

MM MM AAAAAAAAAA NN NN DDDDDDDDD ## ## P P P P P P P P P P AAAAAAAAAA S S S S S S S S S S  
MMM MMM AAAAAAAAAA NNN NN DDDDDDDDD ## ## P P P P P P P P P P AAAAAAAAAA S S S S S S S S S S  
MMMM MMMM AA AA NNNN NN DD DD ##### PP PP AA AA SS SS  
MM MM MM MM AA AA NN NN NN DD DD ##### PP PP AA AA SS  
MM MMMM MM AA AA NN NN NN DD DD ## ## PP PP AA AA SSS  
MM MM MM AAAAAAAAAA NN NN NN DD DD ## ## P P P P P P P P P P AAAAAAAAAA S S S S S S S S S S  
MM MM MM AAAAAAAAAA NN NN NN DD DD ## ## P P P P P P P P P P AAAAAAAAAA S S S S S S S S S S  
MM MM MM AA AA NN NN NN DD DD ## ## PP PP AA AA SSS  
MM MM MM AA AA NN NNNN DD DD ##### PP PP AA AA SS  
MM MM MM AA AA NN NNN DD DD ##### PP PP AA AA SS  
MM MM MM AA AA NN NN DDDDDDDDD ## ## PP PP AA AA SSSSSSSSSSSS  
MM MM AA AA NN N DDDDDDDDD ## ## PP PP AA AA SSSSSSSSSS

JJJJJJJJJ 444 333333333 11 AAAAAAAAAA  
JJJJJJJJJJ 4444 33333333333 111 AAAAAAAAAA  
JJ 44 44 33 1111 AA AA  
JJ 44 44 33 11 AA AA  
JJ 44 44 33 11 AA AA  
JJ 44444444444 3333 11 AAAAAAAAAA  
JJ 44444444444 3333 11 AAAAAAAAAA  
JJ 44 33 11 AA AA  
JJ JJ 44 33 11 AA AA  
JJ JJ 44 33 11 AA AA  
JJJJJJJJ 44 33333333333 1111111111 AA AA  
JJJJJJ 44 333333333 1111111111 AA AA

|       |       |     |     |          |      |         |    |    |     |    |          |          |     |     |       |       |
|-------|-------|-----|-----|----------|------|---------|----|----|-----|----|----------|----------|-----|-----|-------|-------|
| ****A | START | JOB | 431 | MAND#PAS | ROOM | 2.22.27 | PM | 10 | JUN | 20 | PRINTER1 | SYS TK4- | JOB | 431 | START | A**** |
| ****A | START | JOB | 431 | MAND#PAS | ROOM | 2.22.27 | PM | 10 | JUN | 20 | PRINTER1 | SYS TK4- | JOB | 431 | START | A**** |
| ****A | START | JOB | 431 | MAND#PAS | ROOM | 2.22.27 | PM | 10 | JUN | 20 | PRINTER1 | SYS TK4- | JOB | 431 | START | A**** |
| ****A | START | JOB | 431 | MAND#PAS | ROOM | 2.22.27 | PM | 10 | JUN | 20 | PRINTER1 | SYS TK4- | JOB | 431 | START | A**** |

J E S 2   J O B   L O G

14.22.25 JOB 431 IEF677I WARNING MESSAGE(S) FOR JOB MAND#PAS ISSUED  
14.22.25 JOB 431 \$HASP373 MAND#PAS STARTED - INIT 1 - CLASS A - SYS TK4-  
14.22.25 JOB 431 IEF403I MAND#PAS - STARTED - TIME=14.22.25  
14.22.25 JOB 431 CCI001C COMPILE /PASCAL /00:00:00.07/00:00:00/00000/ /MAND#PAS  
14.22.25 JOB 431 CCI001C XREF /PASCREF /00:00:00.05/00:00:00/00000/ /MAND#PAS  
14.22.25 JOB 431 CCI001C POSTPROC/ASMPCODE/00:00:00.04/00:00:00/00000/ /MAND#PAS  
14.22.27 JOB 431 CCI001C GO /LOADER /00:00:02.20/00:00:02/00000/ /MAND#PAS  
14.22.27 JOB 431 IEF404I MAND#PAS - ENDED - TIME=14.22.27  
14.22.27 JOB 431 \$HASP395 MAND#PAS ENDED

----- JES2 JOB STATISTICS -----

10 JUN 20 JOB EXECUTION DATE

4 CARDS READ

1,556 SYSOUT PRINT RECORDS

0 SYSOUT PUNCH RECORDS

0.04 MINUTES EXECUTION TIME

|    |                 |   |                       |
|----|-----------------|---|-----------------------|
| 1  | //MAND#PAS      | JOB CLASS=A,MSGCLASS=A,MSGLEVEL=(1,1),NOTIFY=HERC01,  | JOB 431               |
|    | //              | USER=HERC01,PASSWORD=                                 | GENERATED BY IKJEFF10 |
| 2  | // EXEC PAXCG,  | PARM.COMPILE='D-,K+',PARM.GO=MAP                      |                       |
| 3  | XXPAXCG PROC    | GOTIME=299,GOPARM=,GOREG=2048K,DUMP='DUMMY',          | 00010000              |
|    | XX              | SOUT='*',WORK=VIO,OPT='M+' 1..72 MARGINS              | 00020000              |
|    | ***             |   | 00030000              |
|    | ***             |   | 00040000              |
| 4  | XXCOMPILE EXEC  | PGM=PASCAL,REGION=8192K,PARM='&OPT'                   | 00050000              |
| 5  | XXSTEPLIB DD    | DSN=PASCAL.PASLIB,DISP=SHR                            | 00060000              |
| 6  | XXINPUT DD      | DDNAME=SYSIN  | 00070000              |
| 7  | XXPRD DD        | DSN=PASCAL.PASOBJ(PASMSG),DISP=SHR                    | 00080000              |
| 8  | XXOUTPUT DD     | UNIT=&WORK,DSN=&&XIN,SPACE=(TRK,(19,19)),DISP=(,PASS) | 00090000              |
| 9  | XXPRR DD        | DSN=&&PCODE,UNIT=&WORK,DCB=RECFM=VB,                  | 00100000              |
|    | XX              | SPACE=(TRK,(20,5),RLSE),DISP=(,PASS)                  | 00110000              |
| 10 | XXQRR DD        | DSN=&&TABLES,UNIT=&WORK,DCB=RECFM=VB,                 | 00120000              |
|    | XX              | SPACE=(TRK,(5,2),RLSE),DISP=(,PASS)                   | 00130000              |
|    | ***             |   | 00140000              |
|    | ***             |   | 00150000              |
| 11 | //SYSIN DD      | DSN=MANDEL.TEST.SOURCE(MAND#PAS),DISP=SHR             |                       |
| 12 | XXXREF EXEC     | PGM=PASCREF,REGION=2048K,COND=EVEN                    | 00160000              |
| 13 | XXSTEPLIB DD    | DISP=SHR,DSN=PASCAL.PASLIB                            | 00170000              |
| 14 | XXINPUT DD      | DISP=(OLD,DELETE),DSN=*.COMPILE.OUTPUT                | 00180000              |
| 15 | XXOUTPUT DD     | SYSOUT=&SOUT  | 00190000              |
|    | ***             |   | 00200000              |
|    | ***             |   | 00210000              |
| 16 | XXPOSTPROC EXEC | PGM=ASMPCODE,COND=(0,LT,COMPILE),REGION=2048K         | 00220000              |
| 17 | XXSTEPLIB DD    | DSN=PASCAL.PASLIB,DISP=SHR                            | 00230000              |
| 18 | XXINPUT DD      | DSN=*.COMPILE.PRR,DISP=(OLD,DELETE)                   | 00240000              |
| 19 | XXPRD DD        | DSN=*.COMPILE.QRR,DISP=(OLD,PASS)                     | 00250000              |
| 20 | XXOUTPUT DD     | SYSOUT=&SOUT  | 00260000              |
| 21 | XXPRR DD        | DSN=&&OBJECT,UNIT=&WORK,DCB=RECFM=FB,                 | 00270000              |
|    | XX              | SPACE=(TRK,(10,5),RLSE),DISP=(,PASS)                  | 00280000              |
|    | ***             |   | 00290000              |
|    | ***             |   | 00300000              |
| 22 | XXGO EXEC       | PGM=LOADER,COND=((0,LT,COMPILE),(0,LT,POSTPROC)),     | 00310000              |
|    | XX              | PARM='//TIME=&GOTIME,&GOPARM',REGION=&GOREG           | 00320000              |
| 23 | XXSTEPLIB DD    | DSN=PASCAL.PASLIB,DISP=SHR (NEEDED FOR K+ ONLY)       | 00330000              |
| 24 | XXSYSLIN DD     | DSN=*.POSTPROC.PRR,DISP=(OLD,DELETE)                  | 00340000              |
| 25 | XXSYSLOUT DD    | SYSOUT=&SOUT  | 00350000              |
| 26 | XXSYSLIB DD     | DISP=SHR,DSN=PASCAL.PASLIB                            | 00360000              |
| 27 | XX DD           | DISP=SHR,DSN=SYS1.FORTLIB                             | 00370000              |
| 28 | XXINPUT DD      | DDNAME=SYSIN  | 00380000              |
| 29 | XXPRD DD        | DUMMY   | 00390000              |
| 30 | XXQRD DD        | DSN=*.COMPILE.QRR,DISP=(OLD,DELETE)                   | 00400000              |
| 31 | XXFT06F001 DD   | SYSOUT=&SOUT  | 00410000              |
| 32 | XXOUTPUT DD     | SYSOUT=&SOUT  | 00420000              |
| 33 | XXQRR DD        | UNIT=&WORK,SPACE=(TRK,(2,2))                          | 00430000              |
| 34 | XXSYSUDUMP DD   | &DUMP.SYSOUT=&SOUT                                    | 00440000              |
|    | ***             |   | 00450000              |

STMT NO. MESSAGE

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4      IEF653I SUBSTITUTION JCL - PGM=PASCAL,REGION=8192K,PARM='M+'
8      IEF653I SUBSTITUTION JCL - UNIT=VIO,DSN=XXIN,SPACE=(TRK,(19,19)),DISP=(,PASS)
9      IEF653I SUBSTITUTION JCL - DSN=XXPCODE,UNIT=VIO,DCB=RECFM=VB,
10     IEF653I SUBSTITUTION JCL - DSN=XXTABLES,UNIT=VIO,DCB=RECFM=VB,
15     IEF653I SUBSTITUTION JCL - SYSOUT=*
20     IEF653I SUBSTITUTION JCL - SYSOUT=*
21     IEF653I SUBSTITUTION JCL - DSN=XXOBJECT,UNIT=VIO,DCB=RECFM=FB,
22     IEF653I SUBSTITUTION JCL - PARM='//TIME=299,',REGION=2048K
25     IEF653I SUBSTITUTION JCL - SYSOUT=*
31     IEF653I SUBSTITUTION JCL - SYSOUT=*
32     IEF653I SUBSTITUTION JCL - SYSOUT=*
33     IEF653I SUBSTITUTION JCL - UNIT=VIO,SPACE=(TRK,(2,2))
34     IEF653I SUBSTITUTION JCL - DUMMY,SYSOUT=*
34     IEF686I DDNAME REFERRED TO ON DDNAME KEYWORD IN PRIOR STEP WAS NOT RESOLVED
IEF236I ALLOC. FOR MAND#PAS COMPILE
IEF237I 280 ALLOCATED TO STEPLIB
IEF237I 191 ALLOCATED TO SYS00342
IEF237I 242 ALLOCATED TO INPUT
IEF237I 290 ALLOCATED TO PRD
IEF237I VIO ALLOCATED TO OUTPUT
IEF237I VIO ALLOCATED TO PRR
IEF237I VIO ALLOCATED TO QRR
IEF142I MAND#PAS COMPILE - STEP WAS EXECUTED - COND CODE 0000
IEF285I PASCAL.PASLIB KEPT *-----0
IEF285I VOL SER NOS= PUB002.
IEF285I SYS1.UCAT.MVS KEPT *-----0
IEF285I VOL SER NOS= MVSCAT.
IEF285I MANDEL.TEST.SOURCE KEPT *-----2
IEF285I VOL SER NOS= MV0001.
IEF285I PASCAL.PASOBJ KEPT *-----0
IEF285I VOL SER NOS= PUB003.
IEF285I SYS20162.T142225.RA000.MAND#PAS.XIN PASSED *-----2
IEF285I SYS20162.T142225.RA000.MAND#PAS.PCODE PASSED *-----2
IEF285I SYS20162.T142225.RA000.MAND#PAS.TABLES PASSED *-----1
IEF373I STEP /COMPILE / START 20162.1422
IEF374I STEP /COMPILE / STOP 20162.1422 CPU OMIN 00.07SEC SRB OMIN 00.00SEC VIRT 4148K SYS 272K
**** JOBCARD READ 20162 14:22:25 ****
* PRC-CCI 370/033 VS2 R03.8 TK4- STEP STATISTICS *
* STEP NAME COMPILE USER CORE 4148K TAPES USED/IO 000/000000000 START TIME 14:22:25 TCB TIME 00:00:00.07 *
* PGM NAME PASCAL SYSTEM CORE 272K DISKS USED/IO 004/000000002 STOP TIME 14:22:25 SRB TIME 00:00:00.00 *
* COND CODE 0000 PRIVATE AREA SZ 8192K ALLOC TIME 14:22:25 ELAPSED TIME 00:00:00 PGM LOAD 14:22:25 *
** PGNO * NR SRV UNITS * ACTIVE TIME *** PAGES IN *** PAGES OUT * # SWAPS * PGS SWAP IN * PGS SWAP OUT * VIO PGS IN * VIO PGS OUT **
* 004 944 00:00:00.08 0 0 0 0 0 0 0 0 0 6 *
***** VIO IO 000000005 *****
* CPU $ ( 0.02) + EXCP $ ( 0.00) + MEMORY $ ( 0.82) = TOTAL $ ( 0.84) *
*****
IEF236I ALLOC. FOR MAND#PAS XREF
IEF237I 280 ALLOCATED TO STEPLIB
IEF237I 191 ALLOCATED TO SYS00344
IEF237I VIO ALLOCATED TO INPUT
IEF237I JES2 ALLOCATED TO OUTPUT
IEF142I MAND#PAS XREF - STEP WAS EXECUTED - COND CODE 0000
IEF285I PASCAL.PASLIB KEPT *-----0
IEF285I VOL SER NOS= PUB002.
IEF285I SYS1.UCAT.MVS KEPT *-----0
IEF285I VOL SER NOS= MVSCAT.
IEF285I SYS20162.T142225.RA000.MAND#PAS.XIN DELETED *-----3
IEF285I JES2.JOB00431.S00101 SYSOUT
IEF373I STEP /XREF / START 20162.1422
IEF374I STEP /XREF / STOP 20162.1422 CPU OMIN 00.05SEC SRB OMIN 00.00SEC VIRT 2048K SYS 252K
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* PRC-CCI 370/033 VS2 R03.8 TK4- STEP STATISTICS *
* STEP NAME XREF USER CORE 2048K TAPES USED/IO 000/000000000 START TIME 14:22:25 TCB TIME 00:00:00.05 *
* PGM NAME PASCREF SYSTEM CORE 252K DISKS USED/IO 002/000000000 STOP TIME 14:22:25 SRB TIME 00:00:00.00 *
* COND CODE 0000 PRIVATE AREA SZ 2048K ALLOC TIME 14:22:25 ELAPSED TIME 00:00:00 PGM LOAD 14:22:25 *
** PGNO * NR SRV UNITS * ACTIVE TIME *** PAGES IN *** PAGES OUT * # SWAPS * PGS SWAP IN * PGS SWAP OUT * VIO PGS IN * VIO PGS OUT **
* 004 479 00:00:00.05 0 0 0 0 0 0 0 0 0 0 *
***** VIO IO 000000003 *****
* CPU $ ( 0.01) + EXCP $ ( 0.00) + MEMORY $ ( 0.29) = TOTAL $ ( 0.30) *
*****
IEF236I ALLOC. FOR MAND#PAS POSTPROC
IEF237I 280 ALLOCATED TO STEPLIB
IEF237I 191 ALLOCATED TO SYS00346
IEF237I VIO ALLOCATED TO INPUT
IEF237I VIO ALLOCATED TO PRD
IEF237I JES2 ALLOCATED TO OUTPUT
IEF237I VIO ALLOCATED TO PRR
IEF142I MAND#PAS POSTPROC - STEP WAS EXECUTED - COND CODE 0000
IEF285I PASCAL.PASLIB KEPT *-----0
IEF285I VOL SER NOS= PUB002.
IEF285I SYS1.UCAT.MVS KEPT *-----0
IEF285I VOL SER NOS= MVSCAT.
IEF285I SYS20162.T142225.RA000.MAND#PAS.PCODE DELETED *-----3
IEF285I SYS20162.T142225.RA000.MAND#PAS.TABLES PASSED *-----2
IEF285I JES2.JOB00431.S00102 SYSOUT
IEF285I SYS20162.T142225.RA000.MAND#PAS.OBJECT PASSED *-----1
IEF373I STEP /POSTPROC/ START 20162.1422
IEF374I STEP /POSTPROC/ STOP 20162.1422 CPU OMIN 00.04SEC SRB OMIN 00.00SEC VIRT 2064K SYS 296K
*****
* PRC-CCI 370/033 VS2 R03.8 TK4- STEP STATISTICS *
* STEP NAME POSTPROC USER CORE 2064K TAPES USED/IO 000/000000000 START TIME 14:22:25 TCB TIME 00:00:00.04 *
* PGM NAME ASMPCODE SYSTEM CORE 296K DISKS USED/IO 002/000000000 STOP TIME 14:22:25 SRB TIME 00:00:00.00 *
* COND CODE 0000 PRIVATE AREA SZ 2048K ALLOC TIME 14:22:25 ELAPSED TIME 00:00:00 PGM LOAD 14:22:25 *
** PGNO * NR SRV UNITS * ACTIVE TIME *** PAGES IN *** PAGES OUT * # SWAPS * PGS SWAP IN * PGS SWAP OUT * VIO PGS IN * VIO PGS OUT **
* 004 394 00:00:00.05 0 0 0 0 0 0 0 0 2 *
***** VIO IO 000000006 *****
* CPU $ ( 0.01) + EXCP $ ( 0.00) + MEMORY $ ( 0.23) = TOTAL $ ( 0.24) *
*****
IEF236I ALLOC. FOR MAND#PAS GO
IEF237I 280 ALLOCATED TO STEPLIB
IEF237I 191 ALLOCATED TO SYS00348
IEF237I VIO ALLOCATED TO SYSLIN
IEF237I JES2 ALLOCATED TO SYSLOUT
IEF237I 280 ALLOCATED TO SYSLIB
IEF237I 148 ALLOCATED TO
IEF237I DMY ALLOCATED TO INPUT
IEF237I DMY ALLOCATED TO PRD
IEF237I VIO ALLOCATED TO QRD
IEF237I JES2 ALLOCATED TO FT06F001
IEF237I JES2 ALLOCATED TO OUTPUT
IEF237I VIO ALLOCATED TO QRR
IEF237I DMY ALLOCATED TO SYSUDUMP
IEF142I MAND#PAS GO - STEP WAS EXECUTED - COND CODE 0000
IEF285I PASCAL.PASLIB KEPT *-----0
IEF285I VOL SER NOS= PUB002.
IEF285I SYS1.UCAT.MVS KEPT *-----0
IEF285I VOL SER NOS= MVSCAT.
IEF285I SYS20162.T142225.RA000.MAND#PAS.OBJECT DELETED *-----2
IEF285I JES2.JOB00431.S00103 SYSOUT
IEF285I PASCAL.PASLIB KEPT *-----14
IEF285I VOL SER NOS= PUB002.
IEF285I SYS1.FORTLIB KEPT *-----1
IEF285I VOL SER NOS= MVSRES.
IEF285I SYS20162.T142225.RA000.MAND#PAS.TABLES DELETED *-----2
IEF285I JES2.JOB00431.S00104 SYSOUT
IEF285I JES2.JOB00431.S00105 SYSOUT
IEF285I SYS20162.T142225.RA000.MAND#PAS.R0000001 DELETED *-----3

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IEF373I STEP /GO / START 20162.1422
IEF374I STEP /GO / STOP 20162.1422 CPU OMIN 02.20SEC SRB OMIN 00.00SEC VIRT 2052K SYS 316K
*****
* PRC-CCI 370/033 VS2 R03.8 TK4- STEP STATISTICS *
* STEP NAME GO USER CORE 2052K TAPES USED/IO 000/000000000 START TIME 14:22:25 TCB TIME 00:00:02.20 *
* PGM NAME LOADER SYSTEM CORE 316K DISKS USED/IO 003/000000015 STOP TIME 14:22:27 SRB TIME 00:00:00.00 *
* COND CODE 0000 PRIVATE AREA SZ 2048K ALLOC TIME 14:22:25 ELAPSED TIME 00:00:02 PGM LOAD 14:22:25 *
** PGNO * NR SRV UNITS * ACTIVE TIME *** PAGES IN *** PAGES OUT * # SWAPS * PGS SWAP IN * PGS SWAP OUT * VIO PGS IN * VIO PGS OUT **
* 004 24438 00:00:02.24 0 0 0 0 0 0 0 0 0 2 *
***** VIO IO 000000007 *****
* CPU $ ( 0.79) + EXCP $ ( 0.02) + MEMORY $ ( 12.86) = TOTAL $ ( 13.67) *
*****
IEF375I JOB /MAND#PAS/ START 20162.1422
IEF376I JOB /MAND#PAS/ STOP 20162.1422 CPU OMIN 02.36SEC SRB OMIN 00.00SEC
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```

1      ) PROGRAM MANDELBROTSET(OUTPUT); (* POSTER DELLO INSIEME DI MANDELBROT *)
2      ) CONST MAXIT=27; (* NUMERO DI "COLORI" IN REALTÀ CARATTERI *)
3      ) VAR STR:ARRAY[1..MAXIT] OF CHAR; (* TAVOLOZZA DEI COLORI/CARATTERI *)
4      331 1)
5      331 1) PROCEDURE MANDELBROT(MINRE,MINIM,MAXRE,MAXIM:REAL; STRP:INTEGER);
6      ) LABEL 99; (* EAT YOUR HEART OUT DIJKSTRA *)
7      ) VAR STEPX,STEPY,RE,IM,ZR,ZI,A,B:REAL;
8      184 2) XSIZE,YSIZE,X,Y,N,S:INTEGER;
9      208 2) BEGIN
10     ) XSIZE:=131*STRP; (* LE COLONNE VENGONO CONTATE 0..131 *)
11     6 2) YSIZE:=48*STRP; (* 0..49 RIGHE APPROSSIMANO IL RAPPORTO 3:2 *)
12     10 2) STRP:=STRP-1;
13     14 2) STEPX:=(MAXRE-MINRE)/XSIZE;
14     21 2) STEPY:=(MAXIM-MINIM)/YSIZE;
15     28 2) FOR S:=0 TO STRP (* CICLO PRINCIPALE: QUANTE STRISCIE *)
16     30 2) DO BEGIN
17     37 2) FOR Y:=0 TO YSIZE (* CICLO RIGHE *)
18     39 2) DO BEGIN
19     46 2) IM:=MINIM+STEPY*Y;
20     53 2) WRITE(' ');
21     59 2) FOR X:=132*S TO X+131 (* CICLO COLONNE *)
22     64 2) DO BEGIN
23     72 2) RE:=MINRE+STEPX*X;
24     79 2) ZR:=RE;
25     81 2) ZI:=IM;
26     83 2) FOR N:=1 TO MAXIT (* CICLO COLORI/CARATTERI *)
27     85 2) DO BEGIN
28     92 2) A:=ZR*ZR;
29     96 2) B:=ZI*ZI;
30     100 2) IF(A+B)>4
31     103 2) THEN GOTO 99;
32     109 2) ZI:=ZR*ZI*2+IM;
33     118 2) ZR:=A-B+RE
34     121 2) END;
35     132 2) 99: WRITE(STR[N]:1)
36     143 2) END;
37     151 2) WRITELN
38     151 2) END;
39     163 2) IF S<STRP (* FINITO UNA STRISCIA, SE NE SEGUONO ALTRE... *)
40     164 2) THEN WRITELN('1') (* ...INIZIA IN UNA NUOVA PAGINA *)
41     175 2) END
42     175 2) END;
43     184 2)
44     ) BEGIN
45     ) STR:='ABCDEFGHIJKLMNOPQRSTUVWXYZ '; (* I COLORI/CARATTERI *)
46     10 1) (* STAMPA UN RETTANGOLO 3:2 "SPALMATO" SU 5 STRISCIE *)
47     10 1) MANDELBROT(-2,-1,1,1,5)
48     22 1) END.

```

```

**** NO SYNTAX ERROR(S) DETECTED.
**** 48 LINE(S) READ, 1 PROCEDURE(S) COMPILED,
**** 209 P_INSTRUCTIONS GENERATED, 0.00 SECONDS IN COMPILATION.

```

CROSS REFERENCE OF IDENTIFIERS, LABEL DECLARATIONS AND GOTO STATEMENTS:

|            |    |    |    |    |    |    |    |
|------------|----|----|----|----|----|----|----|
| A          | 7  | 28 | 30 | 33 |    |    |    |
| ARRAY      | 3  |    |    |    |    |    |    |
| B          | 7  | 29 | 30 | 33 |    |    |    |
| BEGIN      | 9  | 16 | 18 | 22 | 27 | 44 |    |
| CHAR       | 3  |    |    |    |    |    |    |
| CONST      | 2  |    |    |    |    |    |    |
| DO         | 16 | 18 | 22 | 27 |    |    |    |
| END        | 34 | 36 | 38 | 41 | 42 | 48 |    |
| FOR        | 15 | 17 | 21 | 26 |    |    |    |
| GOTO       | 31 |    |    |    |    |    |    |
| IF         | 30 | 39 |    |    |    |    |    |
| IM         | 7  | 19 | 25 | 32 |    |    |    |
| INTEGER    | 5  | 8  |    |    |    |    |    |
| LABEL      | 6  |    |    |    |    |    |    |
| MAXIT      | 2  | 3  | 26 |    |    |    |    |
| MAXIM      | 5  | 14 |    |    |    |    |    |
| MAXRE      | 5  | 13 |    |    |    |    |    |
| MINIM      | 5  | 14 | 19 |    |    |    |    |
| MINRE      | 5  | 13 | 23 |    |    |    |    |
| N          | 8  | 26 | 35 |    |    |    |    |
| OF         | 3  |    |    |    |    |    |    |
| OUTPUT     | 1  |    |    |    |    |    |    |
| PROCEDURE  | 5  |    |    |    |    |    |    |
| PROGRAM    | 1  |    |    |    |    |    |    |
| RE         | 7  | 23 | 24 | 33 |    |    |    |
| REAL       | 5  | 7  |    |    |    |    |    |
| S          | 8  | 15 | 21 | 39 |    |    |    |
| STEPX      | 7  | 13 | 23 |    |    |    |    |
| STEPLY     | 7  | 14 | 19 |    |    |    |    |
| STR        | 3  | 35 | 45 |    |    |    |    |
| STRP       | 5  | 10 | 11 | 12 | 12 | 15 | 39 |
| THEN       | 31 | 40 |    |    |    |    |    |
| TO         | 15 | 17 | 21 | 26 |    |    |    |
| VAR        | 3  | 7  |    |    |    |    |    |
| WRITE      | 20 | 35 |    |    |    |    |    |
| WRITELN    | 37 | 40 |    |    |    |    |    |
| X          | 8  | 21 | 21 | 23 |    |    |    |
| Y          | 8  | 17 | 19 |    |    |    |    |
| ZI         | 7  | 25 | 29 | 29 | 32 | 32 |    |
| ZR         | 7  | 24 | 28 | 28 | 32 | 33 |    |
| MANDELBROT | 1  | 5  | 47 |    |    |    |    |
| XSIZE      | 8  | 10 | 13 |    |    |    |    |
| YSIZE      | 8  | 11 | 14 | 17 |    |    |    |

LIST OF PROCEDURES AND FUNCTIONS:

PROGRAM 1

# OF IDENTIFIERS: 43, # OF OCCURENCES: 128, # OF PROCEDURES: 1.



```
****      STANFORD PASCAL POST-PROCESSOR, VERSION OF OCT.-79.  
****      NO ASSEMBLY ERROR(S) DETECTED.  
****      1060 BYTES OF CODE GENERATED,  0.00 SECONDS IN POST_PROCESSING.
```

VS LOADER

OPTIONS USED - PRINT,MAP,NOLET,CALL,RES,NOTERM,SIZE=307200,NAME=\*\*GO

| NAME       | TYPE | ADDR  | NAME       | TYPE | ADDR  | NAME       | TYPE | ADDR  | NAME       | TYPE | ADDR  | NAME       | TYPE | ADDR  |
|------------|------|-------|------------|------|-------|------------|------|-------|------------|------|-------|------------|------|-------|
| MANDE001   | SD   | AC010 | \$MAINBLK  | SD   | AC340 | \$PASENT * | SD   | AC438 | \$PASINT * | LR   | AC9A0 | IFYVERRM*  | LR   | AD06A |
| IHCERRM *  | LR   | AD06A | IHOERRM *  | LR   | AD06A | IHNERRM *  | LR   | AD06A | ERRMON *   | LR   | AD06A | IFYVERRE*  | LR   | AD09E |
| IHOERRE *  | LR   | AD09E | IHNERRE *  | LR   | AD09E | IHCERRE *  | LR   | AD09E | \$PASCSP * | LR   | AD0A8 | \$WRADDR * | SD   | AE720 |
| \$IDLEN *  | SD   | AE8D0 | \$GETPNAM* | SD   | AE960 | \$ALIGN *  | SD   | AEAFO | \$ERRMSG * | SD   | AEB38 | \$TRANSVA* | SD   | AE740 |
| \$CNVTNUM* | SD   | AEEC8 | \$PRNT *   | SD   | AF008 | \$IVSCAN * | SD   | AFD98 | \$PRNTVAR* | SD   | B0410 | \$FROMLIN* | SD   | B0990 |
| \$PRNTLNK* | SD   | B0B30 | \$PRNTSYS* | SD   | B0CF0 | SNAPSHOT*  | SD   | B17C8 | #MAINBLK*  | SD   | B1CC8 |            |      |       |

TOTAL LENGTH 5D20  
ENTRY ADDRESS AC438

[illegible]



[illegible]

[illegible]

[illegible]

XW  
SSTUWZ  
OQRT  
NPYTSTUY  
MMOPQRVW

ZY



[illegible]

[illegible]

[illegible]

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 FFFFFFFGGGGGGGGHHIKUNRRNMNPTWS QPPPP0000PPV  
 FFFGGGGGGGGGGGGHHHIIJNRU UT VUSSU TSQQRSUX  
 GGGGGGGGGGGGGHHHIIJLMOQUZ XX WTTT  
 GGGGGGGGGGGGGHHHIIIIJK RW WX  
 GGGGGGGGGHHHHHHHIIIIJLU QRU Z  
 GGGGGGGHHHHHHHHHIIIIJKKLM UV  
 GGGGGHHHHHHHHHHHIIIIJJKKLOURQRVY  
 GGGGHHHHHHHHHHHIIIIJJJJKKKLMNOPW  
 GGHHHHHHHHHHHHHIIIIJJJJKKKLMMNO  
 HHHHHHHHHHHHHHIIIIJJJJJKKLLMMNOPQSTX  
 HHHHHHHHHHHHHHIIIIJJJJJKLLLMMNNNOPQRTVX  
 HHHHHHHHHHHHHHIIIIJJJKL PS POOPQT  
 HHHHHHHHHHIIIIJJKKLMO SRQRT  
 HHHHHHHHIIIIJKLMMO V VV UUUX  
 HHHHHHIIIIJLS T  
 HHHIIIIIIJJKKMOT  
 IIIIIIIIIJJJKL SV  
 IIIIIIIJJJJJKKLMPQ X  
 IIIIIJJJJJJJKKLLMNOPQS  
 IIIJJJJJJJJJKKLLMNOPQRTVZ  
 IIJJJJJJJJJKKLLM TTX  
 JJJJJJJJJJKKLMNOV YXY  
 JJJJJJJKKL T  
 JJJJJKKKKLMN  
 JKKKKKKKKLLMMO  
 KKKKKKLLLLMNNPQSUX  
 KKKKLLLLLLMMNOS XY  
 KKLLLLLLLLMNOQ  
 LLLLLLLMMNR  
 LLLLMMMMNNORX  
 MMMMMMMNNNOOPR Z  
 MMMMNNNNNOPR  
 NNNNNNNNOOP  
 00000000PQRTX  
 000000PPPQR  
 QPPPPPPPPQS  
 RQQQQQQQQRST  
 VSRRRRRRRRTY  
 VTSSSSSTUX  
 ZUTTTTTTV  
 WUUUUUVW  
 XWVVWY  
 YXXX  
 ZZZ

ZZZ  
YXXX  
XWVVWY  
WUUUUVW  
ZUTTTTTV  
VTSSSSSTUX  
VSRRRRRRTY  
RQQQQQQRST  
QPPPPPPQ  
000000PPQR  
0000000PQRTX  
NNNNNNNOOP  
MMMNNNNNOPR  
MMMMMMNNNOOPR Z  
LLLLMMMNNORX  
LLLLLLLLMMNR  
KKLLLLLLLLMNOQ  
KKKKLLLLLMNOS XY  
KKKKKKLLLLMNNPQSUX  
JKKKKKKLLMMO  
JJJJJJKKKLMN  
JJJJJJJKKL T  
JJJJJJJJJKLMNOV YYXY  
IIJJJJJJJKKLLM TTX  
IIJJJJJJJKKKLLMNOPQRTVZ  
IIIIJJJJJJJKKLLMNOPQS  
IIIIIIJJJJJKKLMPQ X  
IIIIIIJJJJJKKL SV  
HHHIIIIJJJKMOT  
HHHHHHIIIIJLS T  
HHHHHHHHIIIIJKLMMO V VV UUUX  
HHHHHHHHIIIIJJKLMO SRQRT  
HHHHHHHHHHIIIIJJJKL PS POOPQT  
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GGGGGGHHHHHHHHIIIIJJKKLOURQRVY  
GGGGGGGGHHHHHHIIIIJKKLM UV  
GGGGGGGGHHHHHHIIIIJLU QRU Z  
GGGGGGGGGGHHHHIIIIJK RW WX  
GGGGGGGGGGHHHHIIIIJLMOQUZ XX WTTT  
FFFGGGGGGGGGGHHHJNRU UT VUSSU TSQORSUX  
FFFFFFGGGGGGGGHHIKUNRRNMNPTWS QPPPP0000PPV  
FFFFFFFGGGGGGGHHIJJKKKKLNONPV RONNMMMMNNR  
FFFFFFFFGGGGGGGHHIIIIJJJKLR Y NMLLLMMNO ZV  
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FFFFFFFFFFFFFFFFGGGGGGHHHHHHHHIIIIJJJJJJJKKKKKKLLMMNOOPPQRVVX  
FFFFFFFFFFFFFFFFGGGGGGHHHHHHHHHHIIIIJJJJJJJKKKKLLMMNOPPRSTVXZ  
FFFFFFFFFFFFFFFFGGGGGGHHHHHHHHHHIIIIJJJJJJJKKKKLLMMNOPR UY  
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EFFFFFFFFFFFFFFFFGGGGGGHHHHHHIIIIJJKLNU XVX  
EEEEFFFFFFFFFFFFFFFFGGGGGGHHHHHHIIIIJJKKLMQPPRSU  
EEEEEEFFFFFFFFFFFFFFFFGGGGGGGGHHHHIIIIJJKKKLLMMNOQU Y  
EEEEEEFFFFFFFFFFFFFFFFGGGGGGGGHHHJJKLLLLMMNNOS  
EEEEEEFFFFFFFFFFFFFFFFGGGGGGGGGHHJNMPX00Q0000PZ

Z  
ZVVX  
TSS YZ  
RQQRT  
RPP0OP X  
UTQONNNNP W TSSTVZ

[illegible]

[illegible]

VR PNLKKJJJIIHHGGGGGG  
YWUSRQONNMLKKKJJJIIHHGGGGGG  
VURPONMMLKKKJJJIIHHGGGGGG  
RQTOMLLKKKJJJIIHHHHGGGGG  
NMLLLKJJJIIHHHHGGGG  
TPONNP UJIIHHHHHHGG  
XTRQT XYUNKJJJIIHHHHHH  
Z KJIIHHHHHH  
XNKJJJIIHHHH  
X QLKKJJJIIIII  
SQONLLKKKJJJIII  
Y SNMMLLLLKKJJJ  
ONNNNOYYOQLKK  
WSQQQQQRTX WNM  
VTTW PO  
ZZ VUV

U  
U  
X S  
TRQPOONML  
ZPNMMLKJ  
SQOOLKKJ  
Z MKJJ  
MLKJ  
SNMLKK  
SPONMLK  
WTSR ZPM  
P  
XS

XRR  
SQQ OML  
ZUWMLKKJ  
OMLKKJ  
SPNMMLLKJ  
TONMNS  
R U  
Y NK  
Y S J  
YPNNMPNKH  
UPNMLKJIIH  
QOOUJIIHHG  
W VJIIHHGG  
Y SJIIHHGG  
RONMLKIIHHGGGG  
TR KJIIHHGGGGG  
QKJIIHHGGGGGF  
ROMLJIIHHGGGGGGF  
MJJIIHHGGGGGGGF  
UOLKJIIHHHHGGGGGGGF  
T MKJJJIIHHHHGGGGGGGF  
OLKJJJIIHHHHGGGGGGGF  
YQNLKKJJJIIHHHHGGGGGGGFFF  
XPONMLKKKJJJIIHHHHGGGGGGGFFF  
ZVTRPONMLLKJJJIIHHHHGGGGGGGFFF  
XPONMLKKKJJJIIHHHHGGGGGGGFFF  
YQNLKKJJJIIHHHHGGGGGGGFFF  
OLKJJJIIHHHHGGGGGGGF  
T MKJJJIIHHHHGGGGGGGF  
UOLKJIIHHHHGGGGGGGF  
MJJIIHHGGGGGGGF  
ROMLJIIHHGGGGGGF



QKJIIHHGGGGGF  
TR KJIIHHGGGGG  
RONMLKIIHHGGGG  
Y SJIHHGGG  
W VJIHHGG  
Q00UJIIHHG  
UPNMLKJIIHH  
YPNNMPNKH  
Y S J  
Y NK  
R U  
TONMNS  
SPNMLLKJ  
OMLKKJ  
ZUWMLKKJ  
SQQ OML  
XRR

XS  
P  
WTSR ZPM  
SPONMLK  
SNMLKK  
MLKJ  
Z MKJJ  
SQ00LKKJ  
ZPNMMLKJ  
TRQPOONML  
X S  
U  
U

ZZ VUV  
VTTW PO  
WSQQQQQRTX WNM  
ONNNNOYYOQLKK  
Y SNMMLLLLLKKJJJ  
SQONLLKKKJJJIIII  
X QLKKJJJIIIIII  
XNKJJJIIIIHHHH  
Z KJIIHHHHHHH  
XTRQT XYUNKJIIHHHHHHH  
TPONNNP UJIIHHHHHHHGG  
NMLLLKJJIIHHHHHGGGG  
RQTOMLLKKKJJIIHHHHHGGGGG  
VURPONMMLKKKJJIIHHHGGGGGG  
YWUSRQONMMLKKKJJIIHHHGGGGGG  
VR PNLKKJJJIIHHGGGGGGG  
QMLLKJIIHHGGGGGGG  
WSQPRUNLKIIHHHGGGGGF  
U MKJIIHHGGGGGF  
XY VR NKIIHHGGGGGF  
SSZS OQVJIIHHHGGGF  
TPONMLKKJIIHHHGGG  
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V VMLKKJJJIIHHG  
XNLLLLMNPOMIG  
TRPONMN QNYOLH  
YZSPPPY KJJIH  
UVY YYVZ XTT PNLKJIIH  
ZYSTRQQT RQRSSUY TQOMLKJIIH  
YXSPONN POONNN00Q SRW T 00 KK  
U RNMLLLLLLLMMNPRTWPNNMOPPNPQ

YWW  
TTT  
RQQS  
W U QPOOPQW  
RPONNNNOPRU  
PMMMMMT V  
MLLLLLLLMMOPQRX  
NLLKKKKKKKKLMMNOQT  
XPONMMMLKKKJJJJJJKKKLM R UY

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

| LINE # | RANGE | RUN CNT | CONSTRUCT             | PAGE | 1 |
|--------|-------|---------|-----------------------|------|---|
| 10     | - 42  | 1       | PROCEDURE: MANDELBROT |      |   |
| 16     | - 42  | 5       | FOR STMT              |      |   |
| 18     | - 38  | 1205    | FOR STMT              |      |   |
| 22     | - 36  | 159060  | FOR STMT              |      |   |
| 27     | - 34  | 1748261 | FOR STMT              |      |   |
| 31     | - 31  | 115291  | THEN CLAUSE           |      |   |
| 35     | - 35  | 159060  | LABELLED STMT         |      |   |
| 40     | - 41  | 4       | THEN CLAUSE           |      |   |
| 45     | - 48  | 1       | PROCEDURE: \$MAINBLK  |      |   |

