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DECUS NO.	8-584
TITLE	PRECIS, A PROGRAM TO SCAN A BINARY TAPE
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DATE	November 14, 1972
SOURCE LANGUAGE	PAL III

PRECIS - A Program to Scan a Binary Tape

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PRECIS is a program to obtain quickly a brief summary of the core requirements of an unknown binary tape. It is useful to find out what areas may be free for inserting patches, etc. It does not guarantee success (e.g. some parts of core may be used as buffers); however, it can often give a clue as to what is on a particular binary tape. The program is also useful to find out what locations are used in order to store them efficiently on disk.

The program additionally prints out the total number of blocks (in octal) which are loaded from the tape. This information is useful when using the binary punch routine for punching out a section of core. A running checksum is also carried and tested for at the end of the tape.

An independent relocatable subroutine prints out the contents of the accumulator on the teletype in octal with leading zeros removed (except, of course, for the number "0").

Programming. The program was written in PAL III assembler language and was assembled on a 4K computer. Since it was designed as a stand alone program, no effort was made to economize on space, so the program extends over more core than is absolutely necessary. The program uses locations 20-50 on page 0 and 131_8 locations on page 1, 113_8 locations on page 3 and 66_8 locations on page 4. The program assumes the presence of the high speed paper tape reader. However, alteration to accommodate the low speed teletype reader is very simple and obvious.

Page four (1000-1066) is an independently compiled relocatable subroutine to type out the contents of the accumulator in octal. Leading

zeros are sensed and eliminated. If desired, the subroutine could easily be altered to print blanks instead of skipping, thus providing a uniform output format.

Use of Program. To operate the program, load the binary tape in core with the binary loader. Turn on the teletype and execute, starting at location 200_8. The program should be executed with the leader of a binary tape in the paper tape reader. After the program has stopped, it may be reexecuted by pressing "continue" or, in the case of a serious failure (the reader jamming), it may be restarted at location 200.

Output. The program scans the tape and types out the location of each new starting address followed by the address of the last location loaded in that block. If the block is a dummy block (no words loaded), it is ignored. On sensing the trailer, the running checksum is compared with that on the tape. If the checksum is in error, the computer types "CK", displays the difference between the computed and found checksum on the AC, and halts. If the internal checksum is identical with that on the tape, the computer types "OK", followed by the number (in octal) of blocks scanned.

A listing of the program follows.

Sample Output

```
PROGRAM ←PRECIS
SUB-FILE←
START AT←


20 - 50
200 - 327
375 - 377
600 - 711
776 - 777
1000 - 1066
OK
6 BLOCKS
```

Precis of PRECIS

```
7400 - 7552
OK
1 BLOCK
```

Precis of "Octal Memory Dump"

```
1 - 7
20 - 177
200 - 376
400 - 577
600 - 777
1000 - 1173
1200 - 1377
1400 - 1572
1600 - 1775
2000 - 2015
2031 - 2174
2200 - 3006
OK
14 BLOCKS
```

Precis of PAL III Assembler

```
                        /PRECIS. A PROGRAM TO SCAN A PDP-8 BINARY TAPE
                        /AND TO PRINT OUT THE NUMBER OF BLOCKS
                        /WRITTEN, THE STARTING AND FINAL ADDRESS OF EACH
                        /BLOCK, AND CHEKSUM CHECK. PROGRAM USES HIGH-SPEED
                        /PAPER TAPE READER, 4K PDP-8 AND TELETYPE. STARTING
                        /ADDRESS IS 200.
                        *20
0020  0000  T1,         0
0021  0000  T2,         0          /T'S ARE LOCATIONS WHERE 4 LAST FRAMES
0022  0000  T3,         0          /ARE STORED
0023  0000  T4,         0
0024  0664  READ,       RD         /READ SUB. ADD.
0025  0077  K77,        77
0026  0317  O,          317        /LETTERS USED IN OUTPUT
0027  0313              313
0030  0303              303
0031  0240              240
0032  0255              255        /A DASH
0033  1000  OUT,        1000       /AD OF OUTPUT ROUTINE
0034  1057              1057       /AD OF TYPE
0035  0302  B,          302
0036  0314              314
0037  0323              323
0040  1057  TYPE,       1057
0041  0672  CRLF,       LFCR
0042  0000  INLOC,      0
0043  0000              0
0044  0000  CCHK,       0
0045  0000              0
0046  0000  FST,        0
0047  0000  NBLOCK,     0
0050  7600  M200,       7600
              PAUSE
              *200
0200  6046  6046
0201  6016  6016
0202  4441  JMS I CRLF
0203  3042  DCA INLOC
0204  3043  DCA INLOC+1/FIN LOC
0205  3044  DCA CCHK/CALC CHKSUM
0206  3045  DCA CCHK+1/FOUND CHKSUM
0207  3046  DCA FST /FLAG SAYING ITS 1ST ADDRESS
0210  3047  DCA NBLOCK
0211  4424  JMS I READ/1ST FRAME
0212  3023  DCA T4
0213  1023  TAD T4
0214  1050  TAD M200
0215  7450  SNA/IS THE CH A LEADER OR TRAILER?
0216  5211  JMP .-5
0217  4424  JMS I READ/N, FILL UP THE BUFFERS
0220  3022  DCA T3
0221  4424  JMS I READ
0222  3021  DCA T2
0223  4424  JMS I READ
0224  3020  DCA T1
0225  1021  LOOP,TAD T2/IS IT THE END OF THE TAPE?
```

```
0226  1050  TAD M200
0227  7650  SNA CLA
0230  5777  JMP I 377/Y, GO TO END
0231  1023  TAD T4/N, IS IT A NEW ADD?
0232  7006  RTL
0233  7100  CLL
0234  7006  RTL
0235  7006  RTL
0236  7430  SZL
0237  4253  JMS AD/Y GO TO AD
0240  4276  JMS NOAD/N GO TO NO ADD SUB
0241  7200  CLA/SHIFT
0242  1021  TAD T2
0243  3023  DCA T4
0244  1020  TAD T1
0245  3022  DCA T3
0246  4424  JMS I READ
0247  3021  DCA T2
0250  4424  JMS I READ
0251  3020  DCA T1
0252  5225  JMP LOOP
0253  0000  AD, 0/SUB NEW ADDRESS
0254  2253  ISZ AD/JMP BACK TO *+2
0255  4776  JMS I 376/CALL CHKSUM SUB
0256  7200  CLA
0257  1046  TAD FST
0260  7440  SZA/IS IT THE FIRST AD?
0261  4303  JMS OUTPUT/WRITE OUT INFO
0262  2046  ISZ FST /NO MORE SKIPS
0263  7300  CLA CLL
0264  1023  TAD T4
0265  0025  AND K77
0266  7006  RTL
0267  7006  RTL
0270  7006  RTL
0271  1022  TAD T3
0272  3042  DCA INLOC/THE PREV SET UP IN. ADD
0273  1042  TAD INLOC
0274  3043  DCA INLOC+1/FINAL ADD
0275  5653  JMP I AD
0276  0000  NOAD, 0/NOT A NEW AD
0277  2043  ISZ INLOC+1/BUMP FINL AD
0300  7000  NOP/EVEN IF IT TURNS OVER 7777
0301  4776  JMS I 376/CHKSUM SUB
0302  5676  JMP I NOAD
0303  0000  OUTPUT, 0/PRINTS OUT INFO
0304  7200  CLA
0305  1042  TAD INLOC
0306  7041  CIA
0307  1043  TAD INLOC+1/IF INIT = FIN
0310  7650  SNA CLA /NO OUTPUT
0311  5703  JMP I OUTPUT/SINCE NODATA
0312  2047  ISZ NBLOCK/INC # OF BLOCKS
0313  1042  TAD INLOC
0314  4433  JMS I OUT/WRITE IN AD
0315  1031  TAD 0+3 /SP
0316  4440  JMS I TYPE
```

```
0317  1032  TAD OUT-1
0320  4440  JMS I TYPE
0321  1031  TAD O+3
0322  4440  JMS I TYPE
0323  1043  TAD INLOC+1
0324  1375  TAD 375 /SUBTRACT ONE FROM FIN AD
0325  4433  JMS I OUT
0326  4441  JMS I CRLF
0327  5703  JMP I OUTPUT
            *375
0375  7777  7777
0376  0703  CHK
0377  0600  END
            PAUSE
```

```
                        *600
0600  4777  END,        JMS I 777
0601  7300              CLA CLL
0602  1023              TAD T4  /CHKSUM
0603  7006              RTL
0604  7006              RTL
0605  7006              RTL
0606  1022              TAD T3
0607  7041              CIA
0610  1044              TAD CCHK
0611  3045              DCA CCHK+1
0612  1045              TAD CCHK+1
0613  7440              SZA
0614  5252              JMP ER
0615  1026              TAD 0
0616  4440              JMS I TYPE
0617  1027              TAD 0+1
0620  4440              JMS I TYPE
0621  4441              JMS I CRLF
0622  1047              TAD NBLOCK        /PRINT OUT # OF BLOCKS
0623  4433              JMS I OUT
0624  1031              TAD 0+3
0625  4440              JMS I TYPE
0626  1035              TAD B
0627  4440              JMS I TYPE
0630  1036              TAD B+1
0631  4440              JMS I TYPE
0632  1026              TAD 0
0633  4440              JMS I TYPE
0634  1030              TAD 0+2
0635  4440              JMS I TYPE
0636  1027              TAD 0+1
0637  4440              JMS I TYPE
0640  1047              TAD NBLOCK
0641  1376              TAD 776           /IS NBLOCK A 1?
0642  7650              SNA CLA
0643  5246              JMP .+3 /Y,SKIP THE LETTER 'S'
0644  1037              TAD B+2
0645  4440              JMS I TYPE
0646  4441              JMS I CRLF
0647  7402              HLT
0650  5651              JMP I .+1
0651  0200              200
0652  7200  ER,         CLA
0653  1030              TAD 0+2
0654  4440              JMS I TYPE
0655  1027              TAD 0+1
0656  4440              JMS I TYPE
0657  4441              JMS I CRLF
0660  1045              TAD CCHK+1
0661  7402              HLT
0662  5663              JMP I .+1
0663  0200              200
0664  0000  RD,         0
0665  7200              CLA
0666  6011              6011
0667  5266              JMP .-1
0670  6016              6016
0671  5664              JMP I RD
```

```
0672  0000  LFCR,    0
0673  7200           CLA
0674  1301           TAD .+5
0675  4440           JMS I TYPE
0676  1302           TAD .+4
0677  4440           JMS I TYPE
0700  5672           JMP I LFCR
0701  0215           215
0702  0212           212
0703  0000  CHK,     0
0704  7200           CLA
0705  1022           TAD T3
0706  1023           TAD T4
0707  1044           TAD CCHK
0710  3044           DCA CCHK
0711  5703           JMP I CHK
                *776
0776  7777           7777
0777  0303           OUTPUT

AD        0253
B         0035
CCHK      0044
CHK       0703
CRLF      0041
END       0600
ER        0652
FST       0046
INLOC     0042
K77       0025
LFCR      0672
LOOP      0225
M200      0050
NBLOCK    0047
NOAD      0276
O         0026
OUT       0033
OUTPUT    0303
RD        0664
READ      0024
TYPE      0040
T1        0020
T2        0021
T3        0022
T4        0023
```

```
                        /OCTAL PRINT OUT
                        /SUBROUTINE TO TAKE A BINARY PATTERN IN ACCUMULATOR
                        /AND PRINT OUT ON TELETYPE
                        /LEADING ZEROS ARE ELIMINATED
                        /S.A. 1000 (RELOCATABLE)
                        /USES 70(OCTAL) LOCATIONS
                        *1000
1000  0000              OUT,0
1001  3253              DCA CH
1002  7100              CLL
1003  3265              DCA FLAG          /FLAG FOR LEADING 0'S
1004  1253              TAD CH  /STORE CALLED UP CHAR IN AC
1005  0254              AND K7000         /PULL OUT 1ST DIGIT
1006  7450              SNA     /A 0?
1007  5214              JMP SEC /Y,GO ON
1010  2265              ISZ FLAG/N,SET FLAG
1011  7006              RTL
1012  7006              RTL     /MOVE TO RIGHT HAND SIDE OF AC
1013  4246              JMS PR  /PRINT IT
1014  1253  SEC,        TAD CH
1015  0255              AND K700          /2ND DIGIT
1016  7440              SZA     /0?
1017  5223              JMP .+4/N,PRINT IT
1020  1265              TAD FLAG          /Y,BUT IS IT LEADING?
1021  7650              SNA CLA /LEADING 0
1022  5230              JMP THIRD         /Y,GO ON
1023  2265              ISZ FLAG          /Y SET FLAG
1024  7012              RTR
1025  7012              RTR
1026  7012              RTR     /MOVE TO RIGHT
1027  4246              JMS PR
1030  1253  THIRD,      TAD CH
1031  0256              AND K70
1032  7440              SZA
1033  5237              JMP .+4 /ALL THIS LOGIC AS BEFORE
1034  1265              TAD FLAG
1035  7650              SNA CLA
1036  5242              JMP FOUR
1037  7012              RTR     /MOVE 3 DIGITS
1040  7010              RAR     /TO RIGHT
1041  4246              JMS PR  /PRINT
1042  1253  FOUR,       TAD CH
1043  0266              AND K7
1044  4246              JMS PR
1045  5600              JMP I OUT         /DONE
1046  0000  PR,         0
1047  1252              TAD .+3 /260 + #
1050  4257              JMS TY  /TYPE
1051  5646              JMP I PR
1052  0260              260     /CONSTANT
1053  0000  CH,         0       /STOREHOUSE OF CHARACTER
1054  7000  K7000,      7000    /MASKS
1055  0700  K700,       700
1056  0070  K70,        70
1057  0000  TY,         3
1060  6041              6041
1061  5260              JMP .-1
1062  6046              6046
1063  7200              CLA
1064  5657              JMP I TY
1065  0000  FLAG,       0
1066  0007  K7,         7
```

CH	1053
FLAG	1065
FOUR	1042
K7	1066
K70	1056
K700	1055
K7000	1054
OUT	1000
PR	1046
SEC	1014
THIRD	1030
TY	1057