



# DECUS

## PROGRAM LIBRARY

|                 |                                                                |
|-----------------|----------------------------------------------------------------|
| DECUS NO.       | 8-184                                                          |
| TITLE           | PAGE ROUTINE                                                   |
| AUTHOR          | F. Weil                                                        |
| COMPANY         | Automatic Control Engineering, Ltd.<br>Crayford, Kent, England |
| DATE            | March 23, 1969                                                 |
| SOURCE LANGUAGE | PAL III                                                        |

Although this program has been tested by the contributor, no warranty, express or implied, is made by the contributor, Digital Equipment Computer Users Society or Digital Equipment Corporation as to the accuracy or functioning of the program or related program material, and no responsibility is assumed by these parties in connection therewith.

## PAGE ROUTINE

DECUS Program Library Write-up

DECUS No. 8-184

### INTRODUCTION

Page Routine sets-up into pages, ASCII listings of program and sequentially numbers the pages. The output can be a listing on the Teletype and/or punched tape.

### PROGRAM COMMUNICATION

The program calls a subroutine ASC for binary to BCD Conversion and subroutine TYP for output.

### PROGRAM DESCRIPTION

The program sets-up a row of dots across the page and six blank lines. It then reads in an ASCII tape ignoring blank tape and leader 200 code. When a character greater than 200 is found a flag is set so that blank tape or trailer will be recognized. A character is read and output on the Teletype. If a carriage return character is found the line counter is incremented and, if a page is full the page counter is incremented. At the end of a page, two blank lines are left, the page number is typed, three blank lines left, and a line of dots typed.

If blank tape or trailer 200 code is found the remainder of the page being listed is left blank, the page numbered and a row of dots is printed at the bottom. The program then halts. If the continue button is pressed further tape is read and the page numbering continues from the current page number. If the program is restarted the page counter is returned to zero.

### OPERATION

Set-up the starting address at 200 and press LOAD ADDRESS and START. Load the ASCII tape to be read into the reader if a tape is required turn on the punch.

When the tape has been read the program halts. If the next tape is to follow in the same page sequence load this tape and press CONTINUE. If the tape to be read is to be listed starting with a new sequence of page numbers start the program by setting up its starting address and press LOAD ADDRESS and START.

The program is limited to a maximum of 99 pages.

To alter length of page change value of LNCT and LNCTS. (Note these are negative numbers).

/PAGINATION ROUTINE PGE  
 /ISSUE P  
 /F WEIL 24TH. MARCH 1969

|      |      |        |            |                                     |
|------|------|--------|------------|-------------------------------------|
| 0200 | 6032 | PGE01, | KCC        |                                     |
| 0201 | 6046 |        | TLS        |                                     |
| 0202 | 1367 |        | TAD DOTCTS | /INITIALISE DOT COUNTER             |
| 0203 | 3366 |        | DCA DOTCT  |                                     |
| 0204 | 3362 |        | DCA PGECT  | /ZERO PAGE COUNTER                  |
| 0205 | 4336 |        | JMS PGE09  | /INITIALISE ALL LINE COUNTERS       |
| 0206 | 3360 |        | DCA STFLG  | /RESET FLAG                         |
| 0207 | 7300 | PGE02, | CLA CLL    |                                     |
| 0210 | 1364 |        | TAD CLCD   | /SET UP CARRIAGE RETURN             |
| 0211 | 4751 |        | JMS I LTYP |                                     |
| 0212 | 1365 |        | TAD DOT    | /SET UP DOT                         |
| 0213 | 4751 |        | JMS I LTYP |                                     |
| 0214 | 2366 |        | ISZ DOTCT  | /IS POW OF DOTS TYPED ?             |
| 0215 | 5212 |        | JMP --3    | /NO                                 |
| 0216 | 1367 | PGE03, | TAD DOTCTS | /YES                                |
| 0217 | 3366 |        | DCA DOTCT  |                                     |
| 0220 | 1364 |        | TAD CLCD   |                                     |
| 0221 | 4751 |        | JMS I LTYP |                                     |
| 0222 | 1363 |        | TAD LFCD   |                                     |
| 0223 | 4751 |        | JMS I LTYP |                                     |
| 0224 | 2352 |        | ISZ LFCT1  | /ALL FLANK LINES AT TOP OF PG. OF ? |
| 0225 | 5222 |        | JMP --3    | /NO                                 |
| 0226 | 6031 | PGE06, | ISF        | /YES READ ONE CHAR                  |
| 0227 | 5226 |        | JMP --1    |                                     |
| 0230 | 6036 |        | REF        |                                     |
| 0231 | 3361 |        | DCA PGEBUF | /BUFFER CHAR                        |
| 0232 | 1360 |        | TAD STFLG  | /IS STFLG SET                       |
| 0233 | 7650 |        | SNA CLA    |                                     |
| 0234 | 5275 |        | JMP PGE07  | /NO                                 |
| 0235 | 1361 |        | TAD PGEBUF | /YES                                |
| 0236 | 7450 |        | SNA        | /IS PGEBUF 0 ?                      |
| 0237 | 5306 |        | JMP PGE05  | /YES                                |
| 0240 | 1370 |        | TAD M200   | /NO CHECK IF 200                    |
| 0241 | 7450 |        | SNA        |                                     |
| 0242 | 5306 |        | JMP PGE05  | /IS 200                             |
| 0243 | 1371 |        | TAD M15    | /NOT 200 IS CHAR CR ?               |
| 0244 | 7640 |        | SNA CLA    |                                     |
| 0245 | 5303 |        | JMP PGE08  | /NO                                 |
| 0246 | 2372 |        | ISZ LNCT   | /YES IS IT END OF PG. ?             |
| 0247 | 5303 |        | JMP PGE08  | /NO                                 |
| 0250 | 1361 |        | TAD PGEBUF | /YES TYPE CH                        |
| 0251 | 4751 |        | JMS I LTYP |                                     |
| 0252 | 6031 |        | ISF        |                                     |
| 0253 | 5252 |        | JMP --1    | /READ LF                            |
| 0254 | 6036 |        | REF        |                                     |
| 0255 | 4751 |        | JMS I LTYP |                                     |
| 0256 | 1363 |        | TAD LFCD   |                                     |
| 0257 | 4751 |        | JMS I LTYP |                                     |
| 0260 | 2354 |        | ISZ LFCT2  | /CORRECT NO. OF LINES BEFORE        |
|      |      |        |            | /PAGE NO. ?                         |
| 0261 | 5256 |        | JMP --3    | /NO                                 |
| 0262 | 2362 |        | ISZ PGECT  |                                     |

|      |      |                   |                               |
|------|------|-------------------|-------------------------------|
| 0263 | 1362 | TAD PGECT         | /SET OF PG. NO. FOR OP        |
| 0264 | 4750 | JMS I LASC        |                               |
| 0265 | 1364 | TAD CRCD          |                               |
| 0266 | 4751 | JMS I LTYF        |                               |
| 0267 | 1363 | TAD LFCD          |                               |
| 0270 | 4751 | JMS I LTYF        |                               |
| 0271 | 2356 | ISE LFCT3         | /CORRECT NO OF LINES AFTER    |
| 0272 | 5267 | JMP .-3           | /PAGE NO. ?                   |
| 0273 | 4336 | JMS PGE09         | /NO                           |
| 0274 | 5207 | JMS PGE02         | /YES RESET ALL LINE COUNTERS  |
| 0275 | 1361 | PGE07, TAD PGEBUF | /RETURN FOR NEXT PAGE         |
| 0276 | 1370 | TAD M20C          |                               |
| 0277 | 7750 | 7750              | /IS CHAF > 200 ?              |
| 0300 | 5226 | JMS PGE06         | /THIS IS EQUIV TO SPA SNA CLA |
| 0301 | 7201 | CLA IAC           | /NO                           |
| 0302 | 3360 | DCA STFLG         | /YES SET STFLG                |
| 0303 | 1361 | PGE08, TAD PGEBUF |                               |
| 0304 | 4751 | JMS I LTYF        | /OUTPUT A CHAF                |
| 0305 | 5226 | JMP PGE06         |                               |
| 0306 | 1355 | PGE05, TAD LFCT52 | /SET OF TO PRODUCE CORRECT    |
| 0307 | 1372 | TAD LNCT          | /NO. OF BLANK LINES ON PG.    |
| 0310 | 3372 | DCA LNCT          |                               |
| 0311 | 1363 | TAD LFCD          |                               |
| 0312 | 4751 | JMS I LTYF        |                               |
| 0313 | 2372 | ISE LNCT          | /CORRECT NO OF BLANK OP ?     |
| 0314 | 5311 | JMP .-3           | /NO                           |
| 0315 | 2362 | ISE PGECT         | /YES                          |
| 0316 | 1362 | TAD PGECT         |                               |
| 0317 | 4750 | JMS I LASC        |                               |
| 0320 | 1364 | TAD CRCD          |                               |
| 0321 | 4751 | JMS I LTYF        |                               |
| 0322 | 1363 | TAD LFCD          |                               |
| 0323 | 4751 | JMS I LTYF        |                               |
| 0324 | 2356 | ISE LFCT3         | /ALL LF BELOW NO. GONE ?      |
| 0325 | 5322 | JMP .-3           | /NO                           |
| 0326 | 1365 | TAD DOT.          | /YES SET OF ROW OF DOTS       |
| 0327 | 4751 | JMS I LTYF        |                               |
| 0330 | 2366 | ISE DOTCT         |                               |
| 0331 | 5326 | JMP .-3           |                               |
| 0332 | 4336 | JMS PGE09         | /CLEAR FLAG                   |
| 0333 | 3360 | DCA STFLG         |                               |
| 0334 | 7402 | HLT               |                               |
| 0335 | 5216 | JMP PGE03         |                               |
| 0336 | 7402 | PGE09, HLT        | /THIS ROUTINE INITIALISES     |
| 0337 | 1373 | TAD LNCTS         | /LINE COUNTERS                |
| 0340 | 3372 | DCA LNCT          |                               |
| 0341 | 1353 | TAD LFCT51        |                               |
| 0342 | 3352 | DCA LFCT1         |                               |
| 0343 | 1355 | TAD LFCT52        |                               |
| 0344 | 3354 | DCA LFCT2         |                               |
| 0345 | 1357 | TAD LFCT53        |                               |
| 0346 | 3356 | DCA LFCT3         |                               |
| 0347 | 5736 | JMP I PGE09       |                               |

/DATA

|      |      |         |      |
|------|------|---------|------|
| 0351 | 0431 | LTFP,   | TFP  |
| 0352 | 7772 | LFCT1,  | -6   |
| 0353 | 7772 | LFCT11, | -6   |
| 0354 | 7776 | LFCT2,  | -2   |
| 0355 | 7776 | LFCT22, | -2   |
| 0356 | 7775 | LFCT3,  | -3   |
| 0357 | 7775 | LFCT33, | -3   |
| 0360 | 0000 | STFLG,  | 0    |
| 0361 | 0000 | PGEBOF, | 0    |
| 0362 | 0000 | PGECT,  | 0    |
| 0363 | 0212 | LFCD,   | 212  |
| 0364 | 0215 | CRCD,   | 215  |
| 0365 | 0256 | DOT,    | 256  |
| 0366 | 7670 | DOTCT,  | -110 |
| 0367 | 7670 | DOTCTS, | -110 |
| 0370 | 7600 | M200,   | -200 |
| 0371 | 7763 | M15,    | -15  |
| 0372 | 7710 | LNCT,   | -70  |
| 0373 | 7710 | LNCTS,  | -70  |

|      |      |        |            |                                |
|------|------|--------|------------|--------------------------------|
|      |      | *400   |            |                                |
| 0400 | 7402 | ASC,   | BLT        |                                |
| 0401 | 3247 |        | DCA ASCBOF |                                |
| 0402 | 1246 |        | TAD CFCRA  |                                |
| 0403 | 4231 |        | JMS TYP    |                                |
| 0404 | 1244 |        | TAD SPCTS  |                                |
| 0405 | 3243 |        | DCA SPCT   | /SET UP SPACE COUNTER          |
| 0406 | 1245 |        | TAD SPACE  |                                |
| 0407 | 4231 |        | JMS TYP    |                                |
| 0410 | 2243 |        | ISZ SPCT   | /ALL SPACE OF?                 |
| 0411 | 5206 |        | JMP .-3    | /NO                            |
| 0412 | 3242 |        | DCA TENCT  | /CLEAR TENS COUNTER            |
| 0413 | 1247 |        | TAD ASCBOF | /RELOAD CHAR FOR CONVERSION    |
| 0414 | 1241 |        | TAD 210    |                                |
| 0415 | 7510 |        | SPA        |                                |
| 0416 | 5221 |        | JMP ASC01  | /ALL TENS HAVE GONE            |
| 0417 | 2242 |        | ISZ TENCT  | /INCREMENT TENS COUNTER        |
| 0420 | 5214 |        | JMP .-4    |                                |
| 0421 | 3247 | ASC01, | DCA ASCBOF |                                |
| 0422 | 1242 |        | TAD TENCT  | /SET UP TO PRINT MOST SIG FIG  |
| 0423 | 1240 |        | TAD F260   |                                |
| 0424 | 4231 |        | JMS TYP    |                                |
| 0425 | 1247 |        | TAD ASCBOF | /SET UP TO PRINT LEAST SIG FIG |
| 0426 | 1237 |        | TAD F272   |                                |
| 0427 | 4231 |        | JMS TYP    |                                |
| 0430 | 5600 |        | JMP I ASC  |                                |
| 0431 | 7402 | TYP,   | ALL        |                                |
| 0432 | 6041 |        | TSF        |                                |
| 0433 | 5232 |        | JMP .-1    |                                |
| 0434 | 6046 |        | CLS        |                                |
| 0435 | 7200 |        | CLA        |                                |
| 0436 | 5631 |        | JMP I TYP  |                                |
|      |      | /DATA  |            |                                |
| 0437 | 0272 | F272,  | BYE        |                                |

|      |      |          |     |               |
|------|------|----------|-----|---------------|
| 0440 | 0200 | 1750,    | 100 |               |
| 0441 | 7755 | 110,     | -10 | 7-10 1001-91. |
| 0442 | 0000 | TENUT,   | 0   |               |
| 0443 | 7755 | S. UT,   | -01 |               |
| 0444 | 7755 | S. UT,   | -0  |               |
| 0445 | 0140 | STACU,   | 100 |               |
| 0446 | 0215 | CLUGL,   | 115 |               |
| 0447 | 0000 | ASOF-25, | 0   |               |