

CONSTRUCTING BLOCK CHARACTERS WITH THE HP 2563A



GENERAL INFORMATION

One of the optional character sets available for the HP 2563A is the block character set. This option allows the formation of large-scale characters and symbols using block segments. Each segment consists of a 7 by 9 dot matrix pattern. By joining the segments together via software, characters and symbols of various sizes and shapes can be designed.

This application note contains a program that provides an example of how to print these block characters with the HP 3000. The program provides several block sizes and may be run on the HP 3000 system as indicated. The program is also annotated describing how to add additional characters and/or new sizes of characters to the existing program.

This note is divided into three sections. Section I lists the building blocks available, defining three different character sets using the building blocks. This section also shows examples to help the user design new characters and/or symbols. Section II contains a general description of the programs. Section III contains an annotated listing of an application program for use on the HP 3000 system.

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SECTION I. CHARACTER DEFINITION

A list of the various building blocks and the ASCII characters that allow access to them are shown in table 1-1. An example which shows the different character sizes is provided in figure 1-1.

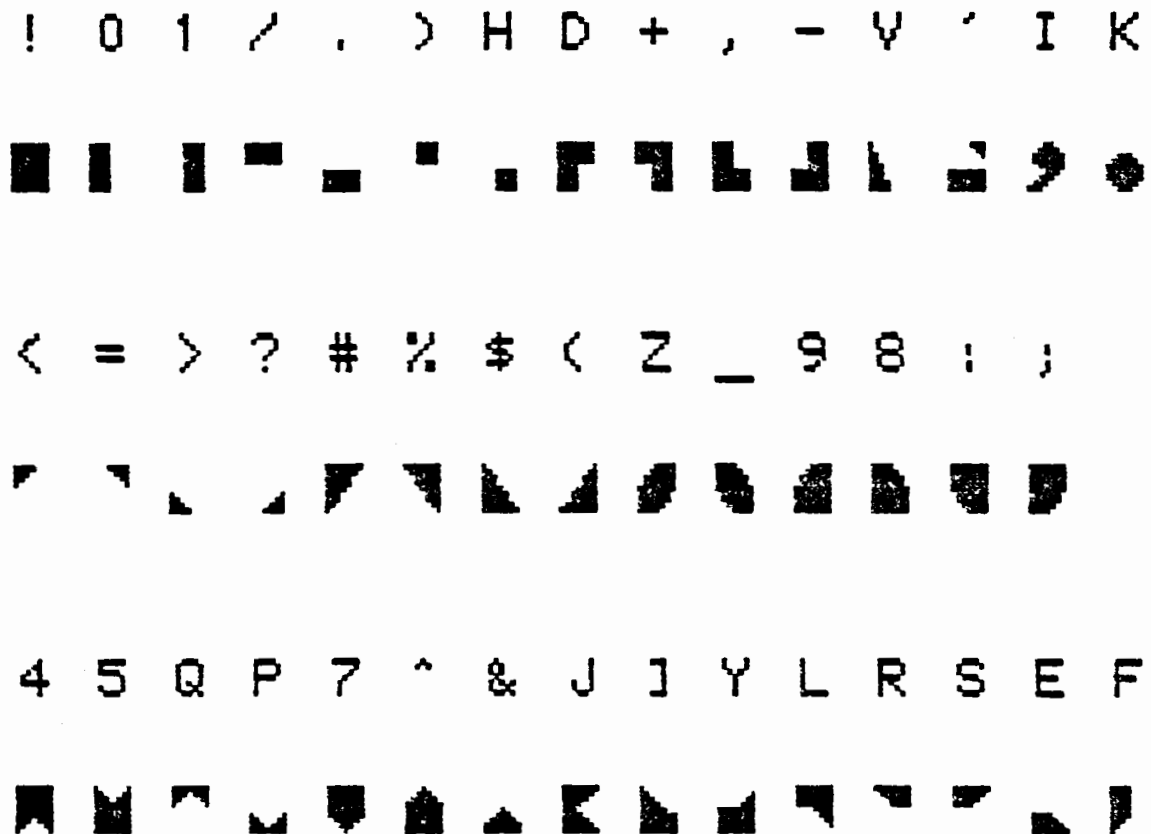


TABLE 1-1 HP 2563A BLOCK CHARACTER SET
(Shown twice normal size for clarity)

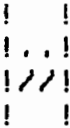
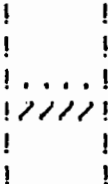
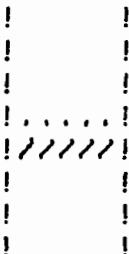
Size	Definition	Print Sample
4 X 4		
6 X 6		
7 X 8		



Figure 1-1. Character Definition Example

Figures 1-2 through 1-4 and tables 1-2 through 1-4 show examples of 46 different characters and symbols in three different sizes. The figures show the physical characters formed and the tables show the associated letters required to form the characters.

A B C D E F G H I J
K L M N O P Q R S T
U V W X Y Z
1 2 3 4 5 6 7 8 9 0
- : ; ? / . , # \$ %

Figure 1-2. Size Four Block Character Print Sample

<\$	1118	9118	111\$	1111	1111	9118	1 1	10
<#%\$	1..;	1 /	1 =1	1..	1..	1 /	1..1	10
1111	1778	1 .	1 ?1	177	177	1 >1	1771	10
1 1	111;	111;	111#	1111	1	111;	1 1	10

1	1 <#	1	1\$<1	1\$ 1	9118	1118	9118	1118
1	1<#	1	1%#1	1%\$1	1 1	1..1	1 1	1..;
1	14\$	1	1 1	1 %1	1 1	1778	1 .1	1778
111;	1 %\$	1111	1 1	1 1	111;	1	11;8	1 1

9118	1111	1 1	1 1	1 1	1 1	1 >?Z	1 >?Z	111;	?90
1..E	10	1 1	1 1	1 1	1 1	=_Z<	=_Z<	?Z<	10
R771	10	1 1	%\$<#	1<\$1	1 1	?Z_>	10	?Z<	10
111;	10	111;	%#	1#%1	1 1	Z<=_	10	9111	1110

911V	9118	1 10	1111	9118	1111	9118	9118	9118
7?1F	..;	1 10	1..E	1..E	<#	1..;	1..1	1?Z1
?9#	778	1111	=771	1771	<#	9778	R771	1Z<1
9111	111;	10	111;	111;	<#	111;	111;	111;

H..	K	K	9778	?Z		01	?... K ?Z
>77			<#	?Z<		/D+7	1... ?Z<
			1	?Z<		..-.	01 ?Z<
	K	I	K	Z<	K	I	01 >7DS Z< K

TABLE 1-2. SIZE FOUR BLOCK CHARACTER DEFINITION

A B C D E F G H
I J K L M N O P
Q R S T U V W X
Y Z 1 2 3 4 5 6
7 8 9 0 - . : ; ?
/ . , # \$ % ' .

Figure 1-3. Size Six Block Character Print Sample

??8>	!!!!\$	9!!!!8	!!!!\$	!!!!	!!!!	9!!!!8	!	!
?9#%8>	!	!	=!	!	!	!	!	!
9# %8	!....	!	!	!....	!...	!	!....	!
!!!!!!	! 8	!	!	!!!!!!	!!!!	!	..	!!!!!!
!	!	!	?!	!	!	!	!	!
!	!!!!#	!!!!;	!!!!#	!!!!	!	!!!!;	!	!
1110	!	! <#	!	!\$ <!	!\$	9!!!!8	!!!!8	
10	!	! <#	!	!:\$<;!	!:\$	!	!	!
10	!	!<J	!	!=\$;<!	!=\$	!	!	!....!
10	!	!#%\$	!	! =< !	! =:\$!	!	!	!!!!/S
10	!	! %\$	!	!	! =:!	!	!	!
1110	!!!!;	! %\$	!!!!	!	! =!	!!!!;	!	!
9!!!!8	!!!!8	9!!!!8	!!!!	!	!	!	!	!> ?!
!	!	!	10	!	!	!	!	%8>?9#
!	!....	!....E	10	!	!	!> ?!	! ?> !	%89#
!	!!!!/8	R!!!!	10	!	!	%8>?9#	! ?98>!	<;:\$
!	!	!	10	!	!	%89#	!9#%8!	<;<=\$
!!!!48	!	!!!!;	10	!!!!;	%#	!# %!	!< =!	
;\$ <;	!!!!;					9!!!!8	?Z	
=\$<;<	<;<					! ?!	?Z<	
=:;<	<;<		K	K		?9#	?Z<	
10	<;<	!!!!				9#	?Z<	
10	<;<					!	?Z<	
10	!!!!		K	I	K	Z<	K	
	1010	10	K	?Z				
	!-,-,.	9!!!!		?Z<				
/+D+D/	!-,-,E			?Z<				
!-,-,.	R/+D/!			?Z<				
/+D+D/	!!!!;			?Z<				
I	1010	10	Z<	K				

TABLE 1-3. SIZE SIX BLOCK CHARACTER DEFINITION

A B C D E F G
H I J K L M N
O P Q R S T U
V W X Y Z Ø 1
2 3 4 5 6 7 8
9 - : ; ? / .
, # \$ %

Figure 1-4(a). Size Eight Block Character Print Sample

?^>	!!!!!!\$	<!!!!!!\$	!!!!!!8>	!!!!!!	!!!!!!	<!!!!!!\$
?948>	! =!	!< =!	! %8	!	!	!< =!
?9# %8>	!	!	!	!	!	!
9# %8	!....Y;	!	!	!	!	!
!!!!!!	!/////L8	!	!	!/////	!/////	!
!	!	!	!	!	!	!
!	! ?!	!> ?!	!< ;	!	!	!> ?!
!	!!!!!!#	%!!!!!!#	!!!!!!<	!!!!!!	!	%!!!!!!#
!	!!!!10	!	!< ;	!	!\$ <!	!> !
!	!	!	!< ;<	!	!\$ < ;!	!8> !
!	!	!	!< ;<	!	!=:5;<!	!%8> !
!....!	!	!	!< ;<	!	!=7< !	!%8> !
!/////!	!	!	!<18>	!	!	!%8>!
!	!	!	!;<%8>	!	!	!%8!
!	!	!> ?!	!< %8>	!	!	! %!
!	!!!!10	%!!!!!!#	! %8	!!!!!!	!	!
<!!!!!!\$	!!!!!!\$	<!!!!!!\$	!!!!!!\$	9!!!!!!8	!!!!!!	!
!< =!	! =!	!< =!	! =!	!< =!	!	!
!	!	!	!	!	!	!
!	!....Y;	!	!....Y;	!1....>	!	!
!	!/////<	!	!/////L8	!=/////L8	!	!
!	!	!	!	!	!	!
!> ?!	!	!> !;	!	!> ?!	!	!> ?!
%!!!!!!#	!	%!!!!!!48	!	!!!!!!!;	!	%!!!!!!#
!	!	!> ?!	!> ?!	!!!!!!	?9	<!!!!!!8>
!	!	%8> ?9#	%8> ?9#	?9#	?9!	! 10
!	!	%8P9#	%8P9#	?9#	!	?Z<
!\$ < ;	!	%!#	%!#	?9#	!	?Z<
=:\$ < ;<	! ?^> !	< ! \$	!	?9#	!	?Z<
=:5;<	! ?948> !	< ; Q: \$	!	?9#	!	?Z<
=7<	!9# %8!	< ;< =: \$	!	9#	!	?Z<
!	!# %!	!< =!	!	!!!!!!	!!!!10	9!!!!!!
9!!!!!!\$	!	!!!!!!	<!!!!!!8	!!!!!!		
!	!	!	!	!< ;		
!	!	!	!	!< ;<		
!....!	!....!	!....E	!....E	!< ;<		
!/////8	!/////!	!/////!	!/////!	!< ;<		
!	!	!	!	!< ;<		
!	!	!	!	!< ;<		
!!!!!!!#	!	!!!!!!#	%!!!!!!#	!<		



TABLE 1-4(a). SIZE EIGHT BLOCK CHARACTER DEFINITION

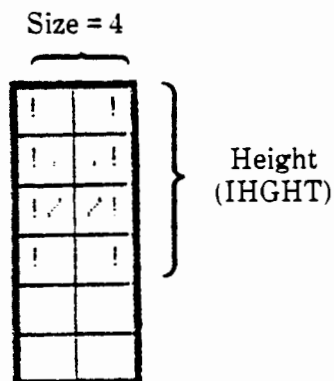
<!!!!\$	<!!!!\$	<!!!!\$				<!!!!9>
! ! ! !	! ! ! !	!< ?Z!				! 10
! ! ! !	! ! ! !	! ?Z<!			98	?Z<
!.....!	!.....!	! ?Z< !		98	!;	?Z<
9////////8	R////////!	! ?Z< !	////////	!;		?Z<
! ! ! !	! ! ! !	! Z< !			98	9<
! ! ! !	! ?!	!< ?!		98	!;	!
%!!!!!#	!!!!!!#	%!!!!!#		!;	?9#	K
! !	! !	98 <				
! !	<!!!!\$	!; <#				
..!..!..	! ! ! /	<#				
//!//!//	!..!..E	<#				
..!..!..	R//!//!	<#				
//!//!//	. ! !	<#				
! !	%!!!!!#	<# 98		98	98	98
! !	!	# !;	#	!;	?9#	

TABLE 1-4(b). SIZE EIGHT BLOCK CHARACTER DEFINITION

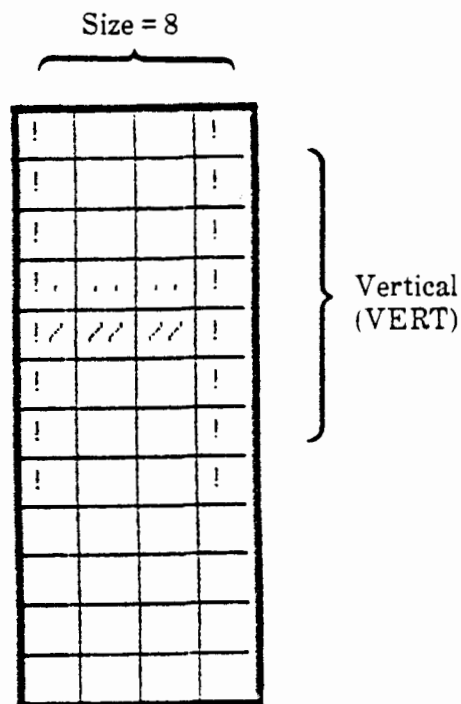
SECTION II. PROGRAM DESCRIPTION

The application programs in this note use the character definitions described in Section I. These character definitions are stored in reference arrays. As the operator inputs the text to be printed, the program takes each input character and searches the reference array for that character. The character, together with the size definition, points to the locations of the beginning of the character definition in the appropriate size array. This information is merged into an output array and then sent to the printer. Adding new character arrays therefore necessitates using the proper format in the character location program. The format is defined below using the letter "H" as an example.

4 x 4 Example



7 x 8 Example



The character data from tables 1-2 through 1-4 are entered into the arrays. Data for the width of the character must be in even numbers (size four characters are already even)*. For example, the width of the 7 by 8 characters is 7. Therefore, one blank is added to the width at the end of the character to make the character width an even number.

The program adds two blank spaces after each character for character separation. Vertical separation can be adjusted by changing the value of the variable VERT. Height (IHGHT) is defined as the value of the vertical rows in the character. The vertical array dimensions (IA\$(141,4), IA8(235,8), Alpha4\$(4)[300], Alpha6\$(6)[400]) listed in the sample programs represent the character height. The difference between VERT and IHGHT is the number of blank lines between characters.

* For HP 1000 and HP 3000 system programs only.

This program allows the user to input the paper text width, the size of character desired, and the text to be printed. For both the HP 1000 and HP 3000 the character size is selectable from standard height (1) to 2, 4, 6, 8, 12, and 16 times standard height. The characters that are 2, 12 and 16 times the standard size are selected by accessing the double size mode and choosing either standard (1), 4, 6, or 8 times the standard height. For example, if 6 times the standard height is selected the printer output will be 12 times (6 x 2) the standard height when in the double size mode.

SECTION III. PROGRAM LISTING FOR THE HP 3000

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1  $CONTROL LIST,MAP,LOCATION ,FILE=05,FILE=06,FILE=07
2  PROGRAM BLOCK
3  C *****
4  C
5  C
6  C
7  C      USING THE BLOCK CHARACTER ROM OF THE HP 2563A
8  C      AND THE HP 3000
9  C
10 C      THE OUTPUT FILE NAME FOR THIS PROGRAM IS FTN07
11 C *****
12 C
13 C      DIMENSION IREF(47),LEN1(66),LEN2(66),IA4(141,4),IA6(188,6)
14 C      DIMENSION IA4B(141),IA4C(141),IA4D(141)
15 C      DIMENSION IA6B(188),IA6C(188),IA6D(188),IA6E(188),IA6F(188)
16 C      DIMENSION IA8B(235),IA8C(235),IA8D(235),IA8E(235),IA8F(235)
17 C      DIMENSION IA8G(235),IA8H(235)
18 C      DIMENSION IA8(235,8)
19 C      DIMENSION IA8AA(45),IA8BB(45),IA8CC(45),IA8DD(45),IA8EE(45)
20 C      DIMENSION IA8FF(45),IA8GG(45),IA8HH(45)
21 C      DIMENSION ITEXT(132),IOUT(66,12)
22 C      EQUIVALENCE (IA4(1,2),IA4B),(IA4(1,3),IA4C),(IA4(1,4),IA4D)
23 C      EQUIVALENCE (IA6(1,2),IA6B),(IA6(1,3),IA6C),(IA6(1,4),IA6D)
24 C      EQUIVALENCE (IA6(1,5),IA6E),(IA6(1,6),IA6F)
25 C      EQUIVALENCE (IA8(1,2),IA8B),(IA8(1,3),IA8C),(IA8(1,4),IA8D)
26 C      EQUIVALENCE (IA8(1,5),IA8E),(IA8(1,6),IA8F),(IA8(1,7),IA8G)
27 C      EQUIVALENCE (IA8(1,8),IA8H)
28 C      EQUIVALENCE (IA8(191,1),IA8AA),(IA8(191,2),IA8BB)
29 C      EQUIVALENCE(IA8(191,3),IA8CC),(IA8(191,4),IA8DD)
30 C      EQUIVALENCE(IA8(191,5),IA8EE),(IA8(191,6),IA8FF)
31 C      EQUIVALENCE(IA8(191,7),IA8GG),(IA8(191,8),IA8HH)
32 C
33 C *****
34 C
35 C REDIMENSION IREF & IA ARRAYS IF ADDITIONAL LETTERS ARE
36 C ADDED. IOUT - 12 MIGHT ALSO NEED REDIMENSIONING IF
37 C NEW CHARACTERS ARE VERY LARGE.
38 C
39 C DIMENSION AND EQUIVALENCE ARRAYS FOR ANY NEW CHARACTER
40 C SIZES TO BE ADDED.
41 C
42 C *****
43 C
44 C***
45 C      FILL REFERENCE ARRAY WITH LETTERS AVAILABLE
46 C
47 DATA IREF/2HA ,2HB ,2HC ,2HD ,2HE ,2HF ,2HG ,2HH ,2HI ,2HJ ,

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48      C2HK ,2HL ,2HM ,2HN ,2HO ,2HP ,2HQ ,2HR ,2HS ,2HT ,2HU ,
49      C2HV ,2HW ,2HX ,2HY ,2HZ ,2H1 ,2H2 ,2H3 ,2H4 ,2H5 ,2H6 ,
50      C2H7 ,2H8 ,2H9 ,2H0 ,2H- ,2H/ ,2H# ,2H. ,2H ,2H$ ,2H% ,
51      C2H; ,2H: ,2H ,2H? /
52      C
53      C *****
54      C INPUT ANY NEW CHARACTERS INTO IREF ARRAY
55      C *****
56      C
57      C *** THIS IS THE START OF SIZE 4 - FIRST ROW
58      DATA IA4/2H ( ,2H$ ,2H ,2H!! ,2H!8,2H ,2H9! ,2H!8,2H ,
59      C2H!! ,2H!$ ,2H ,
60      C2H!! ,2H!! ,2H ,2H!! ,2H!! ,2H ,2H9! ,2H!8,2H ,2H! ,2H ! ,2H ,
61      C2H 1,2H0 ,2H ,
62      C2H ,2H ! ,2H ,2H! ,2H( #,2H ,2H! ,2H ,2H ,2H!$ ,2H( ! ,2H ,
63      C2H!$ ,2H ! ,2H ,
64      C2H9! ,2H!8,2H ,2H!! ,2H!8,2H ,2H9! ,2H!8,2H ,2H!! ,2H!8,2H ,
65      C2H9! ,2H!8,2H ,
66      C2H!! ,2H!! ,2H ,2H! ,2H ! ,2H ,2H! ,2H ! ,2H ,2H! ,2H ! ,2H ,
67      C2H_> ,2H?Z,2H ,2H_> ,2H?Z,2H ,2H!! ,2H!! ,2H ,
68      C2H?9,2H0 ,2H ,2H9! ,2H!V,2H ,2H9! ,2H!8,2H ,2H! ,2H!0,2H ,
69      C2H!! ,2H!! ,2H ,
70      C2H9! ,2H!8,2H ,2H!! ,2H!! ,2H ,2H9! ,2H!8,2H ,2H9! ,2H!8,2H ,
71      C2H9! ,2H!8,2H ,2H ,2H ,2H ,2H ,2H?Z,2H ,2H 0,2H1 ,2H ,
72      C2H ,2H ,2H ,
73      C2H ,2H ,2H ,2H? ,2H , ,2H ,2HK ,2H?Z,2H ,2H ,2H ,2H ,
74      C2H ,2H ,2H ,2H ,2H ,2H ,2H9/ ,2H/8,2H /
75      DATA IA4B/2H( #,2H%$ ,2H ,2H! ,2H. ,2H ,
76      C2H! ,2H / ,2H ,2H! ,2H= ! ,2H ,
77      C2H! ,2H. ,2H ,2H! ,2H. ,2H ,2H! ,2H / ,2H ,2H! ,2H. ! ,2H ,
78      C2H 1,2H0 ,2H ,2H ,2H ! ,2H ,2H! ( ,2H# ,2H ,2H! ,2H ,2H ,
79      C2H! % ,2H# ! ,2H ,2H! % ,2H$ ! ,2H ,2H! ,2H ! ,2H ,2H! ,2H. ! ,2H ,
80      C2H! ,2H ! ,2H ,2H! ,2H. ,2H ,2H! ,2H. E,2H ,2H 1,2H0 ,2H ,
81      C2H! ,2H ! ,2H ,2H! ,2H ! ,2H ,2H! ,2H ! ,2H ,2H= _ ,2HZ< ,2H ,
82      C2H= _ ,2HZ< ,2H ,2H ? ,2HZ< ,2H ,2H 1,2H0 ,2H ,2H/? ,2H!F,2H ,
83      C2H ,2H. ,2H ,2H! ,2H!0,2H ,2H! ,2H. E,2H ,2H! ,2H. E,2H ,
84      C2H ,2H( #,2H ,2H! ,2H. ,2H ,2H! ,2H. ! ,2H ,2H! ? ,2HZ! ,2H ,
85      C2HH. ,2H. ,2H ,2H ? ,2HZ< ,2H ,2H/0,2H+ / ,2H ,2H ,2H ,2H ,
86      C2H ,2H ,2H ,2H1 ,2H. ,2H ,2H ? ,2HZ< ,2H ,2H K,2H ,2H ,
87      C2H K,2H ,2H ,2H ,2H ,2H ,2H ,2H( #,2H /
88      DATA IA4C/2H!! ,
89      C2H!! ,2H ,2H! / ,2H/8,2H ,2H! ,2H ,2H ,2H! ,2H? ! ,2H ,
90      C2H! / ,2H/ ,2H ,2H! / ,2H/ ,2H ,2H! ,2H> ! ,2H ,2H! / ,2H/ ! ,2H ,
91      C2H 1,2H0 ,2H ,2H ,2H ! ,2H ,2H! 4,2H$ ,2H ,2H! ,2H ,2H ,
92      C2H! ,2H ! ,2H ,2H! ,2H% ! ,2H ,2H! ,2H ! ,2H ,2H! / ,2H/8,2H ,
93      C2H! ,2H. ! ,2H ,2H! / ,2H/8,2H ,2HR/ ,2H/ ! ,2H ,2H 1,2H0 ,2H ,
94      C2H! ,2H ! ,2H ,2H%$ ,2H( #,2H ,2H! ( ,2H$ ! ,2H ,2H?Z,2H_> ,2H ,
95      C2H 1,2H0 ,2H ,2H?Z,2H< ,2H ,2H 1,2H0 ,2H ,2H?9,2H# ,2H ,
96      C2H / ,2H/8,2H ,2H!! ,2H!! ,2H ,2H= / ,2H/ ! ,2H ,2H! / ,2H/ ! ,2H ,
97      C2H ( ,2H# ,2H ,2H9/ ,2H/8,2H ,2HR/ ,2H/ ! ,2H ,2H! Z,2H< ! ,2H ,
98      C2H> / ,2H/ ,2H ,2H?Z,2H< ,2H ,2H. ,2H- ,2H ,2H ,2H ,2H ,
99      C2H ,2H ,2H ,2H ,2H01,2H ,2H?Z,2H< ,2H ,2H ,2H ,2H ,

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100      C2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H! ,2H /
101      DATA IA4D/2H! ,2H !,2H ,
102      C2H!! ,2H!! ,2H ,2H!! ,2H!! ,2H ,2H!! ,2H!#,2H ,
103      C2H!! ,2H!! ,2H ,2H! ,2H ,2H ,2H!! ,2H!! ,2H ,2H! ,2H !,2H ,
104      C2H 1,2H0 ,2H ,2H!! ,2H!! ,2H ,2H! ,2H%#,2H ,2H!! ,2H!! ,2H ,
105      C2H! ,2H !,2H ,2H! ,2H !,2H ,2H!! ,2H!! ,2H ,2H! ,2H ,2H ,
106      C2H!! ,2H!8,2H ,2H! ,2H !,2H ,2H!! ,2H!! ,2H ,2H 1,2H0 ,2H ,
107      C2H!! ,2H!! ,2H ,2H % ,2H# ,2H ,2H!#,2H%!,2H ,2HZ< ,2H=_ ,2H ,
108      C2H 1,2H0 ,2H ,2H9! ,2H!! ,2H ,
109      C2H!! ,2H!0,2H ,2H9! ,2H!! ,2H ,2H!! ,2H!! ,2H ,2H ,2H!0,2H ,
110      C2H!! ,2H!! ,2H ,2H!! ,2H!! ,2H ,2H<# ,2H ,2H ,2H!! ,2H!! ,2H ,
111      C2H!! ,2H!! ,2H ,2H!! ,2H!! ,2H ,2H ,2H ,2H ,2HZ< ,2H ,2H ,
112      C2H 0,2H1 ,2H ,2H K,2H ,2H ,2H I,2H ,2H ,2H>/ ,2HDS,2H ,
113      C2HZ< ,2H K,2H ,2H I,2H ,2H ,2H K,2H ,2H ,2H ,2H ,2H ,
114      C2H ,2HK ,2H /
115      C *** FILL LENGTH ARRAY
116      DATA LEN1/2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H! ,
117      C2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H2 ,
118      C2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H3 ,
119      C2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H4 ,
120      C2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H5 ,
121      C2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H6 ,
122      C2H ,2H ,2H ,2H ,2H ,2H /
123      DATA LEN2/2H1 ,2H2 ,2H3 ,2H4 ,2H5 ,2H6 ,2H7 ,2H8 ,2H9 ,2H0 ,
124      C2H1 ,2H2 ,2H3 ,2H4 ,2H5 ,2H6 ,2H7 ,2H8 ,2H9 ,2H0 ,
125      C2H1 ,2H2 ,2H3 ,2H4 ,2H5 ,2H6 ,2H7 ,2H8 ,2H9 ,2H0 ,
126      C2H1 ,2H2 ,2H3 ,2H4 ,2H5 ,2H6 ,2H7 ,2H8 ,2H9 ,2H0 ,
127      C2H1 ,2H2 ,2H3 ,2H4 ,2H5 ,2H6 ,2H7 ,2H8 ,2H9 ,2H0 ,
128      C2H1 ,2H2 ,2H3 ,2H4 ,2H5 ,2H6 ,2H7 ,2H8 ,2H9 ,2H0 ,
129      C2H1 ,2H2 ,2H3 ,2H4 ,2H5 ,2H6 /
130      C
131      C *** THIS IS THE START OF SIZE 6 - FIRST ROW
132      C
133      DATA IA6 /2H ?,2H98,2H> ,2H ,2H!! ,2H!! ,2H!$,2H ,
134      C2H9! ,2H!! ,2H!8,2H ,2H!! ,2H!! ,2H!$,2H ,2H!! ,2H!! ,2H!! ,2H ,
135      C2H!! ,2H!! ,2H!! ,2H ,2H9! ,2H!! ,2H!8,2H ,2H! ,2H ,2H !,2H ,
136      C2H 1,2H!! ,2H0 ,2H ,2H ,2H ,2H !,2H ,2H! ,2H < ,2H# ,2H ,
137      C2H! ,2H ,2H ,2H ,2H!$,2H ,2H<!,2H ,2H!$,2H ,2H !,2H ,
138      C2H9! ,2H!! ,2H!8,2H ,2H!! ,2H!! ,2H!8,2H ,
139      C2H9! ,2H!! ,2H!8,2H ,2H!! ,2H!! ,2H!8,2H ,2H9! ,2H!! ,2H!8,2H ,
140      C2H!! ,2H!! ,2H!! ,2H ,2H! ,2H ,2H !,2H ,2H! ,2H ,2H !,2H ,
141      C2H! ,2H ,2H !,2H ,2H!>,2H ,2H?!,2H ,
142      C2H!$,2H ,2H< ,2H ,2H!! ,2H!! ,2H! ,2H ,
143      C2H ,2H<0,2H ,2H ,2H9! ,2H!! ,2H8 ,2H ,2H9! ,2H!! ,2H!8,2H ,
144      C2H! ,2H ,2H! ,2H ,2H!! ,2H!! ,2H!! ,2H ,2H9! ,2H!! ,2H!! ,2H ,
145      C2H!! ,2H! ,2H!! ,2H ,2H9! ,2H!! ,2H!8,2H ,2H9! ,2H!! ,2H!8,2H ,
146      C2H<!,2H!! ,2H!$,2H ,
147      C2H ,2H ,2H ,2H ,2H ,2H ,2H?Z,2H ,2H 1,2H01,2H0 ,2H ,
148      C2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H!0,2H ,2H ,
149      C2HK ,2H ,2H?Z,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,
150      C2H ,2H ,2H ,2H ,2H9! ,2H!! ,2H8 ,2H /
151      DATA IA6B/2H?9,2H% ,2H8>,2H ,

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152 C2H! ,2H ,2H !,2H ,2H! ,2H ,2H !,2H ,
153 C2H! ,2H ,2H=!,2H ,2H! ,2H ,2H ,2H ,2H! ,2H ,2H ,2H ,
154 C2H! ,2H ,2H !,2H ,2H! ,2H ,2H !,2H ,
155 C2H ,2H10,2H ,2H ,2H ,2H ,2H !,2H ,2H! ,2H<#,2H ,2H ,
156 C2H! ,2H ,2H ,2H ,2H! ,2H$(,2H)!,2H ,2H! ,2H$,2H !,2H ,
157 C2H! ,2H ,2H !,2H ,2H! ,2H ,2H !,2H ,
158 C2H! ,2H ,2H !,2H ,2H! ,2H ,2H !,2H ,2H! ,2H ,2H /,2H ,
159 C2H ,2H10,2H ,2H ,2H! ,2H ,2H !,2H ,2H! ,2H ,2H !,2H ,
160 C2H! ,2H ,2H !,2H ,2H%8,2H>?,2H9#,2H ,
161 C2H=!,2H$(,2H)<,2H ,2H ,2H (<,2H)<,2H ,
162 C2H (<,2H!0,2H ,2H ,2H! ,2H ?,2H! ,2H ,2H ,2H ,2H !,2H ,
163 C2H! ,2H ,2H! ,2H ,2H! ,2H ,2H ,2H ,2H! ,2H ,2H ,2H ,
164 C2H ,2H ?,2H9#,2H ,2H! ,2H ,2H !,2H ,2H! ,2H ,2H !,2H ,
165 C2H! ,2H ?,2HZ!,2H ,
166 C2H ,2H ,2H ,2H ,2H ,2H ?,2HZ<,2H ,2H.-,2H.-,2H.,,2H ,
167 C2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H9!,2H!! ,2H!! ,2H ,
168 C2H ,2H ?,2HZ<,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,
169 C2H ,2H ,2H ,2H ,2H ,2H! ,2H ?,2H! ,2H /
170 DATA IA6C/2H9#,
171 C2H ,2H%8,2H ,2H! ,2H.,,2H.,,2H ,2H! ,2H ,2H ,2H ,
172 C2H! ,2H ,2H !,2H ,2H! ,2H.,,2H.,,2H ,2H! ,2H.,,2H ,2H ,
173 C2H! ,2H ,2H ,2H ,2H! ,2H.,,2H! ,2H ,
174 C2H ,2H10,2H ,2H ,2H ,2H ,2H !,2H ,2H!<,2HJ ,2H ,2H ,
175 C2H! ,2H ,2H ,2H ,2H!=,2H! ,2H<!,2H ,2H!=,2H!$,2H !,2H ,
176 C2H! ,2H ,2H !,2H ,2H! ,2H.,,2H! ,2H ,
177 C2H! ,2H ,2H !,2H ,2H! ,2H.,,2H.,,2H ,2H! ,2H.,,2H.E,2H ,
178 C2H ,2H10,2H ,2H ,2H! ,2H ,2H !,2H ,2H!>,2H ,2H?!,2H ,
179 C2H! ,2H?>,2H !,2H ,2H %,2H89,2H# ,2H ,
180 C2H =,2H! ,2H< ,2H ,2H ,2H< ,2H< ,2H ,
181 C2H ,2H10,2H ,2H ,2H ,2H?9,2H# ,2H ,2H ,2H.,,2H.,,2H ,2H ,
182 C2H! ,2H.,,2H! ,2H ,2H! ,2H.,,2H.E,2H ,2H! ,2H.,,2H.E,2H ,
183 C2H ,2H?9,2H# ,2H ,2H! ,2H.,,2H.,,2H ,2H! ,2H.,,2H! ,2H ,
184 C2H! ,2H?Z,2H<!,2H ,
185 C2H ,2H.,,2H.,,2H ,2H ,2H?Z,2H< ,2H ,2H/+ ,2HD+,2HD/,2H ,
186 C2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H! ,2H-,2H.E,2H ,
187 C2H ,2H?Z,2H< ,2H ,2H ,2HK ,2H ,2H ,2H ,2HK ,2H ,2H ,
188 C2H ,2H ,2H ,2H ,2H ,2H?9,2H# ,2H /
189 DATA IA6D/2H!! ,
190 C2H!! ,2H!! ,2H ,2H! ,2H ,2H 8,2H ,2H! ,2H ,2H ,2H ,
191 C2H! ,2H ,2H !,2H ,2H!/ ,2H//,2H//,2H ,2H!/ ,2H//,2H ,2H ,
192 C2H! ,2H ,2H.,,2H ,2H!/ ,2H//,2H/!,2H ,
193 C2H ,2H10,2H ,2H ,2H ,2H ,2H !,2H ,2H!#,2H%$,2H ,2H ,
194 C2H! ,2H ,2H ,2H ,2H! ,2H=<,2H !,2H ,2H! ,2H=!,2H$,2H ,
195 C2H! ,2H ,2H !,2H ,2H!/ ,2H//,2H/S,2H ,
196 C2H! ,2H ,2H !,2H ,2H!/ ,2H//,2H/8,2H ,2HR/,2H//,2H/!,2H ,
197 C2H ,2H10,2H ,2H ,2H! ,2H ,2H !,2H ,2H%8,2H>?,2H9#,2H ,
198 C2H!?,2H98,2H>!,2H ,2H (<,2H)!,2H$,2H ,
199 C2H ,2H10,2H ,2H ,2H (<,2H)<,2H ,2H ,
200 C2H ,2H10,2H ,2H ,2H ?,2H9#,2H ,2H ,2H /,2H//,2H/8,2H ,
201 C2H//,2H//,2H!/ ,2H ,2H//,2H//,2H/!,2H ,2H!/ ,2H//,2H/!,2H ,
202 C2H ?,2H9#,2H ,2H ,2H9/,2H//,2H/8,2H ,2HR/,2H//,2H/!,2H ,
203 C2H!?,2HZ<,2H !,2H ,

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204 C2H /,2H//,2H/ ,2H ,2H ?,2HZ<,2H ,2H ,2H,-,2H,-,2H,,2H ,
205 C2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2HR/,2H+D,2H/!,2H ,
206 C2H ?,2HZ<,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,
207 C2H ,2H ,2H ,2H ,2H ,2H ,2H9#,2H ,2H /
208 DATA IA6E/2H! ,
209 C2H ,2H !,2H ,2H! ,2H ,2H !,2H ,2H! ,2H ,2H !,2H ,
210 C2H! ,2H ,2H?!,2H ,2H! ,2H ,2H ,2H ,2H! ,2H ,2H ,2H ,
211 C2H! ,2H ,2H !,2H ,2H! ,2H ,2H !,2H ,
212 C2H ,2H10,2H ,2H ,2H! ,2H ,2H !,2H ,2H! ,2H %,2H$,2H ,
213 C2H! ,2H ,2H ,2H ,2H! ,2H ,2H !,2H ,2H! ,2H =,2H! !,2H ,
214 C2H! ,2H ,2H !,2H ,2H! ,2H ,2H ,2H ,
215 C2H! ,2H ,2H.,2H ,2H! ,2H ,2H !,2H ,2H. ,2H ,2H !,2H ,
216 C2H ,2H10,2H ,2H ,2H! ,2H ,2H !,2H ,2H %,2H89,2H#,2H ,
217 C2H!9,2H#%,2H8!,2H ,2H< ,2H<=,2H$,2H ,
218 C2H ,2H10,2H ,2H ,2H< ,2H< ,2H ,2H ,
219 C2H ,2H10,2H ,2H ,2H?9,2H#,2H ,2H ,2H ,2H ,2H !,2H ,
220 C2H ,2H ,2H! ,2H ,2H. ,2H ,2H !,2H ,2H! ,2H ,2H !,2H ,
221 C2H?9,2H#,2H ,2H ,2H! ,2H ,2H !,2H ,2H ,2H ,2H !,2H ,
222 C2H!Z,2H< ,2H !,2H ,
223 C2H ,2H ,2H ,2H ,2H?Z,2H< ,2H ,2H ,2H/+ ,2HD+,2HD/,2H ,
224 C2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H!! ,2H!! ,2H!! ,2H ,
225 C2H?Z,2H< ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,
226 C2H ,2H ,2H ,2H ,2H ,2H! ,2H ,2H /
227 DATA IA6F/2H! ,
228 C2H ,2H !,2H ,2H!! ,2H!! ,2H!#,2H ,2H! !,2H!! ,2H!! ,2H ,
229 C2H!! ,2H!! ,2H!#,2H ,2H!! ,2H!! ,2H!! ,2H ,2H! ,2H ,2H ,2H ,
230 C2H! !,2H!! ,2H!! ,2H ,2H! ,2H ,2H !,2H ,
231 C2H !,2H!! ,2H0 ,2H ,2H! !,2H!! ,2H!! ,2H ,2H! ,2H ,2H%$,2H ,
232 C2H!! ,2H!! ,2H!! ,2H ,2H! ,2H ,2H !,2H ,2H! ,2H ,2H=! ,2H ,
233 C2H! !,2H!! ,2H!! ,2H ,2H! ,2H ,2H ,2H ,
234 C2H! !,2H!! ,2H48,2H ,2H! ,2H ,2H !,2H ,2H! !,2H!! ,2H!! ,2H ,
235 C2H ,2H10,2H ,2H ,2H! !,2H!! ,2H!! ,2H ,2H ,2H%#,2H ,2H ,
236 C2H!#,2H ,2H%!,2H ,2H!<,2H ,2H=! ,2H ,
237 C2H ,2H10,2H ,2H ,2H!! ,2H!! ,2H!! ,2H ,
238 C2H !,2H!! ,2H! ,2H ,2H9!,2H!! ,2H! ,2H ,2H! !,2H!! ,2H!! ,2H ,
239 C2H ,2H ,2H! ,2H ,2H!! ,2H!! ,2H!! ,2H ,2H! !,2H!! ,2H!! ,2H ,
240 C2H9#,2H ,2H ,2H ,2H! !,2H!! ,2H!! ,2H ,2H! !,2H!! ,2H!! ,2H ,
241 C2H%!,2H!! ,2H!#,2H ,
242 C2H ,2H ,2H ,2H ,2HZ<,2H ,2H ,2H ,2H !,2H01,2H0 ,2H ,
243 C2H ,2HK ,2H ,2H ,2H ,2HI ,2H ,2H ,2H ,2H10,2H ,2H ,
244 C2HZ<,2H ,2H K,2H ,2H ,2HK ,2H ,2H ,2H ,2HI ,2H ,2H ,
245 C2H ,2H ,2H ,2H ,2H ,2HK ,2H ,2H /
246 DATA IA8/2H ,2H?^,2H> ,2H ,2H ,2H!! ,2H!! ,2H!! ,2H$,2H ,
247 C2H<!,2H!! ,2H!! ,2H$,2H ,2H!! ,2H!! ,2H!8,2H> ,2H ,
248 C2H!! ,2H!! ,2H!! ,2H! ,2H ,2H!! ,2H!! ,2H!! ,2H! ,2H ,
249 C2H<!,2H!! ,2H!! ,2H$,2H ,2H! ,2H ,2H ,2H! ,2H ,
250 C2H ,2H!! ,2H!! ,2H0 ,2H ,2H ,2H ,2H ,2H! ,2H ,
251 C2H! ,2H ,2H< ,2H ,2H ,2H! ,2H ,2H ,2H ,2H ,
252 C2H!$,2H ,2H< ,2H! ,2H ,2H!>,2H ,2H ,2H! ,2H ,
253 C2H<!,2H!! ,2H!! ,2H$,2H ,2H!! ,2H!! ,2H!! ,2H$,2H ,
254 C2H<!,2H!! ,2H!! ,2H$,2H ,2H!! ,2H!! ,2H!! ,2H$,2H ,
255 C2H9!,2H!! ,2H!! ,2H8 ,2H ,2H!! ,2H!! ,2H!! ,2H! ,2H ,

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256 C2H! ,2H ,2H ,2H! ,2H ,2H! ,2H ,2H ,2H! ,2H ,
257 C2H! ,2H ,2H ,2H! ,2H ,2H!>,2H ,2H ?,2H! ,2H ,
258 C2H!>,2H ,2H ?,2H! ,2H ,2H!! ,2H!! ,2H!! ,2H! ,2H ,
259 C2H ,2H?9,2H ,2H ,2H ,2H<! ,2H!! ,2H!8,2H> ,2H ,
260 C2H9! ,2H!! ,2H!! ,2H$ ,2H ,2H! ,2H ,2H !,2H ,2H ,
261 C2H!! ,2H!! ,2H!! ,2H! ,2H ,2H<! ,2H!! ,2H!! ,2H8 ,2H ,
262 C2H!! ,2H!! ,2H!! ,2H! ,2H ,2H<! ,2H!! ,2H!! ,2H$ ,2H ,
263 C2H<! ,2H!! ,2H!! ,2H$ ,2H ,2H<! ,2H!! ,2H!! ,2H$ ,2H ,
264 C2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H< ,2H /
265 DATA IA8AA/2H ,
266 C2H! ,2H! ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,
267 C2H ,2H ,2H ,2H ,2H ,2H ,2H !,2H ,2H ,2H ,
268 C2H98,2H ,2H ,2H< ,2H ,2H ,2H ,2H ,2H ,2H ,
269 C2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,
270 C2H<! ,2H!! ,2H!8,2H> ,2H /
271 DATA IA8B/2H ?,
272 C2H94,2H8>,2H ,2H ,2H! ,2H ,2H =,2H! ,2H ,
273 C2H!<,2H ,2H =,2H! ,2H ,2H! ,2H ,2H %,2H8 ,2H ,
274 C2H! ,2H ,2H ,2H ,2H ,2H! ,2H ,2H ,2H ,2H ,
275 C2H!<,2H ,2H =,2H! ,2H ,2H! ,2H ,2H ,2H! ,2H ,
276 C2H ,2H ,2H! ,2H ,2H ,2H ,2H ,2H ,2H! ,2H ,
277 C2H! ,2H ,2H< ,2H< ,2H ,2H! ,2H ,2H ,2H ,2H ,
278 C2H!! ,2H$ ,2H< ,2H! ,2H ,2H!8,2H> ,2H ,2H! ,2H ,
279 C2H!<,2H ,2H =,2H! ,2H ,2H! ,2H ,2H =,2H! ,2H ,
280 C2H!<,2H ,2H =,2H! ,2H ,2H! ,2H ,2H =,2H! ,2H ,
281 C2H!<,2H ,2H =,2H! ,2H ,2H ,2H !,2H ,2H ,2H ,
282 C2H! ,2H ,2H ,2H! ,2H ,2H! ,2H ,2H ,2H! ,2H ,
283 C2H! ,2H ,2H ,2H! ,2H ,2H%8,2H> ,2H?9,2H# ,2H ,
284 C2H%8,2H> ,2H?9,2H# ,2H ,2H ,2H ,2H?9,2H# ,2H ,
285 C2H ?,2H9! ,2H ,2H ,2H ,2H! ,2H ,2H !,2H0 ,2H ,
286 C2H ,2H ,2H ,2H! ,2H ,2H! ,2H ,2H !,2H ,2H ,
287 C2H! ,2H ,2H ,2H ,2H ,2H! ,2H ,2H ,2H ,2H ,
288 C2H ,2H ,2H< ,2H ,2H ,2H! ,2H ,2H ,2H! ,2H ,
289 C2H! ,2H ,2H ,2H! ,2H ,2H!<,2H ,2H?Z,2H! ,2H ,
290 C2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H< ,2H# ,2H /
291 DATA IA8BB/2H ,
292 C2H! ,2H! ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,
293 C2H ,2H ,2H ,2H ,2H ,2H<! ,2H!! ,2H!! ,2H$ ,2H ,
294 C2H! ,2H ,2H< ,2H# ,2H ,2H ,2H ,2H ,2H ,2H ,
295 C2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,
296 C2H! ,2H ,2H !,2H0 ,2H /
297 DATA IA8C/2H?9,
298 C2H# ,2H%8,2H> ,2H ,2H! ,2H ,2H ,2H! ,2H ,
299 C2H! ,2H ,2H ,2H/ ,2H ,2H! ,2H ,2H ,2H! ,2H ,
300 C2H! ,2H ,2H ,2H ,2H ,2H! ,2H ,2H ,2H ,2H ,
301 C2H! ,2H ,2H ,2H ,2H ,2H! ,2H ,2H ,2H! ,2H ,
302 C2H ,2H ,2H! ,2H ,2H ,2H ,2H ,2H ,2H! ,2H ,
303 C2H! ,2H< ,2H< ,2H ,2H ,2H! ,2H ,2H ,2H ,2H ,
304 C2H! =,2H:5,2H< ,2H! ,2H ,2H!%,2H8>,2H ,2H! ,2H ,
305 C2H! ,2H ,2H ,2H! ,2H ,2H! ,2H ,2H ,2H! ,2H ,
306 C2H! ,2H ,2H ,2H! ,2H ,2H! ,2H ,2H ,2H! ,2H ,
307 C2H! ,2H ,2H ,2H ,2H ,2H ,2H !,2H ,2H ,2H ,

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308 C2H! ,2H ,2H ,2H! ,2H ,2H! ,2H ,2H ,2H! ,2H ,
309 C2H! ,2H ,2H ,2H! ,2H ,2H % ,2H8P ,2H9# ,2H ,2H ,
310 C2H % ,2H8P ,2H9# ,2H ,2H ,2H ,2H ? ,2H9# ,2H ,2H ,
311 C2H ,2H ! ,2H ,2H ,2H ,2H ,2H ,2H ? Z ,2H < ,2H ,
312 C2H ,2H ,2H ,2H! ,2H ,2H! ,2H ,2H ! ,2H ,2H ,
313 C2H! ,2H ,2H ,2H ,2H ,2H! ,2H ,2H ,2H ,2H ,
314 C2H ,2H ,2H < ,2H < ,2H ,2H! ,2H ,2H ,2H! ,2H ,
315 C2H! ,2H ,2H ,2H! ,2H ,2H! ,2H ? ,2HZ < ,2H! ,2H ,
316 C2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H < # ,2H ,2H /
317 DATA IA8CC/2H...
318 C2H! ,2H! ,2H! ,2H ,2H ,2H ,2H ,2H ,2H ,
319 C2H ,2H ,2H ,2H ,2H ,2H! ,2H ! ,2H ,2H / ,2H ,
320 C2H ,2H ,2H < # ,2H ,2H ,2H ,2H 9 ,2H8 ,2H ,2H ,
321 C2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,
322 C2H ,2H ,2H ? Z ,2H < ,2H /
323 DATA IA8D/2H9# ,
324 C2H ,2H % ,2H8 ,2H ,2H! ,2H... ,2H.Y ,2H ,2H ,
325 C2H! ,2H ,2H ,2H ,2H ,2H! ,2H ,2H ,2H! ,2H ,
326 C2H! ,2H... ,2H... ,2H ,2H ,2H! ,2H... ,2H ,2H ,
327 C2H! ,2H ,2H ,2H ,2H ,2H! ,2H... ,2H... ,2H! ,2H ,
328 C2H ,2H ,2H! ,2H ,2H ,2H ,2H ,2H ,2H! ,2H ,
329 C2H! ,2H < ,2H < ,2H ,2H ,2H! ,2H ,2H ,2H ,2H ,
330 C2H! ,2H = 7 ,2H < ,2H! ,2H ,2H! ,2H % 8 ,2H > ,2H! ,2H ,
331 C2H! ,2H ,2H ,2H! ,2H ,2H! ,2H... ,2H.Y ,2H ,2H ,
332 C2H! ,2H ,2H ,2H! ,2H ,2H! ,2H... ,2H.Y ,2H ,2H ,
333 C2H : 1 ,2H... ,2H... ,2H > ,2H ,2H ,2H ! ,2H ,2H ,2H ,
334 C2H! ,2H ,2H ,2H! ,2H ,2H! ,2H ,2H ,2H! ,2H ,
335 C2H! ,2H ,2H ,2H! ,2H ,2H ,2H % ! ,2H# ,2H ,2H ,
336 C2H ,2H % ! ,2H# ,2H ,2H ,2H ,2H ? 9 ,2H# ,2H ,2H ,
337 C2H ,2H ! ,2H ,2H ,2H ,2H ,2H ? ,2HZ < ,2H ,2H ,
338 C2H ,2H... ,2H... ,2H ,2H ,2H! ,2H... ,2H... ,2H ,2H ,
339 C2H! ,2H... ,2H... ,2HE ,2H ,2H! ,2H... ,2H... ,2HE ,2H ,
340 C2H ,2H < ,2H ; < ,2H ,2H ,2H : ,2H... ,2H... ,2H ,2H ,
341 C2H! ,2H... ,2H... ,2H! ,2H ,2H! ,2H ? Z ,2H < ,2H! ,2H ,
342 C2H ,2H... ,2H... ,2H ,2H ,2H ,2H < ,2H# ,2H ,2H /
343 DATA IA8DD/2H// ,
344 C2H! / ,2H! / ,2H / ,2H ,2H ,2H ,2H ,2H ,2H ,
345 C2H ,2H ,2H ,2H ,2H ,2H! ,2H ! ,2H... ,2HE ,2H ,
346 C2H ,2H < ,2H# ,2H ,2H ,2H ,2H : ,2H ,2H ,2H ,
347 32H ,2H 9 ,2H8 ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,
348 C2H ,2H ? ,2HZ < ,2H ,2H /
349 DATA IA8E/2H!! ,
350 C2H!! ,2H!! ,2H! ,2H ,2H! / ,2H// ,2H/L ,2H8 ,2H ,
351 C2H! ,2H ,2H ,2H ,2H ,2H! ,2H ,2H ,2H! ,2H ,
352 C2H! / ,2H// ,2H// ,2H / ,2H ,2H! / ,2H// ,2H / ,2H ,2H ,
353 C2H! ,2H ,2H ,2H ,2H ,2H! / ,2H// ,2H// ,2H! ,2H ,
354 C2H ,2H ,2H! ,2H ,2H ,2H ,2H ,2H ,2H! ,2H ,
355 C2H! < ,2H! 8 ,2H > ,2H ,2H ,2H! ,2H ,2H ,2H ,2H ,
356 C2H! ,2H ,2H ,2H! ,2H ,2H! ,2H % ,2H8 > ,2H! ,2H ,
357 C2H! ,2H ,2H ,2H! ,2H ,2H! / ,2H// ,2H// ,2H < ,2H ,
358 C2H! ,2H ,2H ,2H! ,2H ,2H! / ,2H// ,2H/L ,2H8 ,2H ,
359 C2H = / ,2H// ,2H/L ,2H8 ,2H ,2H ,2H ! ,2H ,2H ,2H ,

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360 C2H! ,2H ,2H ,2H! ,2H ,2H!$,2H ,2H (,2H; ,2H ,
361 C2H! ,2H?^,2H> ,2H! ,2H ,2H ,2H<!,2H$,2H ,2H ,
362 C2H ,2H !,2H ,2H ,2H ,2H ?,2H9#,2H ,2H ,2H ,
363 C2H ,2H !,2H ,2H ,2H ,2H ,2H?Z,2H< ,2H ,2H ,
364 C2H /,2H//,2H//,2H8 ,2H ,2H//,2H//,2H/!,2H/ ,2H ,
365 C2H//,2H//,2H//,2H! ,2H ,2H!//,2H//,2H//,2H! ,2H ,
366 C2H ,2H<;,2H< ,2H ,2H ,2H9/,2H//,2H//,2H8 ,2H ,
367 C2HR/,2H//,2H//,2H! ,2H ,2H!?,2HZ<,2H ,2H! ,2H ,
368 C2H /,2H//,2H//,2H ,2H ,2H ,2H<#,2H ,2H ,2H /
369 DATA IA8EE/2H...
370 C2H!.,2H!.,2H. ,2H ,2H ,2H ,2H ,2H ,2H ,
371 C2H ,2H ,2H ,2H ,2H ,2HR/,2H/!,2H//,2H! ,2H ,
372 C2H ,2H<#,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,
373 C2H ,2H !,2H; ,2H ,2H ,2H ,2H ,2H ,2H ,
374 C2H ,2H?Z,2H< ,2H ,2H /
375 DATA IA8F/2H! ,
376 C2H ,2H ,2H! ,2H ,2H! ,2H ,2H ,2H! ,2H ,
377 C2H! ,2H ,2H ,2H ,2H ,2H! ,2H ,2H ,2H! ,2H ,
378 C2H! ,2H ,2H ,2H ,2H ,2H! ,2H ,2H ,2H ,2H ,
379 C2H! ,2H ,2H /,2H! ,2H ,2H! ,2H ,2H ,2H! ,2H ,
380 C2H ,2H ,2H! ,2H ,2H ,2H. ,2H ,2H ,2H! ,2H ,
381 C2H!;,2H<%,2H8>,2H ,2H ,2H! ,2H ,2H ,2H ,2H ,
382 C2H! ,2H ,2H ,2H! ,2H ,2H! ,2H ,2H%8,2H! ,2H ,
383 C2H! ,2H ,2H ,2H! ,2H ,2H! ,2H ,2H ,2H ,2H ,
384 C2H! ,2H ,2H ,2H! ,2H ,2H! ,2H ,2H ,2H! ,2H ,
385 C2H ,2H ,2H ,2H! ,2H ,2H ,2H !,2H ,2H ,2H ,
386 C2H! ,2H ,2H ,2H! ,2H ,2H=;,2H$,2H<;,2H< ,2H ,
387 C2H!?,2H94,2H8>,2H! ,2H ,2H (,2H;Q,2H!$,2H ,2H ,
388 C2H ,2H !,2H ,2H ,2H ,2H?9,2H#,2H ,2H ,2H ,
389 C2H ,2H !,2H ,2H ,2H ,2H ?,2HZ<,2H ,2H ,2H ,
390 C2H ,2H ,2H ,2H! ,2H ,2H ,2H ,2H !,2H ,2H ,
391 C2H ,2H ,2H ,2H! ,2H ,2H! ,2H ,2H ,2H! ,2H ,
392 C2H <,2H;<,2H ,2H ,2H ,2H! ,2H ,2H ,2H! ,2H ,
393 C2H ,2H ,2H ,2H! ,2H ,2H!Z,2H< ,2H ,2H! ,2H ,
394 C2H ,2H ,2H ,2H ,2H ,2H (,2H# ,2H ,2H ,2H /
395 DATA IA8FF/2H//,
396 C2H!/,2H!/,2H/ ,2H ,2H ,2H ,2H ,2H ,2H ,
397 C2H ,2H 9,2H8 ,2H ,2H ,2H. ,2H !,2H ,2H! ,2H ,
398 C2H (,2H# ,2H ,2H ,2H ,2H ,2H 9,2H8 ,2H ,2H ,
399 C2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,
400 C2H ,2H9<,2H ,2H ,2H /
401 DATA IA8G/2H! ,
402 C2H ,2H ,2H! ,2H ,2H! ,2H ,2H ?,2H! ,2H ,
403 C2H!>,2H ,2H ?,2H! ,2H ,2H! ,2H ,2H <,2H; ,2H ,
404 C2H! ,2H ,2H ,2H ,2H ,2H! ,2H ,2H ,2H ,2H ,
405 C2H!>,2H ,2H ?,2H! ,2H ,2H! ,2H ,2H ,2H! ,2H ,
406 C2H ,2H ,2H! ,2H ,2H ,2H!>,2H ,2H ?,2H! ,2H ,
407 C2H!<,2H ,2H%8,2H> ,2H ,2H! ,2H ,2H ,2H ,2H ,
408 C2H! ,2H ,2H ,2H! ,2H ,2H! ,2H ,2H %,2H! ,2H ,
409 C2H!>,2H ,2H ?,2H! ,2H ,2H! ,2H ,2H ,2H ,2H ,
410 C2H!>,2H ,2H !,2H; ,2H ,2H! ,2H ,2H ,2H! ,2H ,
411 C2H!>,2H ,2H ?,2H! ,2H ,2H ,2H !,2H ,2H ,2H ,

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412      C2H!>,2H ,2H ?,2H! ,2H ,2H =,2H:5,2H;<,2H ,2H ,
413      C2H!9,2H# ,2H%8,2H! ,2H ,2H< ,2H< ,2H=,2H$ ,2H ,
414      C2H ,2H !,2H ,2H ,2H ,2H9#,2H ,2H ,2H ,2H ,
415      C2H ,2H !,2H ,2H ,2H ,2H?Z,2H< ,2H ,2H ,2H ,
416      C2H ,2H ,2H ,2H! ,2H ,2H ,2H ,2H !,2H ,2H ,
417      C2H! ,2H ,2H ,2H! ,2H ,2H! ,2H ,2H ,2H! ,2H ,
418      C2H< ,2H< ,2H ,2H ,2H ,2H! ,2H ,2H ,2H! ,2H ,
419      C2H ,2H ,2H ?,2H! ,2H ,2H!<,2H ,2H ?,2H! ,2H ,
420      C2H ,2H ,2H ,2H ,2H ,2H<#,2H ,2H ,2H ,2H ,
421      DATA IA8GG/2H ,
422      C2H! ,2H! ,2H ,2H ,2H ,2H 9,2H8 ,2H ,2H ,
423      C2H ,2H !,2H! ,2H ,2H ,2H%!,2H!! ,2H!! ,2H# ,2H ,
424      C2H<#,2H ,2H 9,2H8 ,2H ,2H ,2H !,2H! ,2H ,2H ,
425      C2H ,2H 9,2H8 ,2H ,2H ,2H ,2H ,2H ,2H ,2H ,
426      C2H ,2H! ,2H ,2H ,2H ,
427      DATA IA8H/2H! ,
428      C2H ,2H ,2H! ,2H ,2H!! ,2H!! ,2H!! ,2H# ,2H ,
429      C2H%!,2H!! ,2H!! ,2H# ,2H ,2H!! ,2H!! ,2H!! ,2H< ,2H ,
430      C2H!! ,2H!! ,2H!! ,2H! ,2H ,2H! ,2H ,2H ,2H ,2H ,
431      C2H%!,2H!! ,2H!! ,2H# ,2H ,2H! ,2H ,2H ,2H! ,2H ,
432      C2H ,2H!! ,2H!! ,2H0 ,2H ,2H%!,2H!! ,2H!! ,2H# ,2H ,
433      C2H! ,2H ,2H %,2H8 ,2H ,2H!! ,2H!! ,2H!! ,2H! ,2H ,
434      C2H! ,2H ,2H ,2H! ,2H ,2H! ,2H ,2H ,2H! ,2H ,
435      C2H%!,2H!! ,2H!! ,2H# ,2H ,2H! ,2H ,2H ,2H ,2H ,
436      C2H%!,2H!! ,2H!4,2H8 ,2H ,2H! ,2H ,2H ,2H! ,2H ,
437      C2H!! ,2H!! ,2H!! ,2H; ,2H ,2H ,2H !,2H ,2H ,2H ,
438      C2H%!,2H!! ,2H!! ,2H# ,2H ,2H ,2H=7,2H< ,2H ,2H ,
439      C2H!#,2H ,2H %,2H! ,2H ,2H!<,2H ,2H =,2H! ,2H ,
440      C2H ,2H !,2H ,2H ,2H ,2H!! ,2H!! ,2H!! ,2H! ,2H ,
441      C2H 1,2H!! ,2H!0,2H ,2H ,2H9! ,2H!! ,2H!! ,2H! ,2H ,
442      C2H!! ,2H!! ,2H!! ,2H# ,2H ,2H ,2H ,2H !,2H ,2H ,
443      C2H!! ,2H!! ,2H!! ,2H# ,2H ,2H%!,2H!! ,2H!! ,2H# ,2H ,
444      C2H;<,2H ,2H ,2H ,2H ,2H%!,2H!! ,2H!! ,2H# ,2H ,
445      C2H!! ,2H!! ,2H!! ,2H# ,2H ,2H%!,2H!! ,2H!! ,2H# ,2H ,
446      C2H ,2H ,2H ,2H ,2H ,2H# ,2H ,2H ,2H ,2H ,
447      DATA IA8HH/2H ,
448      C2H! ,2H! ,2H ,2H ,2H ,2H ;,2H; ,2H ,2H ,
449      C2H ,2H?9,2H# ,2H ,2H ,2H ,2H !,2H ,2H ,2H ,
450      C2H# ,2H ,2H !,2H; ,2H ,2H ,2H?9,2H# ,2H ,2H ,
451      C2H ,2H !,2H; ,2H ,2H ,2H ,2H ,2H ,2H ,
452      C2H ,2HK ,2H ,2H ,2H ,
453      C
454      C *****
455      C INSERT ADDITIONAL CHARACTER SIZE ARRAYS HERE
456      C *****
457      C
458      C
459      C *** DEFINE ADDRESSES
460      C
461      LUCRT = 6
462      ICRTD = 5
463      LUPRT = 7

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464 C
465 C *****
466 C REDEFINE ICHAR IF NEW CHARACTERS ARE ADDED
467 C *****
468 C
469 C *** NUMBER OF DEFINED CHARACTERS = ICHAR
470 C
471 C ICHAR = 47
472 C *** GET DATA FROM OPERATOR
473 C WRITE (LUCRT,100)
474 100 FORMAT(" 5h5JINPUT PAPER TEXT WIDTH"///)
475 READ(ICRTD,*) PAPER
476 105 CONTINUE
477 C
478 C *** SET PRINTER TO BLOCK CHARACTERS & 8 LPI
479 C
480 C
481 C *** INITIALIZE TEXT ARRAY
482 C
483 DO 500 I=1,132
484 ITEXT(I)=%20040
485 500 CONTINUE
486 C
487 C *** INITIALIZE OUTPUT ARRAY
488 C
489 C *****
490 C CHANGE J LIMIT FROM 12 IF IOUT IS REDIMENSIONED
491 C *****
492 C
493 DO 4500 I=1,66
494 DO 4600 J = 1,12
495 IOUT(I,J) =%20040
496 4600 CONTINUE
497 4500 CONTINUE
498 C
499 C *** GET CHARACTER SIZE FROM OPERATOR
500 C
501 C WRITE (LUCRT,110)
502 110 FORMAT(" 5h5JINPUT CHARACTER HEIGHT")
503 C WRITE(LUCRT,113)
504 113 FORMAT(" 0,1,4,6, OR 8"///)
505 C WRITE(LUCRT,115)
506 115 FORMAT(" 0 MEANS COMPLETE"///)
507 C READ (ICRTD,*)IHGHT
508 C WRITE(LUCRT,340)
509 C IF(IHGHT.NE.0)GOTO 250
510 C
511 C *** CLEAR PRINTER
512 C
513 C WRITE (LUPRT,210)
514 210 FORMAT(" F")
515 GO TO 9990

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516 C
517 C *** TEST HEIGHT AND SET VARIABLES
518 C
519 250 CONTINUE
520 IF(IHGHT.EQ.1) SIZE = -1
521 IF(IHGHT.EQ.4) SIZE = 4
522 IF(IHGHT.EQ.4) VERT = 6
523 IF(IHGHT.EQ.6) SIZE = 6
524 IF(IHGHT.EQ.6) VERT = 8
525 IF(IHGHT.EQ.8) SIZE = 8
526 IF(IHGHT.EQ.8) VERT = 12
527 C
528 C *****
529 C SET VERT & SIZE PARAMETERS FOR NEW CHARACTER
530 C SIZES HERE.
531 C *****
532 MAX = PAPER *132 /(13.2 *(SIZE +2))
533 IMAX = MAX
534 C
535 C *** GET CHARACTER STRING FROM OPERATOR
536 C
537 WRITE (LUCRT,300)IMAX
538 300 FORMAT("  Enter INPUT STRING -- MAXIMUM OF ",I3," LETTERS"///)
539 IF (IMAX.GT.66) GO TO 330
540 WRITE(LUCRT,335)(LEN1(I),I=1,IMAX)
541 WRITE(LUCRT,335)(LEN2(I),I=1,IMAX)
542 WRITE(LUCRT,350)
543 350 FORMAT(" ")
544 330 CONTINUE
545 READ (ICRTD,345)(ITEXT(I),I=1,IMAX)
546 345 FORMAT(132A1)
547 335 FORMAT(" ",132A1)
548 WRITE(LUCRT,340)
549 340 FORMAT("  Enter ")
550 C
551 C *** BLOCK OUTPUT ROUTINES
552 C
553 C
554 C *** SIZE 4 OUTPUT
555 C
556 IF (IHGHT.NE.4) GOTO 6150
557 C
558 C *** FILL OUTPUT ARRAY
559 C
560 DO 4100 I = 1,IMAX
561 DO 4300 K = 1,ICHAR
562 IF (ITEXT(I).NE.IREF(K)) GOTO 4300
563 DO 4200 J = 1,IHGHT
564 DO 4370 L=1,(SIZE+2)/2
565 IOUT(((I-1)*((SIZE+2)/2))+L ,J) = IA4(((K-1)*((SIZE+2)/2)+L),
566 4370 CONTINUE
567 4200 CONTINUE

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568      4300  CONTINUE
569      4100  CONTINUE
570      C
571      C *** OUTPUT DATA TO PRINTER
572      C
573          GOTO 9000
574      6150  CONTINUE
575      C
576      C *** SIZE 6 OUTPUT
577      C
578          IF (IHGHT.NE.6) GOTO 8150
579      C
580      C *** FILL OUTPUT ARRAY
581      C
582          DO 6100 I = 1,IMAX
583              DO 6300 K = 1,ICHAR
584                  IF (ITEXT(I).NE.IREF(K)) GOTO 6300
585                  DO 6200 J = 1,IHGHT
586                      DO 6370 L=1,((SIZE+2)/2)
587                          IOUT(((I-1)*((SIZE+2)/2) +L),J) = IA6(((K-1)*((SIZE+2)/2)+L),
588      6370  CONTINUE
589      6200  CONTINUE
590      6300  CONTINUE
591      6100  CONTINUE
592      C
593      C *** OUTPUT DATA TO PRINTER
594      C
595          GOTO 9000
596      8150  CONTINUE
597      C
598      C *****
599      C TYPICAL OUTPUT ROUTINE FOLLOWS -- CHANGE IA3 TO THE NEW
600      C CHARACTER MATRIX.  CHANGE ALL REFERENCES FROM SIZE EIGHT.
601      C CHANGE ALL LINE REFERENCE NUMBERS.  ADD NEW CHARACTER SIZE
602      C ROUTINE WHERE SHOWN BELOW.
603      C *****
604      C
605      C *** SIZE 8 OUTPUT
606      C
607          IF (IHGHT.NE.8) GOTO 10000
608      C
609      C *** FILL OUTPUT ARRAY
610      C
611          DO 8100 I = 1,IMAX
612              DO 8300 K = 1,ICHAR
613                  IF (ITEXT(I).NE.IREF(K)) GOTO 8300
614                  DO 8200 J = 1,IHGHT
615                      DO 8370 L=1,((SIZE+2)/2)
616                          IOUT(((I-1)*((SIZE+2)/2) +L),J) = IA8(((K-1)*((SIZE+2)/2)+L),
617      8370  CONTINUE
618      8200  CONTINUE
619      8300  CONTINUE

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620 8100  CONTINUE
621 C
622 C *** OUTPUT DATA TO PRINTER
623 C
624      GOTO9000
625 10000 CONTINUE
626 C
627 C *****
628 C INSERT NEW SIZE OUTPUT ROUTINE HERE AS DEFINED ABOVE.
629 C *****
630 C
631 C
632 C *** OUTPUT SIZE 1 - STANDARD SIZE PRINT
633 C
634      IF(IHGHT.NE.1) GOTO 105
635      WRITE(LUPRT,1110)
636 1110  FORMAT(" ½")
637      WRITE(LUPRT,1100)ITEXT
638 1100  FORMAT(132A1)
639      GOTO105
640 C
641 C *** OUTPUT BLOCK CHARACTERS TO LINE PRINTER
642 C
643 9000  CONTINUE
644      WRITE(LUPRT,4407)
645 4407  FORMAT(" ½&k0S½(0U½)1L½&18D")
646      WRITE(LUPRT,4410)
647 4410  FORMAT(" ½")
648      WRITE(LUPRT,4400)((IOUT(I,J),I=1,66),J=1,VERT)
649 4400  FORMAT(66A2)
650      WRITE(LUPRT,4420)
651 4420  FORMAT(" ½")
652      GOTO 105
653 9990  CONTINUE
654      STOP
655      END

```

