  RRRR←C
------------------------------------------------------------
[ 0]  RRRR←E5 AAAA;A;B;T;RRRR;G;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006
[ 1]  A←AAAA[1]
[ 2]  B←AAAA[2]
[ 3]  Δ001←B>A
[ 4]  →(~Δ001)/Δ002
[ 5]  T←A
[ 6]  A←B
[ 7]  B←T
[ 8] Δ002:
[ 9]  Δ003←B=0
[10]  →(~Δ003)/Δ004
[11]  RRRR←A
[12]  →Δ005
[13] Δ004:
```

```
[14]  G←B|A
[15]  RRRR←E5 B,G
[16] Δ005:
-------------------------------------------------------------
[ 0]  RRRR←MDC AAAA;A;B;RRRR;G;Δ001;Δ002;Δ003;Δ004
[ 1]  A←AAAA[1]
[ 2]  B←AAAA[2]
[ 3]  Δ001←B=0
[ 4]  →(~Δ001)/Δ002
[ 5]  RRRR←A
[ 6]  →Δ003
[ 7] Δ002:
[ 8]  G←B|A
[ 9]  RRRR←E5 B,G
[10] Δ003:
-------------------------------------------------------------
[ 0]  RRRR←PRIMO AAAA;A;B;C;F;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007;Δ008;Δ009
[ 1]  A←AAAA[1]
[ 2]  B←0
[ 3]  C←⌈A*0.5
[ 4]  K←2
[ 5] Δ001:
[ 6]  Δ003←K≤C
[ 7]  →(~Δ003)/Δ002
[ 8]  F←K|A
[ 9]  Δ004←F=0
[10]  →(~Δ004)/Δ005
[11]  B←B+1
[12] Δ005:
[13]  K←K+1
[14]  →Δ001
[15] Δ002:
[16]  Δ006←B=0
[17]  →(~Δ006)/Δ007
[18]  RRRR←'PRIMO'
[19]  →Δ008
[20] Δ007:
[21]  RRRR←'NAOPRIMO'
[22] Δ008:
-------------------------------------------------------------
[ 0]  RRRR←VNP AAAA;F;C;RRRR;Δ001;Δ002;Δ003;Δ004;Δ005;Δ006;Δ007
[ 1]  F←AAAA[1]
[ 2]  C←1
[ 3] Δ001:
[ 4]  Δ003←(F≠1)
[ 5]  →(~Δ003)/Δ002
[ 6]  Δ004←(0=2|F)
[ 7]  →(~Δ004)/Δ005
[ 8]  F←F÷2
[ 9]  →Δ006
[10] Δ005:
[11]  F←(3×F)+1
[12] Δ006:
[13]  C←C+1
[14]  →Δ001
[15] Δ002:
[16]  RRRR←C
-------------------------------------------------------------
[ 0]  funcao E1
[ 1]  A<-76
[ 2]  enquanto((17|A)≠0)
[ 3]  A<-A+1
[ 4]  fimenquanto
```

```
[ 5]  se((2|A)=0)
[ 6]  A<-A-1
[ 7]  fimse
[ 8]  RRRR<-A
[ 9]  fimfuncao
-------------------------------------------------------------
[ 0]  r←geraexemplo
[ 1]  r←80 ajusta EXEMPLOS
[ 2]  r←r,[1]1 80⍴80↑'\paragraph{Exemplo 1}'
[ 3]  r←r,[1]((1↑⍴exe1b),80)↑exe1b
[ 4]  r←r,[1]1 80⍴80↑'\begin{verbatim}'
[ 5]  r←r,[1]((1↑⍴exe1d),80)↑exe1d
[ 6]  r←r,[1]1 80⍴80↑'\end{verbatim}'
[ 7]  r←r,[1]1 80⍴80↑'Deu como resultado ',⍕E1
[ 8]  r←r,[1]1 80⍴80↑'\paragraph{Exemplo 2}'
[ 9]  r←r,[1]((1↑⍴exe2b),80)↑exe2b
[10]  r←r,[1]1 80⍴80↑'\begin{verbatim}'
[11]  r←r,[1]((1↑⍴exe2d),80)↑exe2d
[12]  r←r,[1]1 80⍴80↑'\end{verbatim}'
[13]  r←r,[1]1 80⍴80↑'Deu como resultado ',⍕E2
[14]  r←r,[1]1 80⍴80↑'\paragraph{Exemplo 3}'
[15]  r←r,[1]((1↑⍴exe3b),80)↑exe3b
[16]  r←r,[1]1 80⍴80↑'\begin{verbatim}'
[17]  r←r,[1]((1↑⍴exe3d),80)↑exe3d
[18]  r←r,[1]1 80⍴80↑'\end{verbatim}'
[19]  r←r,[1]1 80⍴80↑'Deu como resultado ',⍕E3
[20]  r←r,[1]1 80⍴80↑'\paragraph{Exemplo 4}'
[21]  r←r,[1]((1↑⍴exe4b),80)↑exe4b
[22]  r←r,[1]1 80⍴80↑'\begin{verbatim}'
[23]  r←r,[1]((1↑⍴exe4d),80)↑exe4d
[24]  r←r,[1]1 80⍴80↑'\end{verbatim}'
[25]  r←r,[1]1 80⍴80↑'Deu como resultado ',⍕E4
[26]  r←r,[1]1 80⍴80↑'\paragraph{Exemplo 5}'
[27]  r←r,[1]((1↑⍴exe5b),80)↑exe5b
[28]  r←r,[1]1 80⍴80↑'\begin{verbatim}'
[29]  r←r,[1]((1↑⍴exe5d),80)↑exe5d
[30]  r←r,[1]1 80⍴80↑'\end{verbatim}'
[31]  r←r,[1]1 80⍴80↑'Deu como resultado ',⍕E5
[32]  r←r,[1]1 80⍴80↑'\end{document}'
-------------------------------------------------------------
[0]  r←a igual b;maior
[1]  maior←(1↑⍴a)⌈1↑⍴b
[2]  a←maior↑a ⋄ b←maior↑b
[3]  r←maior=+/a=b
-------------------------------------------------------------
[ 0]  r←u28gera1;a;b;A;B;C;cc;e;f
[ 1]  r←2⍴0
[ 2]  a←10 74⍴' '
[ 3]  a[1;]←74↑'funcao E1'
[ 4]  a[2;]←74↑'A<-',3 0⍕A←500+?499
[ 5]  a[3;]←74↑'enquanto ((17|A)≠0) '
[ 6]  a[4;]←74↑'    A <- A +1'
[ 7]  a[5;]←74↑'fimenquanto'
[ 8]  a[6;]←74↑'se ((2|A)=0)'
[ 9]  a[7;]←74↑'   A <- A - 1'
[10]  a[8;]←74↑'fimse'
[11]  a[9;]←74↑'RRRR <- A'
[12]  a[10;]←74↑'fimfuncao'
[13]  r[1]←⊂a
[14]  b←10 74⍴' '
[15]  b[1;]←74↑'\begin{algorithmic}[1]'
[16]  b[2;]←74↑'\STATE A $\gets$ ',(3 0⍕A),'!'
[17]  b[3;]←74↑'\WHILE{(A M 17) $\neq$ 0}'
```

```
[18]  b[4;]←74↑'\STATE A $\gets$ A + 1!'
[19]  b[5;]←74↑'\ENDWHILE'
[20]  b[6;]←74↑'\IF {(A M 2) = 0}'
[21]  b[7;]←74↑'\STATE A $\gets$ A - 1!'
[22]  b[8;]←74↑'\ENDIF'
[23]  b[9;]←74↑'\STATE escreva A!'
[24]  b[10;]←74↑'\end{algorithmic}'
[25]  r[2]←⊂b
-------------------------------------------------------------
[ 0]  r←u28gera2;a;b;A;B;C;cc;e;v1;v2;pa
[ 1]  r←2ρ0
[ 2]  a←9 74ρ' '
[ 3]  a[1;]←74↑'funcao E2'
[ 4]  a[2;]←74↑'A<-',2 0⍕A←20+?40
[ 5]  a[3;]←74↑'para X de ',(2 0⍕v1←10+?10),' ate ',(2 0⍕v2←80+?10),' passo ',1 0⍕pa←(5 7
      9)[?3]
[ 6]  a[4;]←74↑'   se ((2|X)=0)'
[ 7]  a[5;]←74↑'      A <- A + X'
[ 8]  a[6;]←74↑'   fimse'
[ 9]  a[7;]←74↑'fimpara'
[10]  a[8;]←74↑'RRRR <- A'
[11]  a[9;]←74↑'fimfuncao'
[12]  r[1]←⊂a
[13]  b←9 74ρ' '
[14]  b[1;]←74↑'\begin{algorithmic}[1]'
[15]  b[2;]←74↑'\STATE A $\gets$ ',(2 0⍕A),'!'
[16]  b[3;]←74↑'\FOR{X de ',(2 0⍕v1),' ate ',(2 0⍕v2),' passo ',(1 0⍕pa),'}'
[17]  b[4;]←74↑'\IF {(X M 2) = 0}'
[18]  b[5;]←74↑'\STATE A = A + X!'
[19]  b[6;]←74↑'\ENDIF'
[20]  b[7;]←74↑'\ENDFOR'
[21]  b[8;]←74↑'\STATE escreva A!'
[22]  b[9;]←74↑'\end{algorithmic}'
[23]  r[2]←⊂b
-------------------------------------------------------------
[ 0]  r←u28gera3;a;b;A;B;C;cc;e;f;g;t;lim;co;asp
[ 1]  r←2ρ0
[ 2]  asp←''''
[ 3]  a←15 74ρ' '
[ 4]  a[1;]←74↑'funcao PRIMO A'
[ 5]  a[2;]←74↑'B <- 0'
[ 6]  a[3;]←74↑'C <- ⌈A*0.5'
[ 7]  a[4;]←74↑'para K de 2 ate C'
[ 8]  a[5;]←74↑'F <- K|A'
[ 9]  a[6;]←74↑'se F = 0'
[10]  a[7;]←74↑'   B<-B+1'
[11]  a[8;]←74↑'fimse'
[12]  a[9;]←74↑'fimpara'
[13]  a[10;]←74↑'se B = 0'
[14]  a[11;]←74↑'   RRRR <- ',asp,'PRIMO',asp
[15]  a[12;]←74↑'senao'
[16]  a[13;]←74↑'   RRRR <-  ',asp,'NAOPRIMO',asp
[17]  a[14;]←74↑'fimse'
[18]  a[15;]←74↑'fimfuncao'
[19]  r[1]←⊂a
[20]  b←16 74ρ' '
[21]  b[1;]←74↑'\begin{algorithmic}[1]'
[22]  b[2;]←74↑'\STATE B $\gets$ 0!'
[23]  b[3;]←74↑'\STATE C $\gets$ R A!'
[24]  b[4;]←74↑'\FOR {K de 2 ate C}'
[25]  b[5;]←74↑'\STATE F $\gets$ A L K!'
[26]  b[6;]←74↑'\STATE B $\gets$ B+1!'
[27]  b[7;]←74↑'\IF{F = 0}'
```

```
[28]  b[8;]←74↑'\STATE B $\gets$ B+1!'
[29]  b[9;]←74↑'\ENDIF'
[30]  b[10;]←74↑'\ENDFOR'
[31]  b[11;]←74↑'\IF {B = 0}'
[32]  b[12;]←74↑'\STATE escreva "PRIMO"'
[33]  b[13;]←74↑'\ELSE'
[34]  b[14;]←74↑'\STATE escreva "NAOPRIMO"'
[35]  b[15;]←74↑'\ENDIF'
[36]  b[16;]←74↑'\end{algorithmic}'
[37]  r[2]←⊂b
-------------------------------------------------------------
[ 0]  r←u28gera4;a;b;A;B;C;cc;e;f;g;t;x1;x2;x11;x12;x21;x22;v1;v2;pa
[ 1]  r←2⍴0
[ 2]  a←12 74⍴' '
[ 3]  a[1;]←74↑'funcao VNP F'
[ 4]  a[2;]←74↑'C<-1'
[ 5]  a[3;]←74↑'enquanto (F ≠ 1)'
[ 6]  a[4;]←74↑'   se (0 = 2|F)'
[ 7]  a[5;]←74↑'      F <- F ÷ 2'
[ 8]  a[6;]←74↑'   senao'
[ 9]  a[7;]←74↑'      F <- (3 × F) + 1'
[10]  a[8;]←74↑'   fimse'
[11]  a[9;]←74↑'   C <- C + 1'
[12]  a[10;]←74↑'fimenquanto'
[13]  a[11;]←74↑'RRRR <- C'
[14]  a[12;]←74↑'fimfuncao'
[15]  r[1]←⊂a
[16]  b←12 74⍴' '
[17]  b[1;]←74↑'\begin{algorithmic}[1]'
[18]  b[2;]←74↑'\STATE C $\gets$ 1'
[19]  b[3;]←74↑'\WHILE {F D 1}'
[20]  b[4;]←74↑'\IF {(0 = (F L 2))}'
[21]  b[5;]←74↑'\STATE F $\gets$ F $\div$ 2'
[22]  b[6;]←74↑'\ELSE'
[23]  b[7;]←74↑'\STATE F $\gets$ (3 $\times$ F)+1'
[24]  b[8;]←74↑'\ENDIF'
[25]  b[9;]←74↑'\STATE C $\gets$ C + 1'
[26]  b[10;]←74↑'\ENDWHILE'
[27]  b[11;]←74↑'\STATE return C'
[28]  b[12;]←74↑'\end{algorithmic}'
[29]  r[2]←⊂b
-------------------------------------------------------------
[ 0]  r←u28gera5;a;b;A;B;C;cc;e;f;g;t;li1;li2;li3;li4
[ 1]  r←2⍴0
[ 2]  a←8 74⍴' '
[ 3]  a[1;]←74↑'funcao MDC A B'
[ 4]  a[2;]←74↑'se B = 0'
[ 5]  a[3;]←74↑'   RRRR <- A'
[ 6]  a[4;]←74↑'senao'
[ 7]  a[5;]←74↑'   G <- B|A'
[ 8]  a[6;]←74↑'   RRRR <- E5 B,G'
[ 9]  a[7;]←74↑'fimse'
[10]  a[8;]←74↑'fimfuncao'
[11]  r[1]←⊂a
[12]  b←8 74⍴' '
[13]  b[1;]←74↑'\begin{algorithmic}[1]'
[14]  b[2;]←74↑'\IF {B = 0}'
[15]  b[3;]←74↑'\STATE retorne A'
[16]  b[4;]←74↑'\ELSE'
[17]  b[5;]←74↑'\STATE G $\gets$ A L B'
[18]  b[6;]←74↑'\STATE retorne MDC B,G'
[19]  b[7;]←74↑'\ENDIF'
[20]  b[8;]←74↑'\end{algorithmic}'
```

```
[21]  r[2]←⊂b
-------------------------------------------------------------
[ 0]  r←vetoriza x;i;rr;letra;aspa;nume
[ 1] ⍝ versao 1.07
[ 2]  aspa←'''' ⋄ nume←'0123456789'
[ 3]  letra←'abcdefghijklmnopqrstuvwxyzABCDEFGHIJKLMNOPQRSTUVWXYZ()',aspa
[ 4] ⍝ tira os brancos
[ 5]  i←1 ⋄ rr←1
[ 6] t2:→(i>¯2+⍴x)/vaiz
[ 7]  →((x[i+1]=' ')∧(x[i]∈letra)∧(x[i+2]∈nume))/mataz
[ 8]  →((x[i+1]=' ')∧(x[i]∈nume)∧(x[i+2]∈letra))/mataz
[ 9]  →((x[i]∈letra)∧(x[i+2]∈letra))/naopode
[10]  →(((x[1]='p')∨(x[1]='P'))∧(x[2]='a')∧(x[i]∈letra)∧((x[i+2]='-')∨(x[i+2]='¯')))/naopo
      de  ⍝ comando incluido para o passo negativo
[11] ⍝ →((x[i]∈letra)∧((x[i+2]='-')∨(x[i+2]='¯')))/naopode  ⍝ comando incluido para o pass
      o negativo
[12] ⍝ os 3 testes iniciais (pPa) foram incluidos porque o comando acima estava
[13] ⍝ fazendo besteira: vetoriza 'A <- A -1' estava gerando 4 tokens e nao 3.
[14] ⍝ correcao em 13/03/12 - P.kantek
[15]  →(x[i+1]≠' ')/naopode
[16] pode:rr←rr,0
[17]  →(i=i←i+1)/t2
[18] mataz:x[i+1]←'!'
[19] naopode:rr←rr,1
[20]  →(i=i←i+1)/t2
[21] vaiz:rr←rr,1
[22]  x←rr/x
[23] ⍝ separa o sinal <-
[24]  →(2≠+/'<-'∈x)/faca
[25]  i←1 ⋄ rr←⍳0
[26] t1:→(i>¯1+⍴x)/vaix
[27]  →((x[i]='<')∧(x[i+1]='-'))/esim
[28]  rr←rr,1
[29]  →(i=i←i+1)/t1
[30] esim:rr←rr,0 1 1 0
[31]  →(i=i←i+2)/t1
[32] vaix:rr←rr,1
[33]  x←rr⌿x
[34] faca:x←'! 'edit x
[35]  r←(~' '=x)⊂x
-------------------------------------------------------------
[ 0]  opesq vivou28a n;CORRECAO;EVENTO;aa;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;p1;p2;p
      3;ql39;qlinha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLu28   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⌿apl2⌿',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAu28←ajusta80 FOLHALAu28
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAu28)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⌿apl2⌿VIVOBLO1'
[13]  xk←1 ⋄ resu←0 34⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←75 80⍴' '
[16]  f←FOLHALAu28
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.07
```

```
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[70;⍳8]←8↑'U28A','0000'⍕xk
[32]  esse[71;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[72;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] inica:
[35]  resp←3 0⍕resp
[36]  p1←3333+?8000
[37]  p2←33+?99
[38]  p3←(1000+?2000),(1000+?2000)
[39]  esse[73;]←80↑7 0⍕p1
[40]  esse[74;]←80↑5 0⍕p2
[41]  esse[75;]←80↑8 0⍕p3
[42]  xx←u28gera1
[43]  aa←⎕FX cpc⊃xx[1]
[44]  resp←resp,' ',10 0⍕±aa
[45]  esse[7+⍳10;]←10 80↑⊃xx[2]
[46]  xx←u28gera2
[47]  aa←⎕FX cpc⊃xx[1]
[48]  resp←resp,' ',4 0⍕±aa
[49]  esse[17+⍳10;]←10 80↑⊃xx[2]
[50]  xx←u28gera3
[51]  aa←⎕FX cpc⊃xx[1]
[52]  resp←resp,' ',4↑±aa,',',7 0⍕p1
[53]  esse[27+⍳17;]←17 80↑⊃xx[2]
[54]  xx←u28gera4
[55]  aa←⎕FX cpc⊃xx[1]
[56]  resp←resp,' ',4 0⍕±aa,',',5 0⍕p2
[57]  esse[44+⍳12;]←12 80↑⊃xx[2]
[58]  xx←u28gera5
[59]  aa←⎕FX cpc⊃xx[1]
[60]  resp←resp,' ',4 0⍕±aa,8 0⍕p3
[61]  esse[56+⍳13;]←13 80↑⊃xx[2]
[62]  resu←resu,[1]1 34⍴resp
[63]  acuja←(f[;2]='#')/⍳1↑⍴f
[64]  f[acuja;⍳80]←esse[±,f[acuja;3 4],' ';]
[65]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[66]  ⍞←(⍕xk←xk+1),'-'
[67]  →testa
[68] fim:upag←(1 0+⍴f)⍴' '
[69]  →(1=≡n)/elafa
[70]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[71]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[72]  upag[2+⍳1↑⍴resu;⍳34]←'¯-'edit resu
[73]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[74]  →terminando
[75] elafa:aaa←(ylu[;⍳36],'¯-'edit 0 4↓resu)
[76]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[77]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[78] terminando:
[79]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[80]  relat[1↑⍴relat;;]←upag
[81]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[82] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
```

```
[83]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.tex'
[84]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[85]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivou42

```
[ 0]  AVISO
[ 1]  'Este ws le imagens BM true color (24 bits/pixel) no diretorio f:⍀p⍀apl2⍀imagens'
[ 2]  '  -- existem 16 imagens la, de IM11 a IM26.BMP -- e codifica uma mensagem obtida'
[ 3]  ' aleatoriamente da variavel MENSAGENS neste WS nos bits menos significativos da'
[ 4]  ' imagem. Note que os dois primeiros bytes neste arranjo codificam o tamanho da'
[ 5]  ' mensagem que vem a seguir. Depois vem a dita cuja'
[ 6]  ' As imagens esteganografadas sao gravadas com o nome de XMmm no diretorio'
[ 7]  ' c:⍀apl2⍀levar⍀ e NAO ha equivalencia entre o numero da imagem IM e da XM, uma'
[ 8]  ' vez que ha apenas 16 imagens originais, mas ha muitas mensagens possiveis.'
[ 9]  ' Ou seja, dois alunos podem receber a mesma imagem original, mas com duas mensagens
      '
[10]  ' diferentes codificadas'
[11]  ' Um detalhe interessante e que a decodificacao pode ser facilmente feita examinando
      '
[12]  ' a imagem com o hexedit, a partir do endereco hex(36) ou dec(54) e olhando se o'
[13]  ' byte eh PAR (=0) ou IMPAR (=1)'
[14]  ''
[15]  ' o limite de geracao de exercicios é 99'
------------------------------------------------------------
[ 0]  Δ_DC←Δ_PID SVOPAIR Δ_SV;Δ_CV
[ 1] ⍝-----------------------------------------------------------------⍝
[ 2] ⍝
[ 3] ⍝  Offer shared variables named in SV to processor number PID.
[ 4] ⍝  To be used for auxiliary processors which use a two-variable
[ 5] ⍝  interface, where the control variable begins with "C" or "CTL"
[ 6] ⍝  and the data variable begins with "D" or "DAT".  (Cxxx/Dxxx or
[ 7] ⍝  CTLxxx/DATxxx)
[ 8] ⍝
[ 9] ⍝  Returns final degree of coupling (DC) for each shared variable
[10] ⍝  Expected degree of coupling is 2 for the control variable and 1
[11] ⍝  or 2 for the data variable.
[12] ⍝
[13] ⍝  Waits up to 15 seconds for the control variable to be accepted
[14] ⍝  by the processor.  Sets standard access control to inhibit my
[15] ⍝  double references or specifications of the control variable.
[16] ⍝  Does not set access control for the data variable.
[17] ⍝
[18] ⍝  Monadic call simply returns the current degree of coupling.
[19] ⍝
[20] ⍝-----------------------------------------------------------------⍝
[21] ⍝
[22] ⍝ Examples:
[23] ⍝
[24] ⍝ Offer a set of variables to the fullscreen processor
[25] ⍝       124 SVOPAIR 'CTL124' 'DAT124'
[26] ⍝ 2 1
[27] ⍝
[28] ⍝ Offer using surrogates
[29] ⍝       124 SVOPAIR 'Control C' 'Data D'
[30] ⍝ 2 1
[31] ⍝
[32] ⍝ Note: Access control set for control, not data
[33] ⍝       ⎕SVC¨ 'Control' 'Data'
[34] ⍝  1 0 1 1  0 0 0 0
[35] ⍝
```

```
[36] ⍝ Check degree of coupling
[37] ⍝       SVOPAIR 'Control' 'Data'
[38] ⍝ 2 1
[39] ⍝
[40] ⍝ Offer improper control variable
[41] ⍝       210 SVOPAIR 'A1' 'D1'
[42] ⍝ 1 1
[43] ⍝
[44] ⍝⍝⍝
```

```
------------------------------------------------------------
[ 0]  r←m leegrava n;lixo;ima;aa;msg;tripa;i;byte;nomuzz;comazz;mer
[ 1] ⍝ le a imagem IMnn em f:\p\apl2\imagens e grava XMnn no diretorio c:\apl2\levar
[ 2] ⍝  fazer fora daqui:    lixo←210 SVOPAIR 'C210' 'D210'
[ 3]  ima←0 lebmp n
[ 4]  aa←?1↑⍴MENSAGENS
[ 5]  msg←trim,MENSAGENS[aa;]
[ 6]  tripa←,(16⍴2)⊤⍴msg
[ 7]  i←1
[ 8] t1:→(i>⍴msg)/aca
[ 9]  tripa←tripa,,(8⍴2)⊤⎕AF msg[i]
[10]  i←i+1
[11]  →t1
[12] aca:i←1
[13] t2:→(i>⍴tripa)/oba
[14]  byte←(8⍴2)⊤⎕AF ima[i+54]
[15]  byte[8]←tripa[i]
[16]  ima[i+54]←⎕AF(8⍴2)⊥byte
[17]  i←i+1
[18]  →t2
[19] oba:nomuzz←'c:\apl2\levar\XM',cuca,('00'⍕m),'.BMP'
[20]  comazz←'IW,"',nomuzz,'",C'
[21]  C210←comazz
[22]  mer←C210
[23]  D210←ima
[24]  C210←1,0,⍴,ima
[25]  mer←C210
[26]  C210←⍳0
[27]  mer←C210
[28] ⍝  fazer fora daqui ⎕SVR 4 2 ⍴'C210D210'
[29]  r←msg
------------------------------------------------------------
[ 0]  r←m leegravaconst n;lixo;ima;aa;msg;tripa;i;byte;nomuzz;comazz;mer
[ 1] ⍝ le a imagem IMnn em f:\p\apl2\imagens e grava XMnn no diretorio c:\apl2\levar
[ 2] ⍝  fazer fora daqui:    lixo←210 SVOPAIR 'C210' 'D210'
[ 3]  ima←0 lebmp n
[ 4]  msg←,HINO
[ 5]  tripa←,(16⍴2)⊤⍴msg
[ 6]  i←1
[ 7] t1:→(i>⍴msg)/aca
[ 8]  tripa←tripa,,(8⍴2)⊤⎕AF msg[i]
[ 9]  i←i+1
[10]  →t1
[11] aca:i←1
[12] t2:→(i>⍴tripa)/oba
[13]  byte←(8⍴2)⊤⎕AF ima[i+54]
[14]  byte[8]←tripa[i]
[15]  ima[i+54]←⎕AF(8⍴2)⊥byte
[16]  i←i+1
[17]  →t2
[18] oba:nomuzz←'c:\apl2\levar\XM',('00'⍕m),'.BMP'
[19]  comazz←'IW,"',nomuzz,'",C'
[20]  C210←comazz
[21]  mer←C210
[22]  D210←ima
[23]  C210←1,0,⍴,ima
[24]  mer←C210
[25]  C210←⍳0
[26]  mer←C210
[27] ⍝  fazer fora daqui ⎕SVR 4 2 ⍴'C210D210'
[28]  r←msg
------------------------------------------------------------
[ 0]  limpa;k
```

```
[ 1]  k←⎕EX'A'
[ 2]  k←⎕EX'L'
[ 3]  k←⎕EX'C'
[ 4]  k←⎕EX'P'
[ 5]  k←⎕EX'M'
[ 6]  k←⎕EX'T'
[ 7]  k←⎕EX'I'
[ 8]  k←⎕EX'IMAGEM'
[ 9]  k←⎕EX'PONTOS'
-------------------------------------------------------------
[ 0]  opesq vivo719a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;ii;jj;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  lixonol←210 SVOPAIR'C210' 'D210'
[ 5]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 6]  CORRECAO←0 ⋄ EVENTO←'PL719'
[ 7]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ cuca←n[5]
[ 9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[10]  ylu←n grupo ylu
[11]  FOLHALA719←ajusta80 FOLHALA719
[12]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALA719)⍴' '
[13]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[14]  xk←1 ⋄ resu←0 44⍴0
[15]  ii←12
[16]  jj←1
[17] testa:→(xk>1↑⍴ylu)/fim
[18]  esse←10 80⍴' '
[19]  f←FOLHALA719
[20]  esse[1;]←80↑dhx[1;]
[21]  esse[2;]←80↑dhx[2;]
[22]  esse[3;]←80↑4 2⍎VERSAOa←3.08
[23] ⍝ usltima alteracao=inclusao do cuca. Veja la...
[24]  esse[4;]←80↑ylu[xk;⍳6]
[25]  →(36=1↓⍴ylu)/zebra
[26]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[27]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[28]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[29]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[30]  →maiszebra
[31] ⍝⍝⍝
```

```
[51]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀newpage'
[52]  ⍞←(⍕xk←xk+1),'-'
[53]  →testa
[54] fim:upag←(1 0+⍴f)⍴' '
[55]  →(1=≡n)/elafa
[56]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[57]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[58]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑resu
[59]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[60]  →terminando
[61] elafa:aaa←(ylu[;⍳36],0 3↓resu)
[62]  lixonol←aaa ⎕FM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[63]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[64] terminando:
[65]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[66]  relat[1↑⍴relat;;]←upag
[67]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[68] ⍝ lixonol←lixonol,[1](ajusta80 INSTRUC719),[1]1 80⍴80↑'⍀end{verbatim} ⍀end{document}'
[69]  lixonol←lixonol,[1]1 80⍴80↑'⍀end{verbatim} ⍀end{document}'
[70] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[71]  lixonol←lixonol ⎕FM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[72]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[73]  lixonol←⎕EX 2 8⍴'C210D210'
[74]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
[75]  'Este WS le imagens em f:⍀p⍀apl2⍀imagens⍀im__'
[76]  '        e gera imagens em c:⍀apl2⍀levar, com o nome de xm...'
[77]  '        vc precisa CRIAR este diretorio antes de comecar...'
-------------------------------------------------------------
[ 0]  opesq vivou42a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;ii;jj;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  lixonol←210 SVOPAIR'C210' 'D210'
[ 5]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 6]  CORRECAO←0 ⋄ EVENTO←'PLu42'
[ 7]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←⎕FM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ cuca←n[5]
[ 9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[10]  ylu←n grupo ylu
[11]  FOLHALAu42←ajusta80 FOLHALAu42
[12]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAu42)⍴' '
[13]  relat[1;;]←(1↓⍴relat)↑⎕FM'c:⍀apl2⍀VIVOBLO1'
[14]  xk←1 ⋄ resu←0 44⍴0
[15]  ii←12
[16]  jj←1
[17] testa:→(xk>1↑⍴ylu)/fim
[18]  esse←10 80⍴' '
[19]  f←FOLHALAu42
[20]  esse[1;]←80↑dhx[1;]
[21]  esse[2;]←80↑dhx[2;]
[22]  esse[3;]←80↑4 2⍕VERSAOa←3.08
[23] ⍝ usltima alteracao=inclusao do cuca. Veja la...
[24]  esse[4;]←80↑ylu[xk;⍳6]
[25]  →(36=1↓⍴ylu)/zebra
[26]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[27]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[28]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[29]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[30]  →maiszebra
[31] ⍝⍝⍝
```

```
[33] ⍝ ↓↓↓↓ e ↑↑↑↑↑ idem
[34] maiszebra:
[35]  →(~1=≡n)/1+⎕LC ◇ esse[6;]←80↑EVENTO
[36]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[37] inica:
[38]  zz←jj leegrava ii
[39]  esse[8;]←80↑'XM',cuca,('00'⍕jj),'.BMP'
[40]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[41]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[42]  resp←(3 0⍕resp),' ',40↑zz
[43]  ii←ii+1
[44]  →(ii<27)/pula
[45]  ii←12
[46] pula:jj←jj+1
[47] continua:
[48]  resu←resu,[1]1 44⍴resp
[49]  acuja←(f[;2]='#')/⍳1↑⍴f
[50]  f[acuja;⍳80]←esse[⌽,f[acuja;3 4],' ';]
[51]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[52]  ⎕←(⍕xk←xk+1),'-'
[53]  →testa
[54] fim:upag←(1 0+⍴f)⍴' '
[55]  →(1=≡n)/elafa
[56]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[57]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[58]  upag[2+⍳1↑⍴presu;]←((1↑⍴presu),80)↑resu
[59]  upag[3+1↑⍴presu;]←(1↓⍴upag)↑'\end{verbatim}'
[60]  →terminando
[61] elafa:aaa←(ylu[;⍳36],0 3↓resu)
[62]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[63]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[64] terminando:
[65]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\begin{verbatim}'
[66]  relat[1↑⍴relat;;]←upag
[67]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[68] ⍝ lixonol←lixonol,[1](ajusta80 INSTRUCu42),[1]1 80⍴80↑'\end{verbatim} \end{document}'
[69]  lixonol←lixonol,[1]1 80⍴80↑'\end{verbatim} \end{document}'
[70] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[71]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[72]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[73]  lixonol←⎕EX 2 8⍴'C210D210'
[74]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
[75]  'Este WS le imagens em f:\p\apl2\imagens\im__'
[76]  '        e gera imagens em c:\apl2\levar, com o nome de xm...'
[77]  '        vc precisa CRIAR este diretorio antes de comecar...'
-------------------------------------------------------------
```

vivou44

```
[0]  AVISO
[1]  'crie um texto chamado X, com os comandos descritos em vivou44'
[2]  'dai chame compila44 X'
[3]  'e peca para ver o arquivo gravado (usando PAINT, por exemplo)'
[4]  ' '
[5]  ' agora, demora...'
-------------------------------------------------------------
[0]  r←t anticara v
[1]  →(t=2)/edois
[2] equatro:
[3]  r←⍷⎕AV[1+(4⍴256)⊤v]
[4]  →0
[5] edois:
```

```
[6]  r←⍎⎕AV[1+(2⍴256)⊤v]
-------------------------------------------------------------
[0]  r←p cara x
[1] ⍝f funcao auxiliar da leitura e gravacao de arquivos BMP - P.kantek - 04/2002
[2]  r←(256*p)×¯1+⎕AV⍳x
-------------------------------------------------------------
[  0]  compila44 x;i;ii;jj;nom;v;z
[  1]  i←1
[  2]  x←((1↑⍴x),100)↑x
[  3] t1:→(i>1↑⍴x)/fim
[  4]  →(x[i;1]='C')/cria
[  5]  →(x[i;1]='L')/limp
[  6]  →(x[i;1]='R')/reta
[  7]  →(x[i;1]='B')/bola
[  8]  →(x[i;1]='P')/pint
[  9]  →(x[i;1]='S')/salv
[ 10]  →(x[i;1]='X')/caif
[ 11]  →(x[i;1]='F')/forb
[ 12]  'deu xabu, saindo...'
[ 13]  →0
[ 14] cria:z←(3,(⌽x[i;1+⍳50]))⍴0
[ 15]  →soma
[ 16] forb: ⍝ F infesq supdir cor largura: i1 i2 t c1 c2 c3 l
[ 17]  v←⌽x[i;1+⍳50] ⍝v eh o comando entrado c1=verm, c2=verde, c3=azul
[ 18]  ii←v[1]
[ 19] tyt4:→(ii>v[1]+v[3])/kii
[ 20]  jj←v[2]
[ 21] tut5:→(jj>v[2]+v[3])/kjj
[ 22]  →((|(ii-v[1])-(jj-v[2]))>v[7])/pulha
[ 23]  z[1;ii;jj]←((v[4]=500),(v[4]≠500))/z[1;ii;jj],v[4]
[ 24]  z[2;ii;jj]←((v[5]=500),(v[5]≠500))/z[2;ii;jj],v[5]
[ 25]  z[3;ii;jj]←((v[6]=500),(v[6]≠500))/z[3;ii;jj],v[6]
[ 26] pulha:
[ 27]  jj←jj+1
[ 28]  →tut5
[ 29] kjj:ii←ii+1
[ 30]  →tyt4
[ 31] kii:
[ 32]  ii←v[1]+v[3]
[ 33] tyt44:→(ii<v[1])/kii4
[ 34]  jj←v[2]
[ 35] tut54:→(jj>v[2]+v[3])/kjj4
[ 36]  →((((ii-v[1])+(jj-v[2])-v[3])-v[7])>0)/pulha4
[ 37]  →((((ii-v[1])+(jj-v[2])-v[3])+v[7])<0)/pulha4
[ 38]  z[1;ii;jj]←((v[4]=500),(v[4]≠500))/z[1;ii;jj],v[4]
[ 39]  z[2;ii;jj]←((v[5]=500),(v[5]≠500))/z[2;ii;jj],v[5]
[ 40]  z[3;ii;jj]←((v[6]=500),(v[6]≠500))/z[3;ii;jj],v[6]
[ 41] pulha4:
[ 42]  jj←jj+1
[ 43]  →tut54
[ 44] kjj4:ii←ii-1
[ 45]  →tyt44
[ 46] kii4:
[ 47]  →soma
[ 48] limp:v←⌽x[i;1+⍳50]
[ 49]  →(v[1]=500)/pu1
[ 50]  z[1;;]←v[1]
[ 51] pu1:→(v[2]=500)/pu2
[ 52]  z[2;;]←v[2]
[ 53] pu2:→(v[3]=500)/pu3
[ 54]  z[3;;]←v[3]
[ 55] pu3:
[ 56]  →soma
```

```
[ 57] reta:v←⍉x[i;1+⍳50] ⍝ v[1]=x1, v[2]=y1, v[3]=x2, v[4]=y2, v[5]=r, v[6]=g, v[7]=b
[ 58]  ii←v[2]
[ 59] t01:→(ii>v[4])/uga1
[ 60]  jj←v[1]
[ 61] t02:→(jj>v[3])/uga2
[ 62]  z[1;ii;jj]←((v[5]=500),(v[5]≠500))/z[1;ii;jj],v[5]
[ 63]  z[2;ii;jj]←((v[6]=500),(v[6]≠500))/z[2;ii;jj],v[6]
[ 64]  z[3;ii;jj]←((v[7]=500),(v[7]≠500))/z[3;ii;jj],v[7]
[ 65]  jj←jj+1
[ 66]  →t02
[ 67] uga2:
[ 68]  ii←ii+1
[ 69]  →t01
[ 70] uga1:
[ 71]  →soma
[ 72] bola:v←⍉x[i;1+⍳50] ⍝v[1]=x1, v[2]=y1, v[3]=raio, v[4]=r, v[5]=g, v[6]=b
[ 73]  ii←v[2]-v[3]
[ 74] t11:→(ii>v[2]+v[3])/ufa1
[ 75]  jj←v[1]-v[3]
[ 76] t12:→(jj>v[1]+v[3])/ufa2
[ 77]  →((((ii-v[2])*2)+(jj-v[1])*2)>v[3]*2)/sso
[ 78]  z[1;ii;jj]←((v[4]=500),(v[4]≠500))/z[1;ii;jj],v[4]
[ 79]  z[2;ii;jj]←((v[5]=500),(v[5]≠500))/z[2;ii;jj],v[5]
[ 80]  z[3;ii;jj]←((v[6]=500),(v[6]≠500))/z[3;ii;jj],v[6]
[ 81] sso:jj←jj+1
[ 82]  →t12
[ 83] ufa2:ii←ii+1
[ 84]  →t11
[ 85] ufa1:
[ 86]  →soma
[ 87] pint:v←⍉x[i;1+⍳50] ⍝ v[1]=x1 v[2]=y1, v[3]=r, v[4]=g, v[5]=b
[ 88]  z[1;v[1];v[2]]←v[3]
[ 89]  z[2;v[1];v[2]]←v[4]
[ 90]  z[3;v[1];v[2]]←v[5]
[ 91]  →soma
[ 92] salv:z gravabmp nom←x[i;1+⍳50]
[ 93]  'gravado com o nome de ',nom
[ 94]  →soma
[ 95] caif:
[ 96]  Z←z
[ 97]  →fim
[ 98] soma:i←i+1
[ 99]  →t1
[100] fim:
------------------------------------------------------------
[ 0]  r←geracu44;x;il;ic;zi;a;b;c;d;e;f
[ 1]  r←2⍴0
[ 2]  x←gerainstu44
[ 3]  x[11;]←50↑'X'
[ 4]  compila44 x
[ 5] ⍝ em Z esta a imagem pretendida e em x esta o programa gerador
[ 6] denovo:
[ 7]  il←?250
[ 8]  ic←?250
[ 9]  a←Z[1;il;ic]
[10]  b←Z[2;il;ic]
[11]  c←Z[3;il;ic]
[12]  zi←il,ic,a,b,c
[13]  il←100+?20
[14]  ic←100+?40
[15]  d←Z[1;il;ic]
[16]  e←Z[2;il;ic]
[17]  f←Z[3;il;ic]
```

```
[18]  →((a≠d)∨(b≠e)∨(c≠f))/blz
[19]  →denovo
[20] blz:
[21]  zi←zi,il,ic,d,e,f
[22]  r[1]←⊂zi
[23]  r[2]←⊂x
-------------------------------------------------------------
[ 0]  r←gerainstu44;x;i;cara
[ 1]  x←10 50⍴' '
[ 2]  x[1;]←50↑'C 250 250'
[ 3]  x[2;]←50↑'L ',(4 0⍕¯1+?256),(4 0⍕¯1+?256),(4 0⍕¯1+?256)
[ 4]  i←3
[ 5] t1:→(i>10)/fim
[ 6]  cara←?4
[ 7]  →(cara=1)/eum
[ 8]  →(cara=2)/edois
[ 9]  →(cara=3)/etres
[10] equatro:
[11]  x[i;]←50↑'R ',(2 0⍕?50),(3 0⍕?50),(4 0⍕150+?50),(4 0⍕150+?50),poecor
[12]  →soma
[13] etres:
[14]  x[i;]←50↑'B ',(3 0⍕100+?50),(4 0⍕100+?50),(4 0⍕30+?50),poecor
[15]  →soma
[16] edois:
[17]  x[i;]←50↑'P ',(3 0⍕100+?50),(4 0⍕100+?50),poecor
[18] eum:
[19]  x[i;]←50↑'F ',(3 0⍕100+?50),(4 0⍕100+?50),(4 0⍕30+?50),poecor,3 0⍕2+?10
[20]  →soma
[21] soma:i←i+1
[22]  →t1
[23] fim:x←x,[1]1 50⍴50↑'S c:\apl2\desenho.bmp'
[24]  r←X←x
-------------------------------------------------------------
[ 0]  rat gravabmp nome;NP;REG;SA;i;j;lixo;mb;mg;mr;nc;quica;saida;xx
[ 1] ⍝ este arquivo eh sempre TRUE COLOR
[ 2] ⍝ ALTERE BLOCAO nas posicoes:
[ 3] ⍝2+⍳4=tamanho do arquivo
[ 4] ⍝18+⍳4 = colunas (real, sem arredondamento)
[ 5] ⍝22+⍳4 = linhas
[ 6] ⍝34+⍳4 = tamanho da imagem (arquivo-54)
[ 7] ⍝ rat é um array cujo ⍴=3,lin,col contendo red,green,blue
[ 8]  xx←BLOCAO
[ 9]  lixo←⎕AV[1]
[10]  lixo←lixo,lixo,lixo
[11]  nc←((⍴rat)[3])+SA←(0 3 2 1)[1+4|3×(⍴rat)[3]]
[12]  xx[2+⍳4]←4 anticara 54+3×nc×(⍴rat)[2]
[13]  xx[18+⍳4]←4 anticara(⍴rat)[3]
[14]  xx[22+⍳4]←4 anticara(⍴rat)[2]
[15]  xx[34+⍳4]←4 anticara 3×nc×(⍴rat)[2]
[16]  saida←xx
[17]  i←1 ⋄ mr←rat[1;;] ⋄ mg←rat[2;;] ⋄ mb←rat[3;;]
[18] t1:→(i>1↑⍴mb)/f1
[19]  j←1 ⋄ REG←(3×1↓⍴mb)⍴' ' ⋄ NP←0
[20] t2:→(j>1↓⍴mb)/f2
[21]  REG[NP+⍳3]←((⎕AV[1+mb[i;j]]),(⎕AV[1+mg[i;j]]),(⎕AV[1+mr[i;j]]))
[22]  NP←NP+3
[23]  →(j=j←j+1)/t2
[24] f2:
[25]  →(SA=0)/saltinho
[26]  REG←((3×1↓⍴mb)+SA)↑REG,lixo
[27] saltinho:saida←saida,REG
[28]  →(i=i←i+1)/t1
[29] f1:
```

```
[30]  →fimmesmo
[31] fimmesmo:
[32]  quica←saida FILE nome
-------------------------------------------------------------
[ 0]  r←poecor;c;a;b;c
[ 1]  c←?2
[ 2]  →(c=1)/pula1
[ 3]  r←(4 0⍕a←¯1+?256)
[ 4]  →junta1
[ 5] pula1:r←' 500'
[ 6]  a←500
[ 7] junta1:
[ 8]  c←?2
[ 9]  →(c=1)/pula2
[10]  r←r,(4 0⍕b←¯1+?256)
[11]  →junta2
[12] pula2:r←r,' 500'
[13]  b←500
[14] junta2:
[15]  →((a=500)∧(b=500))/oba
[16]  c←?2
[17]  →(c=1)/pula3
[18] oba:
[19]  r←r,(4 0⍕¯1+?256)
[20]  →junta3
[21] pula3:r←r,' 500'
[22] junta3:
-------------------------------------------------------------
[ 0]  R←readbm file;r;TF;ID;QL;QC;QA;TM;QP;BP;NP;i;j;lixo;x;yy;xxx;k;ant;tudo;h;CA;SA;m;mr
      ;mb;mg;tc;⎕IO
[ 1] ⍝f le um arquivo BMP - P.kantek - 07/2001
[ 2] ⍝r o nome completo do arquivo com a terminacao BMP
[ 3] ⍝d R e um vetor de 6 itens.
[ 4] ⍝d R[1] e um escalar e indica 8 (mapeado) ou 24 (true-color)
[ 5] ⍝d R[2] e a variavel CA (54 bytes)
[ 6] ⍝d R[3] e a variavel SA (1 numero entre 0 e 3) - indica os stuffing bytes
[ 7] ⍝o se R[1] = 8, R[4] e a tabela de cores devidamente empacotada
[ 8] ⍝o se R[1] = 8, R[5] e a matriz m de valores entre 0..255
[ 9] ⍝o se R[1] = 24, R[4 5 6] contem as 3 matrizes R,G,B da imagem
[10]  R←6⍴' ' ⋄ ⎕IO←1
[11]  ant←⎕TS
[12]  tudo←r←FILE file
[13]  CA←54↑tudo
[14]  TF←(3 cara r[6])+(2 cara r[5])+(1 cara r[4])+0 cara r[3]
[15]  ID←(3 cara r[14])+(2 cara r[13])+(1 cara r[12])+0 cara r[11]
[16]  QC←(3 cara r[22])+(2 cara r[21])+(1 cara r[20])+0 cara r[19]
[17] ⍝   QA←4×⌈(QC)÷4
[18]  QL←(3 cara r[26])+(2 cara r[25])+(1 cara r[24])+0 cara r[23]
[19]  QP←QL×QC
[20]  TM←(3 cara r[38])+(2 cara r[37])+(1 cara r[36])+0 cara r[35]
[21]  BP←(1 cara r[30])+0 cara r[29]
[22]  R[1]←BP ⋄ R[2]←⊂CA
[23] ⍝ SA←QA-QC
[24]  →(BP≠24)/outra
[25] ⍝============================TRUE COLOR============================
[26]  QA←4×⌈(QC×3)÷4
[27]  SA←QA-QC×3
[28]  R[3]←SA
[29]  x←tudo
[30]  k←55
[31] TRUECOLOR:i←1
[32]  mb←mg←mr←(QL,QC)⍴0
[33] t1:→(i>QL)/fim1
```

```
[34]  j←1
[35] t2:→(j>QC)/salta
[36]  mb[i;j]←0 cara x[k]
[37]  mg[i;j]←0 cara x[k+1]
[38]  mr[i;j]←0 cara x[k+2]
[39]  k←k+3
[40]  →(j=j←j+1)/t2
[41] salta:k←k+SA
[42]  h←(0=10|i)/'*'
[43]  →(i=i←i+1)/t1
[44] fim1:R[4]←⊂mr ⋄ R[5]←⊂mg ⋄ R[6]←⊂mb
[45]  →finz
[46] outra:
[47] ⍝==============================MAPEADA==========================
[48]  →(BP≠8)/naomesmo
[49]  QA←4×⌈QC÷4
[50]  SA←QA-QC
[51]  R[3]←SA
[52]  i←1
[53]  tc←256 3⍴0
[54]  x←FILE file
[55]  xxx←x[54+⍳1024]
[56] obag:→(i>256)/fica
[57]  yy←xxx[(4×i-1)+⍳3]
[58]  tc[i;]←(0 cara yy[1]),(0 cara yy[2]),0 cara yy[3]
[59]  →(i=i←i+1)/obag
[60] fica:
[61]  m←(QL,QC)⍴0
[62]  i←1
[63] t3:→(i>1↑⍴m)/fim2
[64]  xxx←x[54+1024+((QC+SA)×i-1)+⍳QC+SA]
[65]  j←1
[66] t4:→(j>QC)/sal
[67]  m[i;j]←0 cara xxx[j]
[68]  →(j=j←j+1)/t4
[69] sal:
[70]  h←(0=10|i)/'*'
[71]  →(i=i←i+1)/t3
[72] fim2:R[4]←⊂tc ⋄ R[5]←⊂m
[73] naomesmo:
[74] finz:
[75] ⍝ 'Tamanho do arquivo       TF = ',⍕TF
[76] ⍝ 'Inicio do bloco de dados ID = ',  ⍕ID
[77] ⍝ 'Quantidade de linhas     QL = ',⍕QL
[78] ⍝ 'Quantidade de colunas    QC = ',⍕QC
[79] ⍝ 'Colunas   × 3                = ',  ⍕(QC  ×3)
[80] ⍝ 'Quantidade de bytes (aj) QA = ',  ⍕QA
[81] ⍝ 'Tam da imagem justa      TM = ',  ⍕TM
[82] ⍝ 'Quantidade de PIXELS     QP = ',⍕QP
[83]  TRUECOLORUI←BP
[84] ⍝ 'BITS / pixel             BP = ',⍕BP
[85] ⍝ 'Tempo gasto em segundos     = ',7 1⍕(24 60 60 1000⊥¯4↑⎕TS-ant)÷1000
[86] naomesmo:
------------------------------------------------------------
[ 0]  opesq vivou44a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivou44 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
```

```
[ 8]  EVENTO←'PLu44   '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[70]  relat[1↑⍴relat;;]←upag
[71]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[72] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[73]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[74]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[75]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivoz02

```
[0]  r←geracasoz02
[1]  r←6 50⍴' '
[2]  r[1;]←50⍴COR[5?10;]
[3]  r[2;]←50⍴NOME[5?10;]
[4]  r[3;]←50⍴IDADE[5?10;]
[5]  r[4;]←50⍴PRESENTE[5?10;]
[6]  r[5;]←50⍴SUCO[5?10;]
[7]  r[6;]←50⍴PROFISSAO[5?10;]
------------------------------------------------------------
[ 0]  r←montatextoz02 z
[ 1]  r←24 99⍴' '
[ 2]  r[1;]←99↑'O garoto que quer ser ',(trim z[6;40+⍳10]),' mora em uma das casas nas pon
      tas'
[ 3]  r[2;]←99↑'Quem gosta de ',(trim z[5;30+⍳10]),' quer ser ',trim z[6;30+⍳10]
[ 4]  r[3;]←99↑'Na terceira casa está o garoto que quer ser ',trim z[6;20+⍳10]
[ 5]  r[4;]←99↑'Em uma das pontas mora quem quer ser ',(trim z[6;0+⍳10])
[ 6]  r[5;]←99↑'Na quinta casa está o garoto que quer ser ',(trim z[6;40+⍳10]),' quando cr
      escer'
[ 7]  r[6;]←99↑'O menino que gosta de ',(trim z[5;40+⍳10]),' está em uma das pontas'
[ 8]  r[7;]←99↑'O garoto que gosta de ',(trim z[5;0+⍳10]),' está exatamente à esquerda de
      quem gosta de ',trim z[5;10+⍳10]
[ 9]  r[8;]←99↑'Quem quer ser ',(trim z[6;30+⍳10]),' está exatamente à direita de quem gos
      ta de ',z[5;20+⍳10]
[10]  r[9;]←99↑(trim z[2;0+⍳10]),' gosta de ',trim z[5;0+⍳10]
[11]  r[10;]←99↑'O menino de ',(trim z[3;30+⍳10]),' mora ao lado esquerdo do que quer um '
      ,z[4;40+⍳10]
[12]  r[11;]←99↑'Quem quer o ',(trim z[4;30+⍳10]),' está exatamente à esquerda do ',trim z
      [2;40+⍳10]
[13]  r[12;]←99↑'Na casa de cor ',(trim z[1;20+⍳10]),' mora quem quer um ',(trim z[4;20+⍳1
      0]),' de Natal'
[14]  r[13;]←99↑'Na primeira casa mora o garoto que quer um ',(trim z[4;0+⍳10]),' de prese
      nte'
[15]  r[14;]←99↑'Quem quer um ',(trim z[4;10+⍳10]),' mora ao lado esquerdo de quem deseja
      um ',z[4;20+⍳10]
[16]  r[15;]←99↑'O menino que tem ',(trim z[3;40+⍳10]),' mora na quinta casa'
[17]  r[16;]←99↑'O garoto de ',(trim z[3;10+⍳10]),' está em algum lugar entre o de ',(trim
       z[3;0+⍳10]),' e o de ',(z[3;20+⍳10]),'nessa ordem'
[18]  r[17;]←99↑'O garoto de ',(trim z[3;20+⍳10]),' quer ser ',(trim z[6;20+⍳10]),' quando
       crescer'
[19]  r[18;]←99↑(trim z[2;20+⍳10]),' mora na terceira casa'
[20]  r[19;]←99↑(trim z[2;30+⍳10]),' mora exatamente à direita de ',trim z[2;20+⍳10]
[21]  r[20;]←99↑(trim z[2;30+⍳10]),' mora na casa de cor ',trim z[1;30+⍳10]
[22]  r[21;]←99↑'A casa de cor ',(trim z[1;20+⍳10]),' está exatamente à esquerda da casa d
      e quem gosta de ',trim z[5;30+⍳10]
[23]  r[22;]←99↑'A casa de cor ',(trim z[1;10+⍳10]),' está rigorosamente à esquerda da cas
      a de quem quer um ',trim z[4;20+⍳10]
[24]  r[23;]←99↑'A primeira casa é a ',(trim z[1;0+⍳10])
[25]  r[24;]←99↑'Qual o nome do garoto que pretende um ',(z[4;10+⍳10]),' ? '
[26]  r[⍳23;]←r[23?23;]
------------------------------------------------------------
[0]  r←ordenaz02 z;i;x
[1]  r←6 50⍴' '
```

```
[2]  i←1
[3] t1:→(i>6)/fim
[4]  r[i;]←,x[⎕AV⍋x←5 10⍴z[i;];]
[5]  i←i+1
[6]  →t1
[7] fim:r←(54⍴((10⍴1),0))⍉[2]r
-------------------------------------------------------------
[ 0]  opesq vivoz02a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivoz02 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PLz02   '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[54]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[55]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[56]  upag[2+⍳1↑⍴resu;⍳14]←resu
[57]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[58]  →terminando
[59] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[60] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[61] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[62]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[63]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[64] terminando:
[65]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[66]  relat[1↑⍴relat;;]←upag
[67]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[68] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[69]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[70]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivoz03

```
[ 0]  cavaleiroz03 n;acuja;esse;f;lixo1;relat;resp;x;xk;xx
[ 1] ⍝ esta funcao gera as instancias de vivoz03a para carga no CTR - 10/04/15-pkantek
[ 2]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 3]  FOLHALAz03←99 ajusta FOLHALAz03
[ 4]  relat←ΔFM'c:\apl2\VIVOBLO1'
[ 5]  xk←1
[ 6] testa:→(xk>n)/fim
[ 7]  esse←34 99⍴' '
[ 8]  f←FOLHALAz03
[ 9]  esse[1;⍳⍴x]←x←' -- Cavaleiros da Tavola Redonda'
[10]  esse[3;]←99↑4 2⍕1.01  ⍝ versao deste cara
[11]  esse[33;⍳8]←'@OOOOOO@'
[12] inica:
[13]  xx←geracaso
[14]  esse[7+⍳20;]←20 99↑montatextoz03 xx
[15]  esse[27+⍳5;]←5 99↑ordenaz03 xx
[16]  resp←,xx[1;20+⍳10]
[17] ⍝ resposta em resp
[18]  acuja←(f[;2]='#')/⍳1↑⍴f
[19]  f[acuja;⍳99]←esse[⍋,f[acuja;3 4],' ';]
[20]  ⎕←(⍕xk←xk+1),'-'
[21]  f←(((1↑⍴relat),1↓⍴f)↑relat),[1]f
[22]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'\end{document}'
[23]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'%',resp
[24]  lixo1←f ΔFM'c:\apl2\CAz03a',('OO'⍕xk-1),'.tex'
[25]  →testa
[26] fim:
------------------------------------------------------------
[0]  r←geracaso
[1]  r←5 50⍴' '
[2]  r[1;]←50⍴BLUSA[5?10;]
[3]  r[2;]←50⍴MULHER[5?10;]
[4]  r[3;]←50⍴ESQUECEU[5?10;]
[5]  r[4;]←50⍴PAGAMENTO[5?10;]
[6]  r[5;]←50⍴VEIOCOM[5?10;]
------------------------------------------------------------
[ 0]  r←montatextoz03 z
[ 1]  r←20 99⍴' '
[ 2]  r[1;]←99↑'Quem esqueceu o ',(trim z[3;20+⍳10]),' está exatamente à esquerda de quem
      veio com o ',trim z[5;30+⍳10]
[ 3]  r[2;]←99↑'A mulher com a blusa ',(trim z[1;20+⍳10]),' está em algum caixa à esquerda
```

```
       de quem veio com o ',trim z[5;40+⍳10]
[ 4]  r[3;]←99↑'A moça que veio com o ',(trim z[5;10+⍳10]),' vai pagar usando ',trim z[4;1
      0+⍳10]
[ 5]  r[4;]←99↑'A mulher que está no caixa 1  veio com o ',trim z[5;0+⍳10]
[ 6]  r[5;]←99↑'Quem vai pagar usando ',(trim z[4;30+⍳10]),' está no caixa 4'
[ 7]  r[6;]←99↑'A moça do último caixa vai pagar usando ',trim z[4;40+⍳10]
[ 8]  r[7;]←99↑'Quem veio com o ',(trim z[5;10+⍳10]),' está exatamente à esquerda de quem
      esqueceu o ',trim z[3;20+⍳10]
[ 9]  r[8;]←99↑'Quem vai pagar com ',(trim z[4;0+⍳10]),' está no primeiro caixa'
[10]  r[9;]←99↑'A cliente que vai pagar com ',(trim z[4;30+⍳10]),' esqueceu de comprar ',t
      rim z[3;30+⍳10]
[11]  r[10;]←99↑'Quem esqueceu de comprar o ',(trim z[3;40+⍳10]),' vai pagar com ',(trim z
      [4;40+⍳10])
[12]  r[11;]←99↑'A mulher que esqueceu o ',(trim z[3;0+⍳10]),' está em um dos caixas das p
      ontas'
[13]  r[12;]←99↑'A ',(trim z[2;30+⍳10]),' está usando uma blusa de cor ',trim z[1;30+⍳10]
[14]  r[13;]←99↑'Quem veio de blusa ',(trim z[1;0+⍳10]),' está em algum lugar à esquerda d
      e quem veio com a blusa ',trim z[1;20+⍳10]
[15]  r[14;]←99↑'A ',(trim z[2;10+⍳10]),' veio com o ',(trim z[5;10+⍳10])
[16]  r[15;]←99↑'A menina ',(trim z[2;20+⍳10]),' está exatamente à direita de quem veio co
      m o ',trim z[5;10+⍳10]
[17]  r[16;]←99↑'A ',(trim z[2;40+⍳10]),' está no último caixa'
[18]  r[17;]←99↑'A garota ',(trim z[2;0+⍳10]),' está exatamente à esquerda de quem veio co
      m a blusa ',trim z[1;10+⍳10]
[19]  r[18;]←99↑'A moça de blusa ',(trim z[1;30+⍳10]),' esqueceu de comprar o ',trim z[3;3
      0+⍳10]
[20]  r[19;]←99↑'A mulher de blusa ',(trim z[1;40+⍳10]),' veio com o ',trim z[5;40+⍳10]
[21]  r[20;]←99↑'Qual a cor da blusa de quem veio com o ',(trim z[5;20+⍳10]),' ? '
[22]  r[⍳19;]←r[19?19;]
------------------------------------------------------------
[0]  r←ordenaz03 z;i;x
[1]  r←6 50⍴' '
[2]  i←1
[3] t1:→(i>5)/fim
[4]  r[i;]←,x[⍋⍋AV⍋x←5 10⍴z[i;];]
[5]  i←i+1
[6]  →t1
[7] fim:r←(54⍴((10⍴1),0))⍀[2]r
------------------------------------------------------------
[ 0]  opesq vivoz03a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivoz03 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PLz03   '
[ 9]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[22]  esse[1;]←99↑dhx[1;]
[23]  esse[2;]←99↑dhx[2;]
[24]  esse[3;]←99↑4 2⍕VERSAOa←1.01
[25]  esse[4;]←99↑ylu[xk;⍳6]
[26] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[27]  →(36=1↓⍴ylu)/zebra
[28]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[29]  nomes←(ql39,99)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[30]  f←(((qlinha-1),99)↑f),[1]nomes,[1](qlinha,0)↓f
[31]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[32]  →maiszebra
[33] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[ 0]  r←montatexto z
[ 1]  r←23 79⍴' '
[ 2]  r[1;]←79↑(trim z[1;10+⍳10]),' gosta de suco de ',trim z[6;10+⍳10]
[ 3]  r[2;]←79↑'A menina que tem ',(trim z[4;40+⍳10]),' gosta de estudar ',trim z[3;40+⍳10
      ]
[ 4]  r[3;]←79↑'O suco favorito de ',(trim z[1;20+⍳10]),' é de ',trim z[6;20+⍳10]
[ 5]  r[4;]←79↑(trim z[1;30+⍳10]),' está à esquerda de ',trim z[1;40+⍳10]
[ 6]  r[5;]←79↑(trim z[1;0+⍳10]),' é a primeira da esquerda'
[ 7]  r[6;]←79↑'A menina da direita gosta de estudar ',trim z[3;40+⍳10]
[ 8]  r[7;]←79↑'Quem toma suco de ',(trim z[6;30+⍳10]),' gosta do animal ',trim z[4;30+⍳10
      ]
[ 9]  r[8;]←79↑'Quem gosta de suco de ',(trim z[6;20+⍳10]),' está no meio'
[10]  r[9;]←79↑'A mochila da ',(trim z[1;30+⍳10]),' é ',trim z[2;30+⍳10]
[11]  r[10;]←79↑'A menina à esquerda da do meio viajará a ',trim z[5;10+⍳10]
[12]  r[11;]←79↑'Quem vai para ',(trim z[5;0+⍳10]),' tem a mochila ',trim z[2;0+⍳10]
[13]  r[12;]←79↑'Quem gosta de suco de ',(trim z[6;10+⍳10]),' senta ao lado de quem vai pa
      ra ',trim z[5;20+⍳10]
[14]  r[13;]←79↑'A dona da mochila ',(trim z[2;20+⍳10]),' vai para ',trim z[5;20+⍳10]
[15]  r[14;]←79↑'A primeira à esquerda tem uma mochila ',trim z[2;0+⍳10]
[16]  r[15;]←79↑'A menina da mochila ',(trim z[2;10+⍳10]),' tem o animal ',trim z[4;10+⍳10
      ]
[17]  r[16;]←79↑'Quem gosta de ',(trim z[3;30+⍳10]),' senta ao lado de quem tem ',trim z[4
      ;40+⍳10]
[18]  r[17;]←79↑'A garota que senta à direita de quem gosta de ',(trim z[3;0+⍳10]),' prefe
      re ',trim z[3;10+⍳10]
[19]  r[18;]←79↑'Quem gosta de suco de ',(trim z[6;30+⍳10]),' senta ao lado de quem gosta
      de suco de ',trim z[6;40+⍳10]
[20]  r[19;]←79↑'Vai para ',(trim z[5;40+⍳10]),' quem tem a mochila ',trim z[2;40+⍳10]
[21]  r[20;]←79↑'A garota que gosta de suco de ',(trim z[6;0+⍳10]),' tem o animal ',trim z
      [4;0+⍳10]
[22]  r[21;]←79↑'A menina que estuda ',(trim z[3;30+⍳10]),' senta ao lado da que estuda ',
      trim z[3;20+⍳10]
[23]  r[22;]←79↑(trim z[1;30+⍳10]),' viajará nas férias para ',trim z[5;30+⍳10]
[24]  r[23;]←79↑'Quem é a menina que gosta do animal ',(trim z[4;20+⍳10]),' ? '
[25]  r[⍳22;]←r[22?22;]
------------------------------------------------------------
[0]  r←ordenaz04 z;i;x
[1]  r←6 50⍴' '
[2]  i←1
[3] t1:→(i>6)/fim
[4]  r[i;]←,x[⍋AV⍋x←5 10⍴z[i;];]
[5]  i←i+1
[6]  →t1
[7] fim:r←(54⍴((10⍴1),0))⍀[2]r
------------------------------------------------------------
[ 0]  opesq vivoz04a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivoz04 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PLz04   '
[ 9]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[16]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAz04)⍴' '
[17]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[18]  xk←1 ⋄ resu←0 14⍴0
[19] testa:→(xk>1↑⍴ylu)/fim
[20]  esse←38 80⍴' '
[21]  f←FOLHALAz04
[22]  esse[1;]←80↑dhx[1;]
[23]  esse[2;]←80↑dhx[2;]
[24]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[25]  esse[4;]←80↑ylu[xk;⍳6]
[26] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[27]  →(36=1↓⍴ylu)/zebra
[28]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[29]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[30]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[31]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[32]  →maiszebra
[33] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
------------------------------------------------------------
[0]  r←acertap c;i
[1]  r←(ρc)ρ' '
[2]  i←1
[3] vo:→(i>1↑ρc)/fi
[4]  r[i;]←(1↓ρc)↑((~⍵∧≠⍵c[i;]=' ')/c[i;]),'.'
[5]  →(i=i←i+1)/vo
[6] fi:
------------------------------------------------------------
[ 0]  r←geracaso;x;y;i;z
[ 1]  x←5 5ρ(5?12),(5?12),(5?12),(5?12),5?12
[ 2]  y←5 75ρ' '
[ 3]  i←1
[ 4] t1:→(i>5)/fi
[ 5]  z←(15↑ESTADO[x[1;i];]),(15↑COR[x[2;i];]),(15↑TIME[x[3;i];])
[ 6]  z←z,(15↑BEBIDA[x[4;i];]),15↑BICHO[x[5;i];]
[ 7]  y[;((i-1)×15)+⍳15]←5 15ρz
[ 8]  →(i=i←i+1)/t1
[ 9] fi:r←y
[10]  X←y
------------------------------------------------------------
[ 0]  r←montaregras da;z
[ 1]  z←15 100ρ' ' ⋄ r←15 110ρ' '
[ 2]  z[1;]←100↑'O ',da[1;31+⍳14],' mora na casa ',da[2;31+⍳14]  ⍝ este aqui nao eh respos
      ta
[ 3]  →((?2)=⍳2)/aa1,bb1
[ 4] aa1:z[1;17+⍳4]←'vive'
[ 5] bb1:
[ 6]  z[2;]←100↑'O ',da[1;46+⍳14],'e dono d',da[5;46],' ',da[5;46+⍳14]
[ 7]  z[3;]←100↑'O ',da[1;1+⍳14],' mora   na primeira casa à esquerda' ⍝ resposta 2
[ 8]  →((?3)=⍳3)/u1,d1,t1
[ 9] u1:z[3;17+⍳7]←'reside '
[10]  →t1
[11] d1:z[3;17+⍳7]←'habita '
[12]  →t1
[13] t1:
[14]  z[4;]←100↑'Torce-se pel',da[3;1],' ',da[3;1+⍳14],' na casa ',da[2;1+⍳14]
[15]  z[5;]←100↑'Quem torce pel',da[3;16],' ',da[3;16+⍳14],' mora na casa ao lado do homem
       que gosta d',da[5;1],' ',da[5;1+⍳14]
[16]  z[6;]←100↑'O ',da[1;1+⍳14],' mora   ao lado da casa ',da[2;16+⍳14] ⍝ resposta=2
[17]  →((?3)=⍳3)/du1,dd1,dt1
[18] du1:z[6;17+⍳7]←'reside '
[19]  →dt1
[20] dd1:z[6;17+⍳7]←'habita '
[21]  →dt1
[22] dt1:
[23]  →(da[5;31]='o')/masc1
[24] fem1:z[7;]←100↑'O torcedor d',da[3;31],' ',da[3;31+⍳14],' tem um',da[5;31],' ',da[5;3
      1+⍳14],' de estimaç≠~ao'
[25]  →cont1
[26] masc1:
[27]  z[7;]←100↑'O torcedor d',da[3;31],' ',da[3;31+⍳14],' tem um ',da[5;31+⍳14],' de esti
      maç≠~ao'
[28] cont1:
[29]  z[8;]←100↑'O torcedor d',da[3;46],' ',da[3;46+⍳14],' bebe ',da[4;46+⍳14]
[30]  z[9;]←100↑'O ',da[1;16+⍳14],' bebe ',da[4;16+⍳14]
[31]  →((?3)=⍳3)/um,dois,tres
[32] um:z[10;]←100↑'O ',da[1;61+⍳14],' é torcedor d',da[3;61],' ',da[3;61+⍳14] ⍝ resp=1
[33]  →junta
[34] dois:z[10;]←100↑'O ',da[1;61+⍳14],' torce pel',da[3;61],' ',da[3;61+⍳14] ⍝ resp=1
[35]  →junta
[36] tres:z[10;]←100↑'O ',da[1;61+⍳14],' gosta do time d',da[3;61],' ',da[3;61+⍳14] ⍝ resp
      =1
```

```
[37] junta:
[38]  →(da[5;16]='o')/masc2
[39] fem2:z[11;]←100↑'O torcedor d',da[3;1],' ',da[3;1+⍳14],' mora ao lado da casa onde há
       um',da[5;16],' ',da[5;16+⍳14]
[40]  →cont2
[41] masc2:z[11;]←100↑'O torcedor d',da[3;1],' ',da[3;1+⍳14],' mora ao lado da casa onde h
      á um ',da[5;16+⍳14]
[42] cont2:
[43]  z[12;]←100↑'Bebe-se ',da[4;61+⍳14],' na casa de cor ',da[2;61+⍳14]
[44]  z[13;]←100↑'A casa cor ',da[2;61+⍳14],' está à direita (colado) da casa de cor ',da[
      2;46+⍳14]
[45]  z[14;]←100↑'Bebe-se ',da[4;31+⍳14],' na casa do meio'
[46]  r[⍳14;10+⍳100]←acertap z[14?14;]
[47]  r[⍳14;⍳10]←14 10⍴10↑'\item '
[48]  r[15;⍳30]←da[4;⍳15],da[5;60+⍳15]
[49]  r[15;50+⍳30]←da[1;60+⍳15],da[1;⍳15]
------------------------------------------------------------
[ 0]  opesq vivoz05a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;xxx;ii;aaa
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←0 ⋄ EVENTO←'PLz05   '
[ 5]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 8]  FOLHALAz05←ajusta80 FOLHALAz05
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAz05)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[11]  xk←1 ⋄ resu←0 32⍴0
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←40 80⍴' '
[14]  f←FOLHALAz05
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍎VERSAOa←3.08
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[22]  esse[39;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[40;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25]  xxx←montaregras geracaso
[26]  ii←1
[27] vo8:→(ii>14)/fi8
[28]  esse[((ii-1)×2)+7+⍳2;]←2 80⍴160↑xxx[ii;]
[29]  →(ii=ii←ii+1)/vo8
[30] fi8:
[31]  esse[36;]←80↑xxx[15;16]
[32]  esse[37;]←80↑xxx[15;16+⍳14]
[33]  esse[38;]←80↑xxx[15;1+⍳14]
[34]  resp←(4 0⍎resp),xxx[15;51+⍳14],xxx[15;66+⍳14]
[35]  resu←resu,[1]1 32⍴resp
[36]  acuja←(f[;2]='#')/⍳1↑⍴f
[37]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[39]  ⍞←(⍎xk←xk+1),'-'
[40]  →testa
[41] fim:upag←(1 0+⍴f)⍴' '
[42]  →(1=≡n)/elafa
[43]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
```

```
[44]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[45]  'ultima matriz gerada esta em X'
[46]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑resu
[47]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[48]  →terminando
[49] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 4↓resu)
[50]  aaa[1;35 36]←2 0⍕CORRECAO
[51]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.t
      ex'
[57]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[58]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
[ 0]  opesq vivoz05b n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;xxx;ii;aaa
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←0 ⋄ EVENTO←'PLz05b  '
[ 5]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 8]  FOLHABBz05←ajusta80 FOLHABBz05
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHABBz05)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[11]  xk←1 ⋄ resu←0 32⍴0
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←40 80⍴' '
[14]  f←FOLHABBz05
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍕VERSAOa←3.08
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[22]  esse[39;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[40;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25]  xxx←montaregras geracaso
[26]  ii←1
[27] vo8:→(ii>14)/fi8
[28]  esse[((ii-1)×2)+7+⍳2;]←2 80⍴160↑xxx[ii;]
[29]  →(ii=ii←ii+1)/vo8
[30] fi8:
[31]  esse[36;]←80↑xxx[15;16]
[32]  esse[37;]←80↑xxx[15;16+⍳14]
[33]  esse[38;]←80↑xxx[15;1+⍳14]
[34]  resp←(4 0⍕resp),xxx[15;51+⍳14],xxx[15;66+⍳14]
[35]  resu←resu,[1]1 32⍴resp
[36]  acuja←(f[;2]='#')/⍳1↑⍴f
[37]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[39]  ⍞←(⍕xk←xk+1),'-'
[40]  →testa
[41] fim:upag←(1 0+⍴f)⍴' '
[42]  →(1=≡n)/elafa
[43]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
```

```
[44]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[45]  'ultima matriz gerada esta em X'
[46]  upag[2+⍳1↑⍴resu;]←((1↑⍴resu),80)↑resu
[47]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[48]  →terminando
[49] elafa:aaa←(ylu,(((1↑⍴ylu),4)⍴' 0.0'),0 4↓resu)
[50]  aaa[1;35 36]←2 0⍕CORRECAO
[51]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.t
      ex'
[57]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[58]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
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vivoz07

```
[ 0]  correcao
[ 1]  'a correcao da versao inicial que estava errada eh'
[ 2]  'a regra que dizia'
[ 3]  'a garota de XXXXX esta em algum lugar entre YYYYY e a amiga de ZZZZZ nessa ordem'
[ 4]  ' este comando omitiu YYYY'
[ 5]  ' '
[ 6]  'olhe a frase AAAAAA esta ao lado da amiga de vestido BBBBBB'
[ 7]  ' faca o YYYYY igual a AAAAAA e mande resolver'
[ 8]  'Na folha que ficou no diretorio vivo durante um bom tempo era a CAMILA'
-------------------------------------------------------------
[0]  r←geracasoz07
[1]  r←6 50⍴' '
[2]  r[1;]←50⍴COR[5?10;]
[3]  r[2;]←50⍴NOME[5?10;]
[4]  r[3;]←50⍴BEBIDA[5?10;]
[5]  r[4;]←50⍴IDADE[5?10;]
[6]  r[5;]←50⍴DESEJO[5?10;]
[7]  r[6;]←50⍴PROFISSAO[5?10;]
-------------------------------------------------------------
[0]  jogador
-------------------------------------------------------------
[ 0]  r←montatextoz07 z
[ 1]  r←28 99⍴' '
[ 2]  r[1;]←99↑'A ',(trim z[6;30+⍳10]),' está em algum lugar entre a ',(trim z[6;10+⍳10]),
      ' e a ',(trim z[6;40+⍳10]),' nessa ordem'
[ 3]  r[2;]←99↑'A ',(trim z[6;20+⍳10]),' está exatamente à esquerda da ',trim z[6;30+⍳10]
[ 4]  r[3;]←99↑'A ',(trim z[6;40+⍳10]),' está na quinta posição'
[ 5]  r[4;]←99↑'A garota de ',(trim z[4;0+⍳10]),' está exatamente à esquerda da ',trim z[6
      ;10+⍳10]
[ 6]  r[5;]←99↑'A mulher que deseja ',(trim z[5;30+⍳10]),' está exatamente à direita da qu
      e deseja ',trim z[5;20+⍳10]
[ 7]  r[6;]←99↑'Na quarta posição está a amiga que deseja ',(trim z[5;30+⍳10])
[ 8]  r[7;]←99↑'A moça de vestido ',(trim z[1;0+⍳10]),' está exatamente à esquerda da que
      deseja ',trim z[5;10+⍳10]
[ 9]  r[8;]←99↑'A garota que deseja ',(trim z[5;0+⍳10]),' está ao lado da amiga de ',z[4;1
      0+⍳10]
[10]  r[9;]←99↑'A mulher de ',(trim z[4;40+⍳10]),' está exatamente à direita da de ',trim
      z[4;30+⍳10]
[11]  r[10;]←99↑'A garota de ',(trim z[4;20+⍳10]),' está em algum lugar entre ',(trim z[2;
      10+⍳10]),' e a amiga de ',(trim z[4;30+⍳10]),' nessa ordem'
[12]  r[11;]←99↑(trim z[2;30+⍳10]),' está exatamente à esquerda da amiga que vai beber ',t
      rim z[3;40+⍳10]
```

```
[13]  r[12;]←99↑'Quem vai beber ',(trim z[3;20+⍳10]),' está na terceira posiçto'
[14]  r[13;]←99↑'Quem vai beber ',(trim z[3;30+⍳10]),' está ao lado da amiga vestida com a
       cor ',trim z[1;40+⍳10]
[15]  r[14;]←99↑'A mulher de ',(trim z[1;10+⍳10]),' está em algum lugar entre a que vai be
      ber ',(trim z[3;0+⍳10]),' e a de cor ',(trim z[1;30+⍳10]),' nessa ordem'
[16]  r[15;]←99↑'A garota do vestido ',(trim z[1;20+⍳10]),' está em algum lugar à esquerda
       de ',trim z[2;40+⍳10]
[17]  r[16;]←99↑(trim z[2;0+⍳10]),' está exatamente à esquerda da amiga que deseja ',(trim
       z[5;10+⍳10])
[18]  r[17;]←99↑'A garota de ',(trim z[4;40+⍳10]),' está usando um vestido da cor ',(trim
      z[1;40+⍳10])
[19]  r[18;]←99↑(trim z[2;10+⍳10]),' está ao lado da amiga de vestido ',trim z[1;20+⍳10]
[20]  r[19;]←99↑'A mulher de vestido ',(trim trim z[1;30+⍳10]),' tem ',trim z[4;30+⍳10]
[21]  r[20;]←99↑(trim z[2;30+⍳10]),' mora na casa de cor ',trim z[1;30+⍳10]
[22]  r[21;]←99↑'Qual o nome da moça de ',(trim z[4;20+⍳10]),' ? '
[23]  r[22;]←99↑'Qual a bebida preferida pela moça que veste cor ',(trim z[1;10+⍳10]),' ?
      '
[24]  r[23;]←99↑'Qual a profissto da ',(trim z[2;0+⍳10]),' ? '
[25]  r[24;]←99↑'Qual o desejo da ',(z[2;40+⍳10]),' ? '
[26]  r[25;]←99↑,z[2;20+⍳10]
[27]  r[26;]←99↑,z[3;10+⍳10]
[28]  r[27;]←99↑,z[6;0+⍳10]
[29]  r[28;]←99↑,z[5;40+⍳10]
[30]  r[⍳20;]←r[20?20;]
-------------------------------------------------------------
[0]  r←ordenaz07 z;i;x
[1]  r←6 50⍴' '
[2]  i←1
[3] t1:→(i>6)/fim
[4]  r[i;]←,x[⍋⍋AV⍋x←5 10⍴z[i;];]
[5]  i←i+1
[6]  →t1
[7] fim:r←(54⍴((10⍴1),0))⍀[2]r
-------------------------------------------------------------
[ 0]  opesq vivoz07a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;kk;lixo1;lixonol;nomes;ql39;ql
      inha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivoz07 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PLz07   '
[ 9]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[27]  →(36=1↓⍴ylu)/zebra
[28]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'↖#05')/⍳1↑⍴f
[29]  nomes←(ql39,99)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[30]  f←(((qlinha-1),99)↑f),[1]nomes,[1](qlinha,0)↓f
[31]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[32]  →maiszebra
[33] ⍝⍝⍝
```

```
[ 3]  r[2;]←99↑'O lutador de ',(trim z[6;40+⍳10]),' está na quinta posiçto'
[ 4]  r[3;]←99↑'O dono da faixa ',(trim z[1;20+⍳10]),' está exatamente à direita do lutado
      r de ',trim z[6;10+⍳10]
[ 5]  r[4;]←99↑'O lutador de ',(trim z[6;0+⍳10]),' é o faixa ',trim z[1;0+⍳10]
[ 6]  r[5;]←99↑'Na quinta casa está o lutador de ',trim z[5;40+⍳10]
[ 7]  r[6;]←99↑(trim z[2;40+⍳10]),' está ao lado do lutador de ',trim z[5;20+⍳10]
[ 8]  r[7;]←99↑'O lutador de ',(trim z[5;20+⍳10]),' está na terceira posiçto'
[ 9]  r[8;]←99↑'Em uma das pontas está o lutador de ',z[5;0+⍳10]
[10]  r[9;]←99↑'O lutador de ',(trim z[4;40+⍳10]),' está em uma das pontas'
[11]  r[10;]←99↑'O faixa ',(trim z[1;20+⍳10]),' está em algum lugar à esquerdo do lutador
      de ',z[4;30+⍳10]
[12]  r[11;]←99↑'Os lutadores de ',(trim z[6;10+⍳10]),' e ',(trim z[6;20+⍳10]),' estto lad
      o a lado'
[13]  r[12;]←99↑'O lutador faixa ',(trim z[1;10+⍳10]),' pesa ',(trim z[4;10+⍳10])
[14]  r[13;]←99↑'O lutador de ',(trim z[4;0+⍳10]),' está exatamente à esquerda do lutador
      de ',trim z[3;10+⍳10]
[15]  r[14;]←99↑'O lutador de ',(trim z[3;30+⍳10]),' está exatamente à esquerda do lutador
       de ',trim z[5;40+⍳10]
[16]  r[15;]←99↑'O que tem ',(trim z[3;40+⍳10]),' é do estado de ',(trim z[6;40+⍳10])
[17]  r[16;]←99↑'O lutador de ',(trim z[3;20+⍳10]),' está exatamente à direita do de ',(tr
      im z[6;10+⍳10])
[18]  r[17;]←99↑(trim z[2;30+⍳10]),' é faixa ',(trim z[1;30+⍳10])
[19]  r[18;]←99↑(trim z[2;20+⍳10]),' pesa ',trim z[4;20+⍳10]
[20]  r[19;]←99↑(trim z[2;10+⍳10]),' está na segunda casa'
[21]  r[20;]←99↑(trim z[2;40+⍳10]),' está em algum lugar à direita do lutador de faixa ',t
      rim z[1;0+⍳10]
[22]  r[21;]←99↑'O lutador de faixa ',(trim z[1;0+⍳10]),' está na primeira posiçto'
[23]  r[22;]←99↑'Qual o nome do lutador faixa ',(trim z[1;0+⍳10])
[24]  r[23;]←99↑'Qual o nome de quem mede ',(trim z[5;10+⍳10])
[25]  r[⍳21;]←r[21?21;]
-------------------------------------------------------------
[0]  r←ordenaz08 z;i;x
[1]  r←6 50⍴' '
[2]  i←1
[3] t1:→(i>6)/fim
[4]  r[i;]←,x[⍋AV⍋x←5 10⍴z[i;];]
[5]  i←i+1
[6]  →t1
[7] fim:r←(54⍴((10⍴1),0))⍀[2]r
-------------------------------------------------------------
[ 0]  opesq vivoz08a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivoz08 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PLz08   '
[ 9]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

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[21]  f←FOLHALAz08
[22]  esse[1;]←99↑dhx[1;]
[23]  esse[2;]←99↑dhx[2;]
[24]  esse[3;]←99↑4 2⍕VERSAOa←1.01
[25]  esse[4;]←99↑ylu[xk;⍳6]
[26] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[27]  →(36=1↓⍴ylu)/zebra
[28]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[29]  nomes←(ql39,99)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[30]  f←(((qlinha-1),99)↑f),[1]nomes,[1](qlinha,0)↓f
[31]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[32]  →maiszebra
[33] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[ 8]  →testa
[ 9] achou:r[j;]←80↑met↑x[i;]
[10]  r[j+1;]←80↑met↓x[i;]
[11]  i←i+1
[12]  j←j+2
[13]  →t1
[14] aca0:
-------------------------------------------------------------
[0]  r←geracasoz09
[1]  r←6 50⍴' '
[2]  r[1;]←50⍴COR[5?10;]
[3]  r[2;]←50⍴NOME[5?10;]
[4]  r[3;]←50⍴REVISTA[5?10;]
[5]  r[4;]←50⍴DENTISTA[5?10;]
[6]  r[5;]←50⍴HORARIO[5?10;]
[7]  r[6;]←50⍴MOTIVO[5?10;]
-------------------------------------------------------------
[ 0]  r←montatextoz09 z
[ 1]  r←17 140⍴' '
[ 2]  r[1;]←140↑'A pessoa que veio fazer ',(trim z[6;30+⍳10]),' está lendo a revista ',(tr
      im z[3;30+⍳10]),'.'
[ 3]  r[2;]←140↑'Quem está lendo ',(trim z[3;10+⍳10]),' está em algum lugar entre o ',(tri
      m z[2;10+⍳10]),' e quem está com a revista ',(trim z[3;20+⍳10]),' nessa ordem.'
[ 4]  r[3;]←140↑'Quem veio fazer ',(trim z[6;10+⍳10]),' está em algum lugar entre quem est
      a lendo ',(trim z[3;0+⍳10]),' e quem veio fazer ',(trim z[6;20+⍳10]),' nessa ordem.'
[ 5]  r[4;]←140↑'O paciente da dra. ',(trim z[4;20+⍳10]),' está lendo a revista ',(trim z[
      3;20+⍳10]),'.'
[ 6]  r[5;]←140↑'O ',(trim z[2;40+⍳10]),' é o paciente da ',(trim z[4;40+⍳10]),'.'
[ 7]  r[6;]←140↑'O ',(trim z[2;20+⍳10]),' está em algum lugar entre o da camisa ',(trim z[
      1;10+⍳10]),' e o ',(trim z[2;30+⍳10]),' nessa ordem.'
[ 8]  r[7;]←140↑'O paciente que veio fazer ',(trim z[6;20+⍳10]),' está em algum lugar entr
      e quem veio fazer ',(trim z[6;0+⍳10]),' e quem veio fazer ',(trim z[6;30+⍳10]),' ness
      a ordem.'
[ 9]  r[8;]←140↑'A pessoa de camisa ',(trim z[1;10+⍳10]),' está em algum lugar à esquerda
      do paciente agendado para às ',(trim z[5;20+⍳10]),'.'
[10]  r[9;]←140↑'A ',(trim z[4;20+⍳10]),' atenderá o paciente do meio.'
[11]  r[10;]←140↑'Quem tem consulta as ',(trim z[5;0+⍳10]),' está sentado em uma das ponta
      s.'
[12]  r[11;]←140↑'O paciente mais à esquerda será atendida pela dra. ',(trim z[4;0+⍳10]),'
      .'
[13]  r[12;]←140↑'O homem de camisa ',(trim z[1;30+⍳10]),' está em algum lugar à esquerda
      de quem tem consulta às ',(trim z[5;40+⍳10]),'.'
[14]  r[13;]←140↑'A pessoa de camisa ',(trim z[1;20+⍳10]),' está em algum lugar entre a pe
      ssoa de camisa ',(trim z[1;0+⍳10]),' e a de camisa ',(trim z[1;30+⍳10]),' nessa ordem
      .'
[15]  r[14;]←140↑'O quarto paciente será atendido às ',(trim z[5;30+⍳10]),'.'
[16]  r[15;]←140↑'O paciente da dra. ',(trim z[4;30+⍳10]),' está em algum lugar entre os p
      acientes das doutoras ',(trim z[4;20+⍳10]),' e ',(trim z[4;40+⍳10]),' nessa ordem.'
[17]  r[16;]←140↑'O paciente da dra. ',(trim z[4;40+⍳10]),' está exatamente à direita de q
      uem lê a revista ',(trim z[3;30+⍳10]),'.'
[18]  r[17;]←140↑'O homem de camisa ',(trim z[1;10+⍳10]),' está em algum lugar entre quem
      lê ',(trim z[3;0+⍳10]),' e quem porta camisa ',(trim z[1;40+⍳10]),' nessa ordem.'
[19]  r[⍳17;]←r[17?17;]
-------------------------------------------------------------
[0]  r←ordenaz09 z;i;x
[1]  r←6 50⍴' '
[2]  i←1
[3] t1:→(i>6)/fim
[4]  r[i;]←,x[⍋AV⍋x←5 10⍴z[i;];]
[5]  i←i+1
[6]  →t1
[7] fim:r←(54⍴((10⍴1),0))⍀[2]r
-------------------------------------------------------------
```

```
[ 0]  opesq vivoz09a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivoz09 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PLz09   '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[60]  upag[3+1↑⍴presu;]←(1↓⍴upag)↑'⍀end{verbatim}'
[61]  →terminando
[62] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[63] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[64] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑↑
[65]  lixonol←aaa ⎕FM('c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.gpa')
[66]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[67] terminando:
[68]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[69]  relat[1↑⍴relat;;]←upag
[70]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[71] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[72]  lixonol←lixonol ⎕FM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.tex'
[73]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivoz10

```
[0]  r←tudo achamenos parte;zebra
[1]  zebra←12⍴1
[2]  zebra[parte[1],(3+parte[2]),(6+parte[3]),9+parte[4]]←0
[3]  r←zebra/[1]tudo
-------------------------------------------------------------
[0]  r←ajeita2 x;a
[1]  a←,x
[2]  r←4 4⍴a[1 2 5 6 9 10 13 14 3 4 7 8 11 12 15 16]
-------------------------------------------------------------
[ 0]  r←geracubo;x;y;i
[ 1] ⍝ rand
[ 2]  r←4 3 4⍴0
[ 3]  i←1
[ 4] te:→(i>4)/f0
[ 5]  y←1 1 1 2 2 2 3 3 3 4 4 4
[ 6] denovo:x←y[6?12]
[ 7]  →((1∈x)∧(2∈x)∧(3∈x)∧(4∈x))/okok
[ 8] ⍝   ⍞  ←'*'
[ 9]  →denovo
[10] okok:r[i;1;2]←x[1] ⋄ r[i;2;]←x[1+⍳4] ⋄ r[i;3;2]←x[6]
[11]  →(i=i←i+1)/te
[12] f0:
-------------------------------------------------------------
[ 0]  r←quem inverteca cas;xc
[ 1]  xc←,cas
[ 2]  →(quem=⍳16)/u1,u2,u3,u4,u5,u6,u7,u8,u9,ua,ub,uc,ud,ue,uf,ug
[ 3] u1:r←cas
[ 4]  →0
[ 5] u2:r←4 2⍴xc[1 2 3 4 5 6 8 7]   ⍝ +++-
[ 6]  →0
[ 7] u3:r←4 2⍴xc[1 2 3 4 6 5 7 8]   ⍝ ++-+
[ 8]  →0
[ 9] u4:r←4 2⍴xc[1 2 3 4 6 5 8 7]   ⍝ ++--
[10]  →0
[11] u5:r←4 2⍴xc[1 2 4 3 5 6 7 8]   ⍝ +-++
[12]  →0
[13] u6:r←4 2⍴xc[1 2 4 3 5 6 8 7]   ⍝ +-+-
[14]  →0
[15] u7:r←4 2⍴xc[1 2 4 3 6 5 7 8]   ⍝ +--+
[16]  →0
[17] u8:r←4 2⍴xc[1 2 4 3 6 5 8 7]   ⍝ +---
[18]  →0
[19] u9:r←4 2⍴xc[2 1 3 4 5 6 7 8]   ⍝ -+++   igual ao u8
[20]  →0
```

```
[21] ua:r←4 2ρxc[2 1 3 4 5 6 8 7]   ⍝ -++-   igual ao u7
[22]  →0
[23] ub:r←4 2ρxc[2 1 3 4 6 5 7 8]   ⍝ -+-+   igual ao u6
[24]  →0
[25] uc:r←4 2ρxc[2 1 3 4 6 5 8 7]   ⍝ -+--   igual ao u5
[26]  →0
[27] ud:r←4 2ρxc[2 1 4 3 5 6 7 8]   ⍝ --++   igual ao u4
[28]  →0
[29] ue:r←4 2ρxc[2 1 4 3 5 6 8 7]   ⍝ --+-   igual ao u3
[30]  →0
[31] uf:r←4 2ρxc[2 1 4 3 6 5 7 8]   ⍝ ---+   igual ao u2
[32]  →0
[33] ug:r←4 2ρxc[2 1 4 3 6 5 8 7]   ⍝ ----   ihual ao u1
[34]  →0
------------------------------------------------------------
[ 0]  r←montagra cu;cu1;ares;i
[ 1]  ares←12 3ρ0
[ 2]  i←1
[ 3] oba:→(i>4)/zero
[ 4]  cu1←cu[i;;]
[ 5]  ares[((i-1)×3)+1;]←cu1[1;2],cu1[3;2],i
[ 6]  ares[((i-1)×3)+2;]←cu1[2;1],cu1[2;3],i
[ 7]  ares[((i-1)×3)+3;]←cu1[2;2],cu1[2;4],i
[ 8]  →(i=i←i+1)/oba
[ 9] zero:r←ares
------------------------------------------------------------
[ 0]  r←resolgra ar;i;caso;quais;alfa;j;y;sc;x;quais2;caso2
[ 1]  H2←H1←4 0ρ0
[ 2]  x←81 4ρ0 ⋄ r←0ρ0
[ 3]  x[;1]←(27ρ1),(27ρ2),27ρ3 ⋄ x[;2]←81ρ(9ρ1),(9ρ2),9ρ3
[ 4]  x[;3]←81ρ(3ρ1),(3ρ2),3ρ3 ⋄ x[;4]←81ρ1 2 3
[ 5]  i←1
[ 6]  quais←81ρ0
[ 7] oja:→(i>81)/acabou
[ 8]  caso←4 2ρar[x[i;1];⍳2],ar[(3+x[i;2]);⍳2],ar[(6+x[i;3]);⍳2],ar[(9+x[i;4]);⍳2]
[ 9]  quais[i]←verifica caso
[10]  →(i=i←i+1)/oja
[11] acabou:
[12]  alfa←quais/⍳81
[13] ⍝ '  ρ=', 4 0   ⍕alfa
[14]  i←1
[15] uxa:→(i>⍴alfa)/aca2
[16]  sc←ar achamenos x[alfa[i];]
[17]  y←16 4ρ0
[18]  y[;1]←(8ρ1),8ρ2 ⋄ y[;2]←16ρ((4ρ1),4ρ2) ⋄ y[;3]←16ρ((2ρ1),2ρ2) ⋄ y[;4]←16ρ1 2
[19]  quais2←16ρ0
[20]  j←1
[21] oka:→(j>16)/uha
[22]  caso2←4 2ρsc[y[j;1];⍳2],sc[(2+y[j;2]);⍳2],sc[(4+y[j;3]);⍳2],sc[(6+y[j;4]);⍳2]
[23]  quais2[j]←verifica caso2
[24]  →(quais2[j]=0)/olk
[25]  H2←H2,caso2
[26] olk:→(j=j←j+1)/oka
[27] uha:   ⍝ □  ←'&'
[28]  →(1∈quais2)/achou
[29]  →(i=i←i+1)/uxa
[30] achou:
[31]  H1←H1,4 2ρar[x[alfa[i];1];⍳2],ar[3+x[alfa[i];2];⍳2],ar[6+x[alfa[i];3];⍳2],ar[9+x[alf
      a[i];4];⍳2]
[32]  r←r,alfa[i]
[33]  →(i=i←i+1)/uxa
[34] aca2:
------------------------------------------------------------
```

```
[0]  r←testacol kk;j1;j2
[1]  j1←,kk[;1] ⋄ j2←,kk[;2]
[2]  j1←j1[⍋j1] ⋄ j2←j2[⍋j2]
[3]  →(8=+/1 2 3 4 1 2 3 4=j1,j2)/bom1
[4]  r←0
[5]  →0
[6] bom1:r←1
------------------------------------------------------------
[0]  r←verifafim caso4;xv;col1;col2
[1] ⍝ devolve 0 se o caso4 e podre e 1 senao
[2]  col1←,caso4[;1] ⋄ col2←,caso4[;2]
[3]  col1←col1[⍋col1] ⋄ col2←col2[⍋col2]
[4]  →(8=+/(col1=⍳4),(col2=⍳4))/sim
[5] nao:r←0
[6]  →fim2
[7] sim:r←1
[8] fim2:
------------------------------------------------------------
[0]  r←verifica caso4;xv;aai
[1]  aai←1
[2] vorta:→(aai>8)/nao   ⍝ era 16, mas nao precisa, basta 8.
[3]  →(1=verifafim aai inverteca caso4)/sim
[4]  →(aai=aai←aai+1)/vorta
[5] nao:r←0
[6]  →fim2
[7] sim:r←1
[8] fim2:
------------------------------------------------------------
[ 0]  opesq vivoz10a n;CORRECAO;EVENTO;ylu;relat;f;resp;xk;esse;dhx;resu;acuja;upag;lixono
      l;xixo;aa;bb;xx;cc;mask;dd;aaa;lixo1
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  CORRECAO←0 ⋄ EVENTO←'PLz10   '
[ 5]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 8]  FOLHALAz10←ajusta80 FOLHALAz10
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAz10)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[11]  xk←1 ⋄ resu←0 33⍴0
[12] testa:→(xk>1↑⍴ylu)/fim
[13]  esse←33 80⍴' '
[14]  f←FOLHALAz10
[15]  esse[1;]←80↑dhx[1;]
[16]  esse[2;]←80↑dhx[2;]
[17]  esse[3;]←80↑4 2⍎VERSAOa←3.45
[18]  esse[4;]←80↑ylu[xk;⍳6]
[19]  esse[5;]←80↑ylu[xk;6+⍳30]
[20]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[21]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[22]  esse[32;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[23]  esse[33;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[24] inica:
[25] tes1:xx←resolgra aa←montagra bb←geracubo
[26]  →(2=⍴xx)/okl
[27] furo:⍞←'*'
[28]  →tes1
[29] okl:
[30]  cc←bb[1;;],[2]bb[2;;],[2]bb[3;;],[2]bb[4;;]
[31]  dd←' 1234'[1+cc]
[32]  esse[7+⍳3;]←3 80↑(3 10⍴' '),dd[;⍳4]
```

```
[33]  esse[10+⍳3;]←3 80↑(3 10⍴' '),dd[;4+⍳4]
[34]  esse[13+⍳3;]←3 80↑(3 10⍴' '),dd[;8+⍳4]
[35]  esse[16+⍳3;]←3 80↑(3 10⍴' '),dd[;12+⍳4]
[36]  H1←ajeita2 ajeita H1
[37]  resp←resp,,H1
[38] ⍝--obs: a rigor o exercicio so pega o H1 como resposta. Ja que foram ge-
[39] ⍝ rados exercicios com 2 respostas. So que pela construcao do modelo,
[40] ⍝ essas duas respostas sao complementares, assim pegando so H1 (ou so
[41] ⍝ H2, a resposta estara OK.    kantek, 21/10/2002
[42] ⍝ criei ajeita2 para resolver uma anomalia na resposta. 28/10/07
[43] tes2:xx←resolgra aa←montagra bb←geracubo
[44]  →(2=⍴xx)/ok2
[45] furo2:⍞←'*'
[46]  →tes2
[47] ok2:
[48]  cc←bb[1;;],[2]bb[2;;],[2]bb[3;;],[2]bb[4;;]
[49]  dd←' 1234'[1+cc]
[50]  esse[19+⍳3;]←3 80↑(3 10⍴' '),dd[;⍳4]
[51]  esse[22+⍳3;]←3 80↑(3 10⍴' '),dd[;4+⍳4]
[52]  esse[25+⍳3;]←3 80↑(3 10⍴' '),dd[;8+⍳4]
[53]  esse[28+⍳3;]←3 80↑(3 10⍴' '),dd[;12+⍳4]
[54]  H1←ajeita2 ajeita H1
[55]  resp←resp,,H1
[56] ⍝--obs: a rigor o exercicio so pega o H1 como resposta. Ja que foram ge-
[57] ⍝ rados exercicios com 2 respostas. So que pela construcao do modelo,
[58] ⍝ essas duas respostas sao complementares, assim pegando so H1 (ou so
[59] ⍝ H2, a resposta estara OK.    kantek, 21/10/2002
[60]  resu←resu,[1]1 33⍴resp
[61] ⍝ criei ajeita2 para resolver uma anomalia na resposta. 28/10/07
[62]  acuja←(f[;2]='#')/⍳1↑⍴f
[63]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[64]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[65]  ⍞←(⍕xk←xk+1),'-'
[66]  →testa
[67] fim:upag←(1 0+⍴f)⍴' '
[68]  →(1=≡n)/elafa
[69]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[70]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[71]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←4 0,64⍴(6 0,(6⍴2 0),2 0,(6⍴2 0),4 0,(6⍴2 0),2 0,(6⍴
      2 0)))⍕resu
[72]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[73]  →terminando
[74] elafa:mask←64⍴4 0 2 0 4 0 2 0 4 0 2 0 4 0 2 0 14 0 2 0 4 0 2 0 4 0 2 0 4 0 2 0
[75]  aaa←(ylu,mask⍕0 1↓resu)
[76]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[77]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[78] terminando:
[79]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[80]  relat[1↑⍴relat;;]←upag
[81]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.t
      ex'
[82]  lixonol←⍞EX 2 10⍴'quantos   matriz    '
[83]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivoz11

```
[ 0]  COMOARRUMARASIMAGENS
[ 1]  'Carregue o ws que exige imagens'
[ 2]  'Aumente o numero de linhas de esse (1 linha por imagem)'
[ 3]  'Altere FOLHALAxxx, comentando a linha \includegra... e abrindo um'
[ 4]  '    \#yy, onde yy e a nova linha inserida em esse'
```

```
[ 5]  'Crie na funcao vivoxxxa,:'
[ 6]  '    No cabecalho, inclua "drive"'
[ 7]  '    Depois da inicializacao, faca drive←trim ΔFM "c:\apl2\imagem.whe"'
[ 8]  '    esse[ultimo]←... conteudo comentado'
[ 9]  '         dentro de FOLHALAxxx, que vem a ser:'
[10]  '    ←\includegraphics[scale=1],",drive,"/infoland/ima/kkkkk.eps '
-------------------------------------------------------------
[0]  COMOGERARPDFPARCIAL
[1]  'Chame o giz e na f.65 gere o pacote parcial (por exemplo: AL)'
[2]  'Carregue o ws vivodire e faca fazcadmat2 fazcadmat Pxx (no exemplo PAL)'
[3]  'depois numa janela DOS carregue o \apl2\TERA.BAT e faca as alteracoes'
[4]  'cabidas (principalmente no nome do arquivo destino final)'
-------------------------------------------------------------
[ 0]  COMOGERARPDFZAO
[ 1]  'Antes, chame )load ... vivo070 e rode vivotod'
[ 2]  ' depois,...'
[ 3]  'Faca x←geralistaunificada'
[ 4]  'Faca fazpdftodo x'
[ 5]  'Importante: no dos, no diretorio c:\apl2, rode tera70'
[ 6]  '    depois, rode tera'
[ 7]  '    depois rode o geradire'
[ 8]  '    e ainda rode o lates e depois o dvipdfm de paper_expl_vivo'
[ 9]  '    que esta e, f:\p\infoland, e depois do pdf gerado deve ser'
[10]  '    copiado para c:\apl2'
-------------------------------------------------------------
[ 0]  COMOGERARX3CASADO
[ 1]  'Este procedimento visa casar as aulas registradas no GIZ (opcao                '
[ 2]  'aulas) com os exercicios descritos em IKVI. O objetivo e redistribuir         '
[ 3]  'exercicios por disciplinas e eventualmente sugerir novas disciplinas...      '
[ 4]  '                                                                            '
[ 5]  '1. Para comecar, entre no diretorio do giz, chame o DBASE e execute        '
[ 6]  'o comando                                                                  '
[ 7]  '                  use GIZAUL3                                             '
[ 8]  '                  copy to lixoau sdf                                     '
[ 9]  'Este procedimento criara o arquivo LIXOAU.TXT                           '
[10]  '                                                                       '
[11]  '2. No APL2, chame VIVODIRE e execute gerax3casado que lera o           '
[12]  'arquivo acima em c:\giz\lixoau.txt e o comparara com x3, gerando um '
[13]  'novo x3 denominado X3CASADO que descrevera como os exercicios sao  '
[14]  'usados                                                            '
[15]  ' '
[16]  ' chamando gerax3casado2, funciona tudo igual, mas ele imprime tambem'
[17]  ' a chamada ao segundo exercicio de cada aula'
-------------------------------------------------------------
[0]  COMOINCLUIRPEDEMAIL
[1]  '1. faca ylu←(n,76)...'
[2]  '2. crie uma linha a mais em esse'
[3]  '3. esse[ul]←80↑pedemail ylu[xk;36+⍳40]'
[4]  '4. carregue pedemail (pode ser de vivo012)'
[5]  '5. em FOLHALAxx, apos a ultima linha'
[6]  '   \\[0.5cm]'
[7]  '   \#ul'
-------------------------------------------------------------
[ 0]  COMOPORCODIGOBARRA
[ 1]  '1. Aumentar esse em 2 linhas ou usar a ultima linha+1 se ja existir esta'
[ 2]  '2. em vivoxxxa, escrever'
[ 3]  '   esse[ult;⍳10]←"@",esse[6;5+⍳3],esse[4;1+⍳5],"@"'
[ 4]  '   esse[ult+1;]←80↑esse[6;5+⍳3],"-",esse[4;1+⍳5]," - ",opesq[6 7],"/",opesq[9 10]'
[ 5]  ''
[ 6]  '3. no final de FOLHALAxxx'
[ 7]  '   \fbox { \font \bcfont=wlc39 scaled 1000 {\bcfont'
[ 8]  '   \#ult'
[ 9]  '   }}'
```

```
[10]  '   ⍀#ult+1'
-------------------------------------------------------------
[0]  CORES2009
[1]  'verde = ALA'
[2]  'amarelo = ALB'
[3]  'rosa = EDN'
[4]  'azul = TPM e TPN'
[5]  'salmao = EDM'
[6]  'ciza/reciclado = ALM'
[7]  '90gr branco = controle meu'
-------------------------------------------------------------
[ 0]  ROTINASABADOS;r
[ 1]  r←0 70⍴' '
[ 2]  r←r,[1]70↑'Confirmar as mudancas de alunos'
[ 3]  r←r,[1]70↑'   a. Crie os arquivos no micro internet. Nome AA* (AA=ano)'
[ 4]  r←r,[1]70↑'   e grave-os em ⍀giz'
[ 5]  r←r,[1]70↑'   b. Rode giz e na opcao aluno, F3, geracao de arquivos mediante ANO'
[ 6]  r←r,[1]70↑'   c. Carregue ws=entrasai e execute x <- montamats turs'
[ 7]  r←r,[1]70↑'   d. examine x'
[ 8]  r←r,[1]70↑'recrie os arquivos ALU (giz : turmas : F6)'
[ 9]  r←r,[1]70↑'Preencher GIZ-PROGS com o planejamento da semana'
[10]  r←r,[1]70↑'Gerar GIZ-PROGS-PROGLA, imprimir e conferir'
[11]  r←r,[1]70↑'Confirmar se os WSs APL2 estao OK (sem erro e codigo barras OK...)'
[12]  r←r,[1]70↑'Gerar os exercicios AAxxxyyy no APL2'
[13]  r←r,[1]70↑'Compilar os exercicios gerados no LATEX'
[14]  r←r,[1]70↑'Imprimir os exercicios'
[15]  r←r,[1]70↑'Carregar no portal os exercicios complementares'
[16]  r←r,[1]70↑'Imprimir em folha salmão 1 exercicio complementar'
[17]  r←r,[1]70↑'Publicar as aulas da semana (ou só confirmar)'
[18]  r←r,[1]70↑'Carregar os eventos em GIZ-EVEN'
[19]  r←r,[1]70↑'Mover os arquivos *.GPA de ⍀apl2 para ⍀giz '
[20]  r←r,[1]70↑'Carregar GIZ-AVAL-captura ALLA'
[21]  r←r,[1]70↑'Mover arquivos *.GPA de ⍀giz para ⍀giz⍀gpa'
[22]  r←r,[1]70↑'Criar arquivos PDF da semana a partir dos DVI (dvipdfm)'
[23]  r←r,[1]70↑'Publicar os 09xxxyyy.PDF nas aulas correspondentes do portal'
[24]  r←r,[1]70↑'Apagar ⍀dbfs.zip e ⍀prgs⍀zip'
[25]  r←r,[1]70↑'Recuperar folhas feitas, descobrir data de corte e carimbar atrasados'
[26]  r←r,[1]70↑'corrigir folhas pendentes'
[27]  r←r,[1]70↑'Fazer em ⍀giz: VAIDISK'
[28]  r←r,[1]70↑'Backup de ⍀p⍀ no disco USB'
[29]  r←r,[1]70↑'Rodar um CHKDSK /F sobre o pendrive'
[30]  r←((1↑⍴r),80)↑1 numera r
[31]  CABE←ajusta80 CABE
[32]  CABE←CABE,[1]1 80⍴80↑'⍀large'
[33]  CABE←CABE,[1]1 80⍴80↑'⍀begin{verbatim}'
[34]  r←CABE,[1]r,[1]2 80⍴(80↑'⍀end{verbatim}'),80↑'⍀end{document}'
[35]  r ⎕FM'c:⍀apl2⍀listasab.tex'
[36]  'criado arquivo c:⍀apl2⍀listasab.tex'
-------------------------------------------------------------
[ 0]  r←acertaca x;i
[ 1]  r←3 78⍴' '
[ 2]  i←1
[ 3] t1:→(i>3)/fim
[ 4]  →(i≠1)/pulla
[ 5]  r[i;]←78↑(⍕x[i;1]),'&-',(⍕x[i;2]),'&-',(⍕x[i;3]),'&-',(⍕x[i;4]),'&...&',(⍕x[i;5]),'⍀
      ⍀ ⍀hline'
[ 6]  →vaii
[ 7] pulla:
[ 8]  r[i;]←78↑(⍕x[i;1]),'&-',(⍕x[i;2]),'&-',(⍕x[i;3]),'&-',(⍕x[i;4]),'&...&⍀⍀ ⍀hline'
[ 9] vaii:
[10]  i←i+1
[11]  →t1
[12] fim:
```

```
------------------------------------------------------------
[0]  r←achagrand x
[1]  r←(1=,GRANDEGRUPO[;1]=x)/⍳1↑⍴GRANDEGRUPO
------------------------------------------------------------
[0]  r←v3 achaliq t3;i
[1]  i←1
[2] t1:→(i>1↑⍴v3)/fim
[3]  →(3=+/t3=v3[i;⍳3])/achou
[4]  i←i+1
[5]  →t1
[6] achou:r←i
[7]  →0
[8] fim:'deu erro'
------------------------------------------------------------
[0]  r←achanovo x;ii
[1]  r←'   '
[2]  ii←(3=+/[2]NOVOVELHO[;1 2 3]=((1↑⍴NOVOVELHO),3)⍴x)/⍳1↑⍴NOVOVELHO
[3]  →(0=⍴ii)/0
[4]  r←NOVOVELHO[ii;4 5 6]
------------------------------------------------------------
[0]  r←analisalatex x
[1]  x←4 0↓x
[2]  r←'latex ',3 0⍕+/x[;5]='L'
[3]  r←r,'       '
[4]  r←r,'outros ',3 0⍕+/x[;5]≠'L'
------------------------------------------------------------
[0]  aviso
[1]  'Exercicios comecados com L sao os ja convertidos a latex'
[2]  'Os comecados com P sao aqueles que so tem PAPEL sem WS apl'
[3]  'Os comecados com I sao os VIVO e ja estao na base APL2'
------------------------------------------------------------
[ 0]  r←cortaz11 x;i;j;candi;met
[ 1]  r←46 80⍴' '
[ 2]  i←1 ⋄ j←1
[ 3] t1:→(i>23)/aca0
[ 4]  candi←160↑x[i;]
[ 5]  met←70
[ 6] testa:→(candi[met]=' ')/achou
[ 7]  met←met-1
[ 8]  →testa
[ 9] achou:r[j;]←80↑met↑x[i;]
[10]  r[j+1;]←80↑met↓x[i;]
[11]  i←i+1
[12]  j←j+2
[13]  →t1
[14] aca0:
------------------------------------------------------------
[ 0]  r←urca doctralatex quem;li;co;i;j;k;ind;xva;mat;dx
[ 1] ⍝fgera as macros latex para documentar em apl a texto (funcao?) apl
[ 2] ⍝roperando esquerda=titulo da sessao; direita:o texto apl a converter
[ 3] ⍝ exemplo: 'exemplo de convrsao' doctralatex ⎕cr 'edit'
[ 4]  mat←5 50⍴' '
[ 5]  mat[1;]←'≥α⍬⍜⊖⍟○⍳⊂⊥⊤∇≠÷⋄→↓Δ⊃∧≤≠±⍕⍋⍒⍞⍳⍝⌈⁻⌊∣⍫⍲⍱ω∨∈⍇⍁←⍴↑~≡¨∪×'
[ 6]  mat[3;]←'GARTCLLSCRDEDN%DGDLL&LCXFGGQI"CNFAPNNOOEDB_RUNDDU#'
[ 7]  mat[4;]←'EMVRRGOOBUENLE MOADU ESQMDUQO EGLBDNRMRPQX OATQDU '
[ 8]  mat[2;]←'@' ⋄ mat[5;]←'~'
[ 9]  mat[1+⍳3;30]←'"  '
[10]  →(2≠⍴⍴quem)/erro
[11] ⍝  →(urca  ∈quem)/erro
[12]  xva←(1↑⍴quem)⍴0
[13]  i←1
[14] t0:→(i>⍴xva)/f88
[15]  xva[i]←+/quem[i;]∈mat[1;]
```

```
[16]  →(i=i←i+1)/t0
[17] f88:li←1↑ρquem
[18]  co←1↓ρquem
[19]  r←(li,co+4×⌈/xva)ρ' '
[20]  i←1
[21] t1:→(i>li)/fim1
[22]  j←1 ⋄ k←1
[23] t2:→(j>co)/fim0
[24]  →(quem[i;j]∈mat[1;])/tem
[25]  r[i;k]←quem[i;j]
[26]  j←j+1
[27]  k←k+1
[28]  →t2
[29] tem:ind←(quem[i;j]=mat[1;])/⍳1↓ρmat
[30]  r[i;k+¯1+⍳4]←mat[2;ind],mat[3;ind],mat[4;ind],mat[5;ind]
[31]  j←j+1
[32]  k←k+4
[33]  →t2
[34] fim0:→(i=i←i+1)/t1
[35] erro:'deu xabu, troque a opcao '
[36] fim1:dx←1↓ρr
[37]  →(0=ρurca)/naotemurca
[38]  r←((2,dx)ρ(dx↑'\section{',urca,'}'),dx↑'\begintt'),[1]r
[39]  →conta69
[40] naotemurca:r←((1,dx)ρdx↑'\begintt'),[1]r
[41] conta69:r←r,[1]((1,dx)ρdx↑'\endtt')
-------------------------------------------------------------
[ 0]  r←fazcadmat qual;x;y;li;as;i;r;letra;ll
[ 1]  'Entre no GIZ e chame a funcao AULA'
[ 2]  'Dai gere a listagem 65'
[ 3]  'E informe a esta funcao APL o nome P+o que vc falou la no GIZ'
[ 4]  x←ΔFM'c:\giz\',qual
[ 5]  y←x[2+⍳¯2+1↑ρx;44+⍳4]
[ 6]  y
[ 7]  as←''''
[ 8]  r←0 100ρ' '
[ 9]  i←1
[10] t1:→(i>1↑ρy)/fim
[11]  letra←y[i;4]
[12]  →(letra='a')/ea
[13] naoe:
[14]  ll←letra
[15]  →junta
[16] ea:ll←' '
[17] junta:
[18]  li←100ρ' '
[19]  li[⍳29]←')copy ',as,'f:\p\apl2\vivo',y[i;1 2 3],'.apl',as
[20]  li[30+⍳12]←12↑'vivo',y[i;1 2 3 4],' 1'
[21]  li[42+⍳20]←20↑'latex pl',y[i;1 2 3],ll,' -quiet'
[22]  li[62+⍳20]←20↑'dvipdfm -s 1 pl',y[i;1 2 3],ll
[23]  →(ll≠' ')/uga
[24]  li[82+⍳18]←18↑'pl',y[i;1 2 3],'.pdf'
[25]  →juga
[26] uga:
[27]  li[82+⍳18]←18↑'pl',y[i;1 2 3],ll,'.pdf'
[28] juga:
[29]  r←r,[1]1 100ρli
[30]  i←i+1
[31]  →t1
[32] fim:LI←r
[33]  'SAIDA guardada com o nome de LI (global)'
-------------------------------------------------------------
[ 0]  r←fazcadmat2 lixotudo;lixo;i;tera;SHR101;coma;sinal;xxx
```

```
[ 1]  'tamanho do operador x',⍕⍴lixotudo
[ 2]  lixo←101 SVOFFER'SHR101'
[ 3]  sinal←1
[ 4]  tera←0 110⍴' '
[ 5]  coma←'pdftk '
[ 6]  i←1
[ 7] t1:
[ 8]  →(i>1↑⍴lixotudo)/fi8
[ 9]  SHR101←lixotudo[i;⍳30],⎕TC[2],lixotudo[i;30+⍳12],⎕TC[2],')clear'
[10] pula:
[11]  tera←tera,[1]1 110⍴110↑lixotudo[i;42+⍳20]
[12]  tera←tera,[1]1 110⍴110↑lixotudo[i;62+⍳20]
[13]  coma←coma,(trim lixotudo[i;82+⍳18]),' '
[14]  i←i+1
[15]  →(0≠7|i)/t1
[16] fi8:
[17]  coma←coma,' output a',('00'⍕sinal),' dont_ask'
[18]  sinal←sinal+1
[19]  tera←tera,[1]1 110⍴110↑coma
[20]  coma←'pdftk '
[21]  →(i>1↑⍴lixotudo)/gui
[22]  →t1
[23] gui:
[24]  tera←tera,[1]1 110⍴110↑'pdftk a01 a02 a03 a04 a05 a06 a07 a08 a09 a10 output b1 dont
      _ask'
[25]  tera←tera,[1]1 110⍴110↑'pdftk a11 a12 a13 a14 a15 a16 a17 a18 a19 a20 output b2 dont
      _ask'
[26]  tera←tera,[1]1 110⍴110↑'pdftk a21 a22 a23 a24 a25 a26 a27 a28 a29 a30 output b3 dont
      _ask'
[27]  tera←tera,[1]1 110⍴110↑'pdftk a31 a32 a33 a34 a35 a36 a37 a38 a39 a40 output b4 dont
      _ask'
[28]  tera←tera,[1]1 110⍴110↑'pdftk a41 a42 a43 a44 a45 a46 a47 a48 a49 a50 output b5 dont
      _ask'
[29]  tera←tera,[1]1 110⍴110↑'pdftk a51 a52 a53 a54 a55 output b6 dont_ask'
[30]  tera←tera,[1]1 110⍴110↑'pdftk b1 b2 b3 b4 b5 b6 output VIVOAULA.PDF '
[31]  tera ⎕FM'c:\apl2\tera.bat'
[32]  'arrume o tera gerado'
-------------------------------------------------------------
[ 0]  r←fazdiatodo1 lixotudo;lixo;i;tera;SHR101;coma;sinal;xxx
[ 1]  lixo←101 SVOFFER'SHR101'
[ 2]  i←1
[ 3] t1:
[ 4]  →(i>330)/fi8
[ 5]  SHR101←lixotudo[i;⍳30],⎕TC[2],lixotudo[i;30+⍳40],⎕TC[2],')clear'
[ 6]  i←i+1
[ 7]  →(0≠7|i)/t1
[ 8] fi8:
[ 9]  →(i>330)/gui
[10]  →t1
[11] gui:
-------------------------------------------------------------
[ 0]  r←fazdiatodo2 lixotudo;SHR101;coma;i;lixo;sinal;tera1;tera2;xxx
[ 1]  lixo←101 SVOFFER'SHR101'
[ 2]  i←1
[ 3] t1:
[ 4]  →(i>1↑⍴lixotudo)/fi8
[ 5]  →(i<331)/pula
[ 6]  SHR101←lixotudo[i;⍳30],⎕TC[2],lixotudo[i;30+⍳40],⎕TC[2],')clear'
[ 7] pula:
[ 8] ⍝ xxx←⎕
[ 9]  i←i+1
[10]  →(0≠7|i)/t1
[11] fi8:
```

```
[12]  →(i>1↑⍴lixotudo)/gui
[13]  →t1
[14] gui:
------------------------------------------------------------
[ 0]  r←fazdiatodo3 lixotudo;SHR101;coma;i;lixo;sinal;tera1;tera2;xxx
[ 1]  lixo←101 SVOFFER'SHR101'
[ 2]  i←1
[ 3] t1:
[ 4]  →(i>1↑⍴lixotudo)/fi8
[ 5]  →(i<661)/pula
[ 6]  SHR101←lixotudo[i;⍳30],⎕TC[2],lixotudo[i;30+⍳40],⎕TC[2],')clear'
[ 7] pula:
[ 8] ⍝ xxx←⎕
[ 9]  i←i+1
[10]  →(0≠7|i)/t1
[11] fi8:
[12]  →(i>1↑⍴lixotudo)/gui
[13]  →t1
[14] gui:
------------------------------------------------------------
[ 0]  r←fazfuntodo1 lixotudo;lixo;i;tera;SHR101;coma;sinal;xxx;asp
[ 1]  lixo←101 SVOFFER'SHR101' ⋄ asp←''''
[ 2]  i←1
[ 3] t1:
[ 4]  →(i>330)/fi8
[ 5]  SHR101←lixotudo[i;⍳30],⎕TC[2],')copy ',asp,'c:⍀apl2⍀vivofunc.apl',asp,⎕TC[2],asp,lix
      otudo[i;15+⍳7],asp,' docfuncoes stopwords',⎕TC[2],')clear'
[ 6]  i←i+1
[ 7]  →(0≠7|i)/t1
[ 8] fi8:
[ 9]  →(i>330)/gui
[10]  →t1
[11] gui:
------------------------------------------------------------
[ 0]  r←fazpdftodo1 lixotudo;lixo;i;tera;SHR101;coma;sinal;xxx
[ 1] ⍝ 'tamanho do operador x',⍕⍴lixotudo
[ 2] ⍝ geradire
[ 3] ⍝ geracartela
[ 4]  lixo←101 SVOFFER'SHR101'
[ 5]  i←1
[ 6] t1:
[ 7]  →(i>330)/fi8
[ 8]  SHR101←lixotudo[i;⍳30],⎕TC[2],lixotudo[i;30+⍳12],⎕TC[2],')clear'
[ 9]  i←i+1
[10]  →(0≠7|i)/t1
[11] fi8:
[12]  →(i>330)/gui
[13]  →t1
[14] gui:
[15] ⍝ SHR101←0
------------------------------------------------------------
[ 0]  r←fazpdftodo2 lixotudo;SHR101;coma;i;lixo;sinal;tera1;tera2;xx;xxx
[ 1]  lixo←101 SVOFFER'SHR101'
[ 2]  i←331
[ 3] t1:
[ 4]  →(i>661)/gui
[ 5]  SHR101←lixotudo[i;⍳30],⎕TC[2],lixotudo[i;30+⍳12],⎕TC[2],')clear'
[ 6] pula:
[ 7]  i←i+1
[ 8]  →t1
[ 9] gui:
------------------------------------------------------------
[ 0]  r←fazpdftodo3 lixotudo;SHR101;coma;i;lixo;sinal;tera1;tera2;xx;xxx
```

```
[ 1]  lixo←101 SVOFFER'SHR101'
[ 2]  i←661
[ 3] t1:
[ 4]  →(i>1↑⍴lixotudo)/gui
[ 5]  SHR101←lixotudo[i;⍳30],⎕TC[2],lixotudo[i;30+⍳12],⎕TC[2],')clear'
[ 6] pula:
[ 7]  i←i+1
[ 8]  →t1
[ 9] gui:
------------------------------------------------------------
[ 0]  r←fazpdftodo4 lixotudo;SHR101;coma;i;lixo;sinal;tera1;tera2;xx;xxx
[ 1] ⍝ 'tamanho do operador x',⍕⍴lixotudo
[ 2]  geradire
[ 3]  geracartela
[ 4]  sinal←1
[ 5]  tera1←tera2←0 110⍴' '
[ 6]  coma←'pdftk '
[ 7]  i←1
[ 8] t1:
[ 9]  →(i>1↑⍴lixotudo)/fi8
[10] pula:
[11]  →(lixotudo[i;56]='a')/branco
[12]  coma←coma,11↑(trim lixotudo[i;50+⍳6]),'.pdf'
[13]  tera1←tera1,[1]1 110⍴110↑(trim lixotudo[i;42+⍳14])
[14]  →puula
[15] branco:
[16]  tera1←tera1,[1]1 110⍴110↑lixotudo[i;42+⍳13]
[17]  coma←coma,10↑(trim lixotudo[i;50+⍳5]),'.pdf '
[18] puula:
[19]  i←i+1
[20]  →(0≠7|i)/t1
[21] fi8:
[22]  coma←coma,' output a',('00'⍕sinal),' dont_ask'
[23]  sinal←sinal+1
[24]  tera2←tera2,[1]1 110⍴110↑coma
[25]  coma←'pdftk '
[26]  →(i>1↑⍴lixotudo)/gui
[27]  →t1
[28] gui:
[29]  tera1 ⎕FM'c:\apl2\tera1.bat'
[30]  tera2←tera2,[1]1 110⍴110↑'latex diredire    '
[31]  tera2←tera2,[1]1 110⍴110↑'dvipdfm diredire  -q  '
[32]  tera2←tera2,[1]1 110⍴110↑'latex cartvivo    '
[33]  tera2←tera2,[1]1 110⍴110↑'dvipdfm cartvivo  -q  '
[34]  tera2←tera2,[1]1 110⍴110↑'pdftk a01 a02 a03 a04 a05 a06 a07 a08 a09 a10 output b1 '
[35]  tera2←tera2,[1]1 110⍴110↑'pdftk a11 a12 a13 a14 a15 a16 a17 a18 a19 a20 output b2 '
[36]  tera2←tera2,[1]1 110⍴110↑'pdftk a21 a22 a23 a24 a25 a26 a27 a28 a29 a30 output b3 '
[37]  tera2←tera2,[1]1 110⍴110↑'pdftk a31 a32 a33 a34 a35 a36 a37 a38 a39 a40 output b4 '
[38]  tera2←tera2,[1]1 110⍴110↑'pdftk a41 a42 a43 a44 a45 a46 a47 a48 a49 a50 output b5 '
[39]  tera2←tera2,[1]1 110⍴110↑'pdftk a51 a52 a53 a54 a55 a56 a57 a58 a59 a60 output b6 '
[40]  tera2←tera2,[1]1 110⍴110↑'pdftk a61 a62 a63 a64 a65 a66 a67 a68 a69 a70 output b7 '
[41]  tera2←tera2,[1]1 110⍴110↑'pdftk a71 a72 a73 a74 a75 a76 a77 a78 a79 a80 output b8 '
[42]  tera2←tera2,[1]1 110⍴110↑'pdftk a81 a82 a83 a84 a85 a86 a87 a88 a89 a90 output b9 '
[43]  tera2←tera2,[1]1 110⍴110↑'pdftk a91 a92 a93 a94 a95 a96 output ba dont_ask'
[44] ⍝ nao esquecer de incluir os arquivos faltantes a35, a36, ...
[45]  tera2←tera2,[1]1 110⍴110↑'copy c:\apl2\paper_expl_vivos.tex .'
[46]  tera2←tera2,[1]1 110⍴110↑'latex paper_expl_vivos'
[47]  tera2←tera2,[1]1 110⍴110↑'dvipdfm -o pap.pdf paper_expl_vivos -q '
[48]  tera2←tera2,[1]1 110⍴110↑'latex diredire'
[49]  tera2←tera2,[1]1 110⍴110↑'dvipdfm diredire -q '
[50]  tera2←tera2,[1]1 110⍴110↑'pdftk c:\apl2\capa.pdf pap.pdf c:\apl2\eista03.pdf diredir
      e.pdf cartvivo.pdf output b0 '
[51]  tera2←tera2,[1]1 110⍴110↑'pdftk b0 c:\apl2\exer_alg.pdf capa2.pdf b1 b2 b3 b4 b5 out
```

```
      put VIVOFLS1.PDF '
[52]  tera2←tera2,[1]1 110⍴110↑'pdftk b6 b7 b8 b9 ba output VIVOFLS2.PDF '
[53]  tera2←tera2,[1]1 110⍴110↑'pdftk VIVOFLS1.PDF VIVOFLS2.PDF output VIVOFLS.PDF '
[54]  tera2 ⎕FM'c:\apl2\tera5.bat'
[55]  'Gerado o arquivo c:\apl2\TERA.BAT, que devera ser executado...'
[56]  ' Rode antes STANDALONE o tera70'
-------------------------------------------------------------
[0]  g
[1]  IKVI←ajusta80 IKVI
[2]  x1←geralista1
[3]  x2←geralista2
[4]  x3←geralista3
[5]  x4←geralista4
-------------------------------------------------------------
[ 0]  geracartela;ik;i;ANT;li;tam;r
[ 1]  tam←78
[ 2]  IKVI←ajusta80 IKVI
[ 3]  r←(0,tam)⍴' '
[ 4]  ik←(80≠+/(IKVI=' '))/[1]IKVI
[ 5]  ik←ik[⍋AV⍋ik[;1+⍳7];]
[ 6]  i←1
[ 7]  ANT←'⍟'
[ 8] t1:→(i>1↑⍴ik)/fim
[ 9]  →(ik[i;2]=ANT)/segue
[10]  →(ANT='⍟')/oba
[11] ⍝ r←r,[1](1,tam)⍴tam↑'\end{longtable}'
[12]  r←r,[1](1,tam)⍴tam↑'\end{verbatim}'
[13] oba:
[14]  r←r,[1](1,tam)⍴tam↑'\subsubsection*{',,GRANDEGRUPO[achagrand ik[i;2];1+⍳29],'}'
[15] ⍝ r←r,[1](1,tam)⍴tam↑'\begin{longtable}{|p{0.7cm}|p{5.5cm}|p{0.3cm}|p{0.3cm}|} \hline
      '
[16]  r←r,[1](1,tam)⍴tam↑'\begin{verbatim}'
[17] ⍝segue:li←ik[i;1+⍳7],'&',trim ik[i;11+⍳39],'&',ik[i;58 59],'&',(,achanovo ik[i;1+⍳3])
      ,'\\ \hline'
[18] segue:li←ik[i;1+⍳7],' ',ik[i;11+⍳39],' ',ik[i;58 59],' ',(,achanovo ik[i;1+⍳3])
[19]  ANT←ik[i;2]
[20]  r←r,[1](1,tam)⍴tam↑li
[21]  i←i+1
[22]  →t1
[23] fim:
[24] ⍝ r←r,[1](1,tam)⍴tam↑'\end{longtable}'
[25]  r←r,[1](1,tam)⍴tam↑'\end{verbatim}'
[26]  r←(((1↑⍴CABECAR),tam)↑CABECAR),[1]r
[27]  r←r,[1](1,tam)⍴tam↑'Número de folhas: ',(⍕1↑⍴ik),'\\*'
[28]  r←r,[1](1,tam)⍴tam↑'Versto de ',('00/'⍕⎕TS[3]),('00/'⍕⎕TS[2]),('00'⍕⎕TS[1]-2000),' à
      s ',('00:'⍕⎕TS[4]),('00'⍕⎕TS[5])
[29]  r←r,[1](1,tam)⍴tam↑'\end{multicols*}'
[30]  r←r,[1](1,tam)⍴tam↑'\end{document}'
[31]  r ⎕FM'c:\apl2\cartvivo.tex'
[32]  'Arquivo criado com o nome de cartvivo.tex'
-------------------------------------------------------------
[ 0]  r←geracaso;z;x
[ 1]  r←0 5⍴0
[ 2] denovo:x←10000+?50000
[ 3]  z←raizq x
[ 4]  →(5>⍴FRASE)/denovo
[ 5]  →(0=FRASE[5])/denovo
[ 6]  r←1 5⍴x,FRASE[1 2 3 5]
[ 7] denovo2:x←40000+?10000
[ 8]  z←raizq x
[ 9]  →(5>⍴FRASE)/denovo2
[10]  →(0=FRASE[5])/denovo2
[11]  r←r,[1]1 5⍴x,FRASE[1 2 3 5]
```

```
[12] denovo4:x←10000+?20000
[13]  z←raizq x
[14]  →(5>ρFRASE)/denovo4
[15]  →(0=FRASE[5])/denovo4
[16]  r←r,[1]1 5ρx,FRASE[1 2 3 5]
------------------------------------------------------------
[0]  r←geracasoz11
[1]  r←6 50ρ' '
[2]  r[1;]←50ρCOR[5?10;]
[3]  r[2;]←50ρBLOCO[5?10;]
[4]  r[3;]←50ρARQUITETO[5?10;]
[5]  r[4;]←50ρIDADE[5?10;]
[6]  r[5;]←50ρVENDIDO[5?10;]
[7]  r[6;]←50ρTEM[5?10;]
------------------------------------------------------------
[ 0]  r←geradialunificada;xx;i;a;b;li;aux;as
[ 1]  as←''''
[ 2]  xx←IKVI
[ 3]  xx←xx[⎕AV⍋xx[;2 3 4 5];]
[ 4]  r←0 70ρ' '
[ 5]  i←1
[ 6] t1:→(i>1↑ρxx)/fim
[ 7]  li←70ρ' '
[ 8]  li[ι29]←29↑')copy ',as,'c:\apl2\vivo',xx[i;2 3 4],'.apl',as
[ 9]  li[30+ι40]←40↑')out ',as,'c:\vaiapl2\vivo',xx[i;2 3 4],'.atf',as
[10]  r←r,[1]1 70ρli
[11] soma:i←i+1
[12]  →t1
[13] fim:LI←li
[14]  'Tamanho da lista gerada: ',⍕1↑ρr
------------------------------------------------------------
[ 0]  r←geradir3 x;lin;i;tam
[ 1]  r←(((+/(,x[;1])='%')÷2),15)ρ' '
[ 2]  tam←0
[ 3]  lin←1
[ 4]  i←1
[ 5] t1:→(i>1↑ρx)/fim
[ 6]  →((x[i;1]='%')∧(x[i;2]='i'))/comeca
[ 7]  →((x[i;1]='%')∧(x[i;2]='f'))/termina
[ 8]  tam←tam+1
[ 9]  i←i+1
[10]  →t1
[11] comeca:r[lin;ι3]←x[i;3 4 5]
[12]  r[lin;5+ι5]←5 0⍕i
[13]  tam←0
[14]  i←i+1
[15]  →t1
[16] termina:r[lin;10+ι5]←5 0⍕tam
[17]  lin←lin+1
[18]  i←i+1
[19]  →t1
[20] fim:
------------------------------------------------------------
[ 0]  geradire;dhx;cabe;zz;fol;xk;bloco;iikbd;lixo
[ 1]  METOD←ajusta80 METOD
[ 2]  CABE←ajusta80 CABE
[ 3]  DESCR←ajusta80 DESCR
[ 4]  fol←0 80ρ' '
[ 5]  fol←fol,[1]CABE
[ 6]  fol←fol,[1]METOD
[ 7]  fol←fol,[1]1 80ρ80↑'\counterwithout{subsection}{section}'
[ 8]  fol←fol,[1]1 80ρ80↑'\tableofcontents'
[ 9]  fol←fol,[1]1 80ρ80↑'\chapter{Lista de exercícios}'
```

```
[10]  xk←1 ⋄ zz←geradir3 DESCR
[11]  zz←zz[⍋⎕AV⍋zz[;⍳3];]
[12] testa:→(xk>1↑⍴zz)/fim
[13]  iikbd←IKVI[;1+⍳3]achaliq zz[xk;⍳3]
[14]  bloco←50 80⍴' '
[15]  bloco[1;]←DESCR[(⍋zz[xk;5+⍳5])+1;]
[16]  bloco[2;]←80↑'código: ',(zz[xk;⍳3]),'⍀⍀'
[17]  →(8=+/IKVI[iikbd;51+⍳8]=' ')/pula
[18]  bloco[3;]←80↑'finalizado em ',IKVI[iikbd;51+⍳8],'⍀⍀'
[19] pula:bloco[3+⍳47;]←47 80↑DESCR[1+(⍋zz[xk;5+⍳5])+⍳⍋zz[xk;10+⍳5];]
[20]  fol←fol,[1]trim2 bloco
[21]  xk←xk+1
[22]  →testa
[23] fim:fol←fol,[1]1 80⍴80↑'⍀end{document}'
[24]  lixo←fol ⎕FM'c:⍀apl2⍀diredire.tex'
[25]  'gerada a cartela em c:⍀apl2⍀diredire.tex'
[26]  ZZ←zz
-------------------------------------------------------------
[ 0]  geradireparc quais;dhx;cabe;zz;fol;xk;bloco;iikbd
[ 1]  METOD←ajusta80 METOD
[ 2]  CABE←ajusta80 CABE
[ 3]  DESCR←ajusta80 DESCR
[ 4]  fol←0 80⍴' '
[ 5]  fol←fol,[1]CABE
[ 6]  fol←fol,[1]METOD
[ 7]  fol←fol,[1]1 80⍴80↑'⍀section*{Lista de exercícios}'
[ 8]  xk←1 ⋄ zz←geradir3 DESCR
[ 9] ⍝ zz←zz[⍋zz[;1];]
[10]  zz←zz[zz[;1]⍳quais;]
[11] testa:→(xk>1↑⍴zz)/fim
[12]  iikbd←(⍋,IKVI[;1+⍳3],' ')⍳zz[xk;1]
[13]  bloco←50 80⍴' '
[14]  bloco[1;]←DESCR[zz[xk;2]+1;]
[15]  bloco[2;]←80↑'código: ',(⍕zz[xk;1]),'⍀⍀'
[16]  →(8=+/IKVI[iikbd;51+⍳8]=' ')/pula
[17]  bloco[3;]←80↑'finalizado em ',IKVI[iikbd;51+⍳8],'⍀⍀'
[18] pula:bloco[3+⍳47;]←47 80↑DESCR[1+zz[xk;2]+⍳zz[xk;3];]
[19]  fol←fol,[1]trim2 bloco
[20]  xk←xk+1
[21]  →testa
[22] fim:fol←fol,[1]1 80⍴80↑'⍀end{document}'
[23]  fol ⎕FM'c:⍀apl2⍀diredire.tex'
-------------------------------------------------------------
[0]  geragiz;x;y
[1]  x←(80≠+/[2]IKVI=' ')/[1]IKVI
[2]  y←x[;2 3 4 5,(11+⍳39),(51+⍳8)]
[3]  y ⎕FM'c:⍀giz⍀GVT'
[4]  'feito'
-------------------------------------------------------------
[0]  r←geralista1;y;j;x
[1]  'ordena pelas 8 primeiras posicoes'
[2]  r←IKVI[⍋⎕AV⍋IKVI[;1+⍳7];]
-------------------------------------------------------------
[ 0]  r←geralista2;y;j;x
[ 1]  'ordena pela antiguidade'
[ 2]  x←720 59↑IKVI
[ 3]  x←x[⍋⎕AV⍋x[;8+⍳3];]
[ 4]  ⍴x
[ 5]  x←(1 0 1 1 1 1 1 1 0 1 1 1 0,(39⍴1),0 1 0,8⍴1)⍀[2]x
[ 6]  j←12 66 64⍴' '
[ 7]  j[;1;]←12 64⍴64↑'T NUM     SEQ Descricao                                N Data'
[ 8]  j[;2;]←12 64⍴64↑'= ======= === ======================================== = =========='
[ 9]  j[1;2+⍳60;]←x[⍳60;]
```

```
[10]  j[2;2+⍳60;]←x[60+⍳60;]
[11]  j[3;2+⍳60;]←x[120+⍳60;]
[12]  j[4;2+⍳60;]←x[180+⍳60;]
[13]  j[5;2+⍳60;]←x[240+⍳60;]
[14]  j[6;2+⍳60;]←x[300+⍳60;]
[15]  j[7;2+⍳60;]←x[360+⍳60;]
[16]  j[8;2+⍳60;]←x[420+⍳60;]
[17]  j[9;2+⍳60;]←x[480+⍳60;]
[18]  j[10;2+⍳60;]←x[540+⍳60;]
[19]  j[11;2+⍳60;]←x[600+⍳60;]
[20]  j[12;2+⍳60;]←x[660+⍳60;]
[21]  r←j[1;;],[1]j[2;;],[1]j[3;;],[1]j[4;;],[1]j[5;;],[1]j[6;;],[1]j[7;;],[1]j[8;;],[1]j[
      9;;],[1]j[10;;],[1]j[11;;],[1]j[12;;]
[22]  r←(~⍱⍲0=+/r=' ')/[1]r
-------------------------------------------------------------
[ 0]  r←geralista3;y;j;x
[ 1]  'ordena so pelo numero'
[ 2]  x←780 59↑IKVI
[ 3]  x←(59≠+/x=' ')/[1]x
[ 4]  x←x[⍋AV⍋x[;1+⍳4];]
[ 5]  x←(660,59)↑x
[ 6]  x←(1 0 1 1 1 1 1 1 1 0 1 1 1 0,(39⍴1),0 1 0,8⍴1)⌿[2]x
[ 7]  j←13 66 64⍴' '
[ 8]  j[;1;]←13 64⍴64↑'T NUM     SEQ Descricao                                    N Data'
[ 9]  j[;2;]←13 64⍴64↑'= ======= === ======================================== = =========='
[10]  j[1;2+⍳60;]←x[⍳60;]
[11]  j[2;2+⍳60;]←x[60+⍳60;]
[12]  j[3;2+⍳60;]←x[120+⍳60;]
[13]  j[4;2+⍳60;]←x[180+⍳60;]
[14]  j[5;2+⍳60;]←x[240+⍳60;]
[15]  j[6;2+⍳60;]←x[300+⍳60;]
[16]  j[7;2+⍳60;]←x[360+⍳60;]
[17]  j[8;2+⍳60;]←x[420+⍳60;]
[18]  j[9;2+⍳60;]←x[480+⍳60;]
[19]  j[10;2+⍳60;]←x[540+⍳60;]
[20]  j[11;2+⍳60;]←x[600+⍳60;]
[21]  r←j[1;;],[1]j[2;;],[1]j[3;;],[1]j[4;;],[1]j[5;;],[1]j[6;;],[1]j[7;;],[1]j[8;;],[1]j[
      9;;],[1]j[10;;],[1]j[11;;] ⍝,[1]j[12;;],[1]j[13;;]
[22] ⍝ para acertar em 3 folhas de 66 linhas, tire o proximo comando
[23] ⍝ r←(~⍱⍲0=+/r=' ')/[1]r
-------------------------------------------------------------
[ 0]  x←geralista4;kk;zz;gg;kika;azi;i;r;a;b
[ 1]  'ordena pela usabilidade + posicoes numericas do codigo'
[ 2]  x←700 70↑IKVI
[ 3]  x←(70≠+/x=' ')/[1]x
[ 4]  →oba
[ 5]  x←x[⍋AV⍋(x[;51],[2]x[;1+⍳4]);]
[ 6]  'Listagem de exercicios'
[ 7]  kk←x[;51 2],' '
[ 8]  kk←⍪,kk
[ 9]  zz←(+/kk<17),(+/(kk>20)∧(kk<27)),(+/(kk>30)∧(kk<37)),+/(kk>40)∧kk<47
[10]  zz←zz,(+/kk=17),(+/kk=27),(+/kk=37),+/kk=47
[11]  zz←zz,(+/(kk>17)∧(kk<20)),(+/(kk>27)∧(kk<30)),(+/(kk>37)∧(kk<40)),+/(kk>47)∧kk<50
[12]  zz←3 4⍴zz
[13]  zz←zz,[1]+/[1]zz
[14]  zz←zz,[2]+/[2]zz
[15]  gg←5 6⍴0 ⋄ gg[1;]←' ',(⊂'C1'),(⊂'C2'),(⊂'C3'),(⊂'C4'),⊂'TOT'
[16]  gg[;1]←' ',(⊂'ED'),(⊂'TO'),(⊂'IA'),⊂'TOT'
[17]  gg[1+⍳4;1+⍳5]←zz
[18]  gg
[19] oba:
[20]  'Qtd I=',(⍕+/IKVI[;1]='I'),'  Qtd L=',(+/IKVI[;1]='L'),'   Qtd V=',(⍕+/IKVI[;1]='V')
      ,'  Qtd P=',(⍕+/IKVI[;1]='P')
```

```
[21]  '------------------------------'
[22]  'Listagem por anos'
[23]  kika←x[;57+⍳2]
[24]  kika←' 7'edit kika
[25]  kika←⍪,kika,' '
[26]  azi←tiraduplo kika
[27]  i←1 ⋄ r←((⍴azi),2)⍴0
[28]  r[;1]←azi
[29] ⍝ r[;1]←77 0 edit r[;1]
[30] t1:→(i>⍴azi)/fim
[31]  r[i;2]←+/kika=azi[i]
[32]  →(r[i;1]<70)/menos
[33]  r[i;1]←r[i;1]+1900
[34]  →junta
[35] menos:r[i;1]←r[i;1]+2000
[36] junta:
[37]  →(i=i←i+1)/t1
[38] fim:
[39]  a←r[⍋r[;1];]
[40]  b←r[⍒r[;2];]
[41]  b
[42]  a,' ',' ','|',' ',' ',1 numera b
-------------------------------------------------------------
[ 0]  r←geralistaunificad2;xx;i;a;b;li;aux;as
[ 1]  as←''''
[ 2]  xx←IKVI
[ 3]  xx←xx[⍋⎕AV⍋xx[;2 3 4 5];]
[ 4]  r←0 100⍴' '
[ 5]  i←1
[ 6]  a←'a'
[ 7]  b←'b'
[ 8] t1:→(i>1↑⍴xx)/fim
[ 9]  →(xx[i;1]='P')/soma
[10]  →(xx[i;1]='V')/soma
[11]  li←100⍴' '
[12]  li[⍳29]←29↑')copy ',as,'c:\apl2\vivo',xx[i;2 3 4],'.apl',as
[13]  li[30+⍳12]←12↑'vivo',xx[i;2 3 4 5],' 1'  ⍝ era 2 para vivos/carimbo
[14]  →(li[38]≠'a')/efogo
[15]  →(3=+/'070'=xx[i;2 3 4])/ikaa
[16]  li[42+⍳20]←20↑'call mpdf pl',xx[i;2 3 4]
[17] ⍝ li[42+⍳20]←20↑'car pl',xx[i;2 3 4],'        '⍝ para vivo/carimbo
[18]  →(3=+/xx[i;2 3 4]='947')/mandaver
[19]  →(3=+/xx[i;2 3 4]='138')/mandaver
[20]  →(3=+/xx[i;2 3 4]='026')/mandaver
[21]  →(3=+/xx[i;2 3 4]='028')/mandaver
[22]  →(3=+/xx[i;2 3 4]='032')/mandaver
[23]  li[62+⍳20]←20↑'call pega1 pl',xx[i;2 3 4] ⍝,'.pdf'
[24]  →junta2
[25] mandaver:
[26]  li[62+⍳20]←20↑'call pega1 pl',xx[i;2 3 4] ⍝ ,'.pdf'
[27] junta2:
[28] ik:li[82+⍳18]←18↑'pl',xx[i;2 3 4],'.pdf'
[29]  →(4=+/'    '=xx[i;2 3 4 5])/soma
[30]  r←r,[1]1 100⍴li
[31]  →soma
[32] ikaa:
[33]  li[30+⍳11]←'vivotod    '
[34]  li[42+⍳20]←20↑'echo rode tera70 '
[35]  li[62+⍳20]←20↑' '
[36]  li[82+⍳18]←18↑'pl070.pdf'
[37]  r←r,[1]1 100⍴li
[38]  →soma
[39] efogo:
```

```
[40]  li[42+⍳20]←20↑'call mpdf pl',xx[i;2 3 4 5]
[41]  li[62+⍳20]←20↑'call pega1 pl',xx[i;2 3 4 5] ⍵,'.pdf'
[42]  li[82+⍳18]←18↑'pl',xx[i;2 3 4 5],'.pdf'
[43]  →(4=+/'    '=xx[i;2 3 4 5])/soma
[44]  r←r,[1]1 100⍴li
[45] soma:i←i+1
[46]  →t1
[47] fim:LI←li
[48]  'Tamanho da lista gerada: ',⍕1↑⍴r
-------------------------------------------------------------
[ 0]  r←geralistaunificada;xx;i;a;b;li;aux;as
[ 1]  as←''''
[ 2]  xx←IKVI
[ 3]  xx←xx[⍋AV⍋xx[;2 3 4 5];]
[ 4]  r←0 100⍴' '
[ 5]  i←1
[ 6]  a←'a'
[ 7]  b←'b'
[ 8] t1:→(i>1↑⍴xx)/fim
[ 9]  →(xx[i;1]='P')/soma
[10]  →(xx[i;1]='V')/soma
[11]  li←100⍴' '
[12]  li[⍳29]←29↑')copy ',as,'c:\apl2\vivo',xx[i;2 3 4],'.apl',as
[13]  li[30+⍳12]←12↑'vivo',xx[i;2 3 4 5],' 1'  ⍝ era 2 para vivos/carimbo
[14]  →(li[38]≠'a')/efogo
[15]  →(3=+/'070'=xx[i;2 3 4])/ikaa
[16]  li[42+⍳20]←20↑'latex pl',xx[i;2 3 4],' -quiet'
[17] ⍝ li[42+⍳20]←20↑'car pl',xx[i;2 3 4],'        'A para vivo/carimbo
[18]  →(3=+/xx[i;2 3 4]='947')/mandaver
[19]  →(3=+/xx[i;2 3 4]='138')/mandaver
[20]  →(3=+/xx[i;2 3 4]='026')/mandaver
[21]  →(3=+/xx[i;2 3 4]='028')/mandaver
[22]  →(3=+/xx[i;2 3 4]='032')/mandaver
[23]  li[62+⍳25]←25↑'dvipdfm -s 1 pl',xx[i;2 3 4],' -q'
[24]  →junta2
[25] mandaver:
[26]  li[62+⍳25]←25↑'dvipdfm pl',xx[i;2 3 4],' -q'
[27] junta2:
[28] ik:li[87+⍳13]←13↑'pl',xx[i;2 3 4],'.pdf'
[29]  →(4=+/'    '=xx[i;2 3 4 5])/soma
[30]  r←r,[1]1 100⍴li
[31]  →soma
[32] ikaa:
[33]  li[30+⍳11]←'vivotod    '
[34]  li[42+⍳20]←20↑'echo rode tera70 '
[35]  li[62+⍳25]←25↑' '
[36]  li[87+⍳13]←13↑'pl070.pdf'
[37]  r←r,[1]1 100⍴li
[38]  →soma
[39] efogo:
[40]  li[42+⍳20]←20↑'latex pl',xx[i;2 3 4 5],' -quiet'
[41]  li[62+⍳25]←25↑'dvipdfm -s 1 pl',xx[i;2 3 4 5],' -q'
[42]  li[87+⍳13]←13↑'pl',xx[i;2 3 4 5],'.pdf'
[43]  →(4=+/'    '=xx[i;2 3 4 5])/soma
[44]  r←r,[1]1 100⍴li
[45] soma:i←i+1
[46]  →t1
[47] fim:LI←li
[48]  'Tamanho da lista gerada: ',⍕1↑⍴r
-------------------------------------------------------------
[ 0]  r←geralistaunificada3;xx;i;a;b;li;aux;as
[ 1]  as←''''
[ 2]  xx←IKVI
```

```
[ 3]  xx←xx[⍋AV⍋xx[;2 3 4 5];]
[ 4]  r←0 57⍴' '
[ 5]  i←1
[ 6] t1:→(i>1↑⍴xx)/fim
[ 7]  →(xx[i;1]='P')/soma
[ 8]  →(xx[i;1]='V')/soma
[ 9]  li←57⍴' '
[10]  li[⍳29]←29↑')copy ',as,'c:\apl2\vivo',xx[i;2 3 4],'.apl',as
[11]  li[30+⍳12]←12↑'vivo',xx[i;2 3 4 5],' 1'  ⍝ era 2 para vivos/carimbo
[12] ⍝ →(li[38]≠'a')/efogo
[13]  →(3=+/'070'=xx[i;2 3 4])/ikaa
[14]  →(3=+/xx[i;2 3 4]='947')/mandaver
[15]  →(3=+/xx[i;2 3 4]='138')/mandaver
[16]  →(3=+/xx[i;2 3 4]='026')/mandaver
[17] ⍝ →(3=+/xx[i;2 3 4]='028')/mandaver   porque o 028 era assim ?
[18]  →(3=+/xx[i;2 3 4]='032')/mandaver
[19]  li[42+⍳15]←15↑'call p1 pl',xx[i;2 3 4 5]
[20]  →junta2
[21] mandaver:
[22]  li[42+⍳15]←15↑'call p0 pl',xx[i;2 3 4 5]
[23] junta2:
[24]  →(4=+/'    '=xx[i;2 3 4 5])/soma
[25]  r←r,[1]1 57⍴li
[26]  →soma
[27] ikaa:
[28]  li[30+⍳11]←'vivotod    '
[29]  li[42+⍳15]←15↑'echo rode tera70 '
[30] ⍝li[62+⍳25]←25↑' '
[31] ⍝ li[87+⍳13]←13↑'pl070.pdf'
[32]  r←r,[1]1 57⍴li
[33]  →soma
[34] ⍝efogo:
[35] ⍝ li[42+⍳20]←20↑'latex pl',xx[i;2 3 4 5],' -quiet'
[36] ⍝ li[62+⍳25]←25↑'dvipdfm -s 1 pl',xx[i;2 3 4 5],' -q'
[37] ⍝ li[87+⍳13]←13↑'pl',xx[i;2 3 4 5],'.pdf'
[38] ⍝ →(4=+/'    '=xx[i;2 3 4 5])/soma
[39] ⍝ r←r,[1]1 100⍴li
[40] soma:i←i+1
[41]  →t1
[42] fim:LI←li
[43]  'Tamanho da lista gerada: ',⍕1↑⍴r
------------------------------------------------------------
[ 0]  gerax3casado;au;cols;ex;i;ids;j;v1;x
[ 1]  'pressupoe x3 atualizado e arquivo LIXOAU.TXT gerado em c:\giz'
[ 2]  ' para tanto: dbase, use gizaul3, copy to lixoau sdf'
[ 3]  au←⎕FM'c:\giz\lixoau.txt'
[ 4]  'au='
[ 5] ⍝au
[ 6]  'veja x3casado neste ws'
[ 7]  x3casado←x3[;⍳54]
[ 8]  x3casado←((1↑⍴x3casado),90)↑x3casado
[ 9]  i←1
[10] t1:→(i>1↑⍴au)/fim
[11]  ex←au[i;37+⍳4]   ⍝ era 37, depois 29
[12] ⍝ 'ex=',ex
[13]  →(4=+/' '=ex)/ufa
[14]  v1←x3casado[;2+⍳4]
[15]  ids←(4=+/[2]v1=(⍴v1)⍴ex)/⍳1↑⍴x3casado
[16]  j←1
[17] t2:→(j>⍴ids)/ufa
[18]  cols←55
[19] oba:→(cols=90)/soma66
[20]  →((5=+/x3casado[ids[j];cols+⍳5]=' ')∧(au[i;1]≠'H'))/podepor
```

```
[21]  cols←cols+5
[22]  →oba
[23] podepor:x3casado[ids[j];cols+⍳5]←au[i;⍳5]
[24] soma66:
[25]  j←j+1
[26]  →t2
[27] ufa:i←i+1
[28]  →t1
[29] fim:   ⍝ calculo das linhas de x3casado que nao sao usados em nenhuma aula
[30]  i←1
[31] t99:→(i>1↑⍴x3casado)/finzao
[32]  →((x3casado[i;1]=' ')∨(x3casado[i;1]='T')∨(x3casado[i;1]='=')∨(x3casado[i;56]≠' '))/
      enao
[33]  x3casado[i;⍳50]
[34] enao:i←i+1
[35]  →t99
[36] finzao:
[37]  x3casado←((1,1↓⍴x3casado)⍴' '),[1]x3casado
[38]  x3casado[1;⍳⍴x]←x←(20⍴' '),'gerado em ','00 00 00'⍞TS[3 2 1]-0 0 2000
-------------------------------------------------------------
[ 0]  gerax3casado2;au;i;ex;v1;ids;j;cols
[ 1]  'pressupoe x3 atualizado e arquivo LIXOAU.TXT gerado em c:\giz'
[ 2]  ' para tanto faca: dbase <enter> use gizaul3 <enter> copy to lixoau sdf'
[ 3]  au←⍎FM'c:\giz\lixoau.txt'
[ 4]  'veja x3casado neste ws'
[ 5]  x3casado←x3[;⍳54]
[ 6]  x3casado←((1↑⍴x3casado),70)↑x3casado
[ 7]  i←1
[ 8] t1:→(i>1↑⍴au)/fim
[ 9]  ex←au[i;29+⍳4]    ⍝ era 37
[10]  →(4=+/' '=ex)/ufa
[11]  v1←x3casado[;2+⍳4]
[12]  ids←(4=+/[2]v1=(⍴v1)⍴ex)/⍳1↑⍴x3casado
[13]  j←1
[14] t2:→(j>⍴ids)/ufa
[15]  cols←55
[16] oba:→(5=+/x3casado[ids[j];cols+⍳5]=' ')/podepor
[17]  cols←cols+5
[18]  →oba
[19] podepor:x3casado[ids[j];cols+⍳5]←au[i;⍳5]
[20]  j←j+1
[21]  →t2
[22] ufa:
[23]  ex←au[i;34+⍳4]   ⍝ era 42
[24]  →(4=+/' '=ex)/ufa2
[25]  v1←x3casado[;2+⍳4]
[26]  ids←(4=+/[2]v1=(⍴v1)⍴ex)/⍳1↑⍴x3casado
[27]  j←1
[28] t2x:→(j>⍴ids)/ufa2
[29]  cols←55
[30] obax:→(5=+/x3casado[ids[j];cols+⍳5]=' ')/podeporx
[31]  cols←cols+5
[32]  →obax
[33] podeporx:x3casado[ids[j];cols+⍳5]←au[i;⍳4],'s'
[34]  j←j+1
[35]  →t2x
[36] ufa2:
[37]  i←i+1
[38]  →t1
[39] fim:
-------------------------------------------------------------
[ 0]  listatodassumas x;i;z;lixo;SHR101;aspa;aa;y
[ 1] ⍝ esta funcao lista todas as sumas
```

```
[ 2]  y←x[;1+⍳3]
[ 3]  aspa←''''
[ 4]  y←y[⎕AV⍋x;]
[ 5]  →zebra
[ 6]  z←0 60⍴' '
[ 7]  i←1
[ 8] t7:→(i>1↑⍴y)/oba
[ 9]  z←z,[1]1 60⍴60↑'latex suma',y[i;]
[10]  z←z,[1]1 60⍴60↑'dvipdfm suma',y[i;]
[11] t8:
[12]  i←i+1
[13]  →t7
[14] oba:
[15]  z ⎕FM'c:⍀apl2⍀lsuma.bat'
[16]  'primeira parte OK'
[17] zebra:
[18]  lixo←101 SVOFFER'SHR101'
[19]  SHR101←0
[20]  i←1
[21] t1:→(i>300)/fim
[22]  aa←')copy ',aspa,'f:⍀p⍀apl2⍀vivo',y[i;],'.apl',aspa,⎕TC[2],'listasuma',⎕TC[2],'⎕io',
      ⎕TC[2],')clear'
[23]  SHR101←aa
[24] t2:
[25]  i←i+1
[26]  →(i>300)/fim
[27]  →(3=+/y[i;]=y[i-1;])/t2
[28]  →t1
[29] fim:
[30]  SHR101←0
------------------------------------------------------------
[ 0]  r←makepdf1 lixotudo;lixo;i;tera;SHR101;coma;sinal;xxx
[ 1] ⍝ 'tamanho do operador x',⍕⍴lixotudo
[ 2] ⍝ geradire
[ 3] ⍝ geracartela
[ 4]  lixo←101 SVOFFER'SHR101'
[ 5]  i←1
[ 6] t1:
[ 7]  →(i>330)/gui
[ 8]  SHR101←lixotudo[i;⍳30],⎕TC[2],lixotudo[i;30+⍳12],⎕TC[2],')clear'
[ 9]  i←i+1
[10]  →t1
[11] gui:
[12] ⍝ SHR101←0
------------------------------------------------------------
[ 0]  r←makepdf2 lixotudo;lixo;i;tera;SHR101;coma;sinal;xxx
[ 1] ⍝ 'tamanho do operador x',⍕⍴lixotudo
[ 2] ⍝ geradire
[ 3] ⍝ geracartela
[ 4]  lixo←101 SVOFFER'SHR101'
[ 5]  i←331
[ 6] t1:→(i>1↑⍴lixotudo)/gui
[ 7]  SHR101←lixotudo[i;⍳30],⎕TC[2],lixotudo[i;30+⍳12],⎕TC[2],')clear'
[ 8]  i←i+1
[ 9]  →t1
[10] gui:
[11] ⍝ SHR101←0
------------------------------------------------------------
[ 0]  r←makepdf3 lixotudo;lixo;i;tera1;tera2;coma;sinal;xxx
[ 1] ⍝ 'tamanho do operador x',⍕⍴lixotudo
[ 2] ⍝ geradire
[ 3] ⍝ geracartela
[ 4]  tera1←0 14⍴' '
```

```
[ 5]  tera2←0 110⍴' '
[ 6]  coma←'pdftk '
[ 7]  sinal←1
[ 8]  i←1
[ 9] t1:
[10]  →(i>1↑⍴lixotudo)/fi8
[11]  →(lixotudo[i;56]='a')/menos
[12]  tera1←tera1,[1]lixotudo[i;42+⍳14]
[13]  coma←coma,lixotudo[i;50+⍳6],'.pdf '
[14]  →soma
[15] menos:
[16]  tera1←tera1,[1]lixotudo[i;42+⍳13],' '
[17]  coma←coma,lixotudo[i;50+⍳5],'.pdf '
[18] soma:
[19]  i←i+1
[20]  →(0≠7|i)/t1
[21] fi8:
[22]  coma←coma,' output a',('00'⍕sinal),' dont_ask'
[23]  sinal←sinal+1
[24]  tera2←tera2,[1]1 110⍴110↑coma
[25]  coma←'pdftk '
[26]  →(i>1↑⍴lixotudo)/gui
[27]  →t1
[28] gui:
[29]  tera2←tera2,[1]1 110⍴110↑'latex diredire    '
[30]  tera2←tera2,[1]1 110⍴110↑'dvipdfm diredire  -q  '
[31]  tera2←tera2,[1]1 110⍴110↑'latex cartvivo    '
[32]  tera2←tera2,[1]1 110⍴110↑'dvipdfm cartvivo -q '
[33]  tera2←tera2,[1]1 110⍴110↑'pdftk a01 a02 a03 a04 a05 a06 a07 a08 a09 a10 output b1 do
      nt_ask'
[34]  tera2←tera2,[1]1 110⍴110↑'pdftk a11 a12 a13 a14 a15 a16 a17 a18 a19 a20 output b2 do
      nt_ask'
[35]  tera2←tera2,[1]1 110⍴110↑'pdftk a21 a22 a23 a24 a25 a26 a27 a28 a29 a30 output b3 do
      nt_ask'
[36]  tera2←tera2,[1]1 110⍴110↑'pdftk a31 a32 a33 a34 a35 a36 a37 a38 a39 a40 output b4 do
      nt_ask'
[37]  tera2←tera2,[1]1 110⍴110↑'pdftk a41 a42 a43 a44 a45 a46 a47 a48 a49 a50 output b5 do
      nt_ask'
[38]  tera2←tera2,[1]1 110⍴110↑'pdftk a51 a52 a53 a54 a55 a56 a57 a58 a59 a60 output b6 do
      nt_ask'
[39]  tera2←tera2,[1]1 110⍴110↑'pdftk a61 a62 a63 a64 a65 a66 a67 a68 a69 a70 output b7 do
      nt_ask'
[40]  tera2←tera2,[1]1 110⍴110↑'pdftk a71 a72 a73 a74 a75 a76 a77 a78 a79 a80 output b8 do
      nt_ask'
[41]  tera2←tera2,[1]1 110⍴110↑'pdftk a81 a82 a83 a84 a85 a86 a87 a88 a89 a90 output b9 do
      nt_ask'
[42]  tera2←tera2,[1]1 110⍴110↑'pdftk a91 a92 a93 a94 a95 output ba dont_ask'
[43] ⍝ nao esquecer de incluir os arquivos faltantes a97 a98 ...
[44]  tera2←tera2,[1]1 110⍴110↑'copy c:\apl2\paper_expl_vivos.tex .'
[45]  tera2←tera2,[1]1 110⍴110↑'latex paper_expl_vivos'
[46]  tera2←tera2,[1]1 110⍴110↑'dvipdfm -o pap.pdf paper_expl_vivos -q '
[47]  tera2←tera2,[1]1 110⍴110↑'latex diredire'
[48]  tera2←tera2,[1]1 110⍴110↑'dvipdfm diredire -q '
[49]  tera2←tera2,[1]1 110⍴110↑'pdftk c:\apl2\capa.pdf pap.pdf c:\apl2\eista03.pdf diredir
      e.pdf cartvivo.pdf output b0 dont_ask'
[50]  tera2←tera2,[1]1 110⍴110↑'pdftk b0 c:\apl2\exer_alg.pdf capa2.pdf b1 b2 b3 b4 b5 out
      put VIVOFLS1.PDF dont_ask'
[51]  tera2←tera2,[1]1 110⍴110↑'pdftk b6 b7 b8 b9 ba output VIVOFLS2.PDF dont_ask'
[52]  tera2←tera2,[1]1 110⍴110↑'pdftk VIVOFLS1.PDF VIVOFLS2.PDF output VIVOFLS.PDF dont_as
      k'
[53]  lixo←tera1 ⎕FM'c:\apl2\mera1.bat'
[54]  lixo←tera2 ⎕FM'c:\apl2\mera2.bat'
-------------------------------------------------------------
```

```
[ 0]  r←montatextoz11 z
[ 1]  r←23 140⍴' '
[ 2]  r[1;]←140↑'O bloco que tem ',(trim z[6;40+⍳10]),' está em uma das pontas.'
[ 3]  r[2;]←140↑'O bloco que tem ',(trim z[6;30+⍳10]),' está ao lado do que tem ',(trim z[
      5;40+⍳10]),'⍀% das unidades vendidas.'
[ 4]  r[3;]←140↑'O arquiteto de ',(trim z[4;30+⍳10]),' anos é responsavel pelo bloco vizin
      ho ao que tem ',(trim z[6;20+⍳10]),'.'
[ 5]  r[4;]←140↑'O bloco com ',(trim z[6;20+⍳10]),' tem ',(trim z[5;20+⍳10]),'⍀% das unida
      des vendidas.'
[ 6]  r[5;]←140↑'O prédio do arquiteto de ',(trim z[4;20+⍳10]),' anos esta exatamente à es
      querda do prédio do arquiteto de ',(trim z[4;30+⍳10]),' anos.'
[ 7]  r[6;]←140↑'O bloco do arquiteto de ',(trim z[4;10+⍳10]),' anos está ao lado do que j
      á vendeu ',(trim z[5;20+⍳10]),' ⍀%.'
[ 8]  r[7;]←140↑'O bloco ',(trim z[2;10+⍳10]),' fica ao lado do que possui ',(trim z[6;0+⍳
      10]),'.'
[ 9]  r[8;]←140↑'O prédio que já vendeu ',(trim z[5;0+⍳10]),'⍀% está exatamente à esquerda
       do bloco ',(trim z[2;10+⍳10]),'.'
[10]  r[9;]←140↑'O arquiteto de ',(trim z[4;40+⍳10]),' anos está trabalhando no bloco de u
      ma das pontas.'
[11]  r[10;]←140↑(trim z[3;20+⍳10]),' é o responsável pelo projeto do prédio com detalhes
      em ',(trim z[1;20+⍳10]),'.'
[12]  r[11;]←140↑'O bloco com detalhes em ',(trim z[1;10+⍳10]),' fica ao lado do que tem '
      ,(trim z[6;20+⍳10]),'.'
[13]  r[12;]←140↑'O bloco ',(trim z[2;0+⍳10]),' fica ao lado do bloco projetado por ',(tri
      m z[3;10+⍳10]),'.'
[14]  r[13;]←140↑(trim z[3;40+⍳10]),' está trabalhando no quinto prédio.'
[15]  r[14;]←140↑'Na terceira posiçto está o bloco ',(trim z[2;20+⍳10]),'.'
[16]  r[15;]←140↑'O prédio que vendeu ',(trim z[5;40+⍳10]),'⍀% está na quinta posiçto.'
[17]  r[16;]←140↑'O bloco ',(trim z[2;20+⍳10]),' está exatamente à esquerda do bloco ',(tr
      im z[2;30+⍳10]),'.'
[18]  r[17;]←140↑'O bloco ',(trim z[2;40+⍳10]),' está em algum lugar à direita do prédio q
      ue tem detalhes em ',(trim z[1;0+⍳10]),'.'
[19]  r[18;]←140↑'O prédio com ',(trim z[6;30+⍳10]),' tem ',(trim z[5;30+⍳10]),'⍀% das uni
      dades vendidas.'
[20]  r[19;]←140↑'O bloco com ',(trim z[6;0+⍳10]),' está sendo projetado pelo arquiteto de
       ',(trim z[4;0+⍳10]),' anos.'
[21]  r[20;]←140↑'O prédio projetado pelo arquiteto de ',(trim z[4;20+⍳10]),' anos está em
       algum lugar à direita do prédio que tem detalhes em ',(trim z[1;10+⍳10]),'.'
[22]  r[21;]←140↑'O bloco com detalhes em ',(trim z[1;20+⍳10]),' está exatamente à esquerd
      a do que é projetado por ',(trim z[3;30+⍳10]),'.'
[23]  r[22;]←140↑'Os prédios com detalhes em ',(trim z[1;30+⍳10]),' e o que tem ',(trim z[
      6;20+⍳10]),' sto vizinhos.'
[24]  r[23;]←140↑'O bloco ',(trim z[2;40+⍳10]),' está em uma das pontas.'
[25]  r[⍳23;]←r[23?23;]
-------------------------------------------------------------
[0]  r←ordenaz11 z;i;x
[1]  r←6 50⍴' '
[2]  i←1
[3] t1:→(i>6)/fim
[4]  r[i;]←,x[⍋⍉AV⍋x←5 10⍴z[i;];]
[5]  i←i+1
[6]  →t1
[7] fim:r←(54⍴((10⍴1),0))⍀[2]r
-------------------------------------------------------------
[0]  r←pedemail x
[1]  →(40≠+/' '=x)/aindanao
[2]  r←80↑'Por favor, informe seu e-mail: ⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_⍀_'
[3]  →junnao
[4] aindanao:r←80↑'e-mail cadastrado: ⍀verb+',x,'+'
[5] junnao:
-------------------------------------------------------------
[0]  r←populagrandegrupo;z;i;qt
[1]  z←GRANDEGRUPO
```

```
[2]  i←1
[3] t1:→(i>1↑ρz)/fim
[4]  qt←+/z[i;1]=,IKVI[;2]
[5]  z[i;50+⍳4]←4 0⍕qt
[6]  i←i+1
[7]  →t1
[8] fim:r←z
------------------------------------------------------------
[0]  r←quais
[1]  r←0 ¯30↓((IKVI[;1]='L')∨(IKVI[;1]='P')∨(IKVI[;1]='V'))/[1]IKVI
------------------------------------------------------------
[0]  r←quaisl;aa
[1]  aa←ρr←0 ¯10↓(IKVI[;1]='L')/[1]IKVI
[2]  r←r,[1]1 70ρ70↑' quantidade = ',⍕1↑aa
------------------------------------------------------------
[ 0]  r←quebra x;t
[ 1]  t←⌈(ρx)÷2
[ 2] t1:→(x[t]=' ')/oba
[ 3]  t←t+1
[ 4]  →(t>ρx)/xabu
[ 5]  →t1
[ 6] oba:r←(2,t)ρ(t↑x),t↓x
[ 7]  →0
[ 8] xabu:r←-1
------------------------------------------------------------
[ 0]  testa;i;x
[ 1]  i←1
[ 2] t1:→(i>100000)/0
[ 3]  x←raizq i
[ 4]  →((⍎10 1⍕RAIZ)=⍎10 1⍕i*0.5)/blz
[ 5]  i
[ 6] blz:i←i+1
[ 7] ⍝ i,QTDOPS
[ 8]  →t1
------------------------------------------------------------
[0]  r←tiraduplo z;i;⎕IO
[1]  i←1 ⋄ r←'' ⋄ ⎕IO←1
[2] volta:→(i>ρz)/fim
[3]  →(z[i]∈r)/tem
[4]  r←r,z[i]
[5] tem:→(i=i←i+1)/volta
[6] fim:
------------------------------------------------------------
[0]  r←trim2 x;z
[1] ⍝f corta as linhas inferiores que sao brancas
[2]  →(2≠ρρx)/erro
[3]  z←+/[2]x=' '
[4]  r←(z≠1↓ρx)/[1]x
[5]  →0
[6] erro:'o operando deve ter rank=2'
------------------------------------------------------------
[ 0]  vivotod;tera
[ 1]  EVENTO←'PL0701'
[ 2]  vivo070k 1 2
[ 3]  EVENTO←'PL0702'
[ 4]  vivo070k 1 4
[ 5]  EVENTO←'PL0703'
[ 6]  vivo070k 1 7
[ 7]  EVENTO←'PL0704'
[ 8]  vivo070k 1 8
[ 9]  EVENTO←'PL0705'
[10]  vivo070k 1 9
[11]  EVENTO←'PL0706'
```

```
[12]  vivo070k 1 10
[13]  EVENTO←'PL0707'
[14]  vivo070k 1 11
[15]  EVENTO←'PL0708'
[16]  vivo070k 1 13
[17]  EVENTO←'PL0709'
[18]  vivo070k 1 14
[19]  EVENTO←'PL0710'
[20]  vivo070k 1 16
[21]  EVENTO←'PL0711'
[22]  vivo070k 1 18
[23]  tera←0 80⍴' '
[24]  tera←tera,[1]1 80⍴80↑'latex -quiet pl0701'
[25]  tera←tera,[1]1 80⍴80↑'latex -quiet pl0702'
[26]  tera←tera,[1]1 80⍴80↑'latex -quiet pl0703'
[27]  tera←tera,[1]1 80⍴80↑'latex -quiet pl0704'
[28]  tera←tera,[1]1 80⍴80↑'latex -quiet pl0705'
[29]  tera←tera,[1]1 80⍴80↑'latex -quiet pl0706'
[30]  tera←tera,[1]1 80⍴80↑'latex -quiet pl0707'
[31]  tera←tera,[1]1 80⍴80↑'latex -quiet pl0708'
[32]  tera←tera,[1]1 80⍴80↑'latex -quiet pl0709'
[33]  tera←tera,[1]1 80⍴80↑'latex -quiet pl0710'
[34]  tera←tera,[1]1 80⍴80↑'latex -quiet pl0711'
[35]  tera←tera,[1]1 80⍴80↑'dvipdfm pl0701'
[36]  tera←tera,[1]1 80⍴80↑'dvipdfm pl0702'
[37]  tera←tera,[1]1 80⍴80↑'dvipdfm pl0703'
[38]  tera←tera,[1]1 80⍴80↑'dvipdfm pl0704'
[39]  tera←tera,[1]1 80⍴80↑'dvipdfm pl0705'
[40]  tera←tera,[1]1 80⍴80↑'dvipdfm pl0706'
[41]  tera←tera,[1]1 80⍴80↑'dvipdfm pl0707'
[42]  tera←tera,[1]1 80⍴80↑'dvipdfm pl0708'
[43]  tera←tera,[1]1 80⍴80↑'dvipdfm pl0709'
[44]  tera←tera,[1]1 80⍴80↑'dvipdfm pl0710'
[45]  tera←tera,[1]1 80⍴80↑'dvipdfm pl0711'
[46]  tera←tera,[1]1 80⍴80↑'pdftk pl0701.pdf pl0702.pdf pl0703.pdf pl0704.pdf pl0705.pdf o
      utput p71.pdf'
[47]  tera←tera,[1]1 80⍴80↑'pdftk pl0706.pdf pl0707.pdf pl0708.pdf pl0709.pdf pl0710.pdf o
      utput p72.pdf'
[48]  tera←tera,[1]1 80⍴80↑'pdftk p71.pdf p72.pdf pl0711.pdf output pl070.pdf dont_ask'
[49]  tera ΔFM'c:⍀apl2⍀tera70.bat'
-------------------------------------------------------------
[ 0]  opesq vivoz11a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivoz11 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PLz11   '
[ 9]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍕n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[20]  esse←63 80ρ' '
[21]  f←FOLHALAz11
[22]  esse[1;]←80↑dhx[1;]
[23]  esse[2;]←80↑dhx[2;]
[24]  esse[3;]←80↑4 2⍕VERSAOa←1.01
[25]  esse[4;]←80↑ylu[xk;ι6]
[26] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[27]  →(36=1↓ρylu)/zebra
[28]  qlinha←(1=∧/[2]f[;ι4]=((1↑ρf),4)ρ'⍀#05')/ι1↑ρf
[29]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[30]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[31]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[32]  →maiszebra
[33] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[ 0]  opesq vivoz15a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;indx;lixo1;lixonol;qt1;qt2;qto
      s;relat;resp;resu;upag;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  CORRECAO←2 ⋄ EVENTO←'PLz15   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAz15←ajusta80 FOLHALAz15
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAz15)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←15 80⍴' '
[16]  f←FOLHALAz15
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←3.02
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[22]  →(36=1↓⍴ylu)/zebra
[23]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[24]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[25]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[26]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[27]  →maiszebra
[28] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[61]  →terminando
[62] elafa:aaa←(ylu,5 0⍕0 1↓resu)
[63]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[64]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[65] terminando:
[66]  upag[1↑⍴upag;]←(1↓⍴upag)↑'⍀end{document}'
[67]  relat[1↑⍴relat;;]←upag
[68]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[69] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[70]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[71]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[72]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivoz19

```
[0]  gcz
-------------------------------------------------------------
[ 0]  r←base gcz19 simbolos;o1;o2;o3;p1;p2;p3
[ 1] ⍝base←2+?6
[ 2]  o1←0,¯1+?6⍴base
[ 3]  o2←0,¯1+?6⍴base
[ 4]  p1←1 0⍕o1
[ 5]  p2←1 0⍕o2
[ 6]  o3←⍎(14⍴1 0)⍀base soma 2 7⍴1 0⍕p1,p2
[ 7]  p3←1 0⍕(14⍴1 0)⍀o3
[ 8] ⍝ simbolos←simb[(⍴simb)?⍴simb]
[ 9]  →(1=?2)/su
[10]  r←(1 0⍕simbolos[1+o1]),' + ',(1 0⍕simbolos[1+o2]),' = ',1 0⍕simbolos[1+o3]
[11]  →0
[12] su:
[13]  r←(1 0⍕simbolos[1+o3]),' - ',(1 0⍕simbolos[1+o1]),' = ',(1 0⍕simbolos[1+o2])
-------------------------------------------------------------
[ 0]  r←geracasoz19;ba;si;i;ix
[ 1]  ba←3+?5
[ 2]  si←simb[ba?ba]
[ 3]  r←11 75⍴' '
[ 4]  i←1
[ 5] t1:→(i>10)/fi
[ 6]  r[i;]←75↑ba gcz19 si
[ 7]  i←i+1
[ 8]  →t1
[ 9] fi:ix←1+?(¯1+⍴si)
[10]  r[11;]←75↑(1 0⍕ba),si[ix],1 0⍕ix
-------------------------------------------------------------
[ 0]  r←base soma a;p;s;so;i;vaium
[ 1] ⍝ a[1;] e o primeiro operando e a[2;] e o segundo
[ 2]  p←a[1;] ⋄ s←a[2;]
[ 3]  r←''
[ 4]  vaium←0
[ 5]  i←⍴p
[ 6] t1:→(i<1)/fim
[ 7]  so←vaium+(⍎p[i])+⍎s[i]
[ 8]  →(so<base)/ok
[ 9]  so←so-base
[10]  vaium←1
[11]  →junta
[12] ok:vaium←0
[13] junta:
[14]  r←(⍕so),r
[15]  i←i-1
[16]  →t1
```

```
[17] fim:
------------------------------------------------------------
[ 0]  r←base subt a;p;s;se;sb;i
[ 1] ⍝ a[1;] e o primeiro operando e a[2;] e o segundo
[ 2]  p←a[1;] ⋄ s←a[2;]
[ 3]  r←''
[ 4]  i←⍴p
[ 5] t1:→(i<1)/fim
[ 6]  se←⍎p[i] ⋄ sb←⍎s[i]
[ 7]  →(se<sb)/puxa1
[ 8]  r←(⍕se-sb),r
[ 9]  →somaaa
[10] puxa1:se←se+base
[11]  p[i-1]←⍕¯1+⍎p[i-1]
[12]  r←(⍕se-sb),r
[13] somaaa:
[14]  i←i-1
[15]  →t1
[16] fim:
------------------------------------------------------------
[ 0]  opesq vivoz19a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLz19   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAz19←ajusta80 FOLHALAz19
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAz19)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 7⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←42 80⍴' '
[16]  f←FOLHALAz19
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[41;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[42;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geracasoz19
[35]  esse[7+⍳10;]←10 80↑xx[⍳10;]
[36]  esse[18;1]←xx[11;2]
[37]  resp←resp,⍎,xx[11;1],' ',xx[11;3]
[38]  xx←geracasoz19
[39]  esse[18+⍳10;]←10 80↑xx[⍳10;]
[40]  esse[29;1]←xx[11;2]
```

```
[41]  resp←resp,⍤,xx[11;1],' ',xx[11;3]
[42]  xx←geracasoz19
[43]  esse[29+⍳10;]←10 80↑xx[⍳10;]
[44]  esse[40;1]←xx[11;2]
[45]  resp←resp,⍤,xx[11;1],' ',xx[11;3]
[46]  resu←resu,[1]1 7⍴resp
[47]  acuja←(f[;2]='#')/⍳1↑⍴f
[48]  f[acuja;⍳80]←esse[⍤,f[acuja;3 4],' ';]
[49]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[50]  □←(⍕xk←xk+1),'-'
[51]  →testa
[52] fim:upag←(1 0+⍴f)⍴' '
[53]  →(1=≡n)/elafa
[54]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[55]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[56]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 2 0 4 0 2 0 4 0 2 0)⍕resu
[57]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[58]  →terminando
[59] elafa:aaa←(ylu[;⍳36],4 0 2 0 4 0 2 0 4 0 2 0⍕0 1↓resu)
[60]  lixonol←aaa ⎕FM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[61]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[62] terminando:
[63]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[64]  relat[1↑⍴relat;;]←upag
[65]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[66] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[67]  lixonol←lixonol ⎕FM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[68]  lixonol←□EX 2 10⍴'quantos   matriz    '
[69]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivoz20

```
[0]  AVISO
[1]  'Imprima a variavel RESPOSTA que tem a resposta do exercicio comum proposto'
[2]  'na folha...'
-------------------------------------------------------------
[ 0]  r←EPOSSIVEL x;k;l;c;sg
[ 1]  k←x[1] ⋄ l←x[2] ⋄ c←x[3]
[ 2]  →(~k∈M[l;])/bl1
[ 3]  r←0
[ 4]  →0
[ 5] bl1:→(~k∈M[;c])/bl2
[ 6]  r←0
[ 7]  →0
[ 8] bl2:sg←SUBGRUPO l,c
[ 9]  →(~k∈(,M)[sg])/bl3
[10]  r←0
[11]  →0
[12] bl3:r←1
-------------------------------------------------------------
[ 0]  r←OPROXIMO x;l;c
[ 1]  l←x[1] ⋄ c←x[2]
[ 2]  →((l>9)∨(c>9))/lixo
[ 3]  c←c+1
[ 4] s1:→(c>9)/somal
[ 5]  →(M[l;c]≠0)/somac
[ 6]  r←l,c
[ 7]  →0
[ 8] somac:c←c+1
[ 9]  →s1
[10] somal:c←1
```

```
[11]  l←l+1
[12]  →s1
[13] lixo:'deu xabu'
-------------------------------------------------------------
[ 0]  r←SUBGRUPO x;l;c
[ 1]  l←x[1] ⋄ c←x[2]
[ 2]  →(((l=1)∨(l=2)∨(l=3))∧((c=1)∨(c=2)∨(c=3)))/q1
[ 3]  →(((l=1)∨(l=2)∨(l=3))∧((c=4)∨(c=5)∨(c=6)))/q2
[ 4]  →(((l=1)∨(l=2)∨(l=3))∧((c=7)∨(c=8)∨(c=9)))/q3
[ 5]  →(((l=4)∨(l=5)∨(l=6))∧((c=1)∨(c=2)∨(c=3)))/q4
[ 6]  →(((l=4)∨(l=5)∨(l=6))∧((c=4)∨(c=5)∨(c=6)))/q5
[ 7]  →(((l=4)∨(l=5)∨(l=6))∧((c=7)∨(c=8)∨(c=9)))/q6
[ 8]  →(((l=7)∨(l=8)∨(l=9))∧((c=1)∨(c=2)∨(c=3)))/q7
[ 9]  →(((l=7)∨(l=8)∨(l=9))∧((c=4)∨(c=5)∨(c=6)))/q8
[10]  →(((l=7)∨(l=8)∨(l=9))∧((c=7)∨(c=8)∨(c=9)))/q9
[11] q1:r←1 2 3 10 11 12 19 20 21
[12]  →0
[13] q2:r←4 5 6 13 14 15 22 23 24
[14]  →0
[15] q3:r←7 8 9 16 17 18 25 26 27
[16]  →0
[17] q4:r←28 29 30 37 38 39 46 47 48
[18]  →0
[19] q5:r←31 32 33 40 41 42 49 50 51
[20]  →0
[21] q6:r←34 35 36 43 44 45 52 53 54
[22]  →0
[23] q7:r←55 56 57 64 65 66 73 74 75
[24]  →0
[25] q8:r←58 59 60 67 68 69 76 77 78
[26]  →0
[27] q9:r←61 62 63 70 71 72 79 80 81
-------------------------------------------------------------
[ 0]  r←SUDOKU x;l;c;k;resp;l1;c1
[ 1]  CONTADOR←CONTADOR+1
[ 2]  l←x[1] ⋄ c←x[2]
[ 3]  k←1
[ 4] volta:
[ 5]  resp←0
[ 6]  →(~EPOSSIVEL k,l,c)/somak
[ 7]  M[l;c]←k
[ 8]  →((l=9)∧(c=9))/fechou
[ 9]  (l1 c1)←OPROXIMO l,c
[10]  resp←SUDOKU l1,c1
[11]  →(resp=1)/conta
[12]  M[l1;c1]←0
[13]  →somak
[14] fechou:resp←1
[15] somak:k←k+1
[16] conta:→((k≤9)∧(resp≠1))/volta
[17]  r←resp
-------------------------------------------------------------
[0]  r←TRANSF x;z
[1] ⍝ devolve uma 9x9 numerica recebendo uma 9x9 alfa, com - no lugar de zero
[2]  z←'-0'edit x
[3]  r←9 9⍴⍎(162⍴1 0)⍀,z
-------------------------------------------------------------
[0]  r←acertaku x
[1]  r←9 20⍴' '
[2]  r[;1 3 5 7 9 11 13 15 17 19]←'|'
[3]  r[;2 4 6 8 10 12 14 16 18]←'- 'edit x
[4]  r[;20]←'.'
[5]  r←9 80⍴r
```

```
------------------------------------------------------------
[0]  r←geracaso
[1]  r←(((1↑⍴CASOS)÷14),14 9)⍴CASOS
[2]  r←0 ¯1 0↓r
------------------------------------------------------------
[ 0]  opesq vivoz20a n;CORRECAO;EVENTO;dhx;esse;f;relat;resu;xk;ylu;caso;resp;lixo;upag;ac
      uja;aa;lixonol;lixo1;aaa
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 4]  EVENTO←'PLz20   '
[ 5]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 6]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 7]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 8]  FOLHALAz20←ajusta80 FOLHALAz20
[ 9]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAz20)⍴' '
[10]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLOI'
[11]  xk←1 ⋄ resu←0 5⍴0
[12]  X←caso←(((1↑⍴CASOS)÷14),14 9)⍴CASOS
[13]  caso←0 ¯1 0↓caso
[14]  'usando ',(⍎1↑⍴caso),' opcoes de sudoku'
[15] testa:→(xk>1↑⍴ylu)/fim
[16]  esse←20 80⍴' '
[17]  f←FOLHALAz20
[18]  esse[1;]←80↑dhx[1;]
[19]  esse[2;]←80↑dhx[2;]
[20]  esse[3;]←80↑4 2⍎VERSAOa←3.02
[21]  esse[4;]←80↑ylu[xk;⍳6]
[22]  esse[5;]←80↑ylu[xk;6+⍳30]
[23]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[24]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[25] inica:
[26]  aa←1+(1↑⍴caso)|xk
[27]  esse[7+⍳9;]←acertaku caso[aa;⍳9;]
[28]  esse[16+⍳4;]←4 80↑4 6⍴caso[aa;9+⍳4;⍳6]
[29]  resp←resp,⍪caso[aa;10;9],' ',caso[aa;11;9],' ',caso[aa;12;9],' ',caso[aa;13;9]
[30]  resu←resu,[1]1 5⍴resp
[31]  acuja←(f[;2]='#')/⍳1↑⍴f
[32]  f[acuja;⍳80]←esse[⍪,f[acuja;3 4],' ';]
[33]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\newpage'
[34]  ⎕←(⍎xk←xk+1),'-'
[35]  →testa
[36] fim:upag←(1 0+⍴f)⍴' '
[37]  →(1=≡n)/elafa
[38]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[39]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[40]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←4 0 5 0 2 0 2 0 2 0)⍎resu
[41]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[42]  →terminando
[43] elafa:
[44]  aaa←(ylu,2 0 2 0 2 0 2 0⍎0 1↓resu)
[45]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[46]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[47] terminando:
[48]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[49]  relat[1↑⍴relat;;]←upag
[50]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.t
      ex'
[51]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[52]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivoz25

```
[0]  r←geracaso;som;qua
[1]  som←ρRESP827
[2]  qua←5?som
[3]  r←qua,+/RESP827[qua]×1 2 4 8 16
------------------------------------------------------------
[ 0]  veja964
[ 1]  EXPL[ι16;]
[ 2]  x←⍞
[ 3]  EXPL[16+ι16;]
[ 4]  x←⍞
[ 5]  EXPL[32+ι16;]
[ 6]  x←⍞
[ 7]  EXPL[48+ι86-48;]
[ 8]  x←⍞
[ 9]  EXPL[86+ι102-86;]
[10]  x←⍞
[11]  EXPL[102+ι118-102;]
[12]  x←⍞
[13]  EXPL[118+ι138-118;]
[14]  x←⍞
[15]  EXPL[138+ι156-138;]
[16]  x←⍞
[17]  'e o resultado encontrado e um rosto humano (e???)'
------------------------------------------------------------
[ 0]  opesq vivoz25a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;indx;lixo;lixonol;relat;resp;r
      esu;upag;xk;ylu
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←''
[ 3] qveio:
[ 4]  'por economia de espaco, faca: \util\pkunzip c:\infoland\ima f:\infoland\ima\imz25ep
      '
[ 5]  'gere os exercicios, e depois apague: del c:\infoland\ima\im??.eps'
[ 6]  ' nao esqueca de olhar (ou imprimir) a variavel EXPL'
[ 7]  '                                              ===='
[ 8]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 9]  CORRECAO←2 ⋄ EVENTO←'PLz25   '
[10]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[11]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[12]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕ιn
[13]  FOLHALAz25←ajusta80 FOLHALAz25
[14]  relat←((2+1↑ρylu),1 0+ρFOLHALAz25)ρ' '
[15]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:\apl2\VIVOBLO1'
[16]  xk←1 ⋄ resu←0 27ρ' '
[17]  indx←1
[18] testa:→(xk>1↑ρylu)/fim
[19]  esse←8 80ρ' '
[20]  f←FOLHALAz25
[21]  esse[1;]←80↑dhx[1;]
[22]  esse[2;]←80↑dhx[2;]
[23]  esse[3;]←80↑4 2⍕VERSAOa←1.02
[24]  esse[4;]←80↑ylu[xk;ι6]
[25]  esse[5;]←80↑ylu[xk;6+ι30]
[26]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[27]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[28] inica:
[29]  esse[8;]←80↑'\includegraphics [scale=0.5]{c:/apl2/im',('00'⍕indx),'.eps}'
[30]  resp←(3 0⍕resp),'-',('00'⍕indx),'-',OQUEE[indx;]
[31]  resu←resu,[1]1 27ρresp
[32]  acuja←(f[;2]='#')/ι1↑ρf
[33]  f[acuja;ι80]←esse[⍋,f[acuja;3 4],' ';]
```

```
[34]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'⍀newpage'
[35]  ⍞←(⍕xk←xk+1),'-'
[36]  indx←indx+1
[37]  →(indx<20)/testa
[38]  indx←1
[39]  →testa
[40] fim:upag←(1 0+ρf)ρ' '
[41]  →(1=≡n)/elafa
[42]  upag[1;]←(1↓ρupag)↑'⍀begin{verbatim}'
[43]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[44]  upag[2+⍳1↑ρresu;⍳27]←resu
[45]  upag[3+1↑ρresu;]←(1↓ρupag)↑'⍀end{verbatim}'
[46]  →terminando
[47] elafa:aaa←(ylu,(((1↑ρylu),4)ρ' 0.0'),resu)
[48]  aaa[1;35 36]←2 0⍕CORRECAO
[49]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[50]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[51] terminando:
[52]  upag[1↑ρupag;]←(1↓ρupag)↑'⍀end{document}'
[53]  relat[1↑ρrelat;;]←upag
[54]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[55] ⍝ se for o caso, concatenar lixonol←lixonol,[1]INSTRUCxxx
[56]  lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[57]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivoz26

```
[ 0]  r←fibogen x;i
[ 1]  ⎕PP←17
[ 2]  r←50ρ0
[ 3]  r[1]←x[1]
[ 4]  r[2]←x[2]
[ 5]  i←3
[ 6] t1:→(i>50)/fim
[ 7]  r[i]←r[i-2]+r[i-1]
[ 8]  i←i+1
[ 9]  →t1
[10] fim:
------------------------------------------------------------
[0]  r←geraz26a;idade;escol;x
[1]  r←3ρ0
[2]  idade←17+?19
[3]  escol←4+?4
[4]  x←resolz26a idade,escol
[5]  r[1]←⊂idade,escol
[6]  r[2]←⊂x
------------------------------------------------------------
[ 0]  r←geraz26b;a;b;x;y;aux
[ 1]  a←?9
[ 2]  b←?9
[ 3]  →(b≥a)/ok22
[ 4]  aux←a
[ 5]  a←b
[ 6]  b←aux
[ 7] ok22:
[ 8]  x←fibogen a,b
[ 9]  y←⍕x[50]
[10]  r←a,b,≢(1↑y),¯1↑y
------------------------------------------------------------
[ 0]  r←geraz26c;m;a1;a2;a3
[ 1]  m←6+3?13
```

```
[ 2]  a1←(4+?¯5+2ρm[1]),¯1+?2ρm[1]
[ 3]  a2←(4+?¯5+2ρm[2]),¯1+?2ρm[2]
[ 4]  a3←(4+?¯5+2ρm[3]),¯1+?2ρm[3]
[ 5]  r←3 5ρ0
[ 6]  r[;1]←m
[ 7]  r[1;1+ι4]←a1
[ 8]  r[2;1+ι4]←a2
[ 9]  r[3;1+ι4]←a3
-------------------------------------------------------------
[0]  r←resolz26a x;qd;qe;n;hora;resto;minuto
[1]  qd←x[1]×365
[2]  qe←¯305+x[2]×365
[3]  n←(86400×qe)÷qd
[4]  hora←⌊n÷3600
[5]  resto←n-hora×3600
[6]  minuto←⌊resto÷60
[7]  resto←⌊resto-minuto×60
[8]  r←hora,minuto,resto
-------------------------------------------------------------
[0]  r←resz26c x
[1]  r←3 2ρ0
[2]  r[1;1]←x[1;1]|x[1;2]+x[1;3]
[3]  r[1;2]←x[1;1]|x[1;4]×x[1;5]
[4]  r[2;1]←x[2;1]|x[2;2]+x[2;3]
[5]  r[2;2]←x[2;1]|x[2;4]×x[2;5]
[6]  r[3;1]←x[3;1]|x[3;2]+x[3;3]
[7]  r[3;2]←x[3;1]|x[3;4]×x[3;5]
-------------------------------------------------------------
[ 0]  opesq vivoz26a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;yy;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10ρ' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLz26   '
[ 6]  dhx←2 10ρ('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍎ιn
[ 9]  ylu←n grupo ylu
[10]  FOLHALAz26←ajusta80 FOLHALAz26
[11]  relat←((2+1↑ρylu),1 0+ρFOLHALAz26)ρ' '
[12]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 13ρ0
[14] testa:→(xk>1↑ρylu)/fim
[15]  esse←23 80ρ' '
[16]  f←FOLHALAz26
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.08
[20]  esse[4;]←80↑ylu[xk;ι6]
[21]  →(36=1↓ρylu)/zebra
[22]  qlinha←(1=∧/[2]f[;ι4]=((1↑ρf),4)ρ'⍀#05')/ι1↑ρf
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+ι30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[22;ι10]←'@',esse[6;5+ι3],esse[4;1+ι5],'@'
[32]  esse[23;]←80↑esse[6;5+ι3],'-',esse[4;1+ι5],' - ',opesq[6 7],'/',opesq[9 10]
```

```
[33] inica:
[34]  xx←geraz26a
[35]  esse[8;]←80↑⍕(⊃xx[1])[1]
[36]  esse[9;]←80↑⍕(⊃xx[1])[2]
[37]  resp←resp,⊃xx[2]
[38]  xx←geraz26b
[39]  esse[10;⍳6]←3 0⍕xx[1 2]
[40]  resp←resp,xx[3]
[41]  xx←geraz26b
[42]  esse[11;⍳6]←3 0⍕xx[1 2]
[43]  resp←resp,xx[3]
[44]  xx←geraz26b
[45]  esse[12;⍳6]←3 0⍕xx[1 2]
[46]  resp←resp,xx[3]
[47]  xx←geraz26c
[48]  yy←resz26c xx
[49]  esse[13;]←80↑⍕xx[1;1]
[50]  esse[14;]←80↑(4 0⍕xx[1;2]),' e ',4 0⍕xx[1;3]
[51]  esse[15;]←80↑(4 0⍕xx[1;4]),' e ',4 0⍕xx[1;5]
[52]  esse[16;]←80↑⍕xx[2;1]
[53]  esse[17;]←80↑(4 0⍕xx[2;2]),' e ',4 0⍕xx[2;3]
[54]  esse[18;]←80↑(4 0⍕xx[2;4]),' e ',4 0⍕xx[2;5]
[55]  esse[19;]←80↑⍕xx[3;1]
[56]  esse[20;]←80↑(4 0⍕xx[3;2]),' e ',4 0⍕xx[3;3]
[57]  esse[21;]←80↑(4 0⍕xx[3;4]),' e ',4 0⍕xx[3;5]
[58]  resp←resp,,yy
[59]  resu←resu,[1]1 13⍴resp
[60]  acuja←(f[;2]='#')/⍳1↑⍴f
[61]  f[acuja;⍳80]←esse[⌽,f[acuja;3 4],' ';]
[62]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[63]  □←(⍕xk←xk+1),'-'
[64]  →testa
[65] fim:upag←(1 0+⍴f)⍴' '
[66]  →(1=≡n)/elafa
[67]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[68]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[69]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 3 0 3 0 5 0 3 0 3 0 5 0 3 0 5 0 3 0 5 0 3
      0)⍕resu
[70]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[71]  →terminando
[72] elafa:aaa←(ylu[;⍳36],3 0 3 0 3 0 5 0 3 0 3 0 5 0 3 0 5 0 3 0 5 0 3 0⍕0 1↓resu)
[73]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[74]  '!!!!!  Arquivo GPA com ',(⍕1↑⍴aaa),' linhas e ',(⍕1↓⍴aaa),' colunas'
[75] terminando:
[76]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[77]  relat[1↑⍴relat;;]←upag
[78]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[79]  lixonol←lixonol ΔFM'c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.tex'
[80]  lixonol←□EX 2 10⍴'quantos   matriz    '
[81]  'Arquivo(s) criado(s) com o nome de c:\apl2\',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivoz35

```
[ 0]  r←embaralha;msg;m;n
[ 1]  msg←,frases[?1↑⍴frases;]
[ 2]  m←29↑('*',(trim msg),'#'),20⍴' '
[ 3]  r←3⍴' '
[ 4]  n←(⍴m)⍴' '
[ 5]  n[1 5 9 13 17 21 25 29]←m[⍳8]
[ 6]  n[2 6 10 14 18 22 26]←m[8+⍳7]
[ 7]  n[3 7 11 15 19 23 27]←m[15+⍳7]
```

```
[ 8]  n[4 8 12 16 20 24 28]←m[22+⍳7]
[ 9]  r[1]←⊂n
[10]  r[2]←⊂m⍳'#'
[11]  r[3]←⊂m
------------------------------------------------------------
[ 0]  opesq vivoz35a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLz35   '
[ 6]  dhx←2 10⍴('05/05/0005'⍎+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍎+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍎⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAz35←ajusta80 FOLHALAz35
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAz35)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:\apl2\VIVOBLO1'
[13]  xk←1 ⋄ resu←0 34⍴' '
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←11 80⍴' '
[16]  f←FOLHALAz35
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍎VERSAOa←1.06
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'\#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍎resp←xk),' ',opesq
[31]  esse[10;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[11;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←embaralha
[35]  esse[8;]←80↑' /'edit⊃xx[1]
[36] ⍝ esse[9;⍳4]←4 0⍎⊃xx[2]
[37]  resp←(3 0⍎resp),'-',30↑⊃xx[3]
[38]  resu←resu,[1]1 34⍴resp
[39]  acuja←(f[;2]='#')/⍳1↑⍴f
[40]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[41]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'\clearpage'
[42]  ⍞←(⍎xk←xk+1),'-'
[43]  →testa
[44] fim:upag←(1 0+⍴f)⍴' '
[45]  →(1=≡n)/elafa
[46]  upag[1;]←(1↓⍴upag)↑'\begin{verbatim}'
[47]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
[48]  upag[2+⍳1↑⍴resu;⍳34]←⍎resu
[49]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[50]  →terminando
[51] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[52]  lixonol←aaa ΔFM('c:\apl2\',((~⍷∧\⍷EVENTO=' ')/EVENTO),'.gpa')
[53]  '!!!!!  Arquivo GPA com ',(⍎1↑⍴aaa),' linhas e ',(⍎1↓⍴aaa),' colunas'
[54] terminando:
[55]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
```

```
[56]  relat[1↑⍴relat;;]←upag
[57]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[58]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍵∧⍀⍵EVENTO=' ')/EVENTO),'.tex'
[59]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[60]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
------------------------------------------------------------
```

vivoz41

```
[0]  r←geraz41
[1]  r←2 40⍴' '
[2]  r[1;]←40↑(⍕(100+?899)÷100),' por ',(⍕(100+?899)÷100)
[3]  r[2;]←40↑(⍕(100+?899)÷10),' por ',(⍕(100+?899)÷100)
------------------------------------------------------------
[ 0]  opesq vivoz41a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  opesq←10⍴' '
[ 3] qveio:
[ 4]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 5]  EVENTO←'PLz41   '
[ 6]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 7]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[ 8]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[ 9]  ylu←n grupo ylu
[10]  FOLHALAz41←ajusta80 FOLHALAz41
[11]  relat←((2+1↑⍴ylu),1 0+⍴FOLHALAz41)⍴' '
[12]  relat[1;;]←(1↓⍴relat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[13]  xk←1 ⋄ resu←0 3⍴0
[14] testa:→(xk>1↑⍴ylu)/fim
[15]  esse←11 80⍴' '
[16]  f←FOLHALAz41
[17]  esse[1;]←80↑dhx[1;]
[18]  esse[2;]←80↑dhx[2;]
[19]  esse[3;]←80↑4 2⍕VERSAOa←1.06
[20]  esse[4;]←80↑ylu[xk;⍳6]
[21]  →(36=1↓⍴ylu)/zebra
[22]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[23]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[24]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[25]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[26]  →maiszebra
[27] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[28] maiszebra:
[29]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[30]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[31]  esse[10;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[32]  esse[11;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[33] inica:
[34]  xx←geraz41
[35]  esse[7+⍳2;]←2 80↑xx
[36]  acuja←(f[;2]='#')/⍳1↑⍴f
[37]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[38]  relat[1+xk;;]←f,[1](1,1↓⍴f)⍴200↑'⍀clearpage'
[39]  ⍞←(⍕xk←xk+1),'-'
[40]  →testa
[41] fim:upag←(1 0+⍴f)⍴' '
[42]  →elafa
[43]  →(1=≡n)/elafa
[44]  upag[1;]←(1↓⍴upag)↑'⍀begin{verbatim}'
[45]  upag[2;]←(1↓⍴upag)↑(5⍴'='),(' ',,dhx,' '),(5⍴'='),'E=',EVENTO
```

```
[46]  upag[2+⍳1↑⍴resu;⍳+/lixo1]←(lixo1←5 0 10 0 8 0)⍪resu
[47]  upag[3+1↑⍴resu;]←(1↓⍴upag)↑'\end{verbatim}'
[48]  →terminando
[49] elafa:  ⍝aaa←(ylu[;⍳36],9 0⍪0 1↓resu)
[50]  →terminando
[51]  lixonol←aaa ΔFM('c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.gpa')
[52]  '!!!!!  Arquivo GPA com ',(⍪1↑⍴aaa),' linhas e ',(⍪1↓⍴aaa),' colunas'
[53] terminando:
[54]  upag[1↑⍴upag;]←(1↓⍴upag)↑'\end{document}'
[55]  relat[1↑⍴relat;;]←upag
[56]  lixonol←(((×/2↑⍴relat),¯1↑⍴relat)⍴relat)
[57]  lixonol←lixonol ΔFM'c:\apl2\',((~⍵∧\⍵EVENTO=' ')/EVENTO),'.tex'
[58]  lixonol←⎕EX 2 10⍴'quantos   matriz    '
[59]  'Arquivo criado com o nome de c:\apl2\',EVENTO,'    .tex'
---------------------------------------------------------------
```

vivoz55

```
[0]  r←acertaz55 y;v;i
[1]  v←⍬,y[;⍳20]
[2]  i←(v⍳⌊/v)
[3]  r←y[i;20+⍳16],20 0⍪(⌈/v)-⌊/v
---------------------------------------------------------------
[0]  r←a dab b;a1;a2;b1;b2;arco;ang
[1]  a1←(○a[1]+((a[2]×60)+a[3])÷3600)÷180
[2]  a2←(○a[4]+((a[5]×60)+a[6])÷3600)÷180
[3]  b1←(○b[1]+((b[2]×60)+b[3])÷3600)÷180
[4]  b2←(○b[4]+((b[5]×60)+b[6])÷3600)÷180
[5]  arco←((1○a1)×(1○b1))+((2○a1)×(2○b1)×(2○a2)×(2○b2))+((2○a1)×(2○b1)×(1○a2)×(1○b2))
[6]  ang←¯2○arco
[7]  r←(12756.274÷2)×ang
---------------------------------------------------------------
[0]  r←geracandiz55;z
[1]  z←cand[10?↑⍴cand;]
[2]  r←z[⎕AV⍋z;]
---------------------------------------------------------------
[ 0]  r←geracasoz55;z;c1;c2
[ 1]  z←62 75⍴' '
[ 2]  c1←'555550.555'⍪(100+?3000)÷50000
[ 3]  c2←'555550.555'⍪(1000+?300)÷400
[ 4]  z[1;]←75↑'Custo das remessas: ',c1,' R$/rem/km'
[ 5]  z[2;]←75↑'Custo da reposicao: ',c2,' R$/m^3/km'
[ 6]  z[3;]←75↑'Tabela de compras (inclui encomendas/mes)'
[ 7]  z[3+⍳27;]←27 75↑geracompz55
[ 8]  z[31;]←75↑'Tabela de reposicao (inclui m^3/mes)'
[ 9]  z[31+⍳20;]←20 75↑gerarepoz55
[10]  z[52;]←75↑'Tabela de candidatos (inclui c. implantacao)'
[11]  z[52+⍳10;]←10 75↑geracandiz55
[12]  r←z
---------------------------------------------------------------
[0]  r←geracompz55;c;porte;x
[1]  c←caps,27 10⍴' '
[2]  porte←2 4 6 2 5 4 3 6 4 6 5 4 2 2 5 4 3 3 2 4 2 8 4 2 9 3 2
[3]  x←(5000×porte)+6600×porte+?porte×2
[4]  c[;36+⍳10]←10 0⍪27 1⍴x
[5]  r←c
---------------------------------------------------------------
[0]  r←gerarepoz55;z
[1]  z←repo
[2]  z←z,20 10⍴10 0⍪20 1⍴25×?10×20⍴100
[3]  r←z[⎕AV⍋z;]
---------------------------------------------------------------
```

```
[ 0]  r←resolvaz55 caso;cu;i;j;minimo;resul;rp;tae;tan;tce;tcn;tfe;tfn;x;xx;zz
[ 1] ⍝ x←ΔFM nome -- para leitura dos dados gravados
[ 2]  x←caso
[ 3]  x←'-¯'edit x
[ 4]  x←'+ 'edit x
[ 5]  cu←⍎x[1;21+⍳10]
[ 6]  rp←⍎x[2;21+⍳10]
[ 7]  tan←x[3+⍳27;⍳16]
[ 8]  tae←27 7⍴⍎,x[3+⍳27;16+⍳32]
[ 9]  tfn←x[31+⍳20;⍳16]
[10]  tfe←20 7⍴⍎,x[31+⍳20;16+⍳32]
[11]  tcn←x[52+⍳10;⍳16]
[12]  tce←20 7⍴⍎,x[52+⍳10;16+⍳32]
[13] ⍝ tae[;2]←tae[;2]×tae[;1]  o Google nao calcula assim,
[14] ⍝ tae[;3]←tae[;3]×tae[;1]  portanto deixei como
[15] ⍝ tae[;5]←tae[;5]×tae[;4]  comentario.
[16] ⍝ tae[;6]←tae[;6]×tae[;4]
[17] ⍝ tfe[;2]←tfe[;2]×tfe[;1]  A cid. Mexico tem coordenada
[18] ⍝ tfe[;3]←tfe[;3]×tfe[;1]  -99o 7' 59.55"
[19] ⍝ tfe[;5]←tfe[;5]×tfe[;4]
[20] ⍝ tfe[;6]←tfe[;6]×tfe[;4]  calculando deste jeito ela
[21] ⍝ tce[;2]←tce[;2]×tce[;1]  teria 98.866791 e calculando
[22] ⍝ tce[;3]←tce[;3]×tce[;1]  sem extender o - teria
[23] ⍝ tce[;5]←tce[;5]×tce[;4]  99.133208 que e o resultado
[24] ⍝ tce[;6]←tce[;6]×tce[;4]  que o google da como correto
[25]  i←1
[26]  resul←10⍴0
[27]  minimo←+99999999999999
[28] t1:→(i>10)/fim
[29]  resul[i]←tce[i;7]
[30]  zz←0
[31]  j←1
[32] t2:→(j>27)/oba1
[33]  xx←tce[i;⍳6]dab tae[j;⍳6]
[34]  xx←xx×cu×tae[j;7]
[35]  zz←zz+xx
[36]  j←j+1
[37]  →t2
[38] oba1:
[39]  resul[i]←resul[i]+zz×60
[40]  zz←0
[41]  j←1
[42] t3:→(j>20)/oba2
[43]  xx←tce[i;⍳6]dab tfe[j;⍳6]
[44]  xx←xx×rp×tfe[j;7]
[45]  zz←zz+xx
[46]  j←j+1
[47]  →t3
[48] oba2:
[49]  resul[i]←resul[i]+zz×60
[50]  i←i+1
[51]  →t1
[52] fim:
[53]  r←(20 0⍕10 1⍴⌊resul),tcn
-------------------------------------------------------------
[ 0]  opesq vivoz55a n;CORRECAO;EVENTO;QUIPN;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39
      ;qlinha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1]  →(0≠⎕NC'opesq')/qveio
[ 2]  QUIPN←'00'
[ 3]  opesq←10⍴' '
[ 4] qveio:
[ 5]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 6]  EVENTO←'PLz55   '
```

```
[ 7]  dhx←2 10ρ('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[ 8]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n ⋄ QUIPN←n[3 4]
[ 9]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)ρ4 0⍕⍳n
[10]  ylu←n grupo ylu
[11]  FOLHALAz55←ajusta80 FOLHALAz55
[12]  relat←((2+1↑ρylu),1 0+ρFOLHALAz55)ρ' '
[13]  relat[1;;]←(1↓ρrelat)↑ΔFM'c:⍀apl2⍀VIVOBLO1'
[14]  xk←1 ⋄ resu←0 40ρ' '
[15] testa:→(xk>1↑ρylu)/fim
[16]  esse←10 80ρ' '
[17]  f←FOLHALAz55
[18]  esse[1;]←80↑dhx[1;]
[19]  esse[2;]←80↑dhx[2;]
[20]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[21]  esse[4;]←80↑ylu[xk;⍳6]
[22]  →(36=1↓ρylu)/zebra
[23]  qlinha←(1=∧/[2]f[;⍳4]=((1↑ρf),4)ρ'⍀#05')/⍳1↑ρf
[24]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓ρylu))÷39),39)ρ6↓ylu[xk;]))
[25]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[26]  relat←((2+1↑ρylu),1 0+ρf)↑relat
[27]  →maiszebra
[28] zebra:esse[5;]←80↑ylu[xk;6+⍳30]
[29] maiszebra:
[30]  →(~1=≡n)/1+⎕LC ⋄ esse[6;]←80↑EVENTO
[31]  esse[7;]←80↑(3 0⍕resp←xk),' ',opesq
[32]  esse[9;⍳10]←'@',esse[6;5+⍳3],esse[4;1+⍳5],'@'
[33]  esse[10;]←80↑esse[6;5+⍳3],'-',esse[4;1+⍳5],' - ',opesq[6 7],'/',opesq[9 10]
[34] inica:
[35]  xx←geracasoz55
[36]  lixonol←xx ΔFM'c:⍀apl2⍀FZ55',QUIPN,('00'⍕xk),'.myd'
[37]  esse[8;]←1 80ρ80↑'FZ55',QUIPN,('00'⍕xk),'.myd'
[38]  resp←(3 0⍕xk),'-'
[39]  resp←resp,acertaz55 resolvaz55 xx
[40]  resu←resu,[1]1 40ρresp
[41]  acuja←(f[;2]='#')/⍳1↑ρf
[42]  f[acuja;⍳80]←esse[⌸,f[acuja;3 4],' ';]
[43]  relat[1+xk;;]←f,[1](1,1↓ρf)ρ200↑'⍀clearpage'
[44]  ⍞←(⍕xk←xk+1),'-'
[45]  →testa
[46] fim:upag←(1 0+ρf)ρ' '
[47]  →(1=≡n)/elafa
[48]  upag[1;]←(1↓ρupag)↑'⍀begin{verbatim}'
[49]  upag[2;]←(1↓ρupag)↑(5ρ'='),(' ',,dhx,' '),(5ρ'='),'E=',EVENTO
[50]  upag[2+⍳1↑ρresu;⍳40]←'_ 'edit resu
[51]  upag[3+1↑ρresu;]←(1↓ρupag)↑'⍀end{verbatim}'
[52]  →terminando
[53] elafa:aaa←(ylu[;⍳36],0 4↓resu)
[54]  lixonol←aaa ΔFM('c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.gpa')
[55]  '!!!!!  Arquivo GPA com ',(⍕1↑ρaaa),' linhas e ',(⍕1↓ρaaa),' colunas'
[56] terminando:
[57]  upag[1↑ρupag;]←(1↓ρupag)↑'⍀end{document}'
[58]  relat[1↑ρrelat;;]←upag
[59]  lixonol←(((×/2↑ρrelat),¯1↑ρrelat)ρrelat)
[60]  lixonol←lixonol ΔFM'c:⍀apl2⍀',((~⍷∧⍀⍷EVENTO=' ')/EVENTO),'.tex'
[61]  lixonol←⎕EX 2 10ρ'quantos   matriz    '
[62]  'Arquivo(s) criado(s) com o nome de c:⍀apl2⍀',EVENTO,'    (.tex e .gpa)'
-------------------------------------------------------------
```

vivoz66

```
[ 0]  AVISO
```

```
[ 1]  '  Em 2016, ao aplicar este exercicio aconteceu uma coisa interessante (um erro)'
[ 2]  ' Uma instancia, tinha um destino que nao era atingido por NENHUMA estrada de asfalt
      o'
[ 3]  ' logo, o custo do pedagio por asfalto era infinito. O aluno achou isso e acertou.'
[ 4]  ' no programa, esta inst^ancia deveria ter sido recusada, mas ela foi aceita com a '
[ 5]  'resposta igual a $18.50'
[ 6]  ''
[ 7]  ' onde estará o gato ?'
[ 8]  ''
[ 9]  ' Mais um gato:'
[10]  ' há uma estrada direta entre a origem e o destino (a rigor entre o'
[11]  ' destino e a origem) de asfalto, e a resposta n⍉o mostra este valor'
-------------------------------------------------------------
[ 0]  r←RESOL66 y;W;Q;ordem;infinito;k;i;j
[ 1] ⍝ algoritmo de warshall modificado, pag 285 de LIPS86
[ 2]  W←y
[ 3]  infinito←100000000000
[ 4]  Q←W+(infinito×W=0)
[ 5]  ordem←1⍴⍴y
[ 6]  k←1
[ 7] testak:→(k>ordem)/saik
[ 8]  i←1
[ 9] testai:→(i>ordem)/saii
[10]  j←1
[11] testaj:→(j>ordem)/saij
[12]  Q[i;j]←Q[i;j]⌊Q[i;k]+Q[k;j]
[13]  →(j=j←j+1)/testaj
[14] saij:→(i=i←i+1)/testai
[15] saii:
[16]  →(k=k←k+1)/testak
[17] saik:r←(9999×Q>1000000000)+(Q×Q<1000000000)
-------------------------------------------------------------
[ 0]  r←ini dij66 adj;s;dv;v;dw;xxx;i;aba;fal;bru;w
[ 1] ⍝ ini e o vertice inicial. adj e a matriz de adjacencia e o algoritmo
[ 2] ⍝ esta em Rabuske, pagina 66
[ 3]  fal←0 75⍴' '
[ 4]  r←1 2⍴ini,0
[ 5]  s←,ini
[ 6]  adj←0 99 edit adj
[ 7]  dv←adj[ini;]
[ 8]  dv[ini]←0
[ 9]  v←⍳1⍴⍴adj
[10]  fal←fal,[1]1 75⍴75⍴'Matriz de adjacencia original    = '
[11]  fal←fal,[1]((1⍴⍴adj),75)⍴4 0⍕adj
[12]  fal←fal,[1]1 75⍴75⍴'Nodo inicial = ',⍕ini
[13] t0:
[14]  aba←dv
[15]  aba[s]←¯1
[16]  fal←fal,[1]1 75⍴75⍴'nodos ja estudados               = ',3 0⍕s
[17]  fal←fal,[1]1 75⍴75⍴'¯-'edit'custo desde a origem ate aqui    = ',3 0⍕aba
[18]  →((⍴s)≥1⍴⍴adj)/fim
[19]  dw←⌊/dv[v menos s]
[20]  fal←fal,[1]1 75⍴75⍴'menor custo para ir a algum lugar= ',3 0⍕dw
[21]  xxx←dv
[22]  xxx[s]←99
[23]  w←xxx⍳dw
[24]  bru←'   R[',(⍕w),'] = ',3 0⍕dw
[25]  fal←fal,[1]1 75⍴75⍴'proximo nodo a estudar           = ',(3 0⍕w),bru
[26]  fal←fal,[1]1 75⍴75⍴'linha de ADJ corresp a este nodo = ',3 0⍕adj[w;]
[27]  r←r,[1]1 2⍴w,dw
[28]  s←s,w
[29]  i←1
[30] teste:→(i>⍴dv)/fim2
```

```
[31]  →(i∈s)/soma2
[32]  dv[i]←dv[i]⌊dv[w]+adj[w;i]
[33] soma2:→(i=i←i+1)/teste
[34] fim2:→t0
[35] fim:r←r[⍋r[;1];]
[36]  fal←fal,[1]1 75⍴75↑'Resultado final                    = ',3 0⍕r[;2]
[37]  ULTIMO←fal
------------------------------------------------------------
[ 0]  r←geracasoz66 pars;c;m;i;j;inds;pavs;pepo;n
[ 1]  r←3⍴0
[ 2] ⍝ pars[1]=qtd cids, [2]=estradas
[ 3]  →(pars[2]<2×pars[1])/fraco
[ 4] inicio:c←pars[1]?1↑⍴CIDS
[ 5]  c←c[⍋c]
[ 6]  m←(pars[2],13)⍴0
[ 7]  i←1 ⋄ j←1
[ 8] t1:→(i>1↑⍴m)/ufa
[ 9]  →(j>¯2+1↑⍴c)/mesmo
[10]  m[i;1]←c[j] ⋄ m[i;2]←c[j+1]
[11]  m[i+1;1]←c[j] ⋄ m[i+1;2]←c[j+2]
[12]  i←i+2
[13]  j←j+1
[14]  →t1
[15] mesmo:
[16]  m[i;1 2]←c[(¯1+⍴c),⍴c]
[17]  i←i+1
[18]  →(i>1↑⍴m)/ufa
[19]  m[i;1 2]←c[(¯1+⍴c),1]
[20]  i←i+1
[21]  →(i>1↑⍴m)/ufa
[22]  m[i;1 2]←c[(⍴c),1]
[23]  i←i+1
[24]  →(i>1↑⍴m)/ufa
[25]  m[i;1 2]←c[(⍴c),2]
[26]  i←i+1
[27] mesmo2:
[28]  →(i>1↑⍴m)/ufa
[29]  inds←2?⍴c
[30]  inds←inds[⍋inds]
[31]  →(0=c[inds]jatem m[;1 2])/laka
[32]  ⎕←'!'
[33]  →mesmo2
[34] laka:
[35]  →(0=(⍷c[inds])jatem m[;1 2])/bomba
[36]  ⎕←'@'
[37]  →mesmo2
[38] bomba:
[39]  m[i;1 2]←c[inds]
[40]  i←i+1
[41]  →mesmo2
[42] ufa:
[43]  →(((⍴c)=⍴tiraduplo,m[;1])∧((⍴c)=⍴tiraduplo,m[;2]))/bkz
[44]  ⎕←'o'
[45]  →inicio
[46] bkz:
[47] ⍝ pavimento
[48]  pavs←1 2 3 3 3 3 3 3 2 1 3 3 3 3 2 2 1 1 3 3 3 3 3 3
[49]  pepo←1 2 3 4 1 2 1 1 1 1 2 2 1 1 2 1 3 1 2 1 2 1 2 1
[50]  i←1
[51] t2:→(i>1↑⍴m)/la
[52]  m[i;3]←pavs[?⍴pavs]
[53]  m[i;4]←pepo[?⍴pepo]
[54]  m[i;9]←pepo[?⍴pepo]
```

```
[55]  m[i;5 6 7 8]←inventapeda m[i;4]
[56]  m[i;10 11 12 13]←inventapont m[i;9]
[57]  i←i+1
[58]  →t2
[59] la:
[60]  r[1]←⊂c
[61]  r[2]←⊂m
[62]  n←((1↑⍴m),5)⍴0
[63]  n[;1]←c⍳,m[;1]
[64]  n[;2]←c⍳,m[;2]
[65]  n[;3]←m[;3]
[66]  n[;4]←+/[2]m[;5 6 7 8]
[67]  n[;5]←⌊/[2]m[;10 11 12 13]+1000×0=m[;10 11 12 13]
[68]  r[3]←⊂n
[69]  →0
[70] fraco:'erro: poucas estradas para muitas cidades'
[71]  →0
-------------------------------------------------------------
[ 0]  geraexemplo
[ 1]  exemploc←10 10⍴0
[ 2]  exemploc[4;10]←exemploc[10;4]←3.8
[ 3]  exemploc[7;8]←exemploc[8;7]←4
[ 4]  exemploc[9;1]←exemploc[1;9]←4.3
[ 5]  exemploc[3;5]←exemploc[5;3]←2.3
[ 6]  exemploc[6;7]←exemploc[7;6]←5.6
[ 7]  exemploc[8;10]←exemploc[10;8]←6
[ 8]  exemploc[10;2]←exemploc[2;10]←5.2+2.3+4.1+2.5
[ 9]  exemploa←10 10⍴0
[10]  exemploa[2;7]←exemploa[7;2]←5.1
[11]  exemploa[5;6]←exemploa[6;5]←2.1
[12]  exemploa[4;3]←exemploa[3;4]←3.6
[13]  exemploa[3;9]←exemploa[9;3]←3.9
[14]  exemploa[1;2]←exemploa[2;1]←4.8
[15]  exemploa[6;8]←exemploa[8;6]←0 ⍝ porque nao aguenta o peso
[16]  exemploa[3;8]←exemploa[8;3]←2.5
[17]  exemploa[4;6]←exemploa[6;4]←4.7
[18]  exemploa[2;8]←exemploa[8;2]←4.3
[19]  exemploa[2;4]←exemploa[4;2]←5.7
[20]  exemploa[2;3]←exemploa[3;2]←0 ⍝ porque nao aguenta o peso
[21]  exemploa[5;7]←exemploa[7;5]←4.3+3.1+2.8
[22]  exemploa[9;8]←exemploa[8;9]←3.5
[23]  exemploa[10;1]←exemploa[1;10]←5
[24]  exemploa[9;10]←exemploa[10;9]←3.5
[25]  exemplop←10 10⍴0
[26]  exemplop[3;1]←exemplop[1;3]←3.9+3.2
[27]  exemplop[7;9]←exemplop[9;7]←2.2
[28]  exemplop[4;5]←exemplop[5;4]←4.3+4.1
[29]  RESOL66 exemploa
[30]  '---------------'
[31]  RESOL66 exemploa+exemplop
[32]  '-----------------'
[33]  RESOL66 exemploa+exemplop+exemploc
-------------------------------------------------------------
[ 0]  r←geramm;ori;peso;i;rr;x;cidades;estradas;lixo;j
[ 1]  cidades←10
[ 2]  estradas←25
[ 3] inicio:
[ 4]  x←geracasoz66 cidades,estradas
[ 5]  ori←?cidades
[ 6]  peso←(2 2.1 2.2 2.3 2.4 2.5 2.6 2.7)[?8]
[ 7]  rr←(ori,peso)resolve66 x[3]
[ 8]  i←1
[ 9] t1:→(i>cidades)/ff
```

```
[10]  →((rr[i;2]≠rr[i;4])∧(rr[i;2]≠rr[i;6])∧(rr[i;4]≠rr[i;6]))/achou
[11]  i←i+1
[12]  →t1
[13] ff:⍞←'#'
[14]  →inicio
[15] achou:
[16]  →(i≠ori)/biva
[17]  ⍞←'↓'
[18]  →inicio
[19] biva:
[20]  →((rr[i;2]≠99)∧(rr[i;4]≠99)∧(rr[i;6]≠99))/achou2
[21]  ⍞←'*'
[22]  →inicio
[23] achou2:
[24]  →((rr[i;2]>rr[i;4])∧(rr[i;4]>rr[i;6]))/achou3
[25]  ⍞←'&'
[26]  →inicio
[27] achou3:
[28]  r←0 70⍴' '
[29]  r←r,[1]1 70⍴70↑'Cidades deste problema = '
[30]  j←1
[31]  lixo←''
[32] t5:→(j>6)/ma1
[33]  lixo←lixo,(trim CIDS[(⊃x[1])[j];]),', '
[34]  j←j+1
[35]  →t5
[36] ma1:
[37]  r←r,[1]1 70⍴70↑lixo
[38]  lixo←''
[39] t6:→(j>cidades)/ma2
[40]  lixo←lixo,(trim CIDS[(⊃x[1])[j];]),', '
[41]  j←j+1
[42]  →t6
[43] ma2:
[44]  r←r,[1]1 70⍴70↑¯2↓lixo
[45]  r←r,[1]1 70⍴70↑'Origem = ',CIDS[(⊃x[1])[ori];],'   Destino = ',CIDS[(⊃x[1])[i];]
[46]  r←r,[1]1 70⍴70↑'Peso do caminhao = ',(6 1⍕peso),' ton'
[47]  r←r,[1]mostrax2 x[2]
[48]  r←r,[1]1 70⍴70↑6 2⍕rr[i;2 4 6]
------------------------------------------------------------
[0]  r←inventapeda x
[1]  r←4↑x↑(20+4?40)÷10
------------------------------------------------------------
[0]  r←inventapont x;p
[1]  p←1.1 2.2 2 3.5 4 5.5 5.6 1 8 5 5 4.5 4.8 2.9 4 4.1 3.3 6
[2]  p←p,4 4.5 4.7 4.1 4.3 4.2 4.7 4
[3]  r←4↑p[x?⍴p]
------------------------------------------------------------
[0]  r←x jatem y
[1]  r←1∈∧/[2]y=(⍴y)⍴x
------------------------------------------------------------
[0]  r←x menos y
[1] ⍝ x e um   ⍳ de alguma coisa; y e um conjunto de indices;
[2] ⍝ a resposta sao os indices de x que nao estao em y
[3]  r←(~x∈y)/x
------------------------------------------------------------
[ 0]  r←mostrax2 x;i;y
[ 1]  y←⊃x
[ 2]  r←((1↑⍴y),70)⍴' '
[ 3]  i←1
[ 4] t1:→(i>1↑⍴y)/f1
[ 5]  r[i;⍳11]←CIDS[y[i;1];]
[ 6]  r[i;12+⍳11]←CIDS[y[i;2];]
```

```
[ 7]  r[i;24]←'CPA'[y[i;3]]
[ 8]  r[i;25+⍳21]←'9 9.99 9.99 9.99 9.99'⍕y[i;4 5 6 7 8]
[ 9]  r[i;47+⍳18]←' 9 9.9 9.9 9.9 9.9'⍕y[i;9 10 11 12 13]
[10]  i←i+1
[11]  →t1
[12] f1:r←r[(1↑⍴r)?1↑⍴r;]
------------------------------------------------------------
[ 0]  r←oripes resolve66 xy;tam;i;x;mt;r1;r2;r3
[ 1] ⍝ oripes[1]=origem; oripes[2]=peso do caminhao
[ 2] ⍝ eh o terceiro elemento da saida de geracasoz66
[ 3]  x←⊃xy
[ 4]  tam←⌈/x[;1]
[ 5]  mt←(3,tam,tam)⍴0
[ 6]  i←1
[ 7] t1:→(i>1↑⍴x)/fim
[ 8]  →(x[i;5]<oripes[2])/soma
[ 9]  mt[3;x[i;2];x[i;1]]←mt[3;x[i;1];x[i;2]]←x[i;4]
[10]  →(x[i;3]=1)/soma
[11]  mt[2;x[i;2];x[i;1]]←mt[2;x[i;1];x[i;2]]←x[i;4]
[12]  →(x[i;3]=2)/soma
[13]  mt[1;x[i;2];x[i;1]]←mt[1;x[i;1];x[i;2]]←x[i;4]
[14] soma:i←i+1
[15]  →t1
[16] fim:r1←oripes[1]dij66 mt[1;;]
[17]  r2←oripes[1]dij66 mt[2;;]
[18]  r3←oripes[1]dij66 mt[3;;]
[19]  i←1
[20]  r←r1,r2,r3
------------------------------------------------------------
[0]  r←tiraduplo z;i;⎕IO
[1]  i←1 ⋄ r←'' ⋄ ⎕IO←1
[2] volta:→(i>⍴z)/fim
[3]  →(z[i]∈r)/tem
[4]  r←r,z[i]
[5] tem:→(i=i←i+1)/volta
[6] fim:
------------------------------------------------------------
[ 0]  opesq vivoz66a n;CORRECAO;EVENTO;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qlinh
      a;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivoz66 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  CORRECAO←1 ⋄ EVENTO←'PLz66   '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:\apl2\',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[24]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[25]  esse[4;]←80↑ylu[xk;⍳6]
[26] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[27]  →(36=1↓⍴ylu)/zebra
[28]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[29]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[30]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[31]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[32]  →maiszebra
[33] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[ 2]  z←,⊃x[1]
[ 3]  z←(z≠0)/z
[ 4]  r[1]←(⌈/z)-⌊/z
[ 5]  z←,⊃x[2]
[ 6]  z←(z≠0)/z
[ 7]  r[2]←(⌈/z)-⌊/z
[ 8]  z←,⊃x[3]
[ 9]  z←(z≠0)/z
[10]  r[3]←(⌈/z)-⌊/z
[11]  r[4]←+/,(⊃x[1])≠⊃x[2]
[12]  r[5]←+/,(⊃x[2])≠⊃x[3]
-------------------------------------------------------------
[ 0]  cavaleiroz67a n;a;aaa;acuja;esse;f;lixo1;relat;resp;x;xk;xx;ylu;zz
[ 1]  □RL←⌊(□TS[7]+□TS[6]+□TS[5])*2.7364736473
[ 2]  FOLHALAz67←ajusta80 FOLHALAz67
[ 3]  relat←ΔFM'c:\apl2\VIVOBLO1'
[ 4]  xk←1
[ 5] testa:→(xk>n)/fim
[ 6]  esse←39 80⍴' '
[ 7]  f←FOLHALAz67
[ 8]  esse[1;⍳⍴x]←x←' ---- Cavaleiros da Tavola Redonda -- '
[ 9]  esse[3;]←80↑4 2⍕1.05
[10]  esse[38;⍳8]←'@000000@'
[11] inica:
[12]  xx←acharesp instancia67 a←geracaso67 10
[13]  esse[7+⍳30;]←30 80↑1 numera mostra67 a
[14]  resp←xx
[15]  acuja←(f[;2]='#')/⍳1↑⍴f
[16]  f[acuja;⍳80]←esse[⍋,f[acuja;3 4],' ';]
[17]  ⍞←(⍕xk←xk+1),'-'
[18]  f←(((1↑⍴relat),1↓⍴f)↑relat),[1]f
[19]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'\end{document}'
[20]  f←f,[1](1,1↓⍴f)⍴(1↓⍴f)↑'%',⍕resp
[21]  lixo1←f ΔFM'c:\apl2\CAz67a',('00'⍕xk-1),'.tex'
[22]  →testa
[23] fim:
-------------------------------------------------------------
[ 0]  m←geracaso67 tam;i;j;k;zzk
[ 1] iu:m←(3,tam,tam)⍴0
[ 2] ⍝ preenchendo m[1;;]=tsl (trem super luxo)
[ 3]  i←1
[ 4] t1:→(i>tam)/v1
[ 5]  k←?tam
[ 6]  →(k=i)/t1
[ 7]  m[1;i;k]←gerapreco's'
[ 8]  i←i+1
[ 9]  →t1
[10] v1:j←1
[11] v2:→(j>tam)/f0
[12]  →(0≠+/m[1;;j])/ok1
[13] v3:k←?tam
[14]  →(k=j)/v3
[15]  m[1;k;j]←gerapreco's'
[16] ok1:j←j+1
[17]  →v2
[18] f0:zzk←resolve67 m[1;;]
[19]  →(9999≠⌈/,zzk)/oka
[20]  ⍞←'*'
[21]  →iu
[22] oka:
[23] ⍝ preenchendo m[2;;]=tlu (trem luxo)
[24]  i←1
[25] t11:→(i>tam)/v11
```

```
[26]  k←?tam
[27]  →(k=i)/t11
[28]  m[2;i;k]←gerapreco'l'
[29]  i←i+1
[30]  →t11
[31] v11:
[32] ⍝ preenchendo m[3;;]=tpo (trem popular)
[33]  i←1
[34] t111:→(i>tam)/v111
[35]  k←?tam
[36]  →(k=i)/t111
[37]  m[3;i;k]←gerapreco'p'
[38]  i←i+2
[39]  →t111
[40] v111:
------------------------------------------------------------
[0]  r←geracids67 tam;ra
[1]  ra←tam?26
[2]  r←ra[⍋ra]
------------------------------------------------------------
[ 0]  r←gerapreco tipo
[ 1]  →(tipo='s')/super
[ 2]  →(tipo='l')/luxo
[ 3]  →(tipo='p')/popular
[ 4] super:
[ 5]  r←(9+?4)+(?20)÷20
[ 6]  →0
[ 7] luxo:
[ 8]  r←(5+?4)+(?20)÷20
[ 9]  →0
[10] popular:
[11]  r←(1+?4)+(?20)÷20
[12]  →0
------------------------------------------------------------
[ 0]  r←instancia67 x;z1;z2;z3;z4;z5
[ 1] ⍝r←6⍴0
[ 2]  r←3⍴0
[ 3]  r[1]←⊂resolve67 x[1;;]
[ 4]  z1←0 9999 edit x[1;;]
[ 5]  z2←0 9999 edit x[2;;]
[ 6]  z3←0 9999 edit x[3;;]
[ 7]  z4←z1⌊z2
[ 8]  z5←z4⌊z3
[ 9]  r[2]←⊂resolve67 z4
[10]  r[3]←⊂resolve67 z5
------------------------------------------------------------
[ 0]  r←mostra67 x;cids;tab;i;j;k
[ 1]  cids←CIDS67[geracids67(⍴x)[2];]
[ 2]  tab←3 5⍴' SLUX LUXO POPU'
[ 3] ⍝         12345123451234 5
[ 4]  r←0 30⍴' '
[ 5]  i←1
[ 6] t1:→(i>3)/fim
[ 7]  j←1
[ 8] t2:→(j>((⍴x)[2]))/f2
[ 9]  k←1
[10] t3:→(k>((⍴x)[3]))/f3
[11]  →(x[i;j;k]=0)/soma
[12]  r←r,[1]1 30⍴30↑cids[j;],cids[k;],(5 2⍕x[i;j;k]),tab[i;]
[13] soma:k←k+1
[14]  →t3
[15] f3:
[16]  j←j+1
```

```
[17]  →t2
[18] f2:
[19]  i←i+1
[20]  →t1
[21] fim:
------------------------------------------------------------
[0]  r←orig numera2 oper;aa;⎕IO
[1]  ⎕IO←orig
[2]  r←4 0⍕oper
[3]  r←(((3 0⍕(((1↑⍴oper),1)⍴⍳1↑⍴oper)),[⎕IO+1]'|'),[⎕IO+1]' '),r
[4]  r←((1,aa)⍴'     ',4 0⍕⍳1↓⍴oper),[⎕IO]((1,aa←5+4×1↓⍴oper)⍴'   +',100⍴'-'),[⎕IO]r
------------------------------------------------------------
[ 0]  r←resolve67 x;ro;ra;i;q;s;t;tam;j
[ 1]  tam←1↑⍴x
[ 2]  ra←0 9999 edit x
[ 3]  i←1
[ 4] t1:→(i>tam)/fim
[ 5]  ra[i;i]←0
[ 6]  i←i+1
[ 7]  →t1
[ 8] fim:q←1
[ 9] v1:→(q>tam)/f1
[10]  s←1
[11] v2:→(s>tam)/f2
[12]  t←1
[13] v3:→(t>tam)/f3
[14]  →((ra[s;q]+ra[q;t])≥ra[s;t])/nao
[15]  ra[s;t]←ra[s;q]+ra[q;t]
[16] nao:t←t+1
[17]  →v3
[18] f3:s←s+1
[19]  →v2
[20] f2:q←q+1
[21]  →v1
[22] f1:
[23]  r←ra
------------------------------------------------------------
[ 0]  opesq vivoz67a n;CORRECAO;EVENTO;a;aaa;acuja;dhx;esse;f;lixo1;lixonol;nomes;ql39;qli
      nha;relat;resp;resu;upag;xixo;xk;xx;ylu;zz
[ 1] ⍝  )copy vivoz67 grupo
[ 2] ⍝  vars locais a mais=qlinha, nomes, ql39
[ 3] ⍝  verificar que ylu tenha 36 colunas (matar o pedemail)
[ 4]  →(0≠⎕NC'opesq')/qveio
[ 5]  opesq←10⍴' '
[ 6] qveio:
[ 7]  ⎕RL←⌊(⎕TS[7]+⎕TS[6]+⎕TS[5])*2.7364736473
[ 8]  EVENTO←'PLz67   '
[ 9]  dhx←2 10⍴('05/05/0005'⍕+/1000000 10000 1×⎕TS[3 2 1]),'05:05:05.0'⍕+/10000 100 1×⎕TS[
      4 5],⎕TS[6]+⎕TS[7]÷1000
[10]  →(isnum n)/1+⎕LC ⋄ ylu←ΔFM'c:⍀apl2⍀',(5↑n),'.ALU' ⋄ EVENTO←n
[11]  →(~isnum n)/1+⎕LC ⋄ ylu←(n,36)↑(n,4)⍴4 0⍕⍳n
[12] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[13]  ylu←n grupo ylu
[14] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```

```
[24]  esse[3;]←80↑4 2⍕VERSAOa←1.05
[25]  esse[4;]←80↑ylu[xk;⍳6]
[26] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝ incluir ↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓↓
[27]  →(36=1↓⍴ylu)/zebra
[28]  qlinha←(1=∧/[2]f[;⍳4]=((1↑⍴f),4)⍴'⍀#05')/⍳1↑⍴f
[29]  nomes←(ql39,80)↑((((ql39←(¯6+(1↓⍴ylu))÷39),39)⍴6↓ylu[xk;]))
[30]  f←(((qlinha-1),80)↑f),[1]nomes,[1](qlinha,0)↓f
[31]  relat←((2+1↑⍴ylu),1 0+⍴f)↑relat
[32]  →maiszebra
[33] ⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝⍝
```