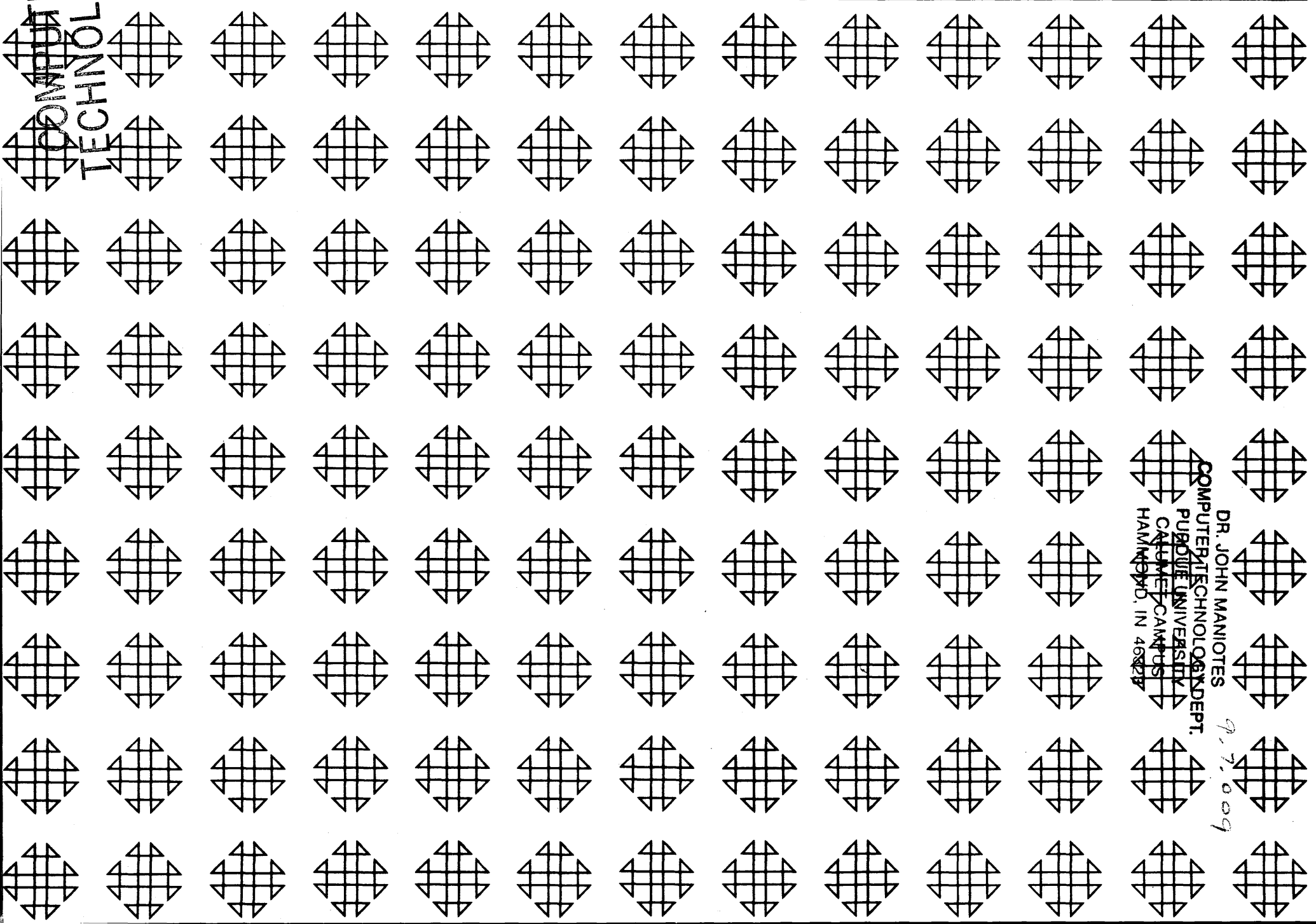

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*Included in program sent to Library only

DECK KEY

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1620 Multicurve Plotting Program

Jack Burgeson
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340 South Broadway
Akron 8, Ohio

Modifications or revisions to this program, as they occur, will be announced in the appropriate Catalog of Programs for IBM Data Processing Systems. When such an announcement occurs, users should order a complete new program from the Program Information Department.

1620 LIBRARY ABSTRACT

Title:	1620 Multicurve Plotting Program
Subject Classification:	9.7.
Authors:	Jack Burgeson and James Snediker IBM Corporation, Akron, Ohio
Direct Inquiries To:	Jack Burgeson IBM Corporation 340 S. Broadway Akron 8, Ohio
Purpose/Description:	Program accepts data from cards and will plot up to ten dependent variables versus a common independent variable. Each dependent variable may have a separate axis scale. Output is on typewriter, cards, paper tape, or any combination of these.
Mathematical Method:	N/A
Restrictions, Range:	FORTRAN Floating point restrictions apply. Able to plot any character except (minus sign, plus sign, decimal point, zero) for any curve. Y axis range 51 points. X axis range unlimited. Maximum number of data points per observation is 9999.
Storage Requirements:	14K (approximately)
Equipment Specifications:	Card 1620, 20K memory, Autodivide
Additional Remarks:	Program is written in FORTRAN and SPS. It will accept an essentially unlimited number of variables and plot only those specified by the user. The scales of all axes are specified as input data and are not restricted in any way. Not relocatable. Running speed depends on problem, very close to I/O speed. Run successfully to date four times. Programming time two weeks. Output cards will plot successfully on offline 407 wired 80 - 80. One need not worry about zero print control on the 407.

PROGRAM DESCRIPTION

The purpose of this program is to provide a simple method for displaying data graphically on the 1620. The Y axis is plotted across the page (51 points) and the X axis is plotted down the page. A maximum of ten curves can be plotted simultaneously, using a different character for each. An "at" symbol will be plotted where two or more curves intersect.

For each curve to be plotted there is a separate Y axis so that the dependent variables do not have to be plotted to the same axis. Any point which does not lie on the graph (i.e. too large or too small) is indicated by an "*" next to the variable character above or below the graph.

Output is provided on cards, paper tape, typewriter, or any combination of these three units. Any character except

(+)	plus sign
(-)	minus sign
(0)	zero
(≠)	record mark
(.)	decimal point

may be plotted.

Jack Burgeson
James Snediker
IBM Akron
April 27, 1962

INPUT DATA DESCRIPTION

Card 1 - Header Card

Any alphanumeric/special characters descriptive of the plot to be made.

Card 2 - Parameters Description Card

Contains the following items, in order, in FORTRAN floating point format, anywhere between cc 1 and 72.

Initial value of Xo	(FIRSX)
Incremental value dX	(DELTX)
No. of curves to be plotted*	(COUNT)
No. of data points per observation**	(FNOPP)

Cards 3 to (COUNT + 2) - Curves Description Cards

Each card contains information on one of the curves to be plotted. These cards, if more than one, may be in any order. Contains the following items, in order, in FORTRAN floating point format, anywhere between cc 1 and 58.

Lowest Y value Yio	(FIRSY(I))
Incremental value dYi	(DELTY(I))
Position of Yi in the observation set	(POSY)***

Eleven alphanumeric characters fill out each of these cards, anywhere up to cc 72. The first character will be the character used for plotting.

The next ten characters are curve identification. They may be blank but must exist.

Cards (COUNT + 3) - ... - Data Cards

As many as required. Data punched in order by observation in any FORTRAN floating point format between cc 1 and 72. All points must be present.

*Should be integer, 1,2,3,...,10
**Must be equal to or greater than COUNT, maximum size 9999.
***Must, of course, be equal to or less than FNOPP.

OUTPUT DATA DESCRIPTION

Output is on typewriter (sense switch 1 on), and/or on cards (sense switch 2 on), and/or on paper tape (sense switch 3 on). At least one of these three switches should be on.

The following describes card output only. Typewriter and tape output are logically the same.

Card 1	Duplicate of the header card
Cards 2-3	Blank
Cards 4-19 (max)	Set up of first curve Y axis*
Cards 20-...	Plotted points cards

Format** of plotted points cards:

cc 1-15	X value
cc 16	blank
cc 17-18	C* if Y value below X axis
cc 19-68	bbb...C...bb
cc 69-70	*C if Y value above plot
cc 71-80	blank

*Repeated for each curve plotted up to 10.
**Assume that C is the character plotted.

Sample Data Listing

```
   SAMPLE  PROBLEM  FOR  1620  GENERAL  PLOT  PROGRAM                M      1
    0.      1.      3.      5.                                       M     02
   0.     2.     5.      D  DENSITY                                   M     03
    25.     0.5    1.      C  TEMP                                    M     04
   -1.0E-03     5.0E-04    3.       T  TORQUE                        M     05
24. 0. -1. 1. 103.                                                   M     06
  27.  0.  -.001    1.    99.                                        M     07
  28.5  0.    0.    0.    95.                                        M     08
  29.5  0.     .001  1.    90.                                       M     09
  30.5  0.      .002     0.     86.                                  M     10
  32.  0.     .003   0.     82.                                      M     11
  33.     0.     .004     0.     77.                                 M     12
   33.5     0.     .005     0.      72.                              M     13
  34.5  0.    .006   1.     67.                                       M     14
  35.5   0.     .007     1.     63.                                  M     15
    37.    0.     .008     1.     58.5                               M     16
   38.  0.     .009   1.       54.                                   M     17
   38.75     0.     .01    1.    50.                                 M     18
  39.5     0.      .011     1.     47.                              M     19
   41.    0.     .012  1.     45.                                    M     20
   42.  0.    .013   1.    43.                                       M     21
  43.5   0.    .014     1.    41.                                    M     22
   44.5   0.    .015  1.     40.                                     M     23
   45.5   0.  .016   1.      38.                                     M     24
    46.25     0.     .017   1.     36.7                             M     25
   47.   1.    .018     1.       35.5                               M     26
    47.5   1.     .019     1.     34.2                              M     27
   48.     0.      .02     1.     33.                               M     28
    48.25     1.      .021   1.      31.5                           M     29
   48.75     1.     .022     1.     31.                             M     30
   49.    1.     .023     1.     30.                                M     31
   48.75     1.  .024   1.     29.5                                 M     32
   48.25    1.     .025     1.      28.                            M     33
  48.    1.    .026     1.     27.                                  M     34
   47.5  1.    .027     1.      25.5                                M     35
  47.   1.     .028     1.    24.                                    M     36
   46.25   1.     .029      1.      23.                             M     37
   45.     1.     .03   1.      21.                                 M     38
    44.5     1.  .029      1.      19.                              M     39
     43.5     1.      .028     1.       17.                        M     40
    42.     1.     .027      1.     15.                             M     41
   41.5     1.     .026   1.     12.                                M     42
   39.5     1.   .025      1.      10.5                            M     43
    38.      1.     .024      1.     9.5                           M     44
    36.5     1.      .023   1.     8.5                             M     45
     35.      1.     .022      1.      7.9                         M     46
   34.     1.      .021      1.      7.3                            M     47
    32.5     1.    .02     1.     6.8                              M     48
   31.      1.      .019      1.      6.4                          M     49
   29.5     1.      .018     1.      6.                            M     50
   28.5     1.    .017      1.      5.85                           M     51
     27.75     1.      .016      1.      5.6                       M     52
   26.5     1.      .015     1.      5.4                           M     53
    25.    1.     .014     1.      5.2                             M     54
    24.      1.     .013     1.     5.1                            M     55
     23.      1.    .012     1.      5.0                           M     56
```

SAMPLE PROBLEM FOR 1620 GENERAL PLOT PROGRAM

M 1

SYMBOL D

DENSITY

```
     •  1  2  3  4  5  6  7  8  9  1
     0  0  0  0  0  0  0  0  0  0  0
     0  •  •  •  •  •  •  •  •  •  0
     0  0  0  0  0  0  0  0  0  0  •
     0  0  0  0  0  0  0  0  0  0  0
```

SYMBOL C

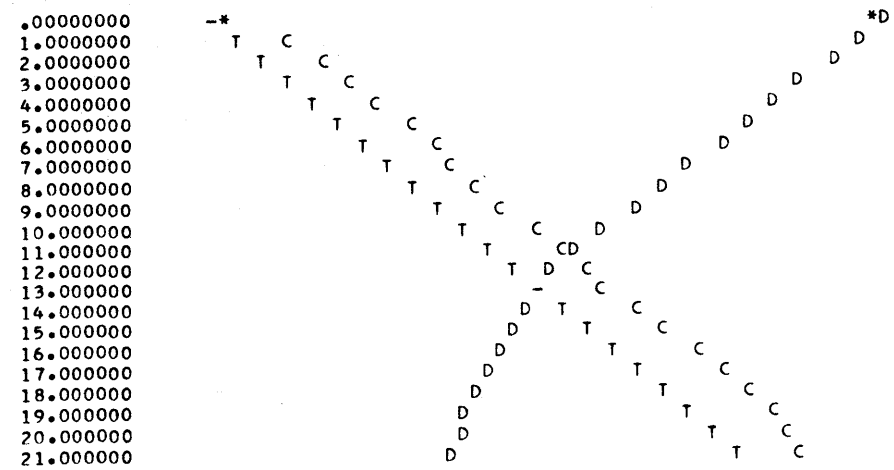
TEMP

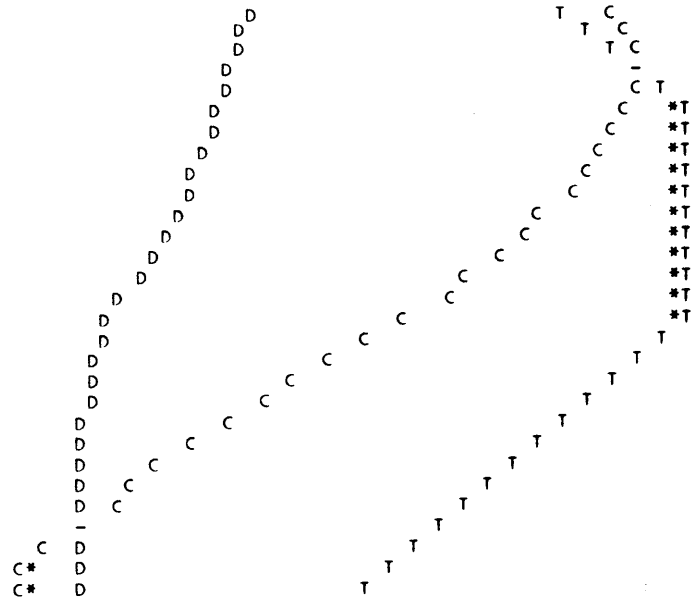
```
     2  2  3  3  3  3  4  4  4  4  5
     5  7  0  2  5  7  0  2  5  7  0
     •  •  •  •  •  •  •  •  •  •  •
     0  5  0  5  0  5  0  5  0  5  0
     0  0  0  0  0  0  0  0  0  0  0
```

SYMBOL T MINUS

TORQUE

```
     1  1  4  6  9  1  1  1  1  2  2
     •  •  •  •  •  •  •  •  •  •  •
     0  5  0  5  0  1  4  6  9  1  4
     0  0  0  0  0  5  0  5  0  5  0
     0  0  0  0  0  0  0  0  0  0  0
     0  0  0  0  0  0  0  0  0  0  0
     0  0  0  0  0  0  0  0  0  0  0
     0  0  0  0  0  0  0  0  0  0  0
     0  0  0  0  0  0  0  0  0  0  0
     E  E  E  E  E  E  E  E  E  E  E
MINUSMINUSMINUSMINUSMINUSMINUSMINUSMINUSMINUSMINUSMINUS
     0  0  0  0  0  0  0  0  0  0  0
     3  3  3  3  3  2  2  2  2  2  2
```





OPERATION NOTES AND MISCELLANEOUS

1. Set sense switches as follows:

   1. On for typewriter output
   2. On for card output
   3. On for paper tape output

2. Load the program in normal manner

   "RESET" on console
   "LOAD" on reader
   "START" on reader to read last 2 cards
   Program will begin immediately

Place data in reader, hit "start" on reader. Action is automatic from this point.

Start of program is location 07500.

Miscellaneous

1. To achieve 407 Y axis printing of zeros and minus signs, all zeros are replaced by alphabetic O's, minus signs by the word "MINUS".

2. The FORTRAN print command is in location 06470.
   It reads: 39 07117 00100
   Flags in the field at 07116 are in random order. The numbers 2,3., and 0.05 look like-(exclusive of flag)

2	00 00 00 00 72 00 0≠ 00 72 00 0≠ 00 00 00 00 0≠
3.	00 73 03 70 70 70 70 70 70 70 0≠ 00 00 00 00 0≠
0.05	00 75 03 70 70 70 70 70 70 70 45 20 70 72 00 0≠

   The PRINT subroutine is reached by branching to location 05684. Data to be fixed for printing goes in just ahead of 05684.

3. Error messages are those of the standard FORTRAN system.

4. All input must be in acceptable Floating point format

5. Key to decks supplied:

Deck 1	Program Deck (Squeezed)
Deck 2	Sample Data Deck (M1 to M56)
Deck 3	Fortran Source Deck (C1 to C58)
Deck 4	SPS Source Deck (SP 1 to SP 277)


```
C     1620 MULTI-CURVE PLOTTER, J BURGESON, J SNEDIKER, I B M AKRON      C  01
      DIMENSION FIRSY(10), DELTY(10), YVAL(11),IPOS(10)                 C  02
    1 S = 0.                                                            C  03
      IF(SENSE SWITCH 1) 2,3                                            C  04
    2 DUMMY = S                                                         C  05
      S = 1.                                                            C  06
    3 IF(SENSE SWITCH 2) 4,5                                            C  07
    4 DUMMY = 1.                                                        C  08
      S = 1.                                                            C  09
    5 IF(SENSE SWITCH 3) 6,7                                            C  10
    6 DUMMY = S                                                         C  11
      S = 1.                                                            C  12
    7 IF (S) 9,8,9                                                      C  13
    8 DUMMY = S                                                         C  14
      PAUSE                                                             C  15
      GO TO 1                                                           C  16
    9 DUMMY = S                                                         C  17
C     STMT 9 READS AND OUTPUTS HEADER CARD                              C  18
      READ 8888,FIRSX,DELTX,COUNT,FNOPP                                 C  19
      N = COUNT                                                         C  20
      NOPP=FNOPP                                                        C  21
      IF(N-10) 11,11,10                                                 C  22
   10 STOP                                                              C  23
   11 DO 26 I=1,N                                                       C  24
      READ 9999,FIRSY(I),DELTY(I),POSY                                  C  25
      YVAL(1) = FIRSY(I)                                                C  26
      IPOS(I)=POSY                                                      C  27
      DO 16 J=2,11                                                      C  28
   16 YVAL(J)=YVAL(J-1) + 5.0*DELTY(I)                                  C  29
   17 DUMMY = S                                                         C  30
C     STMT  17 PUTS PLOT CHAR IN TABLE, OUTPUTS Y AXIS SETUP            C  31
   26 CONTINUE                                                          C  32
      X = FIRSX                                                         C  33
   31 DUMMY = S                                                         C  34
C     STMNT 31 BLANKS OUTPUT AREA                                       C  35
      DO  43 J=1,NOPP                                                   C  36
      READ 7777,Y                                                       C  37
      DO 50 I=1,N                                                       C  38
      IF(J-IPOS(I))50,44,50                                             C  39
   50 CONTINUE                                                          C  40
      GO TO 43                                                          C  41
   44 INDEX=19.5 + (Y-FIRSY(I))/DELTY(I)                                C  42
      IF(INDEX-18) 32,32,35                                             C  43
   32 INDEX = 17                                                        C  44
   33 DUMMY = S                                                         C  45
C     STMT 33 PUTS * IN CC 18                                           C  46
   35 IF(INDEX-69)39,39,37                                              C  47
   37 INDEX=71                                                          C  48
   38 DUMMY = S                                                         C  49
C     STMT 38 PUTS * IN CC 69                                           C  50
   39 DUMMY = S                                                         C  51
C     STMT 39 PUTS PLOT CHAR IN OUTPUT AREA                             C  52
   43 CONTINUE                                                          C  53
   45 DUMMY = S                                                         C  54
C     STMT 45 OUTPUTS PLOT LINE                                         C  55
      X = X + DELTX                                                     C  56
      GO TO  31                                                         C  57
      END                                                               C  58
```

MAP OF FORTRAN SECTION OF THE PROGRAM

UNSUBSCRIPTED VARIABLES

19459	S
19339	FIRSX
19329	DELTX
19319	COUNT
19309	FNOPP
19299	N
19289	NOPP
19229	I
19219	POSY
19199	J
19169	X
19139	Y
19109	INDEX

SUBSCRIPTED VARIABLES

19879	19789	FIRSY	0010
19779	19689	DELTY	0010
19679	19579	YVAL	0011
19569	19479	IPOS	0010

FLOATING POINT CONSTANTS

19189	5150000000
19099	5219500000

FIXED POINT CONSTANTS

19070	0018
19049	0017
19029	0069
18999	0071

STATEMENT NUMBERS

19439	07544	0002
19429	07592	0003
19399	07612	0004
19389	07660	0005
19379	07680	0006
19369	07728	0007
19359	07828	0009
19349	07784	0008
19239	08484	0026
19179	08460	0017
19159	08544	0031
19149	09116	0043
19069	08928	0032
19059	08976	0035
19039	08952	0033
19019	09092	0039
19009	09044	0037
18989	09068	0038
18979	09152	0045

END OF MAPPING


```
PLOT *         1620 PLOTTER PROGRAM                                    ZSP   0
PLOT *         J W BURGESON  I B M  AKRON      MAY 1962                ZSPS  1
PLOT * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *ZSP$002
PLOT *         REPLACES STMNT 2                                        ZSP 003
PLOT       DORG 7544                                                   ZSP 004
PLOT       RCTY                                                        ZSP 005
PLOT       WATY MESS1                                                  ZSP 006
PLOT *         REPLACES STMNT 4                                        ZSP 007
PLOT       DORG 7612                                                   ZSP 008
PLOT       RCTY                                                        ZSP 009
PLOT       WATY MESS2                                                  ZSP 010
PLOT *         REPLACES STMNT 6                                        ZSP 011
PLOT       DORG 7680                                                   ZSP 012
PLOT       RCTY                                                        ZSP 013
PLOT       WATY MESS3                                                  ZSP 014
PLOT *         REPLACES STMNT 8                                        ZSP 015
PLOT       DORG 7784                                                   ZSP 016
PLOT       RCTY                                                        ZSP 017
PLOT       WATY MESS4                                                  ZSP 018
PLOT *         REPLACES STMNT 9                                        ZSP 019
PLOT       DORG 7828                                                   ZSP 020
PLOT       B   STMT9                                                   ZSP 021
PLOT *         REPLACES STMNT 17                                       ZSP 022
           DORG08460                                                   ZSP 023
PLOT       B   STMT17                                                  ZSP 024
PLOT *         REPLACES STMNY 31                                       ZSP 025
           DORG08544                                                   ZSP 026
PLOT       TR  OUTPUT-1,Z                                              ZSP 027
PLOT       NOP                                                         ZSP 028
PLOT *         REPLACES STMNT 33                                       ZSP 029
           DORG08952                                                   ZSP 030
PLOT       TFM OUTPUT+34,14,10                                         ZSP 031
PLOT       NOP                                                         ZSP 032
PLOT *         REPLACES STMNT 38                                       ZSP 033
           DORG09068                                                   ZSP 034
           TFM OUTPUT+138,14,10                                        ZSP 035
PLOT       NOP                                                         ZSP 036
PLOT *         REPLACES STMNT 39                                       ZSP 037
           DORG09092                                                   ZSP 038
PLOT       B   STMT39                                                  ZSP 039
PLOT *         REPLACES STMNT 45                                       ZSP 040
           DORG09152                                                   ZSP 041
PLOT       B   STMT45                                                  ZSP 042
PLOT *         REPLACES PRINT INST IN FORT SUBR                        ZSP 043
PLOT       DORG 6470                                                   ZSP 044
PLOT       B   BACK                                                    ZSP 045
           DORG06398                                                   ZSP 046
           NOP                                                         ZSP 047
PLOT * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * ZSP 04$
PLOT       DORG 10000                                                  ZSP 049
PLOT STMT9 RACD INPUT                                                  ZSP 050
           BNC1*+72                                                    ZSP 051
PLOT       RCTY                                                        ZSP 052
PLOT       RCTY                                                        ZSP 053
PLOT       WATY INPUT                                                  ZSP 054
PLOT       RCTY                                                        ZSP 055
           RCTY                                                        ZSP 056
PLOT       BNC2 *+48                                                   ZSP 057
PLOT       WACD INPUT                                                  ZSP 058
PLOT       WACD Z+1                                                    ZSP 059
```

```
PLOT        WACD Z+1                                                    ZSP 060
PLOT        BNC3 7852                                                   ZSP 061
PLOT        WAPT INPUT                                                  ZSP 062
PLOT        WAPT Z+1                                                    ZSP 063
PLOT        WAPT Z+1                                                    ZSP 064
PLOT        B   7852                                                    ZSP 065
PLOT * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * ZSP 066
PLOT STMT17MM  I,2,10                                                   ZSP 067
PLOT        SF  95                                                      ZSP 068
PLOT        TFM JACK+6,TABLE-1                                          ZSP 069
PLOT        A   JACK+6,99                                               ZSP 070
PLOT PAUL   CM  FORTIN+1,0,10                                           ZSP 071
PLOT        BNE JACK                                                    ZSP 072
PLOT        TR  FORTIN,FORTIN+2                                         ZSP 073
PLOT        B   PAUL                                                    ZSP 074
PLOT JACK   TF  ,FORTIN+1                                               ZSP 075
PLOT *          TABLE(I) HAS CHAR TO BE PLOTTED                         ZSP 076
PLOT        TR  OUTPUT-1,Z                                              ZSP 077
PLOT *          OUTPUT AREA IS BLANKED                                  ZSP 078
PLOT        TF  OUTPUT+158,FORTIN+21                                    ZSP 079
PLOT        TF  OUTPUT+156,FORTIN+19                                    ZSP 080
PLOT        TF  OUTPUT+154,FORTIN+17                                    ZSP 081
PLOT        TF  OUTPUT+152,FORTIN+15                                    ZSP 082
PLOT        TF  OUTPUT+150,FORTIN+13                                    ZSP 083
PLOT        TF  OUTPUT+148,FORTIN+11                                    ZSP 084
PLOT        TF  OUTPUT+146,FORTIN+9                                     ZSP 085
PLOT        TF  OUTPUT+144,FORTIN+7                                     ZSP 086
PLOT        TF  OUTPUT+142,FORTIN+5                                     ZSP 087
PLOT        TF  OUTPUT+140,FORTIN+3                                     ZSP 088
PLOT *          Y FUNCTION IDENT MOVED INTO PLACE                       ZSP 089
            TF  OUTPUT+16,FORTIN+1                                      ZSP 090
            TF  OUTPUT+10,SYM+10                                        ZSP 091
PLOT        TR  FORTIN,ARM-1                                            ZSP 092
PLOT *          RECORD MARK IN CC 1 OF FORT INPUT                       ZSP 093
PLOT        TFM P405+11,YVAL1                                           ZSP 094
PLOT        TFM P406+6,YAXIS                                            ZSP 095
PLOT P405   BT  FIX,                                                    ZSP 096
PLOT P406   TR  ,AREA                                                   ZSP 097
PLOT        SM  P405+11,10                                              ZSP 098
PLOT        AM  P406+6,30                                               ZSP 099
            CM  P406+6,YAXIS+330                                        ZSP 100
PLOT        BNE P405                                                    ZSP 101
PLOT *          OUTPUT YVALS NOW FIXED IN YAXIS                         ZSP 102
PLOT *          30 CHARACTERS EACH                                      ZSP 103
            TFM LOW,99,10                                               ZSP 104
            TFM MOD+11,YAXIS+33                                         ZSP 105
            TFM ZTST+11,YAXIS-1                                         ZSP 106
      RET   AM  ZTST+11,30                                              ZSP 107
            CM  ZTST+11,YAXIS+329                                       ZSP 108
            BH  SUBT                                                    ZSP 109
      ZTST  TFM BASE+11                                                 ZSP 110
            TFM ALZ,0,10                                                ZSP 111
      BASE  BD  BIX                                                     ZSP 112
            SM  BASE+11,2                                               ZSP 113
            AM  ALZ,2,10                                                ZSP 114
            B   BASE                                                    ZSP 115
      BIX   C   ALZ,LOW                                                 ZSP 116
            BNL RET                                                     ZSP 117
            TF  LOW,ALZ                                                 ZSP 118
            B   RET                                                     ZSP 119
```



```
      SUBT  S   MOD+11,LOW                                              ZSP 120
PLOT        TFM CAROL+11,YAXIS+1                                        ZSP 121
PLOT MAC    TFM CAROL+6,OUTPUT+36                                       ZSP 122
PLOT CAROL  TD                                                          ZSP 123
PLOT        TF  EDNA+11,CAROL+11                                        ZSP 124
PLOT        TF  EDNA+6,CAROL+6                                          ZSP 125
PLOT        SM  EDNA+11,1                                               ZSP 126
PLOT        SM  EDNA+6,1                                                ZSP 127
PLOT EDNA   TD                                                          ZSP 128
            TF  BIB+6,EDNA+6                                            ZSP 129
            AM  BIB+6,2                                                 ZSP 130
            CM  BIB+6,OUTPUT+137                                        ZSP 131
            BE  TO                                                      ZSP 132
      BIB   TR  ,Z+152                                                  ZSP 133
            AM  CAROL+11,30                                             ZSP 134
            AM  CAROL+6,10                                              ZSP 135
            B   CAROL                                                   ZSP 136
      TO    BTM PUTOUT,0,10                                             ZSP 137
            SM  CAROL+11,298                                            ZSP 138
      MOD   CM  CAROL+11                                                ZSP 139
            BNE MAC                                                     ZSP 140
PLOT *          Y AXIS INFO PUNCHED OUT                                 ZSP 141
PLOT        TR  OUTPUT-1,Z                                              ZSP 142
PLOT        BTM PUTOUT,0,10                                             ZSP 143
            BTM PUTOUT,0,10                                             ZSP 144
PLOT *          OUTPUT BLANKED AND BLANK LINE                           ZSP 145
            B   08484                                                   ZSP 146
PLOT * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * ZSP 147
PLOT *          SUBR TO PUTOUT LINE                                     ZSP 148
PLOT        DS  2                                                       ZSP 149
10/12PUTOUTNOP                                                          ZSP 150
F I R       TFM TDA+11,OUTPUT+36                                        ZSP 151
0 9 0       TFM TDB+11,OUTPUT+35                                        ZSP 152
R 4 ATDA    TD  BX                                                      ZSP 153
  8 DTDB    TD  BX-1                                                    ZSP 154
S   S       SF  BX-1                                                    ZSP 155
A J T       CF  BX                                                      ZSP 156
L A E       CM  BX,70,10                                                ZSP 157
E G R       BE  IZE                                                     ZSP 158
    U       CM  BX,20,10                                                ZSP 159
O A         BNE EL2                                                     ZSP 160
R R C       TF  *+30,TDA+11                                             ZSP 161
    O       AM  *+18,4                                                  ZSP 162
S M N       TF  ,MINUS+8                                                ZSP 163
W K T       B   EL2                                                     ZSP 164
A   AMINUS  DAC 5,MINUS,,,                                              ZSP 165
P 4 CBX     DS  10                                                      ZSP 166
      TIZE  TF  *+18,TDA+11                                             ZSP 167
            TFM ,56,10                                                  ZSP 168
      BEL2  AM  TDA+11,10                                               ZSP 169
      U     AM  TDB+11,10                                               ZSP 170
      R     CM  TDA+11,OUTPUT+146                                       ZSP 171
      G     BNE TDA                                                     ZSP 172
            WACDOUTPUT                                                  ZSP 173
            BNC1TC3                                                     ZSP 174
            RCTY                                                        ZSP 175
            TFM SFLG+6,OUTPUT+157                                       ZSP 176
      SFLG  SF                                                          ZSP 177
            AM  SFLG+6,1                                                ZSP 178
            TF  COMP+6,SFLG+6                                           ZSP 179
```

```
     COMP  CM  ,0,10                                                  ZSP 180
           BNE WO                                                     ZSP 181
           TF  TRCD+6,COMP+6                                          ZSP 182
     TRCD  TD  ,RM                                                    ZSP 183
           SM  SFLG+6,3                                               ZSP 184
           CM  SFLG+6,OUTPUT+1                                        ZSP 185
           BNE SFLG                                                   ZSP 186
     WO    WATYOUTPUT                                                 ZSP 187
     TC3   BNC3*+24                                                   ZSP 188
           WAPT OUTPUT                                                ZSP 189
           TR  OUTPUT-1,Z                                             ZSP 190
           BB                                                         ZSP 191
PLOT * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * ZSP 192
PLOT STMT39MM  INDEX,2,10                                           ZSP 193
PLOT       SF  95                                                   ZSP 194
           TFM BECKY+6,OUTPUT-3                                     ZSP 195
           A   BECKY+6,99                                           ZSP 196
           TF  SF+6,BECKY+6                                         ZSP 197
     SF    SF                                                       ZSP 198
           AM  BECKY+6,1                                            ZSP 199
           TF  CF+6,BECKY+6                                         ZSP 200
     CF    CF                                                       ZSP 201
     BECKY CM  ,0,10                                                ZSP 202
           BE  ELMER                                                ZSP 203
           TF  *+18,BECKY+6                                         ZSP 204
PLOT       TFM ,34,10                                               ZSP 205
           B   09116                                                ZSP 206
PLOT ELMER MM  I,2,10                                               ZSP 207
PLOT       SF  95                                                   ZSP 208
PLOT       TFM RED+11,TABLE-1                                       ZSP 209
PLOT       A   RED+11,99                                            ZSP 210
PLOT       TF  RED+6,BECKY+6                                        ZSP 211
PLOT RED   TF                                                       ZSP 222
           B   09116                                                ZSP 223
PLOT * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * ZSP 224
PLOT STMT45BT  FIX,X                                                ZSP 225
PLOT       TR  OUTPUT-1,AREA                                        ZSP 226
PLOT       TFM OUTPUT+30,0,10                                       ZSP 227
           BNR *+24, OUTPUT+20                                      ZSP 228
           TFM OUTPUT+20,0,10                                       ZSP 229
PLOT       BTM PUTOUT,0,10                                          ZSP 230
PLOT       TR  OUTPUT-1,Z                                           ZSP 231
           B   09176                                                ZSP 232
PLOT * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * ZSP 233
PLOT *         SUBR TO FIX NUMBERS                                  ZSP 234
PLOT       DS  10                                                   ZSP 235
PLOT FIX   TF  PUNCH-1,FIX-1                                        ZSP 236
PLOT       B   PUNCH                                                ZSP 237
PLOT BACK  BNR *+24,7137                                            ZSP 238
PLOT       TDM 7137,0                                               ZSP 239
PLOT       TR  AREA,7116                                            ZSP 240
PLOT       BB                                                       ZSP 241
PLOT * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * ZSP 242
     ALZ   DC  2,0                                                  ZSP 243
     LOW   DC  2,0                                                  ZSP 244
PLOT AREA  DS  1                                                    ZSP 245
PLOT       DS  29                                                   ZSP 246
PLOT       DC  2,0-Z                                                ZSP 247
PLOT Z     DC  1,0                                                  ZSP 248
PLOT       DC  50,0                                                 ZSP 249
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PLOT       DC  50,0                                                 ZSP 250
PLOT       DC  50,0                                                 ZSP 251
PLOT       DC  9,0                                                  ZSP 252
PLOT       DC  1,-Z                                                 ZSP 253
PLOT OUTPUTDAS 80                                                   ZSP 254
PLOT RM    DAC 1,-,,,                                               ZSP 255
PLOT MESS1 DAC 29,OUTPUT WILL BE ON TYPEWRITER-,,,                  ZSP 256
PLOT MESS2 DAC 24,OUTPUT WILL BE ON CARDS-,,,                       ZSP 257
PLOT MESS3 DAC 29,OUTPUT WILL BE ON PAPER TAPE-,,,                  ZSPS258
PLOT MESS4 DAC 24,SET SWITCHES,HIT START.-,,,                       ZSP 259
     SYM   DAC 6,SYMBOL,,,                                         ZSP 260
PLOT INPUT DAS 80                                                   ZSP 261
PLOT ARM   DC  2,0-Z                                                ZSP 262
PLOT TABLE DS  1                                                    ZSP 263
PLOT       DS  19                                                   ZSP 264
PLOT *         CC1 IS IN OUTPUT                                     ZSP 265
PLOT *         CC2 IS IN OUTPUT + 2                                 ZSP 266
PLOT *         CCN IS IN OUTPUT + (N-1)*2                           ZSP 267
PLOT YAXIS DS  1                                                    ZSP 268
           DS  329                                                  ZSP 269
PLOT WHOA  DAC 1,-,,,                                               ZSP 270
     I     DS  ,19229                                               ZSP 271
PLOT FORTINDS  , 7148                                               ZSP 272
     YVAL1 DS  ,19679                                               ZSP 273
     INDEX DS  ,19109                                               ZSP 274
     X     DS  ,19169                                               ZSP 275
PLOT PUNCH DS  ,5684                                                ZSP 276
PLOT       DEND                                                     ZSP 277
```

```
                                    10 *          1620 PLOTTER PROGRAM
                                    20 *          J W BURGESON  I B M  AKRON
                                    30 * * *  * *  * * * * * * * * * * * * * *
                                    40 *          REPLACES STMNT 2
07544                            00050          DORG  7544
07544 34 00000 00102             00060          RCTY
07556 39 12349 00100             00070          WATY  MESS1
                                    80 *          REPLACES STMNT 4
07612                            00090          DORG  7612
07612 34 00000 00102             00100          RCTY
07624 39 12407 00100             00110          WATY  MESS2
                                 0 120 *          REPLACES STMNT 6
07680                            00130          DORG  7680
07680 34 00000 00102             00140          RCTY
07692 39 12455 00100             00150          WATY  MESS3
                                 00160 *          REPLACES STMNT 8
07784                            00170          DORG  7784
07784 34 00000 00102             00180          RCTY
07796 39 12513 00100             00190          WATY  MESS4
                                 00200 *          REPLACES STMNT 9
07828                            00210          DORG  7828
07828 49 10000 00000             00220          B     STMT9
                                 00230 *          REPLACES STMNT 17
08460                            00240          DORG 08460
08460 49 10192 00000             00250          B     STMT17
                                 00260 *          REPLACES STMNY 31
08544                            00270          DORG 08544
08544 31 12186 12024             00280          TR    OUTPUT-1,Z
08556 41 00000 00000             0 290          NOP
                                 0 300 *          REPLACES STMNT 33
08952                            00310          DORG 08952
08952 J6 12221 000J4             00320          TFM   OUTPUT+34,14,10
08964 41 00000 00000             0 330          NOP
                                 00340 *          REPLACES STMNT 38
09068                            00350          DORG 09068
09068 J6 12325 000J4             00360          TFM   OUTPUT+138,14,10
09080 41 00000 00000             - 370          NOP
                                 00380 *          REPLACES STMNT 39
09092                            00390          DORG 09092
09092 49 11558 00000             00400          B     STMT39
                                 00410 *          REPLACES STMNT 45
09152                            00420          DORG 09152
09152 49 11810 00000             00430          B     STMT45
                                 00440 *          REPLACES PRINT INST IN FORT
06470                            00450          DORG  6470
06470 49 11940 00000             00460          B     BACK
06398                            00470          DORG 06398
06398 41 00000 00000             - 480          NOP
                                 0 490 *  *  *  *  *  *  *  *  *  *  *  *  *
10000                            00500          DORG  10000
10000 37 12573 00500             00510 STMT9    RACD  INPUT
10012 47 10084 00100             00520          BNC1  *+72
10024 34 00000 00102             00530          RCTY
10036 34 00000 00102             00540          RCTY
10048 39 12573 00100             00550          WATY  INPUT
10060 34 00000 00102             00560          RCTY
10072 34 00000 00102             00570          RCTY
                                   580          BNC2  *+48
```



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10084 47 10132 00200             00580
10096 39 12573 00400             00590          WACD  INPUT
10108 39 12025 00400             00600          WACD  Z+1
10120 39 12025 00400             00610          WACD  Z+1
10132 47 07852 00300             00620          BNC3  7852
10144 39 12573 00200             00630          WAPT  INPUT
10156 39 12025 00200             00640          WAPT  Z+1
10168 39 12025 00200             00650          WAPT  Z+1
10180 49 07852 00000             00660          B     7852
                                 00670 * *  *  *  * * * * * * * * * * *
10192 J3 19229 00002             00680 STMT17 MM    I,2,10
10204 32 00095 00000             00690          SF    95
10216 16 10294 J2733             00700          TFM   JACK+6,TABLE-1
10228 21 10294 00099             00710          A     JACK+6,99
10240 J4 07149 00000             00720 PAUL     CM    FORTIN+1,0,10
10252 47 10288 01200             00730          BNE   JACK
10264 31 07148 07150             00740          TR    FORTIN,FORTIN+2
10276 49 10240 00000             00750          B     PAUL
10288 26 00000 07149             00760 JACK     TF    ,FORTIN+1
                                 00770 *          TABLE(I) HAS CHAR TO BE PLO
10300 31 12186 12024             00780          TR    OUTPUT-1,Z
                                 00790 *          OUTPUT AREA IS BLANKED
10312 26 12345 07169             00800          TF    OUTPUT+158,FORTIN+21
10324 26 12343 07167             00810          TF    OUTPUT+156,FORTIN+19
10336 26 12341 07165             00820          TF    OUTPUT+154,FORTIN+17
10348 26 12339 07163             00830          TF    OUTPUT+152,FORTIN+15
10360 26 12337 07161             00840          TF    OUTPUT+150,FORTIN+13
10372 26 12335 07159             00850          TF    OUTPUT+148,FORTIN+11
10384 26 12333 07157             00860          TF    OUTPUT+146,FORTIN+9
10396 26 12331 07155             00870          TF    OUTPUT+144,FORTIN+7
10408 26 12329 07153             00880          TF    OUTPUT+142,FORTIN+5
10420 26 12327 07151             00890          TF    OUTPUT+140,FORTIN+3
                                 0 900 *          Y FUNCTION IDENT MOVED INTO
10432 26 12203 07149             00910          TF    OUTPUT+16,FORTIN+1
10444 26 12197 12571             00920          TF    OUTPUT+10,SYM+10
10456 31 07148 12732             00930          TR    FORTIN,ARM-1
                                 00940 *          RECORD MARK IN CC 1 OF FORT
10468 16 10503 J9679             00950          TFM   P405+11,YVAL1
10480 16 10510 J2754             00960          TFM   P406+6,YAXIS
10492 27 11916 00000             00970 P405     BT    FIX,
10504 31 00000 11992             00980 P406     TR    ,AREA
10516 12 10503 00010             00990          SM    P405+11,10
10528 11 10510 00030             01000          AM    P406+6,30
10540 14 10510 J3084             01010          CM    P406+6,YAXIS+330
10552 47 10492 01200             01020          BNE   P405
                                 01030 *          OUTPUT YVALS NOW FIXED IN Y.
                                 01040 *          30 CHARACTERS EACH
10564 J6 11991 000R9             01050          TFM   LOW,99,10
10576 16 10995 J2787             01060          TFM   MOD+11,YAXIS+33
10588 16 10647 J2753             01070          TFM   ZTST+11,YAXIS-1
10600 11 10647 00030             01080 RET      AM    ZTST+11,30
10612 14 10647 J3083             01090          CM    ZTST+11,YAXIS+329
10624 46 10756 01100             01100          BH    SUBT
10636 16 10671 00000             01110 ZTST     TFM   BASE+11
10648 J6 11989 00000             01120          TFM   ALZ,0,10
10660 43 10708 00000             01130 BASE     BD    BIX
10672 12 10671 00002             01140          SM    BASE+11,2
10684 J1 11989 00002             01150          AM    ALZ,2,10
10696 49 10660 00000             01160          B     BASE
                                  1170 BIX      C     ALZ,LOW
```

```
10708 24 11989 11991
10720 46 10600 01300
10732 26 11991 11989
10744 49 10600 00000
10756 22 10995 11991
10768 16 10803 J2755
10780 16 10798 J2223
10792 25 00000 00000
10804 26 10863 10803
10816 26 10858 10798
10828 12 10863 00001
10840 12 10858 00001
10852 25 00000 00000
10864 26 10918 10858
10876 11 10918 00002
10888 14 10918 J2324
10900 46 10960 01200
10912 31 00000 12176
10924 11 10803 00030
10936 11 10798 00010
10948 49 10792 00000
10960 J7 11058 00000
10972 12 10803 00298
10984 14 10803 00000
10996 47 10780 01200

11008 31 12186 12024
11020 J7 11058 00000
11032 J7 11058 00000

11044 49 08484 00000



11057    00002
11058 41 00000 00000
11070 16 11105 J2223
11082 16 11117 J2222
11094 25 11257 00000
11106 25 11256 00000
11118 32 11256 00000
11130 33 11257 00000
11142 J4 11257 000P0
11154 46 11258 01200
11166 J4 11257 000K0
11178 47 11282 01200
11190 26 11220 11105
11202 11 11220 00004
11214 26 00000 11247
11226 49 11282 00000
11239    00005
11257    00010
11258 26 11276 11105
11270 J6 00000 000N6
11282 11 11105 00010
11294 11 11117 00010
11306 14 11105 J2333
11318 47 11094 01200
11330 39 12187 00400
11342 47 11510 00100
```



```
01170
01180          BNL   RET
01190          TF    LOW,ALZ
01200          B     RET
01210 SUBT     S     MOD+11,LOW
01220          TFM   CAROL+11,YAXIS+1
01230 MAC      TFM   CAROL+6,OUTPUT+36
01240 CAROL    TD
01250          TF    EDNA+11,CAROL+11
01260          TF    EDNA+6,CAROL+6
01270          SM    EDNA+11,1
01280          SM    EDNA+6,1
01290 EDNA     TD
01300          TF    BIB+6,EDNA+6
01310          AM    BIB+6,2
01320          CM    BIB+6,OUTPUT+137
01330          BE    TO
01340 BIB      TR    ,Z+152
01350          AM    CAROL+11,30
01360          AM    CAROL+6,10
01370          B     CAROL
01380 TO       BTM   PUTOUT,0,10
01390          SM    CAROL+11,298
01400 MOD      CM    CAROL+11
01410          BNE   MAC
01420 *              Y AXIS INFO PUNCHED OUT
01430          TR    OUTPUT-1,Z
01440          BTM   PUTOUT,0,10
01450          BTM   PUTOUT,0,10
01460 *              OUTPUT BLANKED AND BLANK LI
01470          B     08484
01480 *  *  *  *  *  *  *  *  *  *  *  *  *  *
01490 *              SUBR TO PUTOUT LINE
01500          DS    2
01510 PUTOUT   NOP
01520          TFM   TDA+11,OUTPUT+36
01530          TFM   TDB+11,OUTPUT+35
01540 TDA      TD    BX
01550 TDB      TD    BX-1
01560          SF    BX-1
01570          CF    BX
01580          CM    BX,70,10
01590          BE    IZE
01600          CM    BX,20,10
01610          BNE   EL2
01620          TF    *+30,TDA+11
01630          AM    *+18,4
01640          TF    ,MINUS+8
01650          B     EL2
01660 MINUS    DAC   5,MINUS,,,
01670 BX       DS    10
01680 IZE      TF    *+18,TDA+11
01690          TFM   ,56,10
01700 EL2      AM    TDA+11,10
01710          AM    TDB+11,10
01720          CM    TDA+11,OUTPUT+146
01730          BNE   TDA
01740          WACD  OUTPUT
01750          BNC1  TC3
 1760          RCTY
```



```
11354 34 00000 00102
11366 16 11384 J2344
11378 32 00000 00000
11390 11 11384 00001
11402 26 11420 11384
11414 J4 00000 00000
11426 47 11498 01200
11438 26 11456 11420
11450 25 00000 12347
11462 12 11384 00003
11474 14 11384 J2188
11486 47 11378 01200
11498 39 12187 00100
11510 47 11534 00300
11522 39 12187 00200
11534 31 12186 12024
11546 42 00000 00000

11558 J3 19109 00002
11570 32 00095 00000
11582 16 11672 J2184
11594 21 11672 00099
11606 26 11624 11672
11618 32 00000 00000
11630 11 11672 00001
11642 26 11660 11672
11654 33 00000 00000
11666 J4 00000 00000
11678 46 11726 01200
11690 26 11708 11672
11702 J6 00000 000L4
11714 49 09116 00000
11726 J3 19229 00002
11738 32 00095 00000
11750 16 11797 J2733
11762 21 11797 00099
11774 26 11792 11672
11786 26 00000 00000
11798 49 09116 00000

11810 27 11916 19169
11822 31 12186 11992
11834 J6 12217 00000
11846 45 11870 12207
11858 J6 12207 00000
11870 J7 11058 00000
11882 31 12186 12024
11894 49 09176 00000



11915    00010
11916 26 05683 11915
11928 49 05684 00000
11940 45 11964 07137
11952 15 07137 00000
11964 31 11992 07116
11976 42 00000 00000

11989    00002
```



```
01760
01770          TFM   SFLG+6,OUTPUT+157
01780 SFLG     SF
01790          AM    SFLG+6,1
01800          TF    COMP+6,SFLG+6
01810 COMP     CM    ,0,10
01820          BNE   WO
01830          TF    TRCD+6,COMP+6
01840 TRCD     TD    ,RM
01850          SM    SFLG+6,3
01860          CM    SFLG+6,OUTPUT+1
01870          BNE   SFLG
01880 WO       WATY  OUTPUT
01890 TC3      BNC3  *+24
01900          WAPT  OUTPUT
01910          TR    OUTPUT-1,Z
01920          BB
01930 *  *     *  *  *  *  *  *  *  *  *  *  *
01940 STMT39   MM    INDEX,2,10
01950          SF    95
01960          TFM   BECKY+6,OUTPUT-3
01970          A     BECKY+6,99
01980          TF    SF+6,BECKY+6
01990 SF       SF
02000          AM    BECKY+6,1
02010          TF    CF+6,BECKY+6
02020 CF       CF
02030 BECKY    CM    ,0,10
02040          BE    ELMER
02050          TF    *+18,BECKY+6
02060          TFM   ,34,10
02070          B     09116
02080 ELMER    MM    1,2,10
02090          SF    95
02100          TFM   RED+11,TABLE-1
02110          A     RED+11,99
02120          TF    RED+6,BECKY+6
02130 RED      TF
02140          B     09116
02150 *  *     *  *  *  *  *  *  *  *  *  *  *
02160 STMT45   BT    FIX,X
02170          TR    OUTPUT-1,AREA
02180          TFM   OUTPUT+30,0,10
02190          BNR   *+24, OUTPUT+20
02200          TFM   OUTPUT+20,0,10
02210          BTM   PUTOUT,0,10
02220          TR    OUTPUT-1,Z
02230          B     09176
02240 *  *     *  *  *  *  *  *  *  *  *  *  *
02250 *              SUBR TO FIX NUMBERS
02260          DS    10
02270 FIX      TF    PUNCH-1,FIX-1
02280          B     PUNCH
02290 BACK     BNR   *+24,7137
02300          TDM   7137,0
02310          TR    AREA,7116
02320          BB
02330 *  *     *  *  *  *  *  *  *  *  *  *  *
02340 ALZ      DC    2,0
 2350 LOW      DC    2,0
```

Assembly listing 5/5

```
11991   00002
11992   00001
12021   00029
12023   00002
12024   00001
12074   00050
12124   00050
12174   00050
12183   00009
12184   00001
12187   00080
12347   00001
12349   00029
12407   00024
12455   00029
12513   00024
12561   00006
12573   00080
12733   00002
12734   00001
12753   00019


12754   00001
13083   00329
13085   00001
19229   00000
07148   00000
19679   00000
19109   00000
19169   00000
05684   00000
00000
```

```
02350
02360 AREA    DS    1
02370         DS    29
02380         DC    2,0-.
02390 Z       DC    1,0
02400         DC    50,0
02410         DC    50,0
02420         DC    50,0
02430         DC    9,0
02440         DC    1,-
02450 OUTPUT  DAS   80
02460 RM      DAC   1,-,,,
02470 MESS1   DAC   29,OUTPUT WILL BE ON TYPEWR
02480 MESS2   DAC   24,OUTPUT WILL BE ON CARDS-
02490 MESS3   DAC   29,OUTPUT WILL BE ON PAPER
02500 MESS4   DAC   24,SET SWITCHES,HIT START.-
02510 SYM     DAC   6,SYMBOL,,,
02520 INPUT   DAS   80
02530 ARM     DC    2,0-
02540 TABLE   DS    1
02550         DS    19
02560 *             CC1 IS IN OUTPUT
02570 *             CC2 IS IN OUTPUT + 2
02580 *             CCN IS IN OUTPUT + (N-1)*2
02590 YAXIS   DS    1
02600         DS    329
02610 WHOA    DAC   1,-,,,
02620 I       DS    ,19229
02630 FORTIN  DS    , 7148
02640 YVAL1   DS    ,19679
02650 INDEX   DS    ,19109
02660 X       DS    ,19169
02670 PUNCH   DS    ,5684
-2680         DEND
```


START DUMP AT 07500
END AT 11978


```
07500  26 00060 19449  26 19459 00060  46 19430 00100  49 19420 ‡
07544  34 00000 00102  39 12349 00100  26 00060 19409  26 19459 00060
07592  46 19390 00200  49 19380 ‡
07612  34 00000 00102  39 12407 00100  26 00060 19409  26 19459 00060
07660  46 19370 00300  49 19360 ‡
07680  34 00000 00102  39 12455 00100  26 00060 19409  26 19459 00060
07728  26 00060 19459  43 07764 00053  49 19340 0
07760  00 00
07764  44 19350 00060  49 19350 ‡
07784  34 00000 00102  39 12513 00100  48 19419 00060  49 19460 ‡
07828  49 10000 0
07836  00 00
07840  26 19419 00060  17 04364 19339  17 04364 19329  17 04364 19319
07888  17 04364 19309  26 00060 19319  27 06910 00060  26 19299 00060
07936  26 00060 19309  27 06910 00060  26 19289 00060  26 00060 19299
07984  27 04022 19279  14 00060 00000  46 19250 01200  46 19240 01100
08032  49 19250 ‡
08040  17 06864 00000  39 06891 00100  48 06864 00000  49 08016 0
08084  00 00
08088  16 19229 00001  16 08135 19889  22 08134 19229  17 04364 19859
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START DUMP AT 10000
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80-80 List of Program Deck

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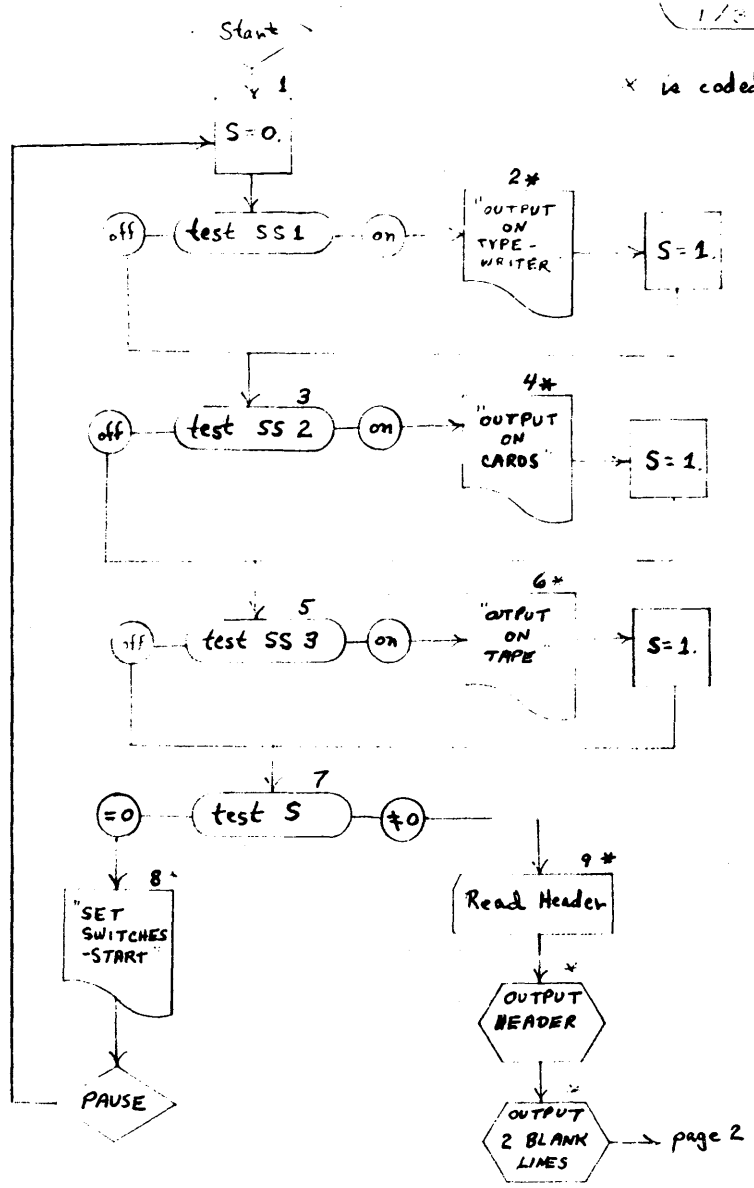
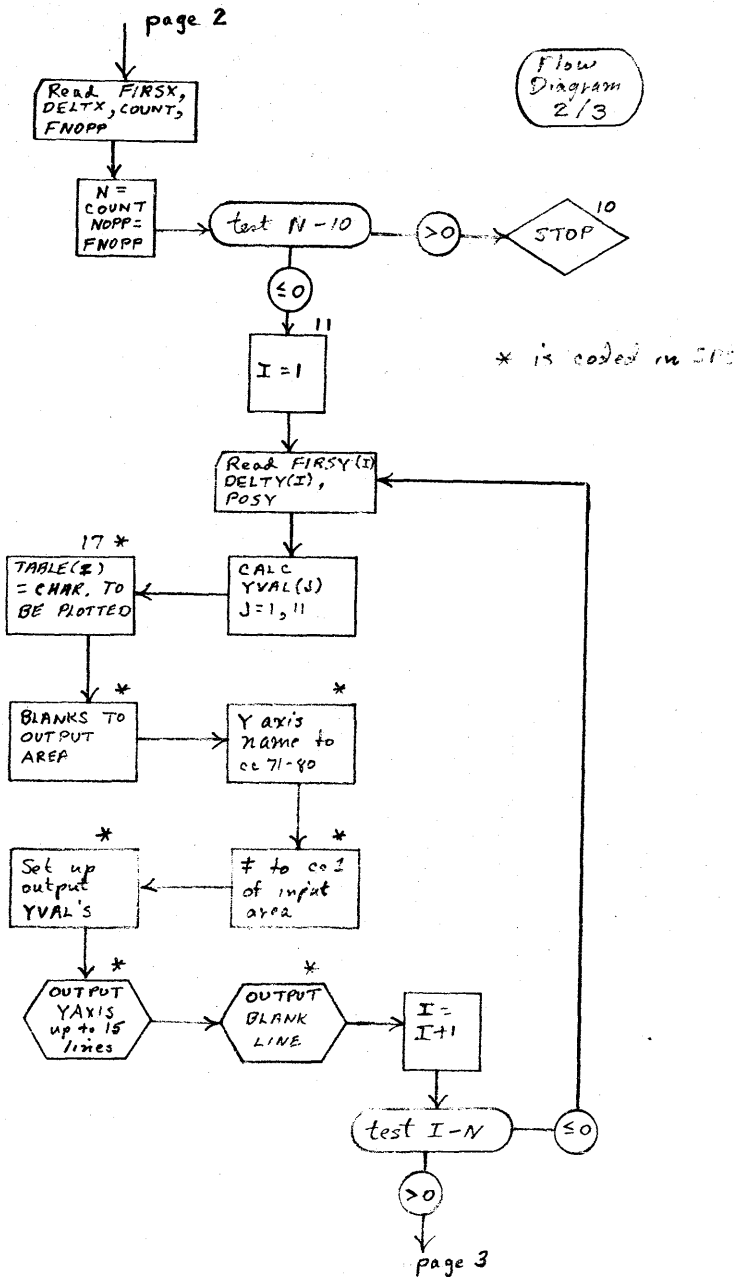
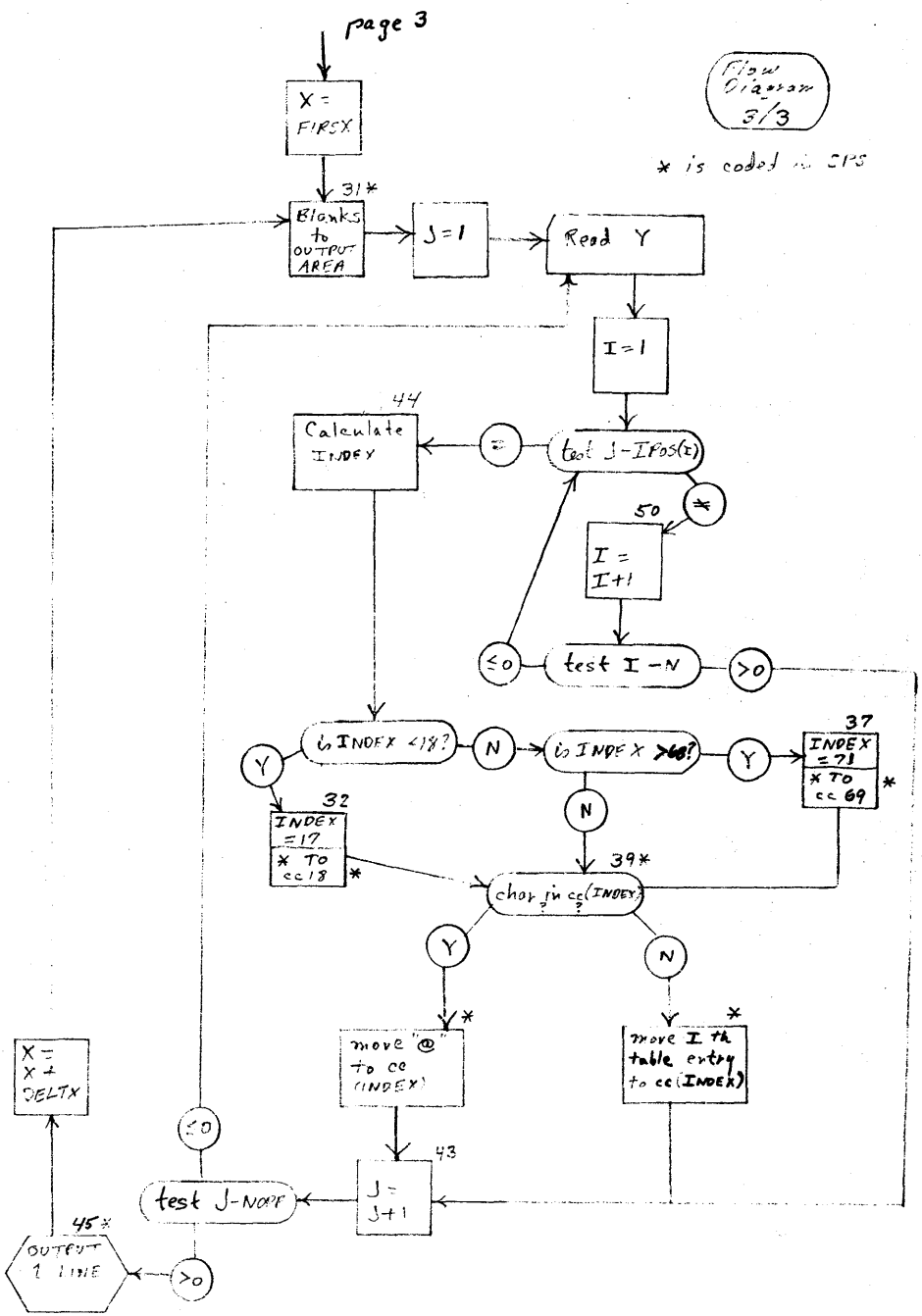
80614223009081726300000000005060708090012141618151811242720242822363520353045403632484455324946536048465462754453627180123456789123456789023456789OJ34567890JK



* is coded in SPS


page 2
Flow Diagram 2/3
Read FIRSX, DELTX, COUNT, FNOPP
N = COUNT NOPP= FNOPP
test N-10
>0
10
STOP
≤0
11
I = 1
* is coded in CPS
Read FIRSY(I) DELTY(I), POSY
17 *
TABLE(I) = CHAR. TO BE PLOTTED
CALC YVAL(J) J=1,11
BLANKS TO OUTPUT AREA
Y axis name to cc 71-80
Set up output YVAL's
≠ to cc 1 of input area
OUTPUT YAXIS up to 15 lines
OUTPUT BLANK LINE
I = I+1
test I-N
≤0
>0
page 3


page 3
Flow Diagram 3/3
* is coded in CPS
X = FIRSX
31*
Blanks to OUTPUT AREA
J = 1
Read Y
I = 1
44
Calculate INDEX
=
test J-IPOS(I)
≠
50
I = I+1
≤0
test I-N
>0
Is INDEX <18?
Y
N
Is INDEX >60?
Y
37
INDEX = 71 * TO cc 69 *
N
32
INDEX = 17 * TO cc 18 *
39*
char in cc(INDEX)?
Y
N
move "@" to cc (INDEX)
move I th table entry to cc (INDEX)
43
J = J+1
test J-NOPP
≤0
X = X + DELTX
45*
OUTPUT 1 LINE
>0

1600010000000

OUTPUT WILL BE ON TYPEWRITER

SAMPLE PROBLEM FOR 1620 GENERAL PLOT PROGRAM M 1

SYMBOL D DENSITY

```
.  1  2  3  4  5  6  7  8  9  1
0  0  0  0  0  0  0  0  0  0  0
0                             0
0  0  0  0  0  0  0  0  0  0  .
 0  0  0  0  0  0  0  0  0  0  0
```

SYMBOL C TEMP

```
2  2  3  3  3  3  4  4  4  4  5
5  7  0  2  5  7  0  2  5  7  0
.  .  .  .  .  .  .  .  .  .  .
0  5  0  5  0  5  0  5  0  5  0
0  0  0  0  0  0  0  0  0  0  0
```

SYMBOL T MINUS TORQUE

```
1  1  4  6  9  1  1  1  1  2  2
.  .  .  .  .  .  .  .  .  .  .
0  5  0  5  0  1  4  6  9  1  4
0  0  0  0  0  5  0  5  0  5  0
0  0  0  0  0  0  0  0  0  0  0
 0  0  0  0  0  0  0  0  0  0  0
0  0  0  0  0  0  0  0  0  0  0
0  0  0  0  0  0  0  0  0  0  0
0  0  0  0  0  0  0  0  0  0  0
E  E  E  E  E  E  E  E  E  E  E
MINUSMINUSMINUSMINUSMINUSMINUSMINUSMINUSMINUSMINUSMINUS
0  0  0  0  0  0  0  0  0  0  0
3  3  3  3  3  2  2  2  2  2  2
```