



# DECUS

## PROGRAM LIBRARY

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| DECUS NO.       | 8-131  |
| TITLE           | SRCD, SOFTWARE RAPID CHARACTER                                       |
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| COMPANY         | Moore School of Electrical Engineering<br>University of Pennsylvania |
| DATE            | June 13, 1968  |
| SOURCE LANGUAGE |  |

# DEOLS

WITROUW 2 111 1354



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## SRCD, SOFTWARE RAPID CHARACTER

DECUS Program Library Write-up

DECUS No. 8-131

Without a character generator, the writer of text display programs must ordinarily face the proposition of seven display cycles (at least 21 PDP-8 cycles) for overhead. This overhead is computed on the basis of a display file arranged as a series of PJMP's to character subroutines (and a final JUMP to the beginning again). The subroutines terminate in POP's. Flicker sets in rapidly under these conditions.

SRCD (Software Rapid Character Display) offers an alternative text display method. To be useful, this technique requires that text be stored somewhere in either strings or buffers. Character routines are terminated now by STOP's. The following sequence (called a character cycle) is performed to display each character (assume that the display is running, and that a STOP will occur):

- 1) Fetch the next character in a string or buffer.
- 2) Perform a look-up to determine the starting address of its display subroutine.
- 3) Wait for the internal stop flag.
- 4) Start the display at the computed address.
- 5) Begin next character cycle at 1).

The display loop is always a closed one. To perform other computation, two possibilities present themselves:

- a) Running under interrupts
- b) Entering a subroutine during each character cycle to check flags and perform I/O.

Method b) has not been attempted because a) seemed to offer advantages of immediacy in handling input/output.

## Character Set for the DEC-338

The accompanying character set, consisting of the printing characters on the Teletype keyboard has proven very useful in text display programs. An example of their format is:

CH SPCE(3030,0000)  
1 2 3

1. Macro name (ignore)
2. Character name
3. Increment mode Data State commands for the character

Each character should have an EDS INCR before the first Data State word and a STOP or POP following the last.

CHARACTER MACRO DEFINITION SET (CMD) \*\*\* 64 CARDS \*\*\* 10/2/67 \*\*

CH SPCE(3030,0000)  
 CH EXCL(1050,1272,6237,2706)  
 CH QUOT(2113,7212,2076,3707)  
 CH NUMB(2063,6063,5052,1167,6467,5552,3701)  
 CH DOLR(2772,7272,6723,6556,5711,6756,5515,6330,3007)  
 CH PERC(5271,5124,6456,5017,6754,5127,0000)  
 CH ANDS(5271,5253,5455,5677,5554,2150,1656,2000)  
 CH APOS(2112,7237,2706)  
 CH LPAR(3122,5265,6667,3000)  
 CH RPAR(1671,6263,3727,0700)  
 CH ASTR(3312,2167,5062,3075,6527,7250,5730,0600)  
 CH PLUS(2072,6411,5156,5750,2707)  
 CH COMA(5751,5230,1007)  
 CH MINS(3270,5027,0700)  
 CH PERD(2050,3000)  
 CH SLSH(1571,6137,0600)  
 CH 0(7262,5160,5776,5655,6414,5411,7111,5137,2507)  
 CH 1(5060,5372,6255,3717,1007)  
 CH 2(1571,6152,5364,5536,2670,5020,0000)  
 CH 3(7051,5253,5420,6253,6455,3656,3731,0700)  
 CH 4(2050,7272,7560,1050,2707)  
 CH 5(5257,6051,5253,7472,7050,3726,0600)  
 CH 6(7270,1152,5364,5556,3616,7051,5227,0000)  
 CH 7(1662,7151,5274,5437,3700)  
 CH 8(6212,6251,6057,5655,6436,1470,5152,2700)  
 CH 9(5257,6051,7252,5364,5556,5760,3700)  
 CH COLN(2050,2252,3700)  
 CH SEMI(5751,5212,5237,1000)  
 CH LESS(2020,7361,1637,0700)  
 CH EQAL(1332,7060,2534,7060,2700)  
 CH GRTR(7163,3717,1700)  
 CH QUES(3212,6157,5655,5616,5630,1000)  
 CH ATSN(6024,6251,5057,5657,5162,6364,5537,3007)  
 CH A(1672,7251,6057,7666,2274,2730,0000)  
 CH B(1672,7252,7057,5655,6430,6655,6430,2000)  
 CH C(7262,5160,5735,1557,6051,2007)  
 CH D(7272,7057,7656,5574,3030,0000)  
 CH E(7272,7035,6035,7060,2000)  
 CH F(7272,7050,3514,6035,5030,3000)  
 CH G(7262,5160,5725,1470,6655,6430,2000)  
 CH H(1672,7252,3670,3250,7676,2000)  
 CH I(7053,7223,7055,2727,0700)  
 CH J(5257,6051,7262,3627,0700)  
 CH K(1672,7252,3127,7524,7757,2000)  
 CH L(7272,3626,5670,5020,0000)  
 CH M(1672,7252,6761,7676,2000)  
 CH N(1672,7252,7750,7236,7620,0000)  
 CH O(7262,5160,5776,5655,6430,2000)  
 CH P(1672,7252,7057,5655,6437,2000)  
 CH Q(7262,5160,5776,3477,1364,2051,2701)

CMD'S (CON'D)

CH R(1672,7252,7057,5655,6477,2000)  
CH S(5257,6051,5253,6453,5251,6057,3716,0600)  
CH T(3222,5260,6024,7676,2020,0000)  
CH U(7272,3050,7666,5564,3020,0000)  
CH V(1272,6230,5076,1075,5337,2100)  
CH W(7272,3050,7666,5553,5215,5630,2000)  
CH X(1662,7151,5234,5456,5717,6756,2000)  
CH Y(1050,7263,5230,5010,6537,0700)  
CH Z(5271,5152,7454,2657,1050,2555,7050,2000)  
CH LBRK(7024,7272,6037,2607)  
CH BKSL(3321,7767,2000)  
CH RBRK(7072,7264,3727,0700)  
CH UPAR(3252,6167,7451,1666,6630,1000)  
CH BKAR(2156,6361,1065,7027,0700)