

GnuCOBOL Sample Programs

For Version 2.2 [00June2017]

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This manual documents GnuCOBOL 2.2, 00June2017 build.

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1. FileStat-Msgs

The FileStat-Msgs.cpy copybook contains an EVALUATE statement to translate the two-digit file status codes that may be generated by file I/O statements.

The copybook assumes that the file status data item name is "STATUS" and the error message data item is named "MSG". By using the COPY statement's REPLACING clause, however, you may use the data names you wish, as follows:

```
COPY FileStat-Msgs
  REPLACING STATUS BY file-status-data-item-name
           MSG     BY error-message-data-item-name
```

Here's the FileStat-Msgs.cpy copybook:

```
EVALUATE STATUS
  WHEN 00 MOVE 'SUCCESS' TO MSG
  WHEN 02 MOVE 'SUCCESS DUPLICATE' TO MSG
  WHEN 04 MOVE 'SUCCESS INCOMPLETE' TO MSG
  WHEN 05 MOVE 'SUCCESS OPTIONAL' TO MSG
  WHEN 07 MOVE 'SUCCESS NO UNIT' TO MSG
  WHEN 10 MOVE 'END OF FILE' TO MSG
  WHEN 14 MOVE 'OUT OF KEY RANGE' TO MSG
  WHEN 21 MOVE 'KEY INVALID' TO MSG
  WHEN 22 MOVE 'KEY EXISTS' TO MSG
  WHEN 23 MOVE 'KEY NOT EXISTS' TO MSG
  WHEN 30 MOVE 'PERMANENT ERROR' TO MSG
  WHEN 31 MOVE 'INCONSISTENT FILENAME' TO MSG
  WHEN 34 MOVE 'BOUNDARY VIOLATION' TO MSG
  WHEN 35 MOVE 'FILE NOT FOUND' TO MSG
  WHEN 37 MOVE 'PERMISSION DENIED' TO MSG
  WHEN 38 MOVE 'CLOSED WITH LOCK' TO MSG
  WHEN 39 MOVE 'CONFLICT ATTRIBUTE' TO MSG
  WHEN 41 MOVE 'ALREADY OPEN' TO MSG
  WHEN 42 MOVE 'NOT OPEN' TO MSG
  WHEN 43 MOVE 'READ NOT DONE' TO MSG
  WHEN 44 MOVE 'RECORD OVERFLOW' TO MSG
  WHEN 46 MOVE 'READ ERROR' TO MSG
  WHEN 47 MOVE 'INPUT DENIED' TO MSG
  WHEN 48 MOVE 'OUTPUT DENIED' TO MSG
  WHEN 49 MOVE 'I/O DENIED' TO MSG
  WHEN 51 MOVE 'RECORD LOCKED' TO MSG
  WHEN 52 MOVE 'END-OF-PAGE' TO MSG
  WHEN 57 MOVE 'I/O LINAGE' TO MSG
  WHEN 61 MOVE 'FILE SHARING FAILURE' TO MSG
  WHEN 91 MOVE 'FILE NOT AVAILABLE' TO MSG
END-EVALUATE.
```


2. COBDUMP

COBDUMP is a useful little utility subroutine to produce a formatted hexadecimal and character dump of the data area passed to it.

If you follow the GnuCOBOL forums, you've undoubtedly heard about the CBL_OC_DUMP subroutine that was the winning entry in a GnuCOBOL programming contest. It's a great tool for producing data dumps, and it's now included in the official GnuCOBOL distributions.

For now though, I'll keep using my good ol' "COBDUMP" routine. It's been my traveling companion from COBOL job to COBOL job since 1971. Here it is, all tuned up for GnuCOBOL, with new tires and a fresh coat of paint.

In addition to general GnuCOBOL concepts, this program provides a useful demonstration of the following:

- Coding a GnuCOBOL subroutine
- Using "USAGE POINTER" data items
- Using the "ANY LENGTH" data item attribute
- Coding for an "OPTIONAL" subprogram argument
- Using the "NUMBER-OF-CALL-PARAMETERS" special register
- Using the "C\$PRINTABLE" built-in system subroutine

The program source and cross-reference listing, produced using the GnuCOBOL Interactive Compiler front-end (GCic.cbl, one of the sample programs included here), begins on the next page.

GNU COBOL 2.1 23NOV2013 Source Listing

2014/03/27

C:/Users/tda010/Documents/Programs/Samples/COBDUMP.cbl

Line Statement

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```

=====
1      >>SOURCE FORMAT IS FIXED
2      IDENTIFICATION DIVISION.
3      PROGRAM-ID.    COBDUMP.
4      *>*****
5      *> This is an OpenCOBOL subroutine that will generate a      **
6      *> formatted Hex/Char dump of a storage area.  To use this  **
7      *> subroutine, simply CALL it as follows:                    **
8      *>                                                            **
9      *> CALL "COBDUMP" USING <data-item>                          **
10     *> [ <length> ]                                              **
11     *>                                                            **
12     *> If specified, the <length> argument specifies how many    **
13     *> bytes of <data-item> are to be dumped.  If absent, all of **
14     *> <data-item> will be dumped (i.e. LENGTH(<data-item>) will **
15     *> be assumed for <length>).                                  **
16     *>                                                            **
17     *> >>> Note that the subroutine name MUST be specified in    <<< **
18     *> >>> UPPERCASE                                             <<< **
19     *>                                                            **
20     *> The dump is generated to STDERR, so you may pipe it to a  **
21     *> file when you execute your program using "2> file".      **
22     *>                                                            **
23     *> AUTHOR:          GARY L. CUTLER                            **
24     *>                                                            **
25     *> NOTE:           The author has a sentimental attachment to **
26     *>                 this subroutine - it's been around since 1971 **
27     *>                 and it's been converted to and run on 10 dif- **
28     *>                 ferent operating system/compiler environments **
29     *>                 **
30     *> DATE-WRITTEN: October 14, 1971                            **
31     *>                                                            **
32     *>*****
33     *>  DATE  CHANGE DESCRIPTION                                  **
34     *> ===== **
35     *> GC1071 Initial coding - Univac Dept. of Defense COBOL '68 **
36     *> GC0577 Converted to Univac ASCII COBOL (ACOB) - COBOL '74 **
37     *> GC1182 Converted to Univac UTS4000 COBOL - COBOL '74 w/    **
38     *>         SCREEN SECTION enhancements                        **
39     *> GC0883 Converted to Honeywell/Bull COBOL - COBOL '74      **
40     *> GC0983 Converted to IBM VS COBOL - COBOL '74              **
41     *> GC0887 Converted to IBM VS COBOL II - COBOL '85           **
42     *> GC1294 Converted to Micro Focus COBOL V3.0 - COBOL '85 w/  **
43     *>         extensions                                         **
44     *> GC0703 Converted to Unisys Universal Compiling System (UCS) **
45     *>         COBOL (UCOB) - COBOL '85                          **
46     *> GC1204 Converted to Unisys Object COBOL (OCOB) - COBOL 2002 **
47     *> GC0609 Converted to OpenCOBOL 1.1 - COBOL '85 w/ some COBOL **
48     *>         2002 features                                     **
49     *> GC0410 Enhanced to make 2nd argument (buffer length)      **
=====

```

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```

=====
50      *>          optional                                **
51      *> GC0211 Ported to IBM Enterprise COBOL            **
52      *> GC0612 Updated for OpenCOBOL 2.0                **
53      *>*****
54      ENVIRONMENT DIVISION.
55      CONFIGURATION SECTION.
56      REPOSITORY.
57          FUNCTION ALL INTRINSIC.
58      DATA DIVISION.
59      WORKING-STORAGE SECTION.
60          01  WS-Addr-PTR                                USAGE POINTER.
61          01  WS-Addr-NUM REDEFINES WS-Addr-PTR          USAGE BINARY-LONG.
62
63
64          01  WS-Addr-SUB                                USAGE BINARY-CHAR.
65
66          01  WS-Addr-Value-NUM                          USAGE BINARY-LONG.
67
68          01  WS-Buffer-Byte-CHR.
69              05  WS-Buffer-Byte-NUM                    USAGE BINARY-CHAR.
70
71          01  WS-Buffer-Length-NUM                       USAGE BINARY-LONG.
72
73          01  WS-Buffer-SUB                              PIC 9(4) COMP-5.
74
75          01  WS-Hex-Digit-TXT VALUE '0123456789ABCDEF'.
76              05  WS-Hex-Digit-CHR                      OCCURS 16 TIMES
77                  PIC X(1).
78
79          01  WS-Nibble-SUB                              PIC 9(1) COMP-5.
80
81          01  WS-Nibble-Left-SUB                         PIC 9(1) COMP-5.
82
83          01  WS-Nibble-Right-SUB                       PIC 9(1) COMP-5.
84
85          01  WS-Output-Detail-TXT.
86              05  WS-OD-Addr-TXT.
87                  10  WS-OD-Addr-Hex-CHR                OCCURS 8 TIMES PIC X.
88              05  FILLER                                PIC X(1).
89              05  WS-OD-Relative-Byte-NUM               PIC Z(3)9.
90              05  FILLER                                PIC X(1).
91              05  WS-OD-Hex-TXT                          OCCURS 16 TIMES.
92                  10  WS-OD-Hex-1-CHR                   PIC X.
93                  10  WS-OD-Hex-2-CHR                   PIC X.
94                  10  FILLER                            PIC X.
95              05  WS-OD-ASCII-Data-TXT.
96                  10  WS-OD-ASCII-CHR                   OCCURS 16 TIMES
97                      PIC X.
98
=====

```

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```

=====
  99      01  WS-Output-SUB                                PIC 9(2) COMP-5.
 100
 101      >>SOURCE FORMAT IS FREE
 102      01  WS-Output-Header-1-TXT.
 103      05  VALUE '<-Addr-> Byte <----- Hexadecimal '-----> <---
- Char ---->' PIC X(80).
 104
 105      01  WS-Output-Header-2-TXT.
 106      05  VALUE '===== '-----> <---
===== ' PIC X(80).
 107      >>SOURCE FORMAT IS FIXED
 108
 109      LINKAGE SECTION.
 110      01  L-Buffer-TXT                                PIC X ANY LENGTH.
 111
 112      01  L-Buffer-Length-NUM                          USAGE BINARY-LONG.
 113
 114      PROCEDURE DIVISION USING L-Buffer-TXT,
 115                                OPTIONAL L-Buffer-Length-NUM.
 116      000-Main SECTION.
 117          IF NUMBER-OF-CALL-PARAMETERS = 1
 118              MOVE LENGTH(L-Buffer-TXT) TO WS-Buffer-Length-NUM
 119          ELSE
 120              MOVE L-Buffer-Length-NUM TO WS-Buffer-Length-NUM
 121          END-IF
 122          MOVE SPACES TO WS-Output-Detail-TXT
 123          SET WS-Addr-PTR TO ADDRESS OF L-Buffer-TXT
 124          PERFORM 100-Generate-Address
 125          MOVE 0 TO WS-Output-SUB
 126          DISPLAY WS-Output-Header-1-TXT UPON SYSERR
 127          DISPLAY WS-Output-Header-2-TXT UPON SYSERR
 128          PERFORM VARYING WS-Buffer-SUB FROM 1 BY 1
 129              UNTIL WS-Buffer-SUB > WS-Buffer-Length-NUM
 130              ADD 1 TO WS-Output-SUB
 131              IF WS-Output-SUB = 1
 132                  MOVE WS-Buffer-SUB TO WS-OD-Relative-Byte-NUM
 133              END-IF
 134              MOVE L-Buffer-TXT (WS-Buffer-SUB : 1)
 135                  TO WS-OD-ASCII-CHR (WS-Output-SUB)
 136                  WS-Buffer-Byte-CHR
 137              DIVIDE WS-Buffer-Byte-NUM BY 16
 138                  GIVING WS-Nibble-Left-SUB
 139                  REMAINDER WS-Nibble-Right-SUB
 140              ADD 1 TO WS-Nibble-Left-SUB
 141                  WS-Nibble-Right-SUB
 142              MOVE WS-Hex-Digit-CHR (WS-Nibble-Left-SUB)
 143                  TO WS-OD-Hex-1-CHR (WS-Output-SUB)
 144              MOVE WS-Hex-Digit-CHR (WS-Nibble-Right-SUB)
 145                  TO WS-OD-Hex-2-CHR (WS-Output-SUB)
=====

```

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```

=====
146             IF WS-Output-SUB = 16
147                 CALL "C$PRINTABLE" USING WS-OD-ASCII-Data-TXT
148                 DISPLAY WS-Output-Detail-TXT UPON SYSERR
149                 MOVE SPACES TO WS-Output-Detail-TXT
150                 MOVE 0 TO WS-Output-SUB
151                 SET WS-Addr-PTR UP BY 16
152                 PERFORM 100-Generate-Address
153             END-IF
154         END-PERFORM
155     IF WS-Output-SUB > 0
156         CALL "C$PRINTABLE" USING WS-OD-ASCII-Data-TXT
157         DISPLAY WS-Output-Detail-TXT UPON SYSERR
158     END-IF
159     EXIT PROGRAM
160     .
161 100-Generate-Address SECTION.
162     MOVE 8 TO WS-Addr-SUB
163     MOVE WS-Addr-NUM TO WS-Addr-Value-NUM
164     MOVE ALL '0' TO WS-OD-Addr-TXT
165     PERFORM WITH TEST BEFORE UNTIL WS-Addr-Value-NUM = 0
166         DIVIDE WS-Addr-Value-NUM BY 16
167             GIVING WS-Addr-Value-NUM
168             REMAINDER WS-Nibble-SUB
169     ADD 1 TO WS-Nibble-SUB
170     MOVE WS-Hex-Digit-CHR (WS-Nibble-SUB)
171         TO WS-OD-Addr-Hex-CHR (WS-Addr-SUB)
172     SUBTRACT 1 FROM WS-Addr-SUB
173     END-PERFORM
174     .
=====

```

GNU COBOL 2.1 23NOV2013 Cross-Reference Listing

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PROGRAM-ID	Identifier/Register/Function	Defn	Where Defined	References	Page: 5
COBDUMP	000-Main	116	PROCEDURE		
COBDUMP	100-Generate-Address	161	PROCEDURE	124 152	
COBDUMP	L-Buffer-Length-NUM	112	LINKAGE	115 120	
COBDUMP	L-Buffer-TXT	110	LINKAGE	114 118 123	
				134	
COBDUMP	NUMBER-OF-CALL-PARAMETERS		PROCEDURE	117	
COBDUMP	WS-Addr-NUM	61	WORKING-STORAGE	163	
COBDUMP	WS-Addr-PTR	60	WORKING-STORAGE	61 123* 151*	
COBDUMP	WS-Addr-SUB	64	WORKING-STORAGE	162* 171 172	
COBDUMP	WS-Addr-Value-NUM	66	WORKING-STORAGE	163* 165 166	
				167*	
COBDUMP	WS-Buffer-Byte-CHR	68	WORKING-STORAGE	136	
COBDUMP	WS-Buffer-Byte-NUM	69	WORKING-STORAGE	137	
COBDUMP	WS-Buffer-Length-NUM	71	WORKING-STORAGE	118* 120* 129	
COBDUMP	WS-Buffer-SUB	73	WORKING-STORAGE	128* 129 132	
				134	
COBDUMP	WS-Hex-Digit-CHR	76	WORKING-STORAGE	142 144 170	
COBDUMP	WS-Hex-Digit-TXT	75	WORKING-STORAGE		
COBDUMP	WS-Nibble-Left-SUB	81	WORKING-STORAGE	138* 140* 142	
COBDUMP	WS-Nibble-Right-SUB	83	WORKING-STORAGE	139* 141* 144	
COBDUMP	WS-Nibble-SUB	79	WORKING-STORAGE	168* 169* 170	
COBDUMP	WS-OD-Addr-Hex-CHR	87	WORKING-STORAGE	171*	
COBDUMP	WS-OD-Addr-TXT	86	WORKING-STORAGE	164*	
COBDUMP	WS-OD-ASCII-CHR	96	WORKING-STORAGE	135*	
COBDUMP	WS-OD-ASCII-Data-TXT	95	WORKING-STORAGE	147C 156C	
COBDUMP	WS-OD-Hex-1-CHR	92	WORKING-STORAGE	143*	
COBDUMP	WS-OD-Hex-2-CHR	93	WORKING-STORAGE	145*	
COBDUMP	WS-OD-Hex-TXT	91	WORKING-STORAGE		
COBDUMP	WS-OD-Relative-Byte-NUM	89	WORKING-STORAGE	132*	
COBDUMP	WS-Output-Detail-TXT	85	WORKING-STORAGE	122* 148 149*	
				157	
COBDUMP	WS-Output-Header-1-TXT	102	WORKING-STORAGE	126	
COBDUMP	WS-Output-Header-2-TXT	105	WORKING-STORAGE	127	
COBDUMP	WS-Output-SUB	99	WORKING-STORAGE	125* 130* 131	
				135 143 145	
				146 150* 155	

3. Colors

Colors is a handy little GnuCOBOL utility program that will produce a screen showing all possible combinations of:

- FOREGROUND-COLOR
- BACKGROUND-COLOR
- BLINKING (or absence of BLINKING)
- HIGHLIGHT, LOWLIGHT or absence of either (i.e. "Normal")
- REVERSE-VIDEO

Here is a sample of the screen generated by this program:



The program source and cross-reference listing, produced using the GnuCOBOL Interactive Compiler front-end (GCic.cbl, one of the sample programs included here), begins on the next page.

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Line Statement

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```

=====
1      >>SOURCE FREE
2 IDENTIFICATION DIVISION.
3 PROGRAM-ID. colors.
4 DATA DIVISION.
5 SCREEN SECTION.
6 01 S-COLORTST-SCR BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 BLANK SCREEN.
7 05 LINE 01.
8 10 COL 1 VALUE ' LOWLIGHT  ----- HIGHLIGHT  LOWLIGHT  ----- HIGHLIGHT'.
9 05 LINE + 1.
10 10 COL 1 VALUE ' -----  -----  -----  -----  -----  -----'.
11 05 LINE + 1.
12 10 COL 1 VALUE ' -----  -----  -----  REVERSE  REVERSE  REVERSE'.
13 05 LINE + 1.
14 10 COL 1 VALUE ' 01234567 01234567 01234567 01234567 01234567 01234567'.
15 05 LINE + 1.
16 10 COL 1 VALUE '0          0          0          0          0          0          '.
17 05 LINE + 1.
18 10 COL 1 VALUE '1          1          1          1          1          1          '.
19 05 LINE + 1.
20 10 COL 1 VALUE '2          2          2          2          2          2          '.
21 05 LINE + 1.
22 10 COL 1 VALUE '3      1   3   2   3   3   3   4   3   5   3   6   '.
23 05 LINE + 1.
24 10 COL 1 VALUE '4          4          4          4          4          4          '.
25 05 LINE + 1.
26 10 COL 1 VALUE '5          5          5          5          5          5          '.
27 05 LINE + 1.
28 10 COL 1 VALUE '6          6          6          6          6          6          '.
29 05 LINE + 1.
30 10 COL 1 VALUE '7          7          7          7          7          7          '.
31 05 LINE + 1.
32 10 COL 1 VALUE ' LOWLIGHT  ----- HIGHLIGHT  LOWLIGHT  ----- HIGHLIGHT'.
33 05 LINE + 1.
34 10 COL 1 VALUE '      BLINK      BLINK      BLINK      BLINK      BLINK      BLINK'.
35 05 LINE + 1.
36 10 COL 1 VALUE ' -----  -----  -----  REVERSE  REVERSE  REVERSE'.
37 05 LINE + 1.
38 10 COL 1 VALUE ' 01234567 01234567 01234567 01234567 01234567 01234567'.
39 05 LINE + 1.
40 10 COL 1 VALUE '0          0          0          0          0          0          '.
41 05 LINE + 1.
42 10 COL 1 VALUE '1          1          1          1          1          1          '.
43 05 LINE + 1.
44 10 COL 1 VALUE '2          2          2          2          2          2          '.
45 05 LINE + 1.
46 10 COL 1 VALUE '3      7   3   8   3   9   3  10   3  11   3  12   '.
47 05 LINE + 1.
48 10 COL 1 VALUE '4          4          4          4          4          4          '.
49 05 LINE + 1.
=====

```

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Line Statement

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```

=====
50 10 COL 1 VALUE '5          5          5          5          5          5          '.
51 05 LINE + 1.
52 10 COL 1 VALUE '6          6          6          6          6          6          '.
53 05 LINE + 1.
54 10 COL 1 VALUE '7          7          7          7          7          7          '.
55 *> #1
56 05 LINE 05.
57 10 COL 2  BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 LOWLIGHT VALUE 'X'.
58 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 LOWLIGHT VALUE 'X'.
59 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 LOWLIGHT VALUE 'X'.
60 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 LOWLIGHT VALUE 'X'.
61 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 LOWLIGHT VALUE 'X'.
62 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 LOWLIGHT VALUE 'X'.
63 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 LOWLIGHT VALUE 'X'.
64 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 LOWLIGHT VALUE 'X'.
65 05 LINE + 1.
66 10 COL 2  BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 LOWLIGHT VALUE 'X'.
67 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 LOWLIGHT VALUE 'X'.
68 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 LOWLIGHT VALUE 'X'.
69 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 LOWLIGHT VALUE 'X'.
70 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 LOWLIGHT VALUE 'X'.
71 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 LOWLIGHT VALUE 'X'.
72 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 LOWLIGHT VALUE 'X'.
73 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 LOWLIGHT VALUE 'X'.
74 05 LINE + 1.
75 10 COL 2  BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 LOWLIGHT VALUE 'X'.
76 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 LOWLIGHT VALUE 'X'.
77 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 LOWLIGHT VALUE 'X'.
78 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 LOWLIGHT VALUE 'X'.
79 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 LOWLIGHT VALUE 'X'.
80 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 LOWLIGHT VALUE 'X'.
81 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 LOWLIGHT VALUE 'X'.
82 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 LOWLIGHT VALUE 'X'.
83 05 LINE + 1.
84 10 COL 2  BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 LOWLIGHT VALUE 'X'.
85 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 LOWLIGHT VALUE 'X'.
86 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 LOWLIGHT VALUE 'X'.
87 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 LOWLIGHT VALUE 'X'.
88 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 LOWLIGHT VALUE 'X'.
89 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 LOWLIGHT VALUE 'X'.
90 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 LOWLIGHT VALUE 'X'.
91 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 LOWLIGHT VALUE 'X'.
92 05 LINE + 1.
93 10 COL 2  BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 LOWLIGHT VALUE 'X'.
94 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 LOWLIGHT VALUE 'X'.
95 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 LOWLIGHT VALUE 'X'.
96 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 LOWLIGHT VALUE 'X'.
97 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 LOWLIGHT VALUE 'X'.
98 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 LOWLIGHT VALUE 'X'.
=====

```

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```

=====
  99 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 LOWLIGHT VALUE 'X'.
 100 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 LOWLIGHT VALUE 'X'.
 101 05 LINE + 1.
 102 10 COL 2 BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 LOWLIGHT VALUE 'X'.
 103 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 LOWLIGHT VALUE 'X'.
 104 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 LOWLIGHT VALUE 'X'.
 105 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 LOWLIGHT VALUE 'X'.
 106 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 LOWLIGHT VALUE 'X'.
 107 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 LOWLIGHT VALUE 'X'.
 108 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 LOWLIGHT VALUE 'X'.
 109 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 LOWLIGHT VALUE 'X'.
 110 05 LINE + 1.
 111 10 COL 2 BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 LOWLIGHT VALUE 'X'.
 112 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 LOWLIGHT VALUE 'X'.
 113 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 LOWLIGHT VALUE 'X'.
 114 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 LOWLIGHT VALUE 'X'.
 115 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 LOWLIGHT VALUE 'X'.
 116 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 LOWLIGHT VALUE 'X'.
 117 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 LOWLIGHT VALUE 'X'.
 118 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 LOWLIGHT VALUE 'X'.
 119 05 LINE + 1.
 120 10 COL 2 BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 LOWLIGHT VALUE 'X'.
 121 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 LOWLIGHT VALUE 'X'.
 122 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 LOWLIGHT VALUE 'X'.
 123 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 LOWLIGHT VALUE 'X'.
 124 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 LOWLIGHT VALUE 'X'.
 125 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 LOWLIGHT VALUE 'X'.
 126 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 LOWLIGHT VALUE 'X'.
 127 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 LOWLIGHT VALUE 'X'.
 128 *> #2
 129 05 LINE 05.
 130 10 COL 12 BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 VALUE 'X'.
 131 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 VALUE 'X'.
 132 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 VALUE 'X'.
 133 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 VALUE 'X'.
 134 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 VALUE 'X'.
 135 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 VALUE 'X'.
 136 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 VALUE 'X'.
 137 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 VALUE 'X'.
 138 05 LINE + 1.
 139 10 COL 12 BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 VALUE 'X'.
 140 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 VALUE 'X'.
 141 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 VALUE 'X'.
 142 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 VALUE 'X'.
 143 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 VALUE 'X'.
 144 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 VALUE 'X'.
 145 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 VALUE 'X'.
 146 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 VALUE 'X'.
 147 05 LINE + 1.
=====

```

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```

=====
148 10 COL 12 BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 VALUE 'X'.
149 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 VALUE 'X'.
150 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 VALUE 'X'.
151 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 VALUE 'X'.
152 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 VALUE 'X'.
153 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 VALUE 'X'.
154 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 VALUE 'X'.
155 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 VALUE 'X'.
156 05 LINE + 1.
157 10 COL 12 BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 VALUE 'X'.
158 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 VALUE 'X'.
159 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 VALUE 'X'.
160 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 VALUE 'X'.
161 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 VALUE 'X'.
162 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 VALUE 'X'.
163 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 VALUE 'X'.
164 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 VALUE 'X'.
165 05 LINE + 1.
166 10 COL 12 BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 VALUE 'X'.
167 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 VALUE 'X'.
168 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 VALUE 'X'.
169 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 VALUE 'X'.
170 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 VALUE 'X'.
171 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 VALUE 'X'.
172 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 VALUE 'X'.
173 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 VALUE 'X'.
174 05 LINE + 1.
175 10 COL 12 BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 VALUE 'X'.
176 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 VALUE 'X'.
177 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 VALUE 'X'.
178 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 VALUE 'X'.
179 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 VALUE 'X'.
180 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 VALUE 'X'.
181 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 VALUE 'X'.
182 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 VALUE 'X'.
183 05 LINE + 1.
184 10 COL 12 BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 VALUE 'X'.
185 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 VALUE 'X'.
186 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 VALUE 'X'.
187 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 VALUE 'X'.
188 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 VALUE 'X'.
189 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 VALUE 'X'.
190 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 VALUE 'X'.
191 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 VALUE 'X'.
192 05 LINE + 1.
193 10 COL 12 BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 VALUE 'X'.
194 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 VALUE 'X'.
195 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 VALUE 'X'.
196 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 VALUE 'X'.
=====

```

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=====
197 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 VALUE 'X'.
198 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 VALUE 'X'.
199 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 VALUE 'X'.
200 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 VALUE 'X'.
201 *> #3
202 05 LINE 05.
203 10 COL 22 BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 HIGHLIGHT VALUE 'X'.
204 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 HIGHLIGHT VALUE 'X'.
205 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 HIGHLIGHT VALUE 'X'.
206 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 HIGHLIGHT VALUE 'X'.
207 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 HIGHLIGHT VALUE 'X'.
208 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 HIGHLIGHT VALUE 'X'.
209 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 HIGHLIGHT VALUE 'X'.
210 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 HIGHLIGHT VALUE 'X'.
211 05 LINE + 1.
212 10 COL 22 BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 HIGHLIGHT VALUE 'X'.
213 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 HIGHLIGHT VALUE 'X'.
214 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 HIGHLIGHT VALUE 'X'.
215 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 HIGHLIGHT VALUE 'X'.
216 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 HIGHLIGHT VALUE 'X'.
217 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 HIGHLIGHT VALUE 'X'.
218 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 HIGHLIGHT VALUE 'X'.
219 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 HIGHLIGHT VALUE 'X'.
220 05 LINE + 1.
221 10 COL 22 BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 HIGHLIGHT VALUE 'X'.
222 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 HIGHLIGHT VALUE 'X'.
223 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 HIGHLIGHT VALUE 'X'.
224 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 HIGHLIGHT VALUE 'X'.
225 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 HIGHLIGHT VALUE 'X'.
226 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 HIGHLIGHT VALUE 'X'.
227 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 HIGHLIGHT VALUE 'X'.
228 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 HIGHLIGHT VALUE 'X'.
229 05 LINE + 1.
230 10 COL 22 BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 HIGHLIGHT VALUE 'X'.
231 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 HIGHLIGHT VALUE 'X'.
232 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 HIGHLIGHT VALUE 'X'.
233 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 HIGHLIGHT VALUE 'X'.
234 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 HIGHLIGHT VALUE 'X'.
235 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 HIGHLIGHT VALUE 'X'.
236 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 HIGHLIGHT VALUE 'X'.
237 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 HIGHLIGHT VALUE 'X'.
238 05 LINE + 1.
239 10 COL 22 BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 HIGHLIGHT VALUE 'X'.
240 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 HIGHLIGHT VALUE 'X'.
241 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 HIGHLIGHT VALUE 'X'.
242 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 HIGHLIGHT VALUE 'X'.
243 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 HIGHLIGHT VALUE 'X'.
244 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 HIGHLIGHT VALUE 'X'.
245 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 HIGHLIGHT VALUE 'X'.
=====

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=====
246 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 HIGHLIGHT VALUE 'X'.
247 05 LINE + 1.
248 10 COL 22 BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 HIGHLIGHT VALUE 'X'.
249 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 HIGHLIGHT VALUE 'X'.
250 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 HIGHLIGHT VALUE 'X'.
251 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 HIGHLIGHT VALUE 'X'.
252 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 HIGHLIGHT VALUE 'X'.
253 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 HIGHLIGHT VALUE 'X'.
254 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 HIGHLIGHT VALUE 'X'.
255 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 HIGHLIGHT VALUE 'X'.
256 05 LINE + 1.
257 10 COL 22 BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 HIGHLIGHT VALUE 'X'.
258 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 HIGHLIGHT VALUE 'X'.
259 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 HIGHLIGHT VALUE 'X'.
260 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 HIGHLIGHT VALUE 'X'.
261 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 HIGHLIGHT VALUE 'X'.
262 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 HIGHLIGHT VALUE 'X'.
263 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 HIGHLIGHT VALUE 'X'.
264 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 HIGHLIGHT VALUE 'X'.
265 05 LINE + 1.
266 10 COL 22 BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 HIGHLIGHT VALUE 'X'.
267 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 HIGHLIGHT VALUE 'X'.
268 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 HIGHLIGHT VALUE 'X'.
269 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 HIGHLIGHT VALUE 'X'.
270 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 HIGHLIGHT VALUE 'X'.
271 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 HIGHLIGHT VALUE 'X'.
272 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 HIGHLIGHT VALUE 'X'.
273 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 HIGHLIGHT VALUE 'X'.
274 *> #4
275 05 LINE 05.
276 10 COL 32 BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
277 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
278 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
279 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
280 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
281 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
282 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
283 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
284 05 LINE + 1.
285 10 COL 32 BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
286 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
287 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
288 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
289 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
290 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
291 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
292 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
293 05 LINE + 1.
294 10 COL 32 BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
=====

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=====
295 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
296 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
297 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
298 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
299 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
300 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
301 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
302 05 LINE + 1.
303 10 COL 32 BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
304 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
305 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
306 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
307 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
308 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
309 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
310 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
311 05 LINE + 1.
312 10 COL 32 BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
313 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
314 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
315 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
316 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
317 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
318 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
319 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
320 05 LINE + 1.
321 10 COL 32 BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
322 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
323 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
324 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
325 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
326 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
327 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
328 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
329 05 LINE + 1.
330 10 COL 32 BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
331 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
332 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
333 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
334 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
335 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
336 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
337 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
338 05 LINE + 1.
339 10 COL 32 BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
340 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
341 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
342 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
343 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
=====

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```

=====
344 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
345 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
346 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 LOWLIGHT REVERSE-VIDEO VALUE 'X'.
347 *> #5
348 05 LINE 05.
349 10 COL 42 BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 REVERSE-VIDEO VALUE 'X'.
350 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 REVERSE-VIDEO VALUE 'X'.
351 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 REVERSE-VIDEO VALUE 'X'.
352 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 REVERSE-VIDEO VALUE 'X'.
353 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 REVERSE-VIDEO VALUE 'X'.
354 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 REVERSE-VIDEO VALUE 'X'.
355 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 REVERSE-VIDEO VALUE 'X'.
356 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 REVERSE-VIDEO VALUE 'X'.
357 05 LINE + 1.
358 10 COL 42 BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 REVERSE-VIDEO VALUE 'X'.
359 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 REVERSE-VIDEO VALUE 'X'.
360 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 REVERSE-VIDEO VALUE 'X'.
361 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 REVERSE-VIDEO VALUE 'X'.
362 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 REVERSE-VIDEO VALUE 'X'.
363 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 REVERSE-VIDEO VALUE 'X'.
364 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 REVERSE-VIDEO VALUE 'X'.
365 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 REVERSE-VIDEO VALUE 'X'.
366 05 LINE + 1.
367 10 COL 42 BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 REVERSE-VIDEO VALUE 'X'.
368 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 REVERSE-VIDEO VALUE 'X'.
369 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 REVERSE-VIDEO VALUE 'X'.
370 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 REVERSE-VIDEO VALUE 'X'.
371 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 REVERSE-VIDEO VALUE 'X'.
372 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 REVERSE-VIDEO VALUE 'X'.
373 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 REVERSE-VIDEO VALUE 'X'.
374 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 REVERSE-VIDEO VALUE 'X'.
375 05 LINE + 1.
376 10 COL 42 BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 REVERSE-VIDEO VALUE 'X'.
377 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 REVERSE-VIDEO VALUE 'X'.
378 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 REVERSE-VIDEO VALUE 'X'.
379 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 REVERSE-VIDEO VALUE 'X'.
380 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 REVERSE-VIDEO VALUE 'X'.
381 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 REVERSE-VIDEO VALUE 'X'.
382 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 REVERSE-VIDEO VALUE 'X'.
383 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 REVERSE-VIDEO VALUE 'X'.
384 05 LINE + 1.
385 10 COL 42 BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 REVERSE-VIDEO VALUE 'X'.
386 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 REVERSE-VIDEO VALUE 'X'.
387 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 REVERSE-VIDEO VALUE 'X'.
388 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 REVERSE-VIDEO VALUE 'X'.
389 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 REVERSE-VIDEO VALUE 'X'.
390 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 REVERSE-VIDEO VALUE 'X'.
391 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 REVERSE-VIDEO VALUE 'X'.
392 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 REVERSE-VIDEO VALUE 'X'.
=====

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=====
393 05 LINE + 1.
394 10 COL 42 BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 REVERSE-VIDEO VALUE 'X'.
395 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 REVERSE-VIDEO VALUE 'X'.
396 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 REVERSE-VIDEO VALUE 'X'.
397 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 REVERSE-VIDEO VALUE 'X'.
398 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 REVERSE-VIDEO VALUE 'X'.
399 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 REVERSE-VIDEO VALUE 'X'.
400 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 REVERSE-VIDEO VALUE 'X'.
401 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 REVERSE-VIDEO VALUE 'X'.
402 05 LINE + 1.
403 10 COL 42 BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 REVERSE-VIDEO VALUE 'X'.
404 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 REVERSE-VIDEO VALUE 'X'.
405 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 REVERSE-VIDEO VALUE 'X'.
406 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 REVERSE-VIDEO VALUE 'X'.
407 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 REVERSE-VIDEO VALUE 'X'.
408 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 REVERSE-VIDEO VALUE 'X'.
409 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 REVERSE-VIDEO VALUE 'X'.
410 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 REVERSE-VIDEO VALUE 'X'.
411 05 LINE + 1.
412 10 COL 42 BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 REVERSE-VIDEO VALUE 'X'.
413 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 REVERSE-VIDEO VALUE 'X'.
414 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 REVERSE-VIDEO VALUE 'X'.
415 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 REVERSE-VIDEO VALUE 'X'.
416 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 REVERSE-VIDEO VALUE 'X'.
417 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 REVERSE-VIDEO VALUE 'X'.
418 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 REVERSE-VIDEO VALUE 'X'.
419 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 REVERSE-VIDEO VALUE 'X'.
420 *> #6
421 05 LINE 05.
422 10 COL 52 BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
423 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
424 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
425 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
426 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
427 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
428 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
429 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
430 05 LINE + 1.
431 10 COL 52 BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
432 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
433 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
434 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
435 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
436 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
437 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
438 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
439 05 LINE + 1.
440 10 COL 52 BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
441 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
=====

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=====
442 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
443 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
444 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
445 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
446 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
447 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
448 05 LINE + 1.
449 10 COL 52 BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
450 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
451 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
452 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
453 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
454 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
455 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
456 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
457 05 LINE + 1.
458 10 COL 52 BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
459 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
460 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
461 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
462 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
463 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
464 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
465 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
466 05 LINE + 1.
467 10 COL 52 BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
468 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
469 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
470 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
471 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
472 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
473 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
474 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
475 05 LINE + 1.
476 10 COL 52 BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
477 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
478 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
479 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
480 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
481 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
482 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
483 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
484 05 LINE + 1.
485 10 COL 52 BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
486 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
487 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
488 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
489 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
490 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
=====

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=====
491 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
492 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
493 *> #7
494 05 LINE 17.
495 10 COL 02 BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
496 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
497 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
498 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
499 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
500 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
501 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
502 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
503 05 LINE + 1.
504 10 COL 02 BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
505 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
506 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
507 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
508 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
509 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
510 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
511 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
512 05 LINE + 1.
513 10 COL 02 BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
514 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
515 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
516 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
517 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
518 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
519 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
520 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
521 05 LINE + 1.
522 10 COL 02 BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
523 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
524 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
525 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
526 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
527 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
528 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
529 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
530 05 LINE + 1.
531 10 COL 02 BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
532 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
533 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
534 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
535 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
536 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
537 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
538 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
539 05 LINE + 1.
=====

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=====
540 10 COL 02 BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
541 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
542 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
543 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
544 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
545 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
546 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
547 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
548 05 LINE + 1.
549 10 COL 02 BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
550 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
551 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
552 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
553 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
554 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
555 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
556 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
557 05 LINE + 1.
558 10 COL 02 BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
559 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
560 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
561 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
562 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
563 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
564 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
565 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
566 *> #8
567 05 LINE 17.
568 10 COL 12 BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 BLINK VALUE 'X'.
569 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 BLINK VALUE 'X'.
570 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 BLINK VALUE 'X'.
571 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 BLINK VALUE 'X'.
572 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 BLINK VALUE 'X'.
573 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 BLINK VALUE 'X'.
574 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 BLINK VALUE 'X'.
575 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 BLINK VALUE 'X'.
576 05 LINE + 1.
577 10 COL 12 BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 BLINK VALUE 'X'.
578 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 BLINK VALUE 'X'.
579 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 BLINK VALUE 'X'.
580 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 BLINK VALUE 'X'.
581 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 BLINK VALUE 'X'.
582 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 BLINK VALUE 'X'.
583 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 BLINK VALUE 'X'.
584 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 BLINK VALUE 'X'.
585 05 LINE + 1.
586 10 COL 12 BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 BLINK VALUE 'X'.
587 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 BLINK VALUE 'X'.
588 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 BLINK VALUE 'X'.
=====

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=====
589 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 BLINK VALUE 'X'.
590 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 BLINK VALUE 'X'.
591 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 BLINK VALUE 'X'.
592 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 BLINK VALUE 'X'.
593 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 BLINK VALUE 'X'.
594 05 LINE + 1.
595 10 COL 12 BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 BLINK VALUE 'X'.
596 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 BLINK VALUE 'X'.
597 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 BLINK VALUE 'X'.
598 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 BLINK VALUE 'X'.
599 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 BLINK VALUE 'X'.
600 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 BLINK VALUE 'X'.
601 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 BLINK VALUE 'X'.
602 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 BLINK VALUE 'X'.
603 05 LINE + 1.
604 10 COL 12 BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 BLINK VALUE 'X'.
605 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 BLINK VALUE 'X'.
606 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 BLINK VALUE 'X'.
607 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 BLINK VALUE 'X'.
608 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 BLINK VALUE 'X'.
609 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 BLINK VALUE 'X'.
610 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 BLINK VALUE 'X'.
611 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 BLINK VALUE 'X'.
612 05 LINE + 1.
613 10 COL 12 BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 BLINK VALUE 'X'.
614 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 BLINK VALUE 'X'.
615 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 BLINK VALUE 'X'.
616 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 BLINK VALUE 'X'.
617 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 BLINK VALUE 'X'.
618 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 BLINK VALUE 'X'.
619 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 BLINK VALUE 'X'.
620 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 BLINK VALUE 'X'.
621 05 LINE + 1.
622 10 COL 12 BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 BLINK VALUE 'X'.
623 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 BLINK VALUE 'X'.
624 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 BLINK VALUE 'X'.
625 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 BLINK VALUE 'X'.
626 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 BLINK VALUE 'X'.
627 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 BLINK VALUE 'X'.
628 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 BLINK VALUE 'X'.
629 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 BLINK VALUE 'X'.
630 05 LINE + 1.
631 10 COL 12 BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 BLINK VALUE 'X'.
632 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 BLINK VALUE 'X'.
633 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 BLINK VALUE 'X'.
634 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 BLINK VALUE 'X'.
635 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 BLINK VALUE 'X'.
636 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 BLINK VALUE 'X'.
637 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 BLINK VALUE 'X'.
=====

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=====
638 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 BLINK VALUE 'X'.
639 *> #9
640 05 LINE 17.
641 10 COL 22 BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 HIGHLIGHT BLINK VALUE 'X'.
642 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 HIGHLIGHT BLINK VALUE 'X'.
643 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 HIGHLIGHT BLINK VALUE 'X'.
644 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 HIGHLIGHT BLINK VALUE 'X'.
645 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 HIGHLIGHT BLINK VALUE 'X'.
646 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 HIGHLIGHT BLINK VALUE 'X'.
647 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 HIGHLIGHT BLINK VALUE 'X'.
648 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 HIGHLIGHT BLINK VALUE 'X'.
649 05 LINE + 1.
650 10 COL 22 BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 HIGHLIGHT BLINK VALUE 'X'.
651 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 HIGHLIGHT BLINK VALUE 'X'.
652 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 HIGHLIGHT BLINK VALUE 'X'.
653 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 HIGHLIGHT BLINK VALUE 'X'.
654 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 HIGHLIGHT BLINK VALUE 'X'.
655 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 HIGHLIGHT BLINK VALUE 'X'.
656 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 HIGHLIGHT BLINK VALUE 'X'.
657 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 HIGHLIGHT BLINK VALUE 'X'.
658 05 LINE + 1.
659 10 COL 22 BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 HIGHLIGHT BLINK VALUE 'X'.
660 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 HIGHLIGHT BLINK VALUE 'X'.
661 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 HIGHLIGHT BLINK VALUE 'X'.
662 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 HIGHLIGHT BLINK VALUE 'X'.
663 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 HIGHLIGHT BLINK VALUE 'X'.
664 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 HIGHLIGHT BLINK VALUE 'X'.
665 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 HIGHLIGHT BLINK VALUE 'X'.
666 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 HIGHLIGHT BLINK VALUE 'X'.
667 05 LINE + 1.
668 10 COL 22 BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 HIGHLIGHT BLINK VALUE 'X'.
669 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 HIGHLIGHT BLINK VALUE 'X'.
670 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 HIGHLIGHT BLINK VALUE 'X'.
671 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 HIGHLIGHT BLINK VALUE 'X'.
672 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 HIGHLIGHT BLINK VALUE 'X'.
673 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 HIGHLIGHT BLINK VALUE 'X'.
674 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 HIGHLIGHT BLINK VALUE 'X'.
675 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 HIGHLIGHT BLINK VALUE 'X'.
676 05 LINE + 1.
677 10 COL 22 BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 HIGHLIGHT BLINK VALUE 'X'.
678 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 HIGHLIGHT BLINK VALUE 'X'.
679 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 HIGHLIGHT BLINK VALUE 'X'.
680 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 HIGHLIGHT BLINK VALUE 'X'.
681 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 HIGHLIGHT BLINK VALUE 'X'.
682 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 HIGHLIGHT BLINK VALUE 'X'.
683 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 HIGHLIGHT BLINK VALUE 'X'.
684 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 HIGHLIGHT BLINK VALUE 'X'.
685 05 LINE + 1.
686 10 COL 22 BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 HIGHLIGHT BLINK VALUE 'X'.
=====

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=====
687 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 HIGHLIGHT BLINK VALUE 'X'.
688 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 HIGHLIGHT BLINK VALUE 'X'.
689 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 HIGHLIGHT BLINK VALUE 'X'.
690 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 HIGHLIGHT BLINK VALUE 'X'.
691 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 HIGHLIGHT BLINK VALUE 'X'.
692 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 HIGHLIGHT BLINK VALUE 'X'.
693 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 HIGHLIGHT BLINK VALUE 'X'.
694 05 LINE + 1.
695 10 COL 22 BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 HIGHLIGHT BLINK VALUE 'X'.
696 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 HIGHLIGHT BLINK VALUE 'X'.
697 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 HIGHLIGHT BLINK VALUE 'X'.
698 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 HIGHLIGHT BLINK VALUE 'X'.
699 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 HIGHLIGHT BLINK VALUE 'X'.
700 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 HIGHLIGHT BLINK VALUE 'X'.
701 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 HIGHLIGHT BLINK VALUE 'X'.
702 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 HIGHLIGHT BLINK VALUE 'X'.
703 05 LINE + 1.
704 10 COL 22 BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 HIGHLIGHT BLINK VALUE 'X'.
705 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 HIGHLIGHT BLINK VALUE 'X'.
706 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 HIGHLIGHT BLINK VALUE 'X'.
707 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 HIGHLIGHT BLINK VALUE 'X'.
708 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 HIGHLIGHT BLINK VALUE 'X'.
709 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 HIGHLIGHT BLINK VALUE 'X'.
710 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 HIGHLIGHT BLINK VALUE 'X'.
711 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 HIGHLIGHT BLINK VALUE 'X'.
712 *> #10
713 05 LINE 17.
714 10 COL 32 BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
715 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
716 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
717 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
718 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
719 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
720 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
721 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
722 05 LINE + 1.
723 10 COL 32 BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
724 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
725 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
726 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
727 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
728 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
729 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
730 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
731 05 LINE + 1.
732 10 COL 32 BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
733 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
734 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
735 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
=====

```

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=====
736 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
737 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
738 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
739 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
740 05 LINE + 1.
741 10 COL 32 BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
742 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
743 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
744 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
745 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
746 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
747 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
748 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
749 05 LINE + 1.
750 10 COL 32 BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
751 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
752 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
753 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
754 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
755 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
756 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
757 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
758 05 LINE + 1.
759 10 COL 32 BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
760 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
761 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
762 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
763 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
764 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
765 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
766 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
767 05 LINE + 1.
768 10 COL 32 BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
769 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
770 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
771 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
772 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
773 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
774 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
775 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
776 05 LINE + 1.
777 10 COL 32 BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
778 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
779 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
780 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
781 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
782 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
783 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
784 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 LOWLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
=====

```

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```

=====
785 *> #11
786 05 LINE 17.
787 10 COL 42 BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 BLINK REVERSE-VIDEO VALUE 'X'.
788 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 BLINK REVERSE-VIDEO VALUE 'X'.
789 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 BLINK REVERSE-VIDEO VALUE 'X'.
790 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 BLINK REVERSE-VIDEO VALUE 'X'.
791 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 BLINK REVERSE-VIDEO VALUE 'X'.
792 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 BLINK REVERSE-VIDEO VALUE 'X'.
793 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 BLINK REVERSE-VIDEO VALUE 'X'.
794 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 BLINK REVERSE-VIDEO VALUE 'X'.
795 05 LINE + 1.
796 10 COL 42 BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 BLINK REVERSE-VIDEO VALUE 'X'.
797 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 BLINK REVERSE-VIDEO VALUE 'X'.
798 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 BLINK REVERSE-VIDEO VALUE 'X'.
799 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 BLINK REVERSE-VIDEO VALUE 'X'.
800 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 BLINK REVERSE-VIDEO VALUE 'X'.
801 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 BLINK REVERSE-VIDEO VALUE 'X'.
802 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 BLINK REVERSE-VIDEO VALUE 'X'.
803 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 BLINK REVERSE-VIDEO VALUE 'X'.
804 05 LINE + 1.
805 10 COL 42 BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 BLINK REVERSE-VIDEO VALUE 'X'.
806 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 BLINK REVERSE-VIDEO VALUE 'X'.
807 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 BLINK REVERSE-VIDEO VALUE 'X'.
808 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 BLINK REVERSE-VIDEO VALUE 'X'.
809 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 BLINK REVERSE-VIDEO VALUE 'X'.
810 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 BLINK REVERSE-VIDEO VALUE 'X'.
811 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 BLINK REVERSE-VIDEO VALUE 'X'.
812 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 BLINK REVERSE-VIDEO VALUE 'X'.
813 05 LINE + 1.
814 10 COL 42 BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 BLINK REVERSE-VIDEO VALUE 'X'.
815 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 BLINK REVERSE-VIDEO VALUE 'X'.
816 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 BLINK REVERSE-VIDEO VALUE 'X'.
817 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 BLINK REVERSE-VIDEO VALUE 'X'.
818 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 BLINK REVERSE-VIDEO VALUE 'X'.
819 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 BLINK REVERSE-VIDEO VALUE 'X'.
820 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 BLINK REVERSE-VIDEO VALUE 'X'.
821 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 BLINK REVERSE-VIDEO VALUE 'X'.
822 05 LINE + 1.
823 10 COL 42 BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 BLINK REVERSE-VIDEO VALUE 'X'.
824 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 BLINK REVERSE-VIDEO VALUE 'X'.
825 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 BLINK REVERSE-VIDEO VALUE 'X'.
826 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 BLINK REVERSE-VIDEO VALUE 'X'.
827 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 BLINK REVERSE-VIDEO VALUE 'X'.
828 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 BLINK REVERSE-VIDEO VALUE 'X'.
829 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 BLINK REVERSE-VIDEO VALUE 'X'.
830 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 BLINK REVERSE-VIDEO VALUE 'X'.
831 05 LINE + 1.
832 10 COL 42 BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 BLINK REVERSE-VIDEO VALUE 'X'.
833 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 BLINK REVERSE-VIDEO VALUE 'X'.
=====

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```

=====
834 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 BLINK REVERSE-VIDEO VALUE 'X'.
835 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 BLINK REVERSE-VIDEO VALUE 'X'.
836 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 BLINK REVERSE-VIDEO VALUE 'X'.
837 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 BLINK REVERSE-VIDEO VALUE 'X'.
838 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 BLINK REVERSE-VIDEO VALUE 'X'.
839 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 BLINK REVERSE-VIDEO VALUE 'X'.
840 05 LINE + 1.
841 10 COL 42 BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 BLINK REVERSE-VIDEO VALUE 'X'.
842 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 BLINK REVERSE-VIDEO VALUE 'X'.
843 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 BLINK REVERSE-VIDEO VALUE 'X'.
844 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 BLINK REVERSE-VIDEO VALUE 'X'.
845 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 BLINK REVERSE-VIDEO VALUE 'X'.
846 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 BLINK REVERSE-VIDEO VALUE 'X'.
847 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 BLINK REVERSE-VIDEO VALUE 'X'.
848 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 BLINK REVERSE-VIDEO VALUE 'X'.
849 05 LINE + 1.
850 10 COL 42 BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 BLINK REVERSE-VIDEO VALUE 'X'.
851 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 BLINK REVERSE-VIDEO VALUE 'X'.
852 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 BLINK REVERSE-VIDEO VALUE 'X'.
853 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 BLINK REVERSE-VIDEO VALUE 'X'.
854 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 BLINK REVERSE-VIDEO VALUE 'X'.
855 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 BLINK REVERSE-VIDEO VALUE 'X'.
856 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 BLINK REVERSE-VIDEO VALUE 'X'.
857 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 BLINK REVERSE-VIDEO VALUE 'X'.
858 *> #12
859 05 LINE 17.
860 10 COL 52 BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
861 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
862 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
863 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
864 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
865 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
866 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
867 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
868 05 LINE + 1.
869 10 COL 52 BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
870 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
871 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
872 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
873 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
874 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
875 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
876 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
877 05 LINE + 1.
878 10 COL 52 BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
879 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
880 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
881 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
882 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
=====

```

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```

=====
883 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
884 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
885 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
886 05 LINE + 1.
887 10 COL 52 BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
888 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
889 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
890 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
891 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
892 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
893 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
894 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
895 05 LINE + 1.
896 10 COL 52 BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
897 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
898 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
899 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
900 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
901 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
902 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
903 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
904 05 LINE + 1.
905 10 COL 52 BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
906 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
907 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
908 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
909 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
910 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
911 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
912 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
913 05 LINE + 1.
914 10 COL 52 BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
915 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
916 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
917 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
918 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
919 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
920 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
921 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
922 05 LINE + 1.
923 10 COL 52 BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
924 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
925 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
926 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
927 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
928 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
929 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
930 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 HIGHLIGHT BLINK REVERSE-VIDEO VALUE 'X'.
931 PROCEDURE DIVISION.
=====

```

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```
=====
932 000-Main SECTION.
933 DISPLAY S-COLORTEST-SCR
934 STOP RUN
935 .
```

```

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                                           C:/Users/tda010/Documents/Programs/Samples/colors.cbl
PROGRAM-ID      Identifier/Register/Function      Defn  Where Defined  References      Page: 21
=====
colors          000-Main                          932  PROCEDURE
colors          S-COLORTST-SCR                     6  SCREEN          933

```

4. DAY-FROM-DATE

DAY-FROM-DATE is a user-defined function that accepts a single numeric "USAGE DISPLAY" argument –æ either a 7-digit Julian date in the form *yyyyddd* or an 8-digit Gregorian date in the form *yyyymmdd*. This argument may be supplied either as a PIC 9(n) USAGE DISPLAY data item (n=7 or 8) or as a 7- or 8-digit numeric literal.

The subroutine will determine if the supplied date is a valid date in the year range 0000 through 9999 and what day of the week that date fell on.

The value returned will be zero if the date argument was invalid or an integer in the range 1-7, representing Sunday through Saturday.

In addition to general GnuCOBOL concepts, this program provides a useful demonstration of the following:

- Coding a GnuCOBOL user-defined function
- Using the "ANY LENGTH" data item attribute
- Using the "RETURNING" option in a subprogram
- Using the "DATE-OF-INTEGERS" intrinsic function
- Using the "C\$PARAMSIZE" built-in system subroutine

The program source and cross-reference listing, produced using the GnuCOBOL Interactive Compiler front-end (GCic.cbl, one of the sample programs included here), begins on the next page.

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```

=====
1      >>SOURCE FORMAT IS FIXED
2      IDENTIFICATION DIVISION.
3      FUNCTION-ID. DAY-FROM-DATE.
4      *>*****
5      *> This GNU COBOL user-defined function converts a Gregorian or **
6      *> Julian date into a numeric day of the week.                **
7      *>*****
8      *> Arguments:                                                  **
9      *>                                                            **
10     *> Calendar-Date      A PIC 9 data item or numeric literal which **
11     *>                                                            will be treated as a calendar date as fol- **
12     *>                                                            lows:   **
13     *>                                                            **
14     *>                    7-digit value: Interpreted as a Julian date **
15     *>                                                            in the form yyyyddd  **
16     *>                    8-digit value: Interpreted as a Gregorian **
17     *>                    date in the form yyyyymmdd  **
18     *>                                                            **
19     *> The result returned will be one of the following:          **
20     *>                                                            **
21     *> 0:  The supplied date is invalid                          **
22     *> 1:  The supplied date is a Sunday                        **
23     *> 2:  The supplied date is a Monday                        **
24     *> .                                          **
25     *> .                                          **
26     *> .                                          **
27     *> 7:  The supplied date is a Saturday                      **
28     *>*****
29     ENVIRONMENT DIVISION.
30     CONFIGURATION SECTION.
31     REPOSITORY.
32     FUNCTION ALL INTRINSIC.
33     DATA DIVISION.
34     WORKING-STORAGE SECTION.
35     01 WS-Input-Date-DT.
36         05 WS-ID-YYYY-NUM                PIC 9(4).
37         05 WS-ID-MM-NUM                   PIC 9(2).
38         05 WS-ID-DD-NUM                   PIC 9(2).
39     01 WS-Y-NUM                          BINARY-LONG.
40     01 WS-M-NUM                          BINARY-LONG.
41     01 WS-Temp-NUM                       BINARY-LONG.
42     LINKAGE SECTION.
43     01 L-Input-Date-DT                   PIC 9 ANY LENGTH.
44     01 L-Output-Day-NUM                  USAGE BINARY-LONG
45                                         SIGNED.
46     PROCEDURE DIVISION USING L-Input-Date-DT
47                             RETURNING L-Output-Day-NUM.
48     000-Main SECTION.
49     CALL "C$PARAMSIZE" USING 1
=====

```

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```

=====
50      EVALUATE RETURN-CODE
51      WHEN 7
52          IF TEST-DAY-YYYYDDD(L-Input-Date-DT) > 0
53              MOVE 0 TO L-Output-Day-NUM
54              GOBACK
55          END-IF
56          MOVE DATE-OF-INTEGER(INTEGER-OF-DAY(L-Input-Date-DT))
57              TO WS-Input-Date-DT
58      WHEN 8
59          IF TEST-DATE-YYYYMMDD(L-Input-Date-DT) > 0
60              MOVE 0 TO L-Output-Day-NUM
61              GOBACK
62          END-IF
63          MOVE L-Input-Date-DT TO WS-Input-Date-DT
64      WHEN OTHER
65          MOVE 0 TO L-Output-Day-NUM
66          GOBACK
67      END-EVALUATE
68      *> IF january OR february
69      *>     y = year - 1
70      *>     m = month + 10
71      *> ELSE
72      *>     y = year
73      *>     m = month - 2
74      *> END-IF
75      *> For Gregorian calendar:
76      *>     result = (day + y + y/4 - y/100 + y/400 + (31*m)/12) mod 7
77      *> (All divisions are integer divisions, discarding any remainder)
78      IF WS-ID-MM-NUM = 1 OR 2
79          SUBTRACT 1 FROM WS-ID-YYYY-NUM GIVING WS-Y-NUM
80          ADD WS-ID-MM-NUM, 10 GIVING WS-M-NUM
81      ELSE
82          MOVE WS-ID-YYYY-NUM TO WS-Y-NUM
83          SUBTRACT 2 FROM WS-ID-MM-NUM GIVING WS-M-NUM
84      END-IF
85      COMPUTE L-Output-Day-NUM =
86          WS-ID-DD-NUM
87          + WS-Y-NUM
88          + INTEGER(WS-Y-NUM/4)
89          - INTEGER(WS-Y-NUM/100)
90          + INTEGER(WS-Y-NUM/400)
91          + INTEGER((31*WS-M-NUM)/12)
92      DIVIDE L-Output-Day-NUM BY 7
93          GIVING WS-Temp-NUM
94          REMAINDER L-Output-Day-NUM
95      ADD 1 TO L-Output-Day-NUM
96      GOBACK
97      .
98
=====

```

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GNU COBOL 2.1 23NOV2013 Cross-Reference Listing					2014/03/27		
C:/Users/tda010/Documents/Programs/Samples/DAY-FROM-DATE.cbl							
PROGRAM-ID	Identifier/Register/Function	Defn	Where Defined	References	Page: 3		
=====	=====	=====	=====	=====	=====		
DAY-FROM-DATE	000-Main	48	PROCEDURE				
DAY-FROM-DATE	L-Input-Date-DT	43	LINKAGE	46	52	56	
				59	63		
DAY-FROM-DATE	L-Output-Day-NUM	44	LINKAGE	47	53*	60*	
				65*	85*	92	
				94*	95*		
DAY-FROM-DATE	RETURN-CODE		PROCEDURE	50			
DAY-FROM-DATE	WS-ID-DD-NUM	38	WORKING-STORAGE	86			
DAY-FROM-DATE	WS-ID-MM-NUM	37	WORKING-STORAGE	78	80	83	
DAY-FROM-DATE	WS-ID-YYYY-NUM	36	WORKING-STORAGE	79	82		
DAY-FROM-DATE	WS-Input-Date-DT	35	WORKING-STORAGE	57*	63*		
DAY-FROM-DATE	WS-M-NUM	40	WORKING-STORAGE	80*	83*	91	
DAY-FROM-DATE	WS-Temp-NUM	41	WORKING-STORAGE	93*			
DAY-FROM-DATE	WS-Y-NUM	39	WORKING-STORAGE	79*	82*	87	
				88	89	90	

5. GCic

This is MUCH more than a mere demonstration program –æ it's also a very practical utility! The "GCic" (GnuCOBOL Interactive Compiler) is a TUI (Textual User Interface) program that may be used as a full-screen interface to the "cobc" compiler. In addition, GCic can produce neat, concise and useful cross-reference listings of GnuCOBOL programs, showing not only where user-defined names and built-in registers and intrinsic functions are referenced, but also where user-defined data items ARE MODIFIED by program code!

The program is well documented (IMHO) and you should find it fairly easy to follow. The GCic.cbl program was written to work with a native Windows or Windows/MinGW build of GnuCOBOL as well as a Windows/Cygwin, UNIX or OS X build.

Source listings generated by GCic will show the original source code of your programs, with all indentation and comments preserved. Additionally, any COPYed code will be included in the listing immediately (in compressed form) following the COPY statement that triggered its inclusion into your program.

Cross-reference listings will show all user-defined data items and procedures as well as intrinsic function and special register references. In addition to showing the line numbers at which items were defined and referenced, those references that MODIFY the contents of the data item will have an asterisk appended to them.

In addition to general GnuCOBOL concepts, this program provides a useful demonstration of the following:

- Creating a GnuCOBOL compilation unit that consists of multiple programs
- Using CDF conditional compilation facilities
- Using the "SCREEN SECTION" and associated "ACCEPT" and "DISPLAY" statements
- Using "DECLARATIVES" to trap file I/O errors
- Using "FILE-STATUS"
- Using the "REPLACING" clause on a CDF "COPY" statement
- Using the following statements:
 - "ACCEPT FROM COMMAND-LINE" statement
 - "ACCEPT FROM DATE/TIME" statement
 - "ACCEPT FROM ENVIRONMENT" statement
 - "EXIT PERFORM" statement
 - "EXIT SECTION" statement
 - "INSPECT" statement
 - "PERFORM FOREVER" statement

- o "SEARCH ALL" statement
 - o "SET ENVIRONMENT" statement
 - o "SORT" statement
 - o "STRING" statement
 - o "UNSTRING" statement
- Using the following built-in subroutines:
 - o "C\$JUSTIFY" built-in system subroutine
 - o "C\$SLEEP" built-in system subroutine
 - o "CBL_CHANGE_DIR" built-in system subroutine
 - o "CBL_CHECK_FILE_EXIST" built-in system subroutine
 - o "CBL_DELETE_FILE" built-in system subroutine
 - o "SYSTEM" built-in system subroutine
- Using the following intrinsic functions:
 - o "CONCATENATE" intrinsic function
 - o "LENGTH" intrinsic function
 - o "LOWER-CASE" intrinsic function
 - o "NUMVAL" intrinsic function
 - o "TRIM" intrinsic function
 - o "UPPER-CASE" intrinsic function
- Using the "COB-CRT-STATUS,Special Registers" special register
- Programmatically producing a report destined for either portrait or landscape printing

Here is a sample of the screen generated by this program:



The program source and cross-reference listing, produced using this program, begins on the next page.

GNU COBOL 2.1 23NOV2013 Source Listing

2014/03/27

C:/Users/tda010/Documents/Programs/Samples/GCic.cbl

Line Statement

Page: 1

```

=====
1      >>SOURCE FORMAT IS FIXED
2      *> CONFIGURATION SETTINGS: Set these switches before compiling:
3      *>
4      *> LINEDRAW Set to:
5      *> 0   To use spaces (no lines)
6      *> 1   To use the line-drawing character set (PC codepage 437)
7      *> 2   To use conventional ASCII characters (+, -, |)
8      *>
9      *>      OSX USERS - To use the linedrawing character set,
10     *>      set your 'terminal' font to 'Lucida Console'
11     *>
12     *> OS      Set to one of the following:
13     *>      'CYGWIN'   For a Windows/Cygwin version
14     *>      'MINGW'    For a Windows/MinGW version
15     *>      'OSX'      For a Macintosh OSX version
16     *>      'UNIX'     For a Unix/Linux version
17     *>      'WINDOWS'  For a Native Windows version
18     *>
19     *> SELCHAR Set to the desired single character to be used as the red
20     *>      'feature selected' character on the screen.
21     *>      SUGGESTIONS: '>', '*', '=', '+'
22     *>
23     *> LPP      Set to maximum printable lines per page when the listing
24     *>      should be generated for LANDSCAPE orientation (can be over-
25     *>      ridden at execution time using the GCXREF_LINES environment
26     *>      variable.
27     *>
28     *> LPPP     Set to maximum printable lines per page when the listing
29     *>      should be generated for PORTRAIT orientation (can be over-
30     *>      ridden at execution time using the GCXREF_LINES_PORT
31     *>      environment variable.
32     *>
33 GC0712 >>DEFINE CONSTANT LINEDRAW AS 1
34 GC0712 >>DEFINE CONSTANT OS      AS 'MINGW'
35 GC0712 >>DEFINE CONSTANT SELCHAR AS '>'
36 GC1213 >>DEFINE CONSTANT LPP      AS 60   *> LANDSCAPE (GCXREF_LINES)
37 GC1213 >>DEFINE CONSTANT LPPP     AS 54   *> PORTRAIT (GCXREF_LINES_PORT)
38     *> -----
39     *> Now set these switches to establish initial (default) settings
40     *> for the various on-screen options. Set them to a value of
41     *> 0 if they are to be 'OFF' and 1 if they are to be 'ON'
42 GC1213*> (for F5, 1=ON (Landscape), 2=ON (Portrait))
43     *>
44 GC0712 >>DEFINE CONSTANT F1 AS 0 *> Assume WITH DEBUGGING MODE
45 GC0712 >>DEFINE CONSTANT F2 AS 0 *> Procedure+Statement Trace
46 GC0712 >>DEFINE CONSTANT F3 AS 0 *> Make A Library (DLL)
47 GC0712 >>DEFINE CONSTANT F4 AS 0 *> Execute If Compilation OK
48 GC1213 >>DEFINE CONSTANT F5 AS 0 *> Listings
49 GC0712 >>DEFINE CONSTANT F6 AS 1 *> "FUNCTION" Is Optional
=====

```

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GNU COBOL 2.1 23NOV2013 Source Listing

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Line Statement

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```

=====
50 GC0712 >>DEFINE CONSTANT F7 AS 1 *> Enable All Warnings
51 GC0712 >>DEFINE CONSTANT F8 AS 0 *> Source Is Free-Format
52 GC0712 >>DEFINE CONSTANT F9 AS 1 *> No COMP/BINARY Truncation
53 GC0712 >>DEFINE CONSTANT F12 AS 4 *> Default config file (1-7):
54      *> 1 = BS2000
55      *> 2 = COBOL85
56      *> 3 = COBOL2002
57      *> 4 = DEFAULT
58      *> 5 = IBM
59      *> 6 = MF (i.e. Microfocus)
60      *> 7 = MVS
61      *> -----
62      *> END CONFIGURATION SETTINGS
=====

```

GNU COBOL 2.1 23NOV2013 Source Listing

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C:/Users/tda010/Documents/Programs/Samples/GCic.cbl

Line Statement

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```

=====
64      IDENTIFICATION DIVISION.
65      PROGRAM-ID. GCic.
66      *>*****
67      *>      >NOTE<      >NOTE<      >NOTE<      >NOTE<      >NOTE<      >NOTE<      **
68      *>      **
69      *> If this program is compiled with '-fdebugging-line', you **
70      *> will need to pipe SYSERR to a text file when executing GCic **
71      *> (by adding the text '2> filename' to the end of the GCic **
72      *> command). You may also need to press the ENTER key when **
73      *> GCic is finished. **
74      *>*****
75      *> This program provides a Textual User Interface (TUI) to the **
76      *> process of compiling and (optionally) executing a GNU COBOL **
77      *> program. **
78      *> **
79      *> This programs execution syntax is as follows: **
80      *> **
81      *> GCic <program-path-and-filename> [ <switch>... ] **
82      *> **
83      *> Once executed, a display screen will be presented showing **
84      *> the compilation options that will be used. The user will **
85      *> have the opportunity to change options, specify new ones **
86      *> and specify any program execution arguments to be used if **
87      *> you select the 'Execute' option. When you press the Enter **
88      *> key the program will be compiled. **
89      *> **
90      *> The SCREEN SECTION contains an image of the screen. **
91      *> **
92      *> The '010-Parse-Args' section in the PROCEDURE DIVISION has **
93      *> documentation on switches and their function. **
94      *>*****
95      *> **
96      *> AUTHOR:      GARY L. CUTLER **
97      *>      Copyright (C) 2009-2014, Gary L. Cutler, GPL **
98      *> **
99      *> DATE-WRITTEN: June 14, 2009 **
100     *> **
101     *>*****
102     *>  DATE  CHANGE DESCRIPTION **
103     *> ===== **
104     *> GC0609 Don't display compiler messages file if compilation **
105     *>      Is successful. Also don't display messages if the **
106     *>      output file is busy (just put a message on the **
107     *>      screen, leave the OC screen up & let the user fix **
108     *>      the problem & resubmit. **
109     *> GC0709 When 'EXECUTE' is selected, a 'FILE BUSY' error will **
110     *>      still cause the (old) executable to be launched. **
111     *>      Also, the 'EXTRA SWITCHES' field is being ignored. **
=====

```

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GNU COBOL 2.1 23NOV2013 Source Listing

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Line Statement

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```

=====
112      *>      Changed the title bar to lowlighted reverse video & **
113      *>      the message area to highlighted reverse-video.    **
114      *> GC0809 Add a SPACE in front of command-line args when **
115      *>      executing users program. Add a SPACE after the    **
116      *>      -ftraceall switch when building cobc command.    **
117      *> GC0909 Convert to work on Cygwin/Linux as well as MinGW **
118      *> GC0310 Virtualized the key codes for S-F1 thru S-F7 as they **
119      *>      differ depending upon whether PDCurses or NCurses is **
120      *>      being used.                                         **
121      *> GC0410 Introduced the cross-reference and source listing **
122      *>      features. Also fixed a bug in EXTRA switch proces- **
123      *>      sing where garbage will result if more than the    **
124      *>      EXTRA switch is specified.                         **
125      *> GC1010 Corrected several problems reported by Vince Coen: **
126      *>      1) Listing/Xref wouldn't work if '-I' additional **
127      *>      cobc switch specified.                               **
128      *>      2) Programs coded with lowercase reserved words did **
129      *>      not get parsed properly when generating listing    **
130      *>      and/or xref reports.                                 **
131      *>      3) Reliance on a TEMP environment variable caused **
132      *>      non-recoverable errors when generating listing    **
133      *>      and/or xref reports in a session that lacks a    **
134      *>      TEMP variable.                                       **
135      *>      As a result of this change, GCic no longer runs a **
136      *>      second 'cobc' when generating listing and/or xref **
137      *>      reports. A '-save-temps' (without '=dir') specified **
138      *>      in the EXTRA options field will be ignored. A     **
139      *>      '-save-temps=dir' specified in the EXTRA options **
140      *>      field will negate both the XREF and SOURCE opts,    **
141      *>      if specified.                                         **
142      *> GC0711 Tailored for 29APR2011 version of GNU COBOL 2.0 **
143      *> GC0712 Replaced all switches with configuration settings; **
144      *>      Tailored for 11FEB2012 version of GNU COBOL 2.0;    **
145      *>      Reformatted screen layout to fit a 24x80 screen    **
146      *>      rather than a 25x81 screen and to accommodate shell **
147      *>      environments having only F1-F12 (like 'terminal' in **
148      *>      OSX); Fully tested under OSX (required a few altera- **
149      *>      tions); Expanded both extra-options and runtime-    **
150      *>      arguments areas to TWO lines (152 chars total) each; **
151      *>      Added support for MF/IBM/BS2000 listing-control    **
152      *>      directives EJECT,SKIP1,SKIP2,SKIP3 (any of these in **
153      *>      copybooks will be ignored)                             **
154      *> GC0313 Expand the source code record from 80 chars to 256 **
155      *>      to facilitate looking for "LINKAGE SECTION" in a    **
156      *>      free-format file.                                         **
157      *> GC1113 Edited to support the change of "OpenCOBOL" to "GNU **
158      *>      COBOL"                                                  **
159      *> GC1213 Updated for 23NOV2013 version of GNU COBOL 2.1    **
160      *> GC0114 Introduce a "Press ENTER to Close" action after run- **
=====

```

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Line Statement

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```

=====
161      *>          ning the compiled program in the compiler window (F4)**
162      *>*****
163      ENVIRONMENT DIVISION.
164      CONFIGURATION SECTION.
165      REPOSITORY.
166      FUNCTION ALL INTRINSIC.
167      INPUT-OUTPUT SECTION.
168      FILE-CONTROL.
169 GC1010      SELECT F-Cobc-Output-FILE  ASSIGN TO WS-Listing-Filename-TXT
170                                     ORGANIZATION IS LINE SEQUENTIAL.
171
172      SELECT F-Source-Code-FILE  ASSIGN TO WS-File-Name-TXT
173                                     ORGANIZATION IS LINE SEQUENTIAL
174                                     FILE STATUS IS WS-FSM-Status-CD.
=====

```

GNU COBOL 2.1 23NOV2013 Source Listing

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Line Statement

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```

=====
176      DATA DIVISION.
177      FILE SECTION.
178      FD  F-Cobc-Output-FILE.
179      01  F-Cobc-Output-REC          PIC X(256) .
180
181      FD  F-Source-Code-FILE.
182 GC0313 01  F-Source-Code-REC      PIC X(256) .
183
184      WORKING-STORAGE SECTION.
185      COPY screenio.
      78 COB-COLOR-BLACK VALUE 0.
      78 COB-COLOR-BLUE VALUE 1.
      78 COB-COLOR-GREEN VALUE 2.
      78 COB-COLOR-CYAN VALUE 3.
      78 COB-COLOR-RED VALUE 4.
      78 COB-COLOR-MAGENTA VALUE 5.
      78 COB-COLOR-YELLOW VALUE 6.
      78 COB-COLOR-WHITE VALUE 7.
      78 COB-SCR-OK VALUE 0.
      78 COB-SCR-F1 VALUE 1001.
      78 COB-SCR-F2 VALUE 1002.
      78 COB-SCR-F3 VALUE 1003.
      78 COB-SCR-F4 VALUE 1004.
      78 COB-SCR-F5 VALUE 1005.
      78 COB-SCR-F6 VALUE 1006.
      78 COB-SCR-F7 VALUE 1007.
      78 COB-SCR-F8 VALUE 1008.
      78 COB-SCR-F9 VALUE 1009.
      78 COB-SCR-F10 VALUE 1010.
      78 COB-SCR-F11 VALUE 1011.
      78 COB-SCR-F12 VALUE 1012.
      78 COB-SCR-F13 VALUE 1013.
      78 COB-SCR-F14 VALUE 1014.
      78 COB-SCR-F15 VALUE 1015.
      78 COB-SCR-F16 VALUE 1016.
      78 COB-SCR-F17 VALUE 1017.
      78 COB-SCR-F18 VALUE 1018.
      78 COB-SCR-F19 VALUE 1019.
      78 COB-SCR-F20 VALUE 1020.
      78 COB-SCR-F21 VALUE 1021.
      78 COB-SCR-F22 VALUE 1022.
      78 COB-SCR-F23 VALUE 1023.
      78 COB-SCR-F24 VALUE 1024.
      78 COB-SCR-F25 VALUE 1025.
      78 COB-SCR-F26 VALUE 1026.
      78 COB-SCR-F27 VALUE 1027.
      78 COB-SCR-F28 VALUE 1028.
      78 COB-SCR-F29 VALUE 1029.
=====

```

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GNU COBOL 2.1 23NOV2013 Source Listing

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Line Statement

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```

=====
78 COB-SCR-F30 VALUE 1030.
78 COB-SCR-F31 VALUE 1031.
78 COB-SCR-F32 VALUE 1032.
78 COB-SCR-F33 VALUE 1033.
78 COB-SCR-F34 VALUE 1034.
78 COB-SCR-F35 VALUE 1035.
78 COB-SCR-F36 VALUE 1036.
78 COB-SCR-F37 VALUE 1037.
78 COB-SCR-F38 VALUE 1038.
78 COB-SCR-F39 VALUE 1039.
78 COB-SCR-F40 VALUE 1040.
78 COB-SCR-F41 VALUE 1041.
78 COB-SCR-F42 VALUE 1042.
78 COB-SCR-F43 VALUE 1043.
78 COB-SCR-F44 VALUE 1044.
78 COB-SCR-F45 VALUE 1045.
78 COB-SCR-F46 VALUE 1046.
78 COB-SCR-F47 VALUE 1047.
78 COB-SCR-F48 VALUE 1048.
78 COB-SCR-F49 VALUE 1049.
78 COB-SCR-F50 VALUE 1050.
78 COB-SCR-F51 VALUE 1051.
78 COB-SCR-F52 VALUE 1052.
78 COB-SCR-F53 VALUE 1053.
78 COB-SCR-F54 VALUE 1054.
78 COB-SCR-F55 VALUE 1055.
78 COB-SCR-F56 VALUE 1056.
78 COB-SCR-F57 VALUE 1057.
78 COB-SCR-F58 VALUE 1058.
78 COB-SCR-F59 VALUE 1059.
78 COB-SCR-F60 VALUE 1060.
78 COB-SCR-F61 VALUE 1061.
78 COB-SCR-F62 VALUE 1062.
78 COB-SCR-F63 VALUE 1063.
78 COB-SCR-F64 VALUE 1064.
78 COB-SCR-PAGE_UP VALUE 2001.
78 COB-SCR-PAGE_DOWN VALUE 2002.
78 COB-SCR-KEY-UP VALUE 2003.
78 COB-SCR-KEY-DOWN VALUE 2004.
78 COB-SCR-ESC VALUE 2005.
78 COB-SCR-PRINT VALUE 2006.
78 COB-SCR-NO-FIELD VALUE 8000.
78 COB-SCR-TIME-OUT VALUE 8001.
78 COB-SCR-FATAL VALUE 9000.
78 COB-SCR-MAX-FIELD VALUE 9001.
186
187 GC0712 01 WS-Compilation-Switches-TXT.
188 GC0712 05 WS-CS-Args-TXT VALUE SPACES.
189 GC0712 10 WS-CS-Arg-H1-TXT PIC X(76).
=====

```

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Line Statement

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```

=====
190 GC0712      10 WS-CS-Arg-H2-TXT                PIC X(76).
191 GC0712      05 WS-CS-FileNames-TXT.
192 GC0712      10 VALUE 'BS2000'                  PIC X(9).
193 GC0712      10 VALUE 'COBOL85'                 PIC X(9).
194 GC0712      10 VALUE 'COBOL2002'               PIC X(9).
195 GC0712      10 VALUE 'DEFAULT'                 PIC X(9).
196 GC0712      10 VALUE 'IBM'                     PIC X(9).
197 GC0712      10 VALUE 'MF'                      PIC X(9).
198 GC0712      10 VALUE 'MVS'                     PIC X(9).
199 GC0712      05 WS-CS-FileNames-Table-TXT REDEFINES WS-CS-FileNames-TXT.
200 GC0712      10 WS-CS-Filename-TXT              OCCURS 7 TIMES
201 GC0712                                     PIC X(9).
202 GC0712 >>IF F12 < 1
203 GC0712      05 WS-CS-Config-NUM      VALUE 4      PIC 9(1).
204 GC0712 >>ELIF F12 > 7
205 GC0712      05 WS-CS-Config-NUM      VALUE 4      PIC 9(1).
206 GC0712 >>ELSE
207 GC0712      05 WS-CS-Config-NUM      VALUE F12    PIC 9(1).
208 GC0712 >>END-IF
209 GC0712      05 WS-CS-Extra-TXT VALUE SPACES.
210 GC0712      10 WS-CS-Extra-H1-TXT          PIC X(76).
211 GC0712      10 WS-CS-Extra-H2-TXT          PIC X(76).
212 GC0712      05 WS-CS-Switch-Defaults-TXT.
213 GC0712      10 VALUE F1                    PIC 9(1). *> WS-CS-DEBUG-CHR
214 GC0712      10 VALUE F4                    PIC 9(1). *> WS-CS-EXECUTE-CHR
215 GC0712      10 VALUE F8                    PIC 9(1). *> WS-CS-FREE-CHR
216 GC0712      10 VALUE F3                    PIC 9(1). *> WS-CS-LIBRARY-CHR
217 GC0712      10 VALUE F5                    PIC 9(1). *> WS-CS-LISTING-CHR
218 GC0712      10 VALUE F6                    PIC 9(1). *> WS-CS-NOFUNC-CHR
219 GC0712      10 VALUE F9                    PIC 9(1). *> WS-CS-NOTRUNC-CHR
220 GC0712      10 VALUE F2                    PIC 9(1). *> WS-CS-TRACEALL-CHR
221 GC0712      10 VALUE F7                    PIC 9(1). *> WS-CS-WARNALL-CHR
222 GC0712      05 WS-CS-All-Switches-TXT REDEFINES
223 GC0712                                     WS-CS-Switch-Defaults-TXT.
224 GC0712      10 WS-CS-DEBUG-CHR              PIC X(1).
225 GC0712      10 WS-CS-EXECUTE-CHR            PIC X(1).
226 GC0712      10 WS-CS-FREE-CHR               PIC X(1).
227 GC0712      10 WS-CS-LIBRARY-CHR            PIC X(1).
228 GC0712      10 WS-CS-LISTING-CHR            PIC X(1).
229 GC0712      10 WS-CS-NOFUNC-CHR            PIC X(1).
230 GC0712      10 WS-CS-NOTRUNC-CHR            PIC X(1).
231 GC0712      10 WS-CS-TRACEALL-CHR           PIC X(1).
232 GC0712      10 WS-CS-WARNALL-CHR           PIC X(1).
233
234 GC0909 01 WS-Cmd-TXT                        PIC X(512).
235
236 GC0712 01 WS-Cmd-Args-TXT                   PIC X(256).
237
238 GC0712 01 WS-Cmd-End-Quote-CHR              PIC X(1).
=====

```

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Line Statement

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```

=====
239
240 GC0712 01  WS-Cmd-SUB                      USAGE BINARY-LONG.
241
242          01  WS-Cobc-Cmd-TXT                PIC X(256).
243
244          01  WS-Config-Fn-TXT               PIC X(12).
245
246 GC1113 01  WS-Delete-Fn-TXT                PIC X(256).
247
248          01  WS-File-Name-TXT.
249              05 WS-FN-CHR                    OCCURS 256 TIMES
250                      PIC X(1).
251
252          01  WS-File-Status-Message-TXT.
253              05 VALUE 'Status Code: '        PIC X(13).
254              05 WS-FSM-Status-CD             PIC 9(2).
255              05 VALUE ', Meaning: '          PIC X(11).
256              05 WS-FSM-Msg-TXT               PIC X(25).
257
258 GC0909 01  WS-Horizontal-Line-TXT           PIC X(80).
259 GC0909
260          01  WS-I-SUB                        USAGE BINARY-LONG.
261
262          01  WS-J-SUB                        USAGE BINARY-LONG.
263
264 GC1213 01  WS-Listing-CD VALUE F5            PIC 9(1).
265
266 GC0712 01  WS-Listing-Filename-TXT          PIC X(256).
267
268 GC1213 01  WS-Listing-TXT VALUE SPACES      PIC X(27).
269
270          01  WS-OC-Compile-DT                PIC XXXX/XX/XXBXX/XX.
271
272 GC0712 >>IF OS = 'CYGWIN'
273 GC0712 01  WS-OS-Dir-CHR                     VALUE '/'          PIC X(1).
274 GC0712 78  WS-OS-Exe-Ext-CONST               VALUE '.exe'.
275 GC0712 78  WS-OS-Lib-Ext-CONST               VALUE '.dll'.
276 GC0712 78  WS-OS-Lib-Type-CONST             VALUE 'DLL)'.
277 GC0712 01  WS-OS-Type-CD                     VALUE 2          PIC 9(1).
278 GC0712 >>ELIF OS = 'MINGW'
279 GC0712 01  WS-OS-Dir-CHR                     VALUE '\'          PIC X(1).
280 GC0712 78  WS-OS-Exe-Ext-CONST               VALUE '.exe'.
281 GC0712 78  WS-OS-Lib-Ext-CONST               VALUE '.dll'.
282 GC0712 78  WS-OS-Lib-Type-CONST             VALUE 'DLL)'.
283 GC0712 01  WS-OS-Type-CD                     VALUE 5          PIC 9(1).
284 GC0712 >>ELIF OS = 'OSX'
285 GC0712 01  WS-OS-Dir-CHR                     VALUE '/'          PIC X(1).
286 GC0712 78  WS-OS-Exe-Ext-CONST               VALUE '.dylib'.
287 GC0712 78  WS-OS-Lib-Ext-CONST               VALUE '.dylib'.
=====

```

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```

=====
288 GC0712 78 WS-OS-Lib-Type-CONST VALUE 'DYLIB)'.
289 GC0712 01 WS-OS-Type-CD VALUE 4 PIC 9(1).
290 GC0712 >>ELIF OS = 'UNIX'
291 GC0712 01 WS-OS-Dir-CHR VALUE '/' PIC X(1).
292 GC0712 78 WS-OS-Exe-Ext-CONST VALUE ' '.
293 GC0712 78 WS-OS-Lib-Ext-CONST VALUE '.so'.
294 GC0712 78 WS-OS-Lib-Type-CONST VALUE 'SO)'.
295 GC0712 01 WS-OS-Type-CD VALUE 3 PIC 9(1).
296 GC0712 >>ELIF OS = 'WINDOWS'
297 GC0712 01 WS-OS-Dir-CHR VALUE '\' PIC X(1).
298 GC0712 78 WS-OS-Exe-Ext-CONST VALUE '.exe'.
299 GC0712 78 WS-OS-Lib-Ext-CONST VALUE '.dll'.
300 GC0712 78 WS-OS-Lib-Type-CONST VALUE 'DLL)'.
301 GC0712 01 WS-OS-Type-CD VALUE 1 PIC 9(1).
302 GC0712 >>END-IF
303 GC0909 88 WS-OS-Windows-BOOL VALUE 1, 5.
304 GC0909 88 WS-OS-Cygwin-BOOL VALUE 2.
305 GC0712 88 WS-OS-UNIX-BOOL VALUE 3, 4.
306 GC0712 88 WS-OS-OSX-BOOL VALUE 4.
307
308 01 WS-OS-Type-FILLER-TXT.
309 05 VALUE 'Windows' PIC X(14).
310 05 VALUE 'Windows/Cygwin' PIC X(14).
311 05 VALUE 'UNIX/Linux' PIC X(14).
312 05 VALUE 'OSX' PIC X(14).
313 05 VALUE 'Windows/MinGW' PIC X(14).
314 01 WS-OS-Types-TXT REDEFINES WS-OS-Type-FILLER-TXT.
315 05 WS-OS-Type-TXT OCCURS 5 TIMES
316 PIC X(14).
317
318 01 WS-Output-Msg-TXT PIC X(80).
319
320 01 WS-Path-Delimiter-CHR PIC X(1).
321
322 01 WS-Prog-Extension-TXT PIC X(256).
323
324 01 WS-Prog-Folder-TXT PIC X(256).
325
326 GC0712 01 WS-Prog-File-Name-TXT.
327 GC0712 05 WS-PFN-CHR OCCURS 256 TIMES
328 GC0712 PIC X(1).
329
330 GC0712 01 WS-Pgm-Nm-TXT PIC X(31).
331
332 01 WS-Runtime-Switches-TXT.
333 05 WS-RS-Compile-OK-CHR PIC X(1).
334 88 WS-RS-Compile-OK-BOOL VALUE 'Y'.
335 GC0909 88 WS-RS-Compile-OK-Warn-BOOL VALUE 'W'.
336 88 WS-RS-Compile-Failed-BOOL VALUE 'N'.
=====

```

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=====
337 GC0609      05 WS-RS-Complete-CHR          PIC X(1).
338 GC0609      88 WS-RS-Complete-BOOL        VALUE 'Y'.
339 GC0609      88 WS-RS-Not-Complete-BOOL     VALUE 'N'.
340 GC0712      05 WS-RS-Quote-CHR            PIC X(1).
341 GC0712      88 WS-RS-Double-Quote-Used-BOOL VALUE 'Y' FALSE 'N'.
342 GC0809      05 WS-RS-IDENT-DIV-CHR         PIC X(1).
343 GC0809      88 WS-RS-1st-Prog-Complete-BOOL VALUE 'Y'.
344 GC0809      88 WS-RS-More-To-1st-Prog-BOOL  VALUE 'N'.
345             05 WS-RS-No-Switch-Chgs-CHR     PIC X(1).
346             88 WS-RS-No-Switch-Changes-BOOL  VALUE 'Y'.
347             88 WS-RS-Switch-Changes-BOOL     VALUE 'N'.
348 GC0709      05 WS-RS-Output-File-Busy-CHR   PIC X(1).
349 GC0709      88 WS-RS-Output-File-Busy-BOOL  VALUE 'Y'.
350 GC0709      88 WS-RS-Output-File-Avail-BOOL  VALUE 'N'.
351 GC0809      05 WS-RS-Source-Record-Type-CHR  PIC X(1).
352 GC0809      88 WS-RS-Source-Rec-Linkage-BOOL VALUE 'L'.
353 GC0809      88 WS-RS-Source-Rec-Ident-BOOL  VALUE 'I'.
354 GC0712      88 WS-RS-Source-Rec-Ignored-BOOL VALUE ' '.
355             05 WS-RS-Switch-Error-CHR        PIC X(1).
356             88 WS-RS-Switch-Is-Bad-BOOL      VALUE 'Y'.
357             88 WS-RS-Switch-Is-Good-BOOL     VALUE 'N'.
358
359             01 WS-Tally-QTY                  USAGE BINARY-LONG.
=====

```

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=====
361     SCREEN SECTION.
362     *>
363     *> Here is the layout of the GCic screen.
364     *>
365     *> The sample screen below shows how the screen would look if the LINEDRAW
366     *> configuration setting is set to a value of 2
367     *>
368     *> The following sample screen layout shows how the screen looks with line-drawing
369     *> characters disabled.
370     *>
371     *>          1          2          3          4          5          6          7          8
372     *>1234567890123456789012345678901234567890123456789012345678901234567890
373     *>=====
374 01 *> GCic (2011/07/11 08:52) - GNU COBOL V2.1 23NOV2013 Interactive Compilation
375 02 *>+-----+
376 03 *>| Folder:   E:\GNU COBOL\Samples                                     |
377 04 *>| Filename: GCic.cbl                                                |
378 05 *>+-----+
379 06 *> Set/Clr Switches Via F1-F9; Set Config Via F12; ENTER Key Compiles; ESC Quits
380 07 *>+-----+
381 08 *>| F1  Assume WITH DEBUGGING MODE  F6  "FUNCTION" Is Optional      | Current  |
382 09 *>| F2  Procedure+Statement Trace   F7  Enable All Warnings         | Config:  |
383 10 *>| F3  Make A Library (DLL)         F8  Source Is Free-Format      | XXXXXXXX |
384 11 *>| F4  Execute If Compilation OK    F9  No COMP/BINARY Truncation  |          |
385 12 *>| F5  >Produce Listing (Landscape) |          |
386 13 *>+-----+
387 14 *> Extra "cobc" Switches, If Any ("-save-temps=xxx" Prevents Listings):
388 15 *>+-----+
389 16 *>| ----- |
390 17 *>| ----- |
391 18 *>+-----+
392 19 *> Program Execution Arguments, If Any:
393 20 *>+-----+
394 21 *>| ----- |
395 22 *>| ----- |
396 23 *>+-----+
397 24 *> GCic Copyright (C) 2009-2014, Gary L. Cutler, GPL
398     *>=====
399     *>1234567890123456789012345678901234567890123456789012345678901234567890
400     *>          1          2          3          4          5          6          7          8
401     *>
402     *> If this program is run on Windows, it must run with codepage 437 activated to
403     *> display the line-drawing characters.  With a native Windows build or a
404     *> Windows/MinGW build, one could use the command 'chcp 437' to set that codepage
405     *> for display within a Windows console window (that should be the default though).
406     *> With a Windows/Cygwin build, set the environment variable CYGWIN to a value of
407     *> 'codepage:oem' (this cannot be done from within the program though - you will
408     *> have to use the 'Computer/Advanced System Settings/Environment Variables' (Vista

```

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```

=====
409      *> or Windows 7) function to define the variable.  XP Users: use 'My Computer/
410      *> Properties/Advanced/Environment Variables'.
411      *>
412      *> OSX users may use line drawing characters in this and any GNU COBOL program
413      *> simply by setting their 'terminal' application's font to "Lucida Console".
414      *>
415      >>IF LINEDRAW IS EQUAL TO 0
416          78 LD-UL-Corner                VALUE ' '.
417          78 LD-LL-Corner                VALUE ' '.
418          78 LD-UR-Corner                VALUE ' '.
419          78 LD-LR-Corner                VALUE ' '.
420          78 LD-Upper-T                 VALUE ' '.
421          78 LD-Lower-T                 VALUE ' '.
422          78 LD-Horiz-Line              VALUE ' '.
423          78 LD-Vert-Line               VALUE ' '.
424      >>ELIF LINEDRAW IS EQUAL TO 1
425          78 LD-UL-Corner                VALUE X'DA'.
426          78 LD-LL-Corner                VALUE X'CO'.
427          78 LD-UR-Corner                VALUE X'BF'.
428          78 LD-LR-Corner                VALUE X'D9'.
429          78 LD-Upper-T                 VALUE X'C2'.
430          78 LD-Lower-T                 VALUE X'C1'.
431          78 LD-Horiz-Line              VALUE X'C4'.
432          78 LD-Vert-Line               VALUE X'B3'.
433      >>ELSE
434          78 LD-UL-Corner                VALUE '+'.
435          78 LD-LL-Corner                VALUE '+'.
436          78 LD-UR-Corner                VALUE '+'.
437          78 LD-LR-Corner                VALUE '+'.
438          78 LD-Upper-T                 VALUE '+'.
439          78 LD-Lower-T                 VALUE '+'.
440          78 LD-Horiz-Line              VALUE '-'.
441          78 LD-Vert-Line               VALUE '|'.
442      >>END-IF
443
444      01 S-Blank-SCR LINE 1 COLUMN 1 BLANK SCREEN.
445
446      01 S-Switches-SCR BACKGROUND-COLOR COB-COLOR-BLACK
447                      FOREGROUND-COLOR COB-COLOR-WHITE AUTO.
448      *>
449      *> GENERAL SCREEN FRAMEWORK
450      *>
451          03 BACKGROUND-COLOR COB-COLOR-BLACK
452          FOREGROUND-COLOR COB-COLOR-GREEN HIGHLIGHT.
453 GC0712      05 LINE 02 COL 01                VALUE LD-UL-Corner.
454 GC0712      05                COL 02 PIC X(78) FROM WS-Horizontal-Line-TXT.
455                05                COL 80                VALUE LD-UR-Corner.
456
457 GC0712      05 LINE 03 COL 01                VALUE LD-Vert-Line.
=====

```

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=====
458          05          COL 80          VALUE LD-Vert-Line.
459
460 GC0712    05 LINE 04 COL 01          VALUE LD-Vert-Line.
461          05          COL 80          VALUE LD-Vert-Line.
462
463 GC0712    05 LINE 05 COL 01          VALUE LD-LL-Corner.
464 GC0712    05          COL 02 PIC X(78) FROM WS-Horizontal-Line-TXT.
465          05          COL 80          VALUE LD-LR-Corner.
466
467 GC0712    05 LINE 07 COL 01          VALUE LD-UL-Corner.
468 GC0712    05          COL 02 PIC X(65) FROM WS-Horizontal-Line-TXT.
469 GC0712    05          COL 67          VALUE LD-Upper-T.
470 GC0712    05          COL 68 PIC X(12) FROM WS-Horizontal-Line-TXT.
471          05          COL 80          VALUE LD-UR-Corner.
472
473 GC0712    05 LINE 08 COL 01          VALUE LD-Vert-Line.
474 GC0712    05          COL 67          VALUE LD-Vert-Line.
475          05          COL 80          VALUE LD-Vert-Line.
476
477 GC0712    05 LINE 09 COL 01          VALUE LD-Vert-Line.
478 GC0712    05          COL 67          VALUE LD-Vert-Line.
479          05          COL 80          VALUE LD-Vert-Line.
480
481 GC0712    05 LINE 10 COL 01          VALUE LD-Vert-Line.
482 GC0712    05          COL 67          VALUE LD-Vert-Line.
483          05          COL 80          VALUE LD-Vert-Line.
484
485 GC0712    05 LINE 11 COL 01          VALUE LD-Vert-Line.
486 GC0712    05          COL 67          VALUE LD-Vert-Line.
487          05          COL 80          VALUE LD-Vert-Line.
488
489 GC0712    05 LINE 12 COL 01          VALUE LD-Vert-Line.
490 GC0712    05          COL 67          VALUE LD-Vert-Line.
491          05          COL 80          VALUE LD-Vert-Line.
492
493 GC0712    05 LINE 13 COL 01          VALUE LD-LL-Corner.
494 GC0712    05          COL 02 PIC X(65) FROM WS-Horizontal-Line-TXT.
495 GC0712    05          COL 67          VALUE LD-Lower-T.
496 GC0712    05          COL 68 PIC X(12) FROM WS-Horizontal-Line-TXT.
497          05          COL 80          VALUE LD-LR-Corner.
498
499 GC0712    05 LINE 15 COL 01          VALUE LD-UL-Corner.
500 GC0712    05          COL 02 PIC X(78) FROM WS-Horizontal-Line-TXT.
501          05          COL 80          VALUE LD-UR-Corner.
502
503 GC0712    05 LINE 16 COL 01          VALUE LD-Vert-Line.
504          05          COL 80          VALUE LD-Vert-Line.
505
506 GC0712    05 LINE 17 COL 01          VALUE LD-Vert-Line.
=====

```

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=====
507          05          COL 80          VALUE LD-Vert-Line.
508
509 GC0712      05 LINE 18 COL 01          VALUE LD-LL-Corner.
510 GC0712      05          COL 02 PIC X(78) FROM WS-Horizontal-Line-TXT.
511          05          COL 80          VALUE LD-LR-Corner.
512
513 GC0712      05 LINE 20 COL 01          VALUE LD-UL-Corner.
514 GC0712      05          COL 02 PIC X(78) FROM WS-Horizontal-Line-TXT.
515          05          COL 80          VALUE LD-UR-Corner.
516
517 GC0712      05 LINE 21 COL 01          VALUE LD-Vert-Line.
518          05          COL 80          VALUE LD-Vert-Line.
519
520 GC0712      05 LINE 22 COL 01          VALUE LD-Vert-Line.
521          05          COL 80          VALUE LD-Vert-Line.
522
523 GC0712      05 LINE 23 COL 01          VALUE LD-LL-Corner.
524 GC0712      05          COL 02 PIC X(78) FROM WS-Horizontal-Line-TXT.
525          05          COL 80          VALUE LD-LR-Corner.
526      *>
527      *> TOP AND BOTTOM LINES
528      *>
529 GC0712      03 BACKGROUND-COLOR COB-COLOR-BLUE
530          FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
531 GC0410      05 LINE 01 COL 01 VALUE ' GCic ('.
532 GC0410      05          COL 08 PIC X(16) FROM WS-OC-Compile-DT.
533 GC1213      05          COL 24 VALUE ') GNU COBOL 2.1 23NOV2013 ' &
534 GC0410          'Interactive Compilation          '.
535 GC0712      03 BACKGROUND-COLOR COB-COLOR-RED BLINK
536 GC0712      FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
537 GC0712      05 LINE 24 COL 01 PIC X(80) FROM WS-Output-Msg-TXT.
538      *>
539      *> LABELS
540      *>
541          03 BACKGROUND-COLOR COB-COLOR-BLACK
542          FOREGROUND-COLOR COB-COLOR-CYAN HIGHLIGHT.
543 GC0712      05 LINE 06 COL 02 VALUE 'Set/Clr Switches Via F1-F9; ' &
544 GC0712          'Set Config Via F12; Enter Key ' &
545 GC0712          'Compiles; Esc Quits'.
546 GC0712      05 LINE 14 COL 02 VALUE 'Extra "cobc" Switches, If Any ' &
547 GC0712          '("-save-temps=xxx" Prevents ' &
548 GC0712          'Listings):'.
549 GC0712      05 LINE 19 COL 02 VALUE 'Program Execution Arguments, ' &
550 GC0712          'If Any:'.
551 GC0712      03 BACKGROUND-COLOR COB-COLOR-BLACK
552 GC0712      FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
553 GC0712      05 LINE 06 COL 23 VALUE 'F1'.
554 GC0712      05          COL 26 VALUE 'F9'.
555 GC0712      05          COL 45 VALUE 'F12'.
=====

```

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```

=====
556 GC0712      05          COL 50 VALUE 'ENTER'.
557 GC0712      05          COL 70 VALUE 'ESC'.
558             *>
559             *> TOP SECTION BACKGROUND
560             *>
561             03 BACKGROUND-COLOR COB-COLOR-BLACK
562             FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
563 GC0712      05 LINE 03 COL 62 VALUE 'Enter'.
564 GC0712      05 LINE 04 COL 62 VALUE 'Esc'.
565
566             03 BACKGROUND-COLOR COB-COLOR-BLACK
567             FOREGROUND-COLOR COB-COLOR-GREEN HIGHLIGHT.
568 GC0712      05 LINE 04 COL 03 VALUE 'Folder:  '.
569 GC0712      05 LINE 03 COL 03 VALUE 'Filename: '.
570
571 GC0712      05 LINE 03 COL 67 VALUE ': Compile  '.
572 GC0712      05 LINE 04 COL 65 VALUE ':   Quit    '.
573             *>
574             *> TOP SECTION PROGRAM INFO
575             *>
576             03 BACKGROUND-COLOR COB-COLOR-BLACK
577             FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
578 GC0712      05 LINE 03 COL 13 PIC X(66) FROM WS-Prog-File-Name-TXT.
579 GC0712      05 LINE 04 COL 13 PIC X(66) FROM WS-Prog-Folder-TXT.
580             *>
581             *> MIDDLE LEFT SECTION F-KEYS
582             *>
583             03 BACKGROUND-COLOR COB-COLOR-BLACK
584             FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
585 GC0712      05 LINE 08 COL 03 VALUE 'F1'.
586 GC0712      05 LINE 09 COL 03 VALUE 'F2'.
587 GC0712      05 LINE 10 COL 03 VALUE 'F3'.
588 GC0712      05 LINE 11 COL 03 VALUE 'F4'.
589 GC0712      05 LINE 12 COL 03 VALUE 'F5'.
590
591 GC0712      05 LINE 08 COL 35 VALUE 'F6'.
592 GC0712      05 LINE 09 COL 35 VALUE 'F7'.
593 GC0712      05 LINE 10 COL 35 VALUE 'F8'.
594 GC0712      05 LINE 11 COL 35 VALUE 'F9'.
595             *>
596             *> MIDDLE LEFT SECTION SWITCHES
597             *>
598             03 BACKGROUND-COLOR COB-COLOR-BLACK
599             FOREGROUND-COLOR COB-COLOR-RED   HIGHLIGHT.
600 GC0712      05 LINE 08 COL 06 PIC X(1) FROM WS-CS-DEBUG-CHR.
601 GC0712      05 LINE 09 COL 06 PIC X(1) FROM WS-CS-TRACEALL-CHR.
602 GC0712      05 LINE 10 COL 06 PIC X(1) FROM WS-CS-LIBRARY-CHR.
603 GC0712      05 LINE 11 COL 06 PIC X(1) FROM WS-CS-EXECUTE-CHR.
604 GC0712      05 LINE 12 COL 06 PIC X(1) FROM WS-CS-LISTING-CHR.
=====

```

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```

=====
605
606 GC0712      05 LINE 08 COL 38 PIC X(1) FROM WS-CS-NOFUNC-CHR.
607 GC0712      05 LINE 09 COL 38 PIC X(1) FROM WS-CS-WARNALL-CHR.
608 GC0712      05 LINE 10 COL 38 PIC X(1) FROM WS-CS-FREE-CHR.
609 GC0712      05 LINE 11 COL 38 PIC X(1) FROM WS-CS-NOTRUNC-CHR.
610      *>
611      *> MIDDLE LEFT SECTION BACKGROUND
612      *>
613      03 BACKGROUND-COLOR COB-COLOR-BLACK
614      FOREGROUND-COLOR COB-COLOR-GREEN HIGHLIGHT.
615 GC0712      05 LINE 08 COL 07 VALUE 'Assume WITH DEBUGGING MODE'.
616 GC0712      05 LINE 09 COL 07 VALUE 'Procedure+Statement Trace '.
617 GC0712      05 LINE 10 COL 07 VALUE 'Make a Library ('.
618 GC0712      05      COL 23 VALUE WS-OS-Lib-Type-CONST.
619 GC0712      05 LINE 11 COL 07 VALUE 'Execute If Compilation OK '.
620 GC1213      05 LINE 12 COL 07 FROM WS-Listing-TXT.
621
622 GC0712      05 LINE 08 COL 39 VALUE '"FUNCTION" Is Optional '.
623 GC0712      05 LINE 09 COL 39 VALUE 'Enable All Warnings '.
624 GC0712      05 LINE 10 COL 39 VALUE 'Source Is Free-Format '.
625 GC0712      05 LINE 11 COL 39 VALUE 'No COMP/BINARY Truncation '.
626      *>
627      *> MIDDLE RIGHT SECTION Text
628      *>
629      03 BACKGROUND-COLOR COB-COLOR-BLACK
630      FOREGROUND-COLOR COB-COLOR-GREEN HIGHLIGHT.
631 GC0712      05 LINE 08 COL 69 VALUE 'Current'.
632 GC0712      05 LINE 09 COL 69 VALUE 'Config:'.
633      *>
634      *> MIDDLE RIGHT SECTION CONFIG FILE
635      *>
636      03 BACKGROUND-COLOR COB-COLOR-BLACK
637      FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
638 GC0712      05 LINE 10 COL 69 PIC X(10)
639 GC0712      FROM WS-CS-Filename-TXT (WS-CS-Config-NUM).
640      *>
641      *> FREE-FORM OPTIONS FIELDS
642      *>
643      03 BACKGROUND-COLOR COB-COLOR-BLACK
644      FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
645 GC0712      05 LINE 16 COL 03 PIC X(76) USING WS-CS-Extra-H1-TXT.
646 GC0712      05 LINE 17 COL 03 PIC X(76) USING WS-CS-Extra-H2-TXT.
647 GC0712      05 LINE 21 COL 03 PIC X(76) USING WS-CS-Arg-H1-TXT.
648 GC0712      05 LINE 22 COL 03 PIC X(76) USING WS-CS-Arg-H2-TXT.
=====

```

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=====
650      PROCEDURE DIVISION.
651      *>*****
652      *> Legend to procedure names:
653      *>
654      *> 00x-xxx    All MAIN driver procedures
655      *> 0xx-xxx    All GLOBAL UTILITY procedures
656      *> 1xx-xxx    All INITIALIZATION procedures
657      *> 2xx-xxx    All CORE PROCESSING procedures
658      *> 9xx-xxx    All TERMINATION procedures
659      *>*****
660      DECLARATIVES.
661      000-File-Error SECTION.
662      USE AFTER STANDARD ERROR PROCEDURE ON F-Source-Code-FILE.
663      COPY FileStat-Msgs
664      REPLACING STATUS BY WS-FSM-Status-CD
665      MSG      BY WS-FSM-Msg-TXT.

      EVALUATE WS-FSM-Status-CD
      WHEN 00 MOVE 'SUCCESS'                ' TO WS-FSM-Msg-TXT
      WHEN 02 MOVE 'SUCCESS DUPLICATE'      ' TO WS-FSM-Msg-TXT
      WHEN 04 MOVE 'SUCCESS INCOMPLETE'     ' TO WS-FSM-Msg-TXT
      WHEN 05 MOVE 'SUCCESS OPTIONAL'       ' TO WS-FSM-Msg-TXT
      WHEN 07 MOVE 'SUCCESS NO UNIT'        ' TO WS-FSM-Msg-TXT
      WHEN 10 MOVE 'END OF FILE'            ' TO WS-FSM-Msg-TXT
      WHEN 14 MOVE 'OUT OF KEY RANGE'       ' TO WS-FSM-Msg-TXT
      WHEN 21 MOVE 'KEY INVALID'            ' TO WS-FSM-Msg-TXT
      WHEN 22 MOVE 'KEY EXISTS'             ' TO WS-FSM-Msg-TXT
      WHEN 23 MOVE 'KEY NOT EXISTS'        ' TO WS-FSM-Msg-TXT
      WHEN 30 MOVE 'PERMANENT ERROR'        ' TO WS-FSM-Msg-TXT
      WHEN 31 MOVE 'INCONSISTENT FILENAME'  ' TO WS-FSM-Msg-TXT
      WHEN 34 MOVE 'BOUNDARY VIOLATION'     ' TO WS-FSM-Msg-TXT
      WHEN 35 MOVE 'FILE NOT FOUND'        ' TO WS-FSM-Msg-TXT
      WHEN 37 MOVE 'PERMISSION DENIED'      ' TO WS-FSM-Msg-TXT
      WHEN 38 MOVE 'CLOSED WITH LOCK'       ' TO WS-FSM-Msg-TXT
      WHEN 39 MOVE 'CONFLICT ATTRIBUTE'     ' TO WS-FSM-Msg-TXT
      WHEN 41 MOVE 'ALREADY OPEN'          ' TO WS-FSM-Msg-TXT
      WHEN 42 MOVE 'NOT OPEN'              ' TO WS-FSM-Msg-TXT
      WHEN 43 MOVE 'READ NOT DONE'         ' TO WS-FSM-Msg-TXT
      WHEN 44 MOVE 'RECORD OVERFLOW'       ' TO WS-FSM-Msg-TXT
      WHEN 46 MOVE 'READ ERROR'            ' TO WS-FSM-Msg-TXT
      WHEN 47 MOVE 'INPUT DENIED'          ' TO WS-FSM-Msg-TXT
      WHEN 48 MOVE 'OUTPUT DENIED'         ' TO WS-FSM-Msg-TXT
      WHEN 49 MOVE 'I/O DENIED'            ' TO WS-FSM-Msg-TXT
      WHEN 51 MOVE 'RECORD LOCKED'         ' TO WS-FSM-Msg-TXT
      WHEN 52 MOVE 'END-OF-PAGE'           ' TO WS-FSM-Msg-TXT
      WHEN 57 MOVE 'I/O LINAGE'            ' TO WS-FSM-Msg-TXT
      WHEN 61 MOVE 'FILE SHARING FAILURE'  ' TO WS-FSM-Msg-TXT
      WHEN 91 MOVE 'FILE NOT AVAILABLE'    ' TO WS-FSM-Msg-TXT
      END-EVALUATE.
=====

```

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```

=====
666          MOVE SPACES TO WS-Output-Msg-TXT
667          IF WS-FSM-Status-CD = 35
668              DISPLAY
669                  'File not found: "'
670                  TRIM(WS-File-Name-TXT,TRAILING)
671                  ','
672          ELSE
673              DISPLAY
674                  'Error accessing file: "'
675                  TRIM(WS-File-Name-TXT,TRAILING)
676                  ','
677          END-IF
678          GOBACK
679          .
680      END DECLARATIVES.
681
682      000-Main SECTION.
683          PERFORM 100-Initialization
684 GC0609      SET WS-RS-Not-Complete-BOOL TO TRUE
685 GC0609      PERFORM UNTIL WS-RS-Complete-BOOL
686 GC0609          PERFORM 200-Let-User-Set-Switches
687 GC0609          PERFORM 210-Run-Compiler
688 GC0410          IF (WS-RS-Compile-OK-BOOL OR WS-RS-Compile-OK-Warn-BOOL)
689 GC0712              AND (WS-CS-LISTING-CHR > SPACE)
690 GC0712                  DISPLAY S-Blank-SCR
691 GC0410                  PERFORM 220-Make-Listing
692 GC0410          END-IF
693 GC0709          IF (WS-CS-EXECUTE-CHR NOT = SPACES)
694 GC0709              AND (WS-RS-Output-File-Avail-BOOL)
695 GC0609                  PERFORM 230-Run-Program
696 GC0609          END-IF
697 GC0712          PERFORM 250-Autoload-Listing
698 GC0609      END-PERFORM
699          PERFORM 900-Terminate
700      * -- Control will NOT return
701          .
=====

```

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```

=====
703      *>*****
704      *> Perform all program-wide initialization operations      **
705      *>*****
706      100-Initialization SECTION.
707      *>*****
708      *> Make sure full screen-handling is in effect          **
709      *>*****
710      SET ENVIRONMENT 'COB_SCREEN_EXCEPTIONS' TO 'Y'
711      SET ENVIRONMENT 'COB_SCREEN_ESC' TO 'Y'
712      *>*****
713      *> Get GCic Compilation Date/Time                        **
714      *>*****
715      MOVE WHEN-COMPILED (1:12) TO WS-OC-Compile-DT
716      INSPECT WS-OC-Compile-DT
717      REPLACING ALL '/' BY ':'
718      AFTER INITIAL SPACE
719      *>*****
720      *> Convert WS-CS-All-Switches-TXT to Needed Alphanumeric Values**
721      *>*****
722      INSPECT WS-CS-All-Switches-TXT
723      REPLACING ALL '0' BY SPACE
724      ALL '1' BY SELCHAR
725 GC1213    ALL '2' BY SELCHAR
726      *>*****
727      *> Process filename (the only command-line argument)    **
728      *>*****
729 GC0712    ACCEPT WS-Cmd-Args-TXT FROM COMMAND-LINE
730 GC0712    MOVE 1 TO WS-Cmd-SUB
731 GC0712    IF WS-Cmd-Args-TXT(WS-Cmd-SUB:1) = '"' OR '"'
732 GC0712    MOVE WS-Cmd-Args-TXT(WS-Cmd-SUB:1)
733 GC0712    TO WS-Cmd-End-Quote-CHR
734 GC0712    ADD 1 TO WS-Cmd-SUB
735 GC0712    UNSTRING WS-Cmd-Args-TXT
736 GC0712    DELIMITED BY WS-Cmd-End-Quote-CHR
737 GC0712    INTO WS-File-Name-TXT
738 GC0712    WITH POINTER WS-Cmd-SUB
739 GC0712    ELSE
740 GC0712    UNSTRING WS-Cmd-Args-TXT
741 GC0712    DELIMITED BY ALL SPACES
742 GC0712    INTO WS-File-Name-TXT
743 GC0712    WITH POINTER WS-Cmd-SUB
744 GC0712    END-IF
745      IF WS-File-Name-TXT = SPACES
746 GC0712    DISPLAY 'No program filename was specified'
747      PERFORM 900-Terminate
748      * ----- Control will NOT return
749      END-IF
750      *>*****
=====

```

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```

=====
751      *> Determine if 'Make A Library' feature should be forced 'ON' **
752      *>*****
753      PERFORM 240-Find-LINKAGE-SECTION
754      *>*****
755      *> Split 'WS-File-Name-TXT' into 'WS-Prog-Folder-TXT' and **
756      *> 'WS-Prog-File-Name-TXT' **
757      *>*****
758 GC0909      IF WS-OS-Cygwin-BOOL AND WS-File-Name-TXT (2:1) = ':'
759 GC0712      MOVE '\' TO WS-OS-Dir-CHR
760 GC0909      END-IF
761 GC0712      MOVE LENGTH(WS-File-Name-TXT) TO WS-I-SUB
762 GC0712      PERFORM UNTIL WS-I-SUB = 0
763 GC0712      OR WS-FN-CHR (WS-I-SUB) = WS-OS-Dir-CHR
764      SUBTRACT 1 FROM WS-I-SUB
765      END-PERFORM
766      IF WS-I-SUB = 0
767      MOVE SPACES TO WS-Prog-Folder-TXT
768      MOVE WS-File-Name-TXT TO WS-Prog-File-Name-TXT
769      ELSE
770      MOVE '*' TO WS-FN-CHR (WS-I-SUB)
771      UNSTRING WS-File-Name-TXT DELIMITED BY '*'
772      INTO WS-Prog-Folder-TXT
773      WS-Prog-File-Name-TXT
774 GC0712      MOVE WS-OS-Dir-CHR TO WS-FN-CHR (WS-I-SUB)
775      END-IF
776      IF WS-Prog-Folder-TXT = SPACES
777      ACCEPT WS-Prog-Folder-TXT FROM ENVIRONMENT 'CD'
778 GC0909      ELSE
779 GC0909      CALL 'CBL_CHANGE_DIR'
780 GC0909      USING TRIM(WS-Prog-Folder-TXT,TRAILING)
781      END-IF
782 GC0909      IF WS-OS-Cygwin-BOOL AND WS-File-Name-TXT (2:1) = ':'
783 GC0712      MOVE '/' TO WS-OS-Dir-CHR
784 GC0909      END-IF
785      *>*****
786      *> Split 'WS-Prog-File-Name-TXT' into 'WS-Pgm-Nm-TXT' & **
787      *> 'WS-Prog-Extension-TXT' **
788      *>*****
789 GC0712      MOVE LENGTH(WS-Prog-File-Name-TXT) TO WS-I-SUB
790 GC0712      PERFORM UNTIL WS-I-SUB = 0
791 GC0712      OR WS-PFN-CHR (WS-I-SUB) = '.'
792 GC0712      SUBTRACT 1 FROM WS-I-SUB
793 GC0712      END-PERFORM
794 GC0712      IF WS-I-SUB = 0
795 GC0712      MOVE WS-Prog-File-Name-TXT TO WS-Pgm-Nm-TXT
796 GC0712      MOVE SPACES TO WS-Prog-Extension-TXT
797 GC0712      ELSE
798 GC0712      MOVE '*' TO WS-PFN-CHR (WS-I-SUB)
799 GC0712      UNSTRING WS-Prog-File-Name-TXT DELIMITED BY '*'
=====

```

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```

=====
800 GC0712          INTO WS-Pgm-Nm-TXT
801 GC0712          WS-Prog-Extension-TXT
802 GC0712          MOVE '.' TO WS-PFN-CHR (WS-I-SUB)
803 GC0712          END-IF
804                *>*****
805                *> Build initial Line 24 Message                **
806                *>*****
807 GC0909          MOVE ALL LD-Horiz-Line TO WS-Horizontal-Line-TXT.
808 GC0410          MOVE CONCATENATE(' GCic for '
809 GC0410          TRIM(WS-OS-Type-TXT(WS-OS-Type-CD),Trailing)
810 GC1213          ' Copyright (C) 2009-2014, Gary L. '
811 GC0410          'Cutler, GPL')
812 GC0410          TO WS-Output-Msg-TXT.
813 GC0909          .
=====

```

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```

=====
815      *>*****
816      *> Show the user the current switch settings and allow them to **
817      *> be changed.                                           **
818      *>*****
819      200-Let-User-Set-Switches SECTION.
820          SET WS-RS-Switch-Changes-BOOL TO TRUE
821          PERFORM UNTIL WS-RS-No-Switch-Changes-BOOL
822 GC1213      EVALUATE WS-Listing-CD
823 GC1213      WHEN 0
824 GC1213          MOVE 'Listing Off'                TO WS-Listing-TXT
825 GC1213          MOVE SPACE                        TO WS-CS-LISTING-CHR
826 GC1213      WHEN 1
827 GC1213          MOVE 'Listing On (Landscape)' TO WS-Listing-TXT
828 GC1213          MOVE SELCHAR                    TO WS-CS-LISTING-CHR
829 GC1213      WHEN 2
830 GC1213          MOVE 'Listing On (Portrait)' TO WS-Listing-TXT
831 GC1213          MOVE SELCHAR                    TO WS-CS-LISTING-CHR
832 GC1213      END-EVALUATE
833      ACCEPT S-Switches-SCR
834      IF COB-CRT-STATUS > 0
835          EVALUATE COB-CRT-STATUS
836              WHEN COB-SCR-F1
837                  IF WS-CS-DEBUG-CHR = SPACE
838 GC0712      MOVE SELCHAR TO WS-CS-DEBUG-CHR
839                  ELSE
840                      MOVE ' ' TO WS-CS-DEBUG-CHR
841                  END-IF
842 GC0712      WHEN COB-SCR-F2
843 GC0712      IF WS-CS-TRACEALL-CHR = SPACE
844 GC0712      MOVE SELCHAR TO WS-CS-TRACEALL-CHR
845 GC0712      ELSE
846 GC0712      MOVE ' ' TO WS-CS-TRACEALL-CHR
847 GC0712      END-IF
848      WHEN COB-SCR-F3
849 GC0712      IF WS-CS-LIBRARY-CHR = SPACE
850 GC0712      MOVE SELCHAR TO WS-CS-LIBRARY-CHR
851      ELSE
852 GC0712      MOVE ' ' TO WS-CS-LIBRARY-CHR
853      END-IF
854      WHEN COB-SCR-F4
855      IF WS-CS-EXECUTE-CHR = SPACE
856 GC0712      MOVE SELCHAR TO WS-CS-EXECUTE-CHR
857      ELSE
858          MOVE ' ' TO WS-CS-EXECUTE-CHR
859      END-IF
860 GC0712      WHEN COB-SCR-F5
861 GC1213      ADD 1 TO WS-Listing-CD
862 GC1213      IF WS-Listing-CD > 2
=====

```

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```

=====
863 GC1213             MOVE 0 TO WS-Listing-CD
864 GC1213             END-IF
865 GC0712             WHEN COB-SCR-F6
866 GC0712                 IF WS-CS-NOFUNC-CHR = SPACE
867 GC0712                 MOVE SELCHAR TO WS-CS-NOFUNC-CHR
868 GC0712                 ELSE
869 GC0712                 MOVE ' ' TO WS-CS-NOFUNC-CHR
870 GC0712                 END-IF
871 GC0712             WHEN COB-SCR-F7
872 GC0712                 IF WS-CS-WARNALL-CHR = SPACE
873 GC0712                 MOVE SELCHAR TO WS-CS-WARNALL-CHR
874 GC0712                 ELSE
875 GC0712                 MOVE ' ' TO WS-CS-WARNALL-CHR
876 GC0712                 END-IF
877 GC0712             WHEN COB-SCR-F8
878 GC0712                 IF WS-CS-FREE-CHR = SPACE
879 GC0712                 MOVE SELCHAR TO WS-CS-FREE-CHR
880 GC0712                 ELSE
881 GC0712                 MOVE ' ' TO WS-CS-FREE-CHR
882 GC0712                 END-IF
883 GC0712             WHEN COB-SCR-F9
884 GC0712                 IF WS-CS-NOTRUNC-CHR = SPACE
885 GC0712                 MOVE SELCHAR TO WS-CS-NOTRUNC-CHR
886 GC0712                 ELSE
887 GC0712                 MOVE ' ' TO WS-CS-NOTRUNC-CHR
888 GC0712                 END-IF
889                     WHEN COB-SCR-ESC
890                     PERFORM 900-Terminate
891 * ----- Control will NOT return
892 GC0712             WHEN COB-SCR-F12
893 GC0712                 ADD 1 TO WS-CS-Config-NUM
894 GC0712                 IF WS-CS-Config-NUM > 7
895 GC0712                 MOVE 1 TO WS-CS-Config-NUM
896 GC0712                 END-IF
897                     WHEN OTHER
898                     MOVE 'An unsupported key was pressed'
899                     TO WS-Output-Msg-TXT
900                     END-EVALUATE
901                     ELSE
902                     SET WS-RS-No-Switch-Changes-BOOL TO TRUE
903                     END-IF
904                     END-PERFORM
905                     .
=====

```

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```

=====
907      *>*****
908      *> Run the compiler using the switch settings we've prepared.  **
909      *>*****
910      210-Run-Compiler SECTION.
911          MOVE SPACES TO WS-Cmd-TXT
912                      WS-Cobc-Cmd-TXT
913                      WS-Output-Msg-TXT
914      DISPLAY S-Switches-SCR
915      MOVE 1 TO WS-I-SUB
916 GC0712      MOVE LOWER-CASE(WS-CS-Filename-TXT (WS-CS-Config-NUM))
917 GC0712      TO WS-Config-Fn-TXT
918      *>*****
919      *> Build the 'cobc' command **
920      *>*****
921 GC0909      MOVE SPACES TO WS-Cobc-Cmd-TXT
922 GC0909      STRING 'cobc -v -std='
923 GC0909          TRIM(WS-Config-Fn-TXT,TRAILING)
924 GC0909          ' '
925 GC0909      INTO WS-Cobc-Cmd-TXT
926 GC0909      WITH POINTER WS-I-SUB
927      IF WS-CS-LIBRARY-CHR NOT = ' '
928          STRING '-m '
929          DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
930          WITH POINTER WS-I-SUB
931      ELSE
932          STRING '-x '
933          DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
934          WITH POINTER WS-I-SUB
935      END-IF
936      IF WS-CS-DEBUG-CHR NOT = ' '
937          STRING '-fdebugging-line '
938          DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
939          WITH POINTER WS-I-SUB
940      END-IF
941      IF WS-CS-NOTRUNC-CHR NOT = ' '
942          STRING '-fnotrunc '
943          DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
944          WITH POINTER WS-I-SUB
945      END-IF
946      IF WS-CS-TRACEALL-CHR NOT = ' '
947 GC0809      STRING '-ftraceall '
948          DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
949          WITH POINTER WS-I-SUB
950      END-IF
951 GC0712      IF WS-CS-NOFUNC-CHR NOT = ' '
952 GC0712      STRING '-fintrinsic=all '
953 GC0712      DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
954 GC0712      WITH POINTER WS-I-SUB
=====

```

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```

=====
955 GC0712      END-IF
956 GC0712      IF WS-CS-WARNALL-CHR NOT = ' '
957 GC0712          STRING '-Wall '
958 GC0712          DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
959 GC0712          WITH POINTER WS-I-SUB
960 GC0712      END-IF
961 GC0712      IF WS-CS-FREE-CHR NOT = ' '
962 GC0712          STRING '-free '
963 GC0712          DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
964 GC0712          WITH POINTER WS-I-SUB
965 GC0712      ELSE
966 GC0712          STRING '-fixed '
967 GC0712          DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
968 GC0712          WITH POINTER WS-I-SUB
969 GC0712      END-IF
970
971 GC0712      MOVE 0 TO WS-Tally-QTY
972 GC0712      INSPECT WS-CS-Extra-TXT
973 GC0712          TALLYING WS-Tally-QTY FOR ALL '-save-temps'
974 GC0712      IF WS-CS-LISTING-CHR > SPACE
975 GC0712      AND WS-Tally-QTY > 0
976 GC0712          MOVE SPACE TO WS-CS-LISTING-CHR *> Can't generate listing if -save-temps u
sed
977 GC0712      END-IF
978 GC0712      IF WS-CS-LISTING-CHR > SPACE
979 GC1010          STRING '-save-temps '
980 GC1010          DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
981 GC1010          WITH POINTER WS-I-SUB
982 GC1010      END-IF
983
984 GC0709      IF WS-CS-Extra-TXT > SPACES
985 GC0709          STRING ' '
986 GC0709          TRIM(WS-CS-Extra-TXT,TRAILING)
987 GC0709          ' '
988 GC0709          DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
989 GC0709          WITH POINTER WS-I-SUB
990 GC0709      END-IF
991 GC0909      STRING TRIM(WS-Prog-File-Name-TXT,TRAILING)
992 GC0909          DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
993 GC0909          WITH POINTER WS-I-SUB
994      *>*****
995      *> Prepare the compilation listing file      **
996      *>*****
997 GC1113      MOVE CONCATENATE(TRIM(WS-Pgm-Nm-TXT,Trailing),'.gclst')
998 GC0712          TO WS-Listing-Filename-TXT
999 GC0712      CALL 'CBL_DELETE_FILE' USING WS-Listing-Filename-TXT
1000      *>*****
1001      *> Now execute the 'cobc' command      **
1002      *>*****
=====

```

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```

=====
1003 GC0410      MOVE ' Compiling...' TO WS-Output-Msg-TXT
1004 GC0410      DISPLAY S-Switches-SCR
1005 GC0609      SET WS-RS-Output-File-Avail-BOOL TO TRUE
1006             MOVE SPACES TO WS-Cmd-TXT
1007             STRING TRIM(WS-Cobc-Cmd-TXT,TRAILING)
1008 GC0712             ' >' WS-Listing-Filename-TXT
1009 GC0712             ' 2>&1'
1010             DELIMITED SIZE
1011             INTO WS-Cmd-TXT
1012 DEBUG D      DISPLAY WS-Cmd-TXT UPON SYSERR
1013             CALL 'SYSTEM' USING TRIM(WS-Cmd-TXT,TRAILING)
1014 GC0712      OPEN EXTEND F-Cobc-Output-FILE
1015 GC0712      WRITE F-Cobc-Output-REC FROM SPACES
1016 GC0712      IF RETURN-CODE = 0
1017 GC0712          SET WS-RS-Compile-OK-BOOL TO TRUE
1018 GC0712          MOVE ' Compilation Was Successful' TO WS-Output-Msg-TXT
1019 GC0712          MOVE CONCATENATE('GNU COBOL',WS-Output-Msg-TXT)
1020 GC0712              TO F-Cobc-Output-REC
1021 GC0712          WRITE F-Cobc-Output-REC
1022 GC0712          SET WS-RS-Complete-BOOL TO TRUE
1023 GC0712      ELSE
1024 GC0712          SET WS-RS-Compile-Failed-BOOL TO TRUE
1025 GC0712          MOVE CONCATENATE(' Compilation Failed - See ',
1026 GC0712              TRIM(WS-Listing-Filename-TXT,Trailing))
1027 GC0712              TO WS-Output-Msg-TXT
1028 GC0712          MOVE 'GNU COBOL Compilation HAS FAILED - See Above'
1029 GC0712              TO F-Cobc-Output-REC
1030 GC0712          WRITE F-Cobc-Output-REC
1031 GC0712      END-IF
1032 GC0712      CLOSE F-Cobc-Output-FILE
1033 GC0712      DISPLAY S-Switches-SCR
1034 GC0712      CALL 'C$SLEEP' USING 2
1035 GC0712      MOVE SPACES TO WS-Output-Msg-TXT
1036      IF WS-RS-Compile-Failed-BOOL
1037 GC0712          PERFORM 250-Autoload-Listing
1038          PERFORM 900-Terminate
1039      *> ----- Control will not return
1040      END-IF
1041      .
=====

```

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```

=====
1043      *>*****
1044      *> Generate a source + xref listing using 'LISTING' subroutine **
1045      *>*****
1046 GC0410 220-Make-Listing SECTION.
1047 GC0410     MOVE ' Generating listing...' TO WS-Output-Msg-TXT
1048 GC0410     DISPLAY S-Switches-SCR
1049 GC0410     MOVE 0 TO RETURN-CODE
1050      *>*****
1051      *> Create the listing **
1052      *>*****
1053 GC0410     MOVE SPACES TO WS-Output-Msg-TXT
1054 GC0410     CALL 'LISTING' USING WS-Listing-Filename-TXT
1055 GC0712                                     WS-File-Name-TXT
1056 GC0712                                     WS-OS-Type-CD
1057 GC1213                                     LPP
1058 GC1213                                     LPPP
1059 GC1213                                     WS-Listing-CD
1060 GC0410     ON EXCEPTION
1061 GC0410         MOVE ' LISTING module is not available'
1062 GC0410             TO WS-Output-Msg-TXT
1063 GC0410         MOVE 1 TO RETURN-CODE
1064 GC0410     END-CALL
1065 GC0410     IF RETURN-CODE = 0
1066 GC0712         MOVE ' Source+Xref listing generated '
1067 GC0712             TO WS-Output-Msg-TXT
1068 GC0410     END-IF
1069 GC0712     DISPLAY S-Switches-SCR
1070 GC0712     CALL 'C$SLEEP' USING 2
1071 GC0712     PERFORM 250-Autoload-Listing
1072 GC0410     .
=====

```

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```

=====
1074      *>*****
1075      *> Run the compiled program                      **
1076      *>*****
1077      230-Run-Program SECTION.
1078 GC0114      MOVE ' Preparing to run program ... press ENTER to close '
1079 GC0114      TO WS-Output-Msg-TXT
1080 GC0114      DISPLAY S-Switches-SCR
1081 GC0114      CALL 'C$SLEEP' USING 3
1082 GC0909      MOVE SPACES TO WS-Cmd-TXT
1083 GC0909      MOVE 1 TO WS-I-SUB
1084      *>*****
1085      *> If necessary, start with 'cobcrun' command          **
1086      *>*****
1087 GC0712      IF WS-CS-LIBRARY-CHR NOT = ' '
1088              STRING 'cobcrun ' DELIMITED SIZE
1089              INTO WS-Cmd-TXT
1090              WITH POINTER WS-I-SUB
1091      END-IF
1092      *>*****
1093      *> Add any necessary path prefix                      **
1094      *>*****
1095 GC0712      SET WS-RS-Double-Quote-Used-BOOL TO FALSE
1096      IF WS-Prog-Folder-TXT NOT = SPACES
1097 GC0909      IF WS-OS-Cygwin-BOOL AND WS-Prog-Folder-TXT (2:1) = ':'
1098 GC0909      STRING '/cygdrive/'
1099 GC0909      INTO WS-Cmd-TXT
1100 GC0909      WITH POINTER WS-I-SUB
1101 GC0909      STRING LOWER-CASE(WS-Prog-Folder-TXT (1:1))
1102 GC0909      INTO WS-Cmd-TXT
1103 GC0909      WITH POINTER WS-I-SUB
1104 GC0909      PERFORM
1105 GC0909      VARYING WS-J-SUB FROM 3 BY 1
1106 GC0909      UNTIL WS-J-SUB > LENGTH(TRIM(WS-Prog-Folder-TXT))
1107 GC0909      IF WS-Prog-Folder-TXT (WS-J-SUB:1) = '\'
1108 GC0909      STRING '/'
1109 GC0909      INTO WS-Cmd-TXT
1110 GC0909      WITH POINTER WS-I-SUB
1111 GC0909      ELSE
1112 GC0909      STRING WS-Prog-Folder-TXT (WS-J-SUB:1)
1113 GC0909      INTO WS-Cmd-TXT
1114 GC0909      WITH POINTER WS-I-SUB
1115 GC0909      END-IF
1116 GC0909      END-PERFORM
1117 GC0909      ELSE
1118 GC0410      STRING '' TRIM(WS-Prog-Folder-TXT,TRAILING)
1119 GC0909      INTO WS-Cmd-TXT
1120 GC0909      WITH POINTER WS-I-SUB
1121 GC0712      SET WS-RS-Double-Quote-Used-BOOL TO TRUE
=====

```

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```

=====
1122 GC0909      END-IF
1123 GC0712      STRING WS-OS-Dir-CHR
1124 GC0909      INTO WS-Cmd-TXT
1125 GC0909      WITH POINTER WS-I-SUB
1126 GC0909      ELSE
1127 GC0909      IF WS-OS-Cygwin-BOOL OR WS-OS-UNIX-BOOL
1128 GC0909      STRING './'
1129 GC0909      INTO WS-Cmd-TXT
1130 GC0909      WITH POINTER WS-I-SUB
1131 GC0909      END-IF
1132      END-IF
1133      *>*****
1134      *> Insert program filename **
1135      *>*****
1136 GC0909      STRING TRIM(WS-Pgm-Nm-TXT,TRAILING)
1137 GC0909      INTO WS-Cmd-TXT
1138 GC0909      WITH POINTER WS-I-SUB
1139      *>*****
1140      *> Insert proper extension **
1141      *>*****
1142 GC0712      IF WS-CS-LIBRARY-CHR = ' '
1143 GC0712      IF WS-OS-Exe-Ext-CONST > ' '
1144 GC0712      STRING WS-OS-Exe-Ext-CONST DELIMITED SPACE
1145 GC0712      INTO WS-Cmd-TXT
1146 GC0712      WITH POINTER WS-I-SUB
1147 GC0712      END-IF
1148 GC0712      ELSE
1149 GC0712      IF WS-OS-Lib-Ext-CONST > ' '
1150 GC0712      STRING WS-OS-Lib-Ext-CONST DELIMITED SPACE
1151 GC0712      INTO WS-Cmd-TXT
1152 GC0712      WITH POINTER WS-I-SUB
1153 GC0712      END-IF
1154 GC0712      END-IF
1155 GC0712      IF WS-RS-Double-Quote-Used-BOOL
1156 GC0712      STRING ''' DELIMITED SIZE
1157 GC0712      INTO WS-Cmd-TXT
1158 GC0712      WITH POINTER WS-I-SUB
1159 GC0712      END-IF
1160      IF WS-CS-Args-TXT NOT = SPACES
1161 GC0809      STRING ' ' TRIM(WS-CS-Args-TXT,TRAILING)
1162      INTO WS-Cmd-TXT
1163      WITH POINTER WS-I-SUB
1164      END-IF
1165      *>*****
1166      *> Run the program **
1167      *>*****
1168 GC0114      CALL X'E4'
1169      CALL 'SYSTEM' USING TRIM(WS-Cmd-TXT,TRAILING)
1170 GC0712      MOVE SPACES TO WS-Output-Msg-TXT
=====

```

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```
=====
1171 GC0114      ACCEPT WS-Output-Msg-TXT(1:1) AT 0101
1172              PERFORM 900-Terminate
1173      * -- Control will NOT return
1174              .
```

```
=====
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```

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```

=====
1176      *>*****
1177      *> Determine if the program being compiled is a MAIN program  **
1178      *>*****
1179      240-Find-LINKAGE-SECTION SECTION.
1180          OPEN INPUT F-Source-Code-FILE
1181 GC0712      MOVE ' ' TO WS-CS-LIBRARY-CHR
1182          SET WS-RS-More-To-1st-Prog-BOOL TO TRUE
1183          PERFORM UNTIL WS-RS-1st-Prog-Complete-BOOL
1184              READ F-Source-Code-FILE AT END
1185              CLOSE F-Source-Code-FILE
1186              EXIT SECTION
1187          END-READ
1188 GC0712      CALL 'CHECKSRC'
1189 GC0712          USING BY CONTENT F-Source-Code-REC
1190 GC0712              BY REFERENCE WS-RS-Source-Record-Type-CHR
1191          IF WS-RS-Source-Rec-Ident-BOOL
1192              SET WS-RS-1st-Prog-Complete-BOOL TO TRUE
1193          END-IF
1194      END-PERFORM
1195 GC0712      SET WS-RS-Source-Rec-Ignored-BOOL TO TRUE
1196      PERFORM UNTIL WS-RS-Source-Rec-Linkage-BOOL
1197          OR WS-RS-Source-Rec-Ident-BOOL
1198          READ F-Source-Code-FILE AT END
1199          CLOSE F-Source-Code-FILE
1200          EXIT SECTION
1201      END-READ
1202 GC0712      CALL 'CHECKSRC'
1203 GC0712          USING BY CONTENT F-Source-Code-REC
1204 GC0712              BY REFERENCE WS-RS-Source-Record-Type-CHR
1205      END-PERFORM
1206      CLOSE F-Source-Code-FILE
1207      IF WS-RS-Source-Rec-Linkage-BOOL
1208 GC0712          MOVE SELCHAR TO WS-CS-LIBRARY-CHR
1209      END-IF
1210      .
=====

```

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```

1212 GC0712*>*****
1213 GC0712*> Attempt to open the listing file as a command. This will - **
1214 GC1113*> if the user has associated filetype/extension 'gclst' with **
1215 GC0712*> an application - invoke the appropriate application to **
1216 GC0712*> allow the user to view the listing. **
1217 GC0712*>*****
1218 GC0712 250-Autoload-Listing SECTION.
1219 GC0712 EVALUATE TRUE
1220 GC0712 WHEN WS-OS-Windows-BOOL OR WS-OS-Cygwin-BOOL
1221 GC0712 MOVE SPACES TO WS-Cmd-TXT
1222 GC0712 STRING
1223 GC0712 'cmd /c '
1224 GC0712 TRIM(WS-Listing-Filename-TXT,TRAILING)
1225 GC0712 DELIMITED SIZE INTO WS-Cmd-TXT
1226 GC0712 CALL 'SYSTEM' USING TRIM(WS-Cmd-TXT,TRAILING)
1227 GC0712 WHEN WS-OS-OSX-BOOL
1228 GC0712 MOVE SPACES TO WS-Cmd-TXT
1229 GC0712 STRING
1230 GC0712 'open -t '
1231 GC0712 TRIM(WS-Listing-Filename-TXT,TRAILING)
1232 GC0712 DELIMITED SIZE INTO WS-Cmd-TXT
1233 GC0712 CALL 'SYSTEM' USING TRIM(WS-Cmd-TXT,TRAILING)
1234 GC0712 END-EVALUATE
1235 GC0712*> *****
1236 GC0712*> ** Since we had to do our own '-save-temps' when we **
1237 GC0712*> ** compiled (in order to generate the cross-reference **
1238 GC0712*> ** listing) we now need to clean up after ourselves. **
1239 GC0712*> *****
1240 GC1112 DISPLAY S-Blank-SCR
1241 GC0712 IF WS-OS-Windows-BOOL
1242 GC0712 MOVE CONCATENATE('del ',TRIM(WS-Pgm-Nm-TXT,TRAILING))
1243 GC0712 TO WS-Cmd-TXT
1244 GC0712 ELSE
1245 GC0712 MOVE CONCATENATE('rm ',TRIM(WS-Pgm-Nm-TXT,TRAILING))
1246 GC0712 TO WS-Cmd-TXT
1247 GC0712 END-IF
1248 GC0712 CALL 'SYSTEM'
1249 GC0712 USING CONCATENATE(TRIM(WS-Cmd-TXT,TRAILING),'.c')
1250 GC0712 CALL 'SYSTEM'
1251 GC0712 USING CONCATENATE(TRIM(WS-Cmd-TXT,TRAILING),'.c.h')
1252 GC0712 CALL 'SYSTEM'
1253 GC0712 USING CONCATENATE(TRIM(WS-Cmd-TXT,TRAILING),'.c.l*.h')
1254 GC0712 CALL 'SYSTEM'
1255 GC0712 USING CONCATENATE(TRIM(WS-Cmd-TXT,TRAILING),'.i')
1256 GC0712 CALL 'SYSTEM'
1257 GC0712 USING CONCATENATE(TRIM(WS-Cmd-TXT,TRAILING),'.o')
1258
1259 GC0712 .

```

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```

=====
1261      *>*****
1262      *> Display a message and halt the program          **
1263      *>*****
1264      900-Terminate SECTION.
1265 GC0909      IF WS-Output-Msg-TXT > SPACES
1266 GC0909          DISPLAY S-Switches-SCR
1267 GC0909          CALL 'C$SLEEP' USING 2
1268 GC0909      END-IF
1269          DISPLAY S-Blank-SCR
1270          STOP RUN
1271          .
1272
1273      END PROGRAM GCic.
=====

```

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```

=====
1275 IDENTIFICATION DIVISION.
1276 PROGRAM-ID. CHECKSRC.
1277 *>*****
1278 *> This subprogram will scan a line of source code it is given **
1279 *> looking for 'LINKAGE SECTION' or 'IDENTIFICATION DIVISION'. **
1280 *> **
1281 *> ****NOTE**** ****NOTE**** ****NOTE**** ****NOTE**** **
1282 *> **
1283 *> These two strings must be found IN THEIR ENTIRETY within **
1284 *> the 1st 80 columns of program source records, and cannot **
1285 *> follow either a '*>' sequence OR a '*' in col 7. **
1286 *>*****
1287 *> DATE CHANGE DESCRIPTION **
1288 *> ===== **
1289 *> GC0809 Initial coding. **
1290 *>*****
1291 ENVIRONMENT DIVISION.
1292 CONFIGURATION SECTION.
1293 REPOSITORY.
1294 FUNCTION ALL INTRINSIC.
1295 DATA DIVISION.
1296 WORKING-STORAGE SECTION.
1297 01 WS-Compressed-Src-TXT.
1298 05 WS-CS-CHR OCCURS 80 TIMES
1299 PIC X(1).
1300
1301 01 WS-Runtime-Switches-TXT.
1302 05 WS-RS-Found-SPACE-CHR PIC X(1).
1303 88 WS-RS-Skipping-SPACE-BOOL VALUE 'Y'.
1304 88 WS-RS-Not-Skipping-SPACE-BOOL VALUE 'N'.
1305
1306 01 WS-I-SUB USAGE BINARY-CHAR.
1307
1308 01 WS-J-SUB USAGE BINARY-CHAR.
1309 LINKAGE SECTION.
1310 01 L-Argument-1-TXT.
1311 02 L-A1-CHR OCCURS 80 TIMES
1312 PIC X(1).
1313
1314 01 L-Argument-2-CHR PIC X(1).
1315 88 L-A2-LINKAGE-SECTION-BOOL VALUE 'L'.
1316 88 L-A2-IDENT-DIVISION-BOOL VALUE 'I'.
1317 88 L-A2-Nothing-Special-BOOL VALUE ' '.

```

```

=====
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```

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```

=====
1319 GC0712 PROCEDURE DIVISION USING BY VALUE      L-Argument-1-TXT
1320 GC0712                                     BY REFERENCE L-Argument-2-CHR.
1321      000-Main SECTION.
1322          SET L-A2-Nothing-Special-BOOL TO TRUE
1323          IF L-A1-CHR (7) = '*'
1324              GOBACK
1325          END-IF
1326      .
1327      *>
1328      *> Compress multiple consecutive spaces
1329      *>
1330          SET WS-RS-Not-Skipping-SPACE-BOOL TO TRUE
1331          MOVE 0 TO WS-J-SUB
1332          MOVE SPACES TO WS-Compressed-Src-TXT
1333          PERFORM VARYING WS-I-SUB FROM 1 BY 1
1334              UNTIL WS-I-SUB > 80
1335              IF L-A1-CHR (WS-I-SUB) = SPACE
1336                  IF WS-RS-Not-Skipping-SPACE-BOOL
1337                      ADD 1 TO WS-J-SUB
1338                      MOVE UPPER-CASE(L-A1-CHR (WS-I-SUB))
1339                      TO WS-CS-CHR (WS-J-SUB)
1340                      SET WS-RS-Skipping-SPACE-BOOL TO TRUE
1341                  END-IF
1342              ELSE
1343                  SET WS-RS-Not-Skipping-SPACE-BOOL TO TRUE
1344                  ADD 1 TO WS-J-SUB
1345                  MOVE L-A1-CHR (WS-I-SUB) TO WS-CS-CHR (WS-J-SUB)
1346              END-IF
1347          END-PERFORM
1348      *>
1349      *> Scan the compressed source line
1350      *>
1351          PERFORM VARYING WS-I-SUB FROM 1 BY 1
1352              UNTIL WS-I-SUB > 66
1353          EVALUATE TRUE
1354              WHEN WS-CS-CHR (WS-I-SUB) = '*'
1355                  IF WS-Compressed-Src-TXT (WS-I-SUB : 2) = '*>'
1356                      GOBACK
1357                  END-IF
1358              WHEN (WS-CS-CHR (WS-I-SUB) = 'L') AND (WS-I-SUB < 66)
1359                  IF WS-Compressed-Src-TXT (WS-I-SUB : 15)
1360                      = 'LINKAGE SECTION'
1361                      SET L-A2-LINKAGE-SECTION-BOOL TO TRUE
1362                      GOBACK
1363                  END-IF
1364              WHEN (WS-CS-CHR (WS-I-SUB) = 'I') AND (WS-I-SUB < 58)
1365                  IF WS-Compressed-Src-TXT (WS-I-SUB : 23)
1366                      = 'IDENTIFICATION DIVISION'
=====

```

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```

=====
1367             SET L-A2-IDENT-DIVISION-BOOL TO TRUE
1368             GOBACK
1369             END-IF
1370             END-EVALUATE
1371             END-PERFORM
1372         *>
1373         *> If we get to here, we never found anything!
1374         *>
1375 +             GOBACK
1376         .
1377         END PROGRAM CHECKSRC.
1378
1379         IDENTIFICATION DIVISION.
1380         PROGRAM-ID. LISTING.
1381         *>*****
1382         *> This subprogram generates a cross-reference listing of an **
1383         *> GNU COBOL program. **
1384         *>*****
1385         *> **
1386         *> AUTHOR:          GARY L. CUTLER **
1387         *>                Copyright (C) 2010, Gary L. Cutler, GPL **
1388         *> **
1389         *> DATE-WRITTEN: April 1, 2010 **
1390         *> **
1391         *>*****
1392         *> DATE CHANGE DESCRIPTION **
1393         *> ===== **
1394         *> GC0410 Initial coding **
1395         *> GC0711 Updates to accommodate the 12MAR2010 version of OC **
1396         *> GC0710 Handle duplicate data names (i.e. 'CORRESPONDING' or **
1397         *>        qualified items) better; ignore 'END PROGRAM' recs **
1398         *>        so program name doesn't appear in listing. **
1399         *> GC0313 Fix problem where the first procedure name defined **
1400         *>        in the PROCEDURE DIVISION lacks a "Defined" line **
1401         *>        number. **
1402         *> GC1213 Updated for 23NOV2013 version of GNU COBOL 2.1; Stop **
1403         *>        showing functions as if they were identifiers in the **
1404         *>        xref listing; Flag all CALL argument references with **
1405         *>        a "C" rather than "*" because they aren't necessari- **
1406         *>        ly altered; Fixed assorted formatting bugs; DOWN- **
1407         *>        WARD COMPATIBLE WITH GNU COBOL 2.0 SYNTAX **
1408         *> GC0314 Fix problem where 1st char of 1st token on a line is **
1409         *>        lost if >>SOURCE MODE IS FREE is in effect and the **
1410         *>        1st character is non-blank. **
1411         *>*****
1412         ENVIRONMENT DIVISION.
1413         CONFIGURATION SECTION.
1414         REPOSITORY.
1415         FUNCTION ALL INTRINSIC.
=====

```

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```

=====
1416      INPUT-OUTPUT SECTION.
1417      FILE-CONTROL.
1418          SELECT F-Expanded-Src-FILE ASSIGN TO WS-Expanded-Src-Fn-TXT
1419              ORGANIZATION IS LINE SEQUENTIAL.
1420 GC0712      SELECT F-Listing-FILE ASSIGN TO L-Listing-Fn-TXT
1421              ORGANIZATION IS LINE SEQUENTIAL.
1422          SELECT F-Original-Src-FILE ASSIGN TO L-Src-Fn-TXT
1423              ORGANIZATION IS LINE SEQUENTIAL.
1424          SELECT F-Sort-Work-FILE ASSIGN TO DISK.
1425      DATA DIVISION.
1426      FILE SECTION.
1427      FD F-Expanded-Src-FILE.
1428      01 F-Expanded-Src-REC.
1429          05 F-ES-1-CHR PIC X.
1430          05 F-ES-2-256-TXT-256 PIC X(256).
1431 GC0712 01 F-Expanded-Src2-REC.
1432 GC0712      05 F-ES-1-7-TXT PIC X(7).
1433 GC0712      05 F-ES-8-256-TXT PIC X(249).
1434
1435 GC0712 FD F-Listing-FILE.
1436 GC1213 01 F-Listing-96-REC PIC X(96).
1437 GC1213 01 F-Listing-135-REC PIC X(135).
1438      01 F-Listing-REC PIC X(135).
1439
1440      FD F-Original-Src-FILE.
1441      01 F-Original-Src-REC.
1442 GC0410      05 F-OS-1-128-TXT.
1443 GC0410          10 FILLER PIC X(6).
1444 GC0410          10 F-OS-7-CHR PIC X(1).
1445 GC0712          10 F-OS-8-72-TXT PIC X(65).
1446 GC0712          10 FILLER PIC X(56).
1447          05 F-OS-129-256-TXT PIC X(128).
1448
1449      SD F-Sort-Work-FILE.
1450      01 F-Sort-Work-REC.
1451          05 F-SW-Prog-ID-TXT PIC X(15).
1452          05 F-SW-Token-Uc-TXT PIC X(32).
1453          05 F-SW-Token-TXT PIC X(32).
1454          05 F-SW-Section-TXT PIC X(15).
1455          05 F-SW-Def-Line-NUM PIC 9(6).
1456          05 F-SW-Reference-TXT.
1457              10 F-SW-Ref-Line-NUM PIC 9(6).
1458              10 F-SW-Ref-Flag-CHR PIC X(1).
1459
1460      WORKING-STORAGE SECTION.
1461 GC1213 01 WS-Copyright-TXT PIC X(86).
1462
1463      01 WS-Curr-CHR PIC X(1).
1464          88 WS-Curr-Char-Is-Punct-BOOL VALUE '=', '(', ')',
=====

```

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```

=====
1465                                     '*','/', '&',
1466                                     ',',' ','<',
1467                                     '>', ':'.
1468             88 WS-Curr-Char-Is-Quote-BOOL      VALUE '"', '"'.
1469             88 WS-Curr-Char-Is-X-BOOL           VALUE 'x', 'X'.
1470             88 WS-Curr-Char-Is-Z-BOOL           VALUE 'z', 'Z'.
1471
1472             01 WS-Curr-Division-TXT              PIC X(1).
1473 GC1010      88 WS-CD-In-IDENT-DIV-BOOL          VALUE 'i', 'I', '?'.
1474 GC1010      88 WS-CD-In-ENV-DIV-BOOL            VALUE 'e', 'E'.
1475 GC1010      88 WS-CD-In-DATA-DIV-BOOL           VALUE 'd', 'D'.
1476 GC1010      88 WS-CD-In-PROC-DIV-BOOL           VALUE 'p', 'P'.
1477
1478             01 WS-Curr-Line-NUM                  PIC 9(6).
1479
1480             01 WS-Curr-Prog-ID-TXT.
1481                 05 FILLER                        PIC X(12).
1482                 05 WS-CPI-13-15-TXT               PIC X(3).
1483 GC0712      05 WS-CPI-16-CHR                     PIC X(1).
1484
1485             01 WS-Curr-Section-TXT.
1486                 05 WS-CS-1-CHR                    PIC X(1).
1487                 05 WS-CS-2-14-TXT.
1488                     10 FILLER                     PIC X(10).
1489                     10 WS-CS-11-14-TXT             PIC X(3).
1490                 05 WS-CS-15-CHR                    PIC X(1).
1491
1492             01 WS-Curr-Verb-TXT                   PIC X(12).
1493
1494             01 WS-Delim-TXT                       PIC X(2).
1495
1496             01 WS-Dummy-TXT                       PIC X(1).
1497
1498             01 WS-Expanded-Src-Fn-TXT             PIC X(256).
1499
1500             01 WS-Filename-TXT                    PIC X(256).
1501
1502 GC1213 01 WS-Flags-TXT.
1503 GC1213      05 WS-Suppress-FF-CHR                PIC X(1).
1504
1505 GC1213 01 WS-Formatted-DT                        PIC 9999/99/99.
1506
1507             01 WS-Group-Indicators-TXT.
1508                 05 WS-GI-Prog-ID-TXT              PIC X(15).
1509                 05 WS-GI-Token-TXT                PIC X(32).
1510
1511             01 WS-Held-Reference-TXT              PIC X(100).
1512
1513             01 WS-I-SUB                            USAGE BINARY-LONG.
=====

```

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```

=====
1514
1515      01  WS-J-SUB                      USAGE BINARY-LONG.
1516
1517      01  WS-Lines-Left-NUM              USAGE BINARY-LONG.
1518
1519      01  WS-Lines-Per-Page-NUM          USAGE BINARY-LONG.
1520
1521      01  WS-Lines-Per-Page-Env-TXT      PIC X(256).
1522
1523 GC1010 01  WS-Main-Module-Name-TXT      PIC X(256).
1524
1525      01  WS-Next-CHR                    PIC X(1).
1526      88  WS-Next-Char-Is-Quote-BOOL     VALUE '""', ""'.
1527
1528      01  WS-OS-Type-FILLER-TXT.
1529          05  VALUE 'Windows'            PIC X(14).
1530          05  VALUE 'Windows/Cygwin'     PIC X(14).
1531          05  VALUE 'UNIX/Linux'        PIC X(14).
1532          05  VALUE 'OSX'                PIC X(14).
1533          05  VALUE 'Windows/MinGW'      PIC X(14).
1534      01  WS-OS-Types-TXT REDEFINES WS-OS-Type-FILLER-TXT.
1535          05  WS-OS-Type-TXT             PIC X(14)
1536                                     OCCURS 5 TIMES .
1537
1538 GC0712 01  WS-Page-NUM                  USAGE BINARY-LONG.
1539
1540 GC0712 01  WS-Page-No-TXT.
1541 GC0712      05  WS-PN-Literal-TXT      PIC X(6).
1542 GC0712      05  WS-PN-Page-NUM         PIC Z(3)9.
1543
1544 GC1213 01  WS-Program-Path-TXT         PIC X(135).
1545
1546      01  WS-Reserved-Words-TXT.
1547          05  VALUE '                  ' PIC X(33).
1548 GC1213      05  VALUE 'FABS            ' PIC X(33).
1549          05  VALUE 'VACCEPT           ' PIC X(33).
1550          05  VALUE ' ACCESS           ' PIC X(33).
1551 GC1213      05  VALUE 'FACOS          ' PIC X(33).
1552          05  VALUE ' ACTIVE-CLASS     ' PIC X(33).      UNIMPLEMENTED
1553          05  VALUE 'VADD              ' PIC X(33).
1554          05  VALUE ' ADDRESS           ' PIC X(33).
1555          05  VALUE ' ADVANCING         ' PIC X(33).
1556          05  VALUE 'KAFTER            ' PIC X(33).
1557          05  VALUE ' ALIGNED           ' PIC X(33).      UNIMPLEMENTED
1558          05  VALUE ' ALL               ' PIC X(33).
1559          05  VALUE 'VALLOCATE          ' PIC X(33).
1560          05  VALUE ' ALPHABET          ' PIC X(33).
1561          05  VALUE ' ALPHABETIC        ' PIC X(33).
1562          05  VALUE ' ALPHABETIC-LOWER ' PIC X(33).
=====

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=====
1563          05 VALUE ' ALPHABETIC-UPPER          ' PIC X(33).
1564          05 VALUE ' ALPHANUMERIC              ' PIC X(33).
1565          05 VALUE ' ALPHANUMERIC-EDITED        ' PIC X(33).
1566          05 VALUE ' ALSO                      ' PIC X(33).
1567          05 VALUE 'VALTER                     ' PIC X(33).
1568          05 VALUE ' ALTERNATE                  ' PIC X(33).
1569          05 VALUE ' AND                       ' PIC X(33).
1570 GC1213    05 VALUE 'FANNUITY                  ' PIC X(33).
1571          05 VALUE ' ANY                      ' PIC X(33).
1572          05 VALUE ' ANYCASE                    ' PIC X(33).      UNIMPLEMENTED
1573          05 VALUE ' ARE                      ' PIC X(33).
1574          05 VALUE ' AREA                      ' PIC X(33).
1575          05 VALUE ' AREAS                     ' PIC X(33).
1576          05 VALUE ' ARGUMENT-NUMBER            ' PIC X(33).
1577          05 VALUE ' ARGUMENT-VALUE            ' PIC X(33).
1578          05 VALUE ' ARITHMETIC                 ' PIC X(33).      UNIMPLEMENTED
1579          05 VALUE ' AS                      ' PIC X(33).
1580          05 VALUE ' ASCENDING                  ' PIC X(33).
1581          05 VALUE ' ASCII                     ' PIC X(33).
1582 GC1213    05 VALUE 'FASIN                     ' PIC X(33).
1583          05 VALUE ' ASSIGN                    ' PIC X(33).
1584          05 VALUE ' AT                      ' PIC X(33).
1585 GC1213    05 VALUE 'FATAN                     ' PIC X(33).
1586 GC0711    05 VALUE ' ATTRIBUTE                ' PIC X(33).
1587          05 VALUE ' AUTHOR                    ' PIC X(33).      OBSOLETE
1588          05 VALUE ' AUTO                      ' PIC X(33).
1589          05 VALUE ' AUTO-SKIP                  ' PIC X(33).
1590          05 VALUE ' AUTOMATIC                  ' PIC X(33).
1591          05 VALUE ' AUTOTERMINATE              ' PIC X(33).
1592          05 VALUE ' AWAY-FROM-ZERO              ' PIC X(33).
1593          05 VALUE ' B-AND                      ' PIC X(33).      UNIMPLEMENTED
1594          05 VALUE ' B-NOT                     ' PIC X(33).      UNIMPLEMENTED
1595          05 VALUE ' B-OR                      ' PIC X(33).      UNIMPLEMENTED
1596          05 VALUE ' B-XOR                     ' PIC X(33).      UNIMPLEMENTED
1597          05 VALUE ' BACKGROUND-COLOR           ' PIC X(33).
1598          05 VALUE ' BACKGROUND-COLOUR          ' PIC X(33).
1599          05 VALUE ' BASED                     ' PIC X(33).
1600          05 VALUE ' BEEP                      ' PIC X(33).
1601          05 VALUE ' BEFORE                    ' PIC X(33).
1602          05 VALUE ' BELL                     ' PIC X(33).
1603          05 VALUE ' BINARY                    ' PIC X(33).
1604          05 VALUE ' BINARY-C-LONG              ' PIC X(33).
1605          05 VALUE ' BINARY-CHAR               ' PIC X(33).
1606          05 VALUE ' BINARY-DOUBLE             ' PIC X(33).
1607          05 VALUE ' BINARY-INT                ' PIC X(33).
1608          05 VALUE ' BINARY-LONG               ' PIC X(33).
1609          05 VALUE ' BINARY-LONG-LONG          ' PIC X(33).
1610          05 VALUE ' BINARY-SHORT              ' PIC X(33).
1611          05 VALUE ' BIT                      ' PIC X(33).      UNIMPLEMENTED
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1612          05 VALUE ' BLANK                ' PIC X(33).
1613          05 VALUE ' BLINK                ' PIC X(33).
1614          05 VALUE ' BLOCK                ' PIC X(33).
1615          05 VALUE ' BOOLEAN              ' PIC X(33).      UNIMPLEMENTED
1616 GC1213    05 VALUE 'FBOOLEAN-OF-INTEGER  ' PIC X(33).      UNIMPLEMENTED
1617          05 VALUE ' BOTTOM                ' PIC X(33).
1618          05 VALUE ' YBY                  ' PIC X(33).
1619 GC1213    05 VALUE 'FBYTE-LENGTH         ' PIC X(33).
1620          05 VALUE ' MC01                  ' PIC X(33).
1621          05 VALUE ' MC02                  ' PIC X(33).
1622          05 VALUE ' MC03                  ' PIC X(33).
1623          05 VALUE ' MC04                  ' PIC X(33).
1624          05 VALUE ' MC05                  ' PIC X(33).
1625          05 VALUE ' MC06                  ' PIC X(33).
1626          05 VALUE ' MC07                  ' PIC X(33).
1627          05 VALUE ' MC08                  ' PIC X(33).
1628          05 VALUE ' MC09                  ' PIC X(33).
1629          05 VALUE ' MC10                  ' PIC X(33).
1630          05 VALUE ' MC11                  ' PIC X(33).
1631          05 VALUE ' MC12                  ' PIC X(33).
1632          05 VALUE ' VCALL                  ' PIC X(33).
1633          05 VALUE ' MCALL-CONVENTION      ' PIC X(33).
1634          05 VALUE ' VCANCEL                ' PIC X(33).
1635          05 VALUE ' CAPACITY              ' PIC X(33).      UNIMPLEMENTED
1636          05 VALUE ' CD                    ' PIC X(33).      OBSOLETE
1637          05 VALUE ' CENTER                ' PIC X(33).      UNIMPLEMENTED
1638          05 VALUE ' CF                    ' PIC X(33).
1639          05 VALUE ' CH                    ' PIC X(33).
1640          05 VALUE ' CHAIN                  ' PIC X(33).      UNIMPLEMENTED
1641          05 VALUE ' CHAINING              ' PIC X(33).
1642 GC1213    05 VALUE ' FCHAR                ' PIC X(33).
1643 GC1213    05 VALUE ' FCHAR-NATIONAL       ' PIC X(33).      UNIMPLEMENTED
1644          05 VALUE ' CHARACTER            ' PIC X(33).
1645          05 VALUE ' CHARACTERS            ' PIC X(33).
1646          05 VALUE ' CLASS                 ' PIC X(33).
1647          05 VALUE ' CLASS-ID              ' PIC X(33).      UNIMPLEMENTED
1648 GC0711    05 VALUE ' CLASSIFICATION       ' PIC X(33).
1649          05 VALUE ' VCLOSE                ' PIC X(33).
1650 GC1213    05 VALUE ' FCOB-CRT-STATUS      ' PIC X(33).
1651          05 VALUE ' CODE                  ' PIC X(33).
1652          05 VALUE ' CODE-SET              ' PIC X(33).
1653          05 VALUE ' COL                   ' PIC X(33).
1654          05 VALUE ' COLLATING             ' PIC X(33).
1655          05 VALUE ' COLS                  ' PIC X(33).
1656          05 VALUE ' COLUMN                ' PIC X(33).
1657          05 VALUE ' COLUMNS              ' PIC X(33).
1658 GC1213    05 VALUE ' FCOMBINED-DATETIME  ' PIC X(33).
1659          05 VALUE ' COMMA                 ' PIC X(33).
1660          05 VALUE ' COMMAND-LINE          ' PIC X(33).
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1661          05 VALUE 'VCOMMIT                ' PIC X(33).
1662          05 VALUE ' COMMON                ' PIC X(33).
1663          05 VALUE ' COMMUNICATION          ' PIC X(33).      OBSOLETE
1664          05 VALUE ' COMP                  ' PIC X(33).
1665          05 VALUE ' COMP-1                ' PIC X(33).
1666          05 VALUE ' COMP-2                ' PIC X(33).
1667          05 VALUE ' COMP-3                ' PIC X(33).
1668          05 VALUE ' COMP-4                ' PIC X(33).
1669          05 VALUE ' COMP-5                ' PIC X(33).
1670          05 VALUE ' COMP-6                ' PIC X(33).
1671          05 VALUE ' COMP-X                ' PIC X(33).
1672          05 VALUE ' COMPUTATIONAL          ' PIC X(33).
1673          05 VALUE ' COMPUTATIONAL-1        ' PIC X(33).
1674          05 VALUE ' COMPUTATIONAL-2        ' PIC X(33).
1675          05 VALUE ' COMPUTATIONAL-3        ' PIC X(33).
1676          05 VALUE ' COMPUTATIONAL-4        ' PIC X(33).
1677          05 VALUE ' COMPUTATIONAL-5        ' PIC X(33).
1678          05 VALUE ' COMPUTATIONAL-X        ' PIC X(33).
1679          05 VALUE 'VCOMPUTE                ' PIC X(33).
1680 GC1213    05 VALUE 'FCONCATENATE          ' PIC X(33).
1681 GC0712    05 VALUE ' CONDITION            ' PIC X(33).
1682          05 VALUE 'KCONFIGURATION          ' PIC X(33).
1683          05 VALUE 'MCONSOLE                ' PIC X(33).
1684          05 VALUE ' CONSTANT               ' PIC X(33).
1685          05 VALUE ' CONTAINS               ' PIC X(33).
1686 GC0712    05 VALUE 'ACONTENT               ' PIC X(33).
1687          05 VALUE 'VCONTINUE              ' PIC X(33).
1688          05 VALUE ' CONTROL                ' PIC X(33).
1689          05 VALUE ' CONTROLS               ' PIC X(33).
1690 GC0711    05 VALUE ' CONVERSION            ' PIC X(33).
1691          05 VALUE 'KCONVERTING             ' PIC X(33).
1692          05 VALUE ' COPY                   ' PIC X(33).
1693          05 VALUE ' CORR                   ' PIC X(33).
1694          05 VALUE ' CORRESPONDING           ' PIC X(33).
1695 GC1213    05 VALUE 'FCOS                   ' PIC X(33).
1696          05 VALUE 'KCOUNT                 ' PIC X(33).
1697          05 VALUE ' CRT                     ' PIC X(33).
1698          05 VALUE ' CRT-UNDER               ' PIC X(33).
1699          05 VALUE 'MCSP                    ' PIC X(33).
1700          05 VALUE ' CURRENCY                ' PIC X(33).
1701 GC1213    05 VALUE 'FCURRENCY-SYMBOL        ' PIC X(33).
1702 GC1213    05 VALUE 'FCURRENT-DATE          ' PIC X(33).
1703          05 VALUE ' CURSOR                 ' PIC X(33).
1704          05 VALUE ' CYCLE                   ' PIC X(33).
1705          05 VALUE 'KDATA                   ' PIC X(33).
1706          05 VALUE ' DATA-POINTER           ' PIC X(33).      UNIMPLEMENTED
1707          05 VALUE ' DATE                    ' PIC X(33).
1708          05 VALUE ' DATE-COMPILED           ' PIC X(33).      OBSOLETE
1709          05 VALUE ' DATE-MODIFIED           ' PIC X(33).      OBSOLETE
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1710 GC1213      05 VALUE 'FDATE-OF-INTEGGER          ' PIC X(33).
1711 GC1213      05 VALUE 'FDATE-TO-YYYYMMDD         ' PIC X(33).
1712             05 VALUE ' DATE-WRITTEN              ' PIC X(33).      OBSOLETE
1713             05 VALUE ' DAY                        ' PIC X(33).
1714 GC1213      05 VALUE 'FDAY-OF-INTEGGER            ' PIC X(33).
1715             05 VALUE ' DAY-OF-WEEK                ' PIC X(33).
1716 GC1213      05 VALUE 'IDAY-TO-YYYYDDD            ' PIC X(33).
1717             05 VALUE ' DE                         ' PIC X(33).
1718 GC0712      05 VALUE 'IDEBUG-CONTENTS             ' PIC X(33).
1719 GC0712      05 VALUE 'IDEBUG-ITEM                 ' PIC X(33).
1720 GC0712      05 VALUE 'IDEBUG-LINE                 ' PIC X(33).
1721 GC0712      05 VALUE 'IDEBUG-NAME                 ' PIC X(33).
1722 GC0712      05 VALUE 'IDEBUG-SUB-1                 ' PIC X(33).
1723 GC0712      05 VALUE 'IDEBUG-SUB-2                 ' PIC X(33).
1724 GC0712      05 VALUE 'IDEBUG-SUB-3                 ' PIC X(33).
1725             05 VALUE ' DEBUGGING                  ' PIC X(33).
1726             05 VALUE ' DECIMAL-POINT               ' PIC X(33).
1727             05 VALUE ' DECLARATIVES                 ' PIC X(33).
1728             05 VALUE ' DEFAULT                     ' PIC X(33).
1729             05 VALUE 'VDELETE                       ' PIC X(33).
1730             05 VALUE ' DELIMITED                    ' PIC X(33).
1731             05 VALUE 'KDELIMITER                    ' PIC X(33).
1732             05 VALUE ' DEPENDING                    ' PIC X(33).
1733             05 VALUE ' DESCENDING                   ' PIC X(33).
1734             05 VALUE ' DESTINATION                   ' PIC X(33).      UNIMPLEMENTED
1735             05 VALUE ' DETAIL                       ' PIC X(33).
1736 GC0711      05 VALUE ' DISC                        ' PIC X(33).
1737             05 VALUE ' DISK                         ' PIC X(33).
1738             05 VALUE 'VDISPLAY                      ' PIC X(33).
1739 GC1213      05 VALUE 'FDISPLAY-OF                  ' PIC X(33).      UNIMPLEMENTED
1740             05 VALUE 'VDIVIDE                      ' PIC X(33).
1741             05 VALUE 'KDIVISION                     ' PIC X(33).
1742             05 VALUE 'KDOWN                         ' PIC X(33).
1743             05 VALUE ' DUPLICATES                   ' PIC X(33).
1744             05 VALUE ' DYNAMIC                      ' PIC X(33).
1745 GC1213      05 VALUE 'FE                          ' PIC X(33).
1746             05 VALUE ' EBCDIC                      ' PIC X(33).
1747 GC0712      05 VALUE ' EC                          ' PIC X(33).
1748             05 VALUE ' EGI                         ' PIC X(33).      OBSOLETE
1749             05 VALUE 'VELSE                        ' PIC X(33).
1750             05 VALUE ' EMI                         ' PIC X(33).      OBSOLETE
1751             05 VALUE ' EMPTY-CHECK                  ' PIC X(33).
1752             05 VALUE 'VENABLE                      ' PIC X(33).      OBSOLETE
1753 GC0710      05 VALUE 'KEND                        ' PIC X(33).
1754             05 VALUE ' END-ACCEPT                   ' PIC X(33).
1755             05 VALUE ' END-ADD                      ' PIC X(33).
1756             05 VALUE ' END-CALL                    ' PIC X(33).
1757             05 VALUE ' END-CHAIN                    ' PIC X(33).      UNIMPLEMENTED
1758             05 VALUE ' END-COMPUTE                  ' PIC X(33).
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1759          05 VALUE ' END-DELETE                ' PIC X(33).
1760          05 VALUE ' END-DISPLAY                ' PIC X(33).
1761          05 VALUE ' END-DIVIDE                  ' PIC X(33).
1762          05 VALUE ' END-EVALUATE                ' PIC X(33).
1763          05 VALUE ' END-IF                      ' PIC X(33).
1764          05 VALUE ' END-MULTIPLY                ' PIC X(33).
1765          05 VALUE ' END-OF-PAGE                  ' PIC X(33).
1766          05 VALUE ' END-PERFORM                  ' PIC X(33).
1767          05 VALUE ' END-READ                     ' PIC X(33).
1768          05 VALUE ' END-RECEIVE                  ' PIC X(33).      OBSOLETE
1769          05 VALUE ' END-RETURN                   ' PIC X(33).
1770          05 VALUE ' END-REWRITE                  ' PIC X(33).
1771          05 VALUE ' END-SEARCH                    ' PIC X(33).
1772          05 VALUE ' END-START                     ' PIC X(33).
1773          05 VALUE ' END-STRING                    ' PIC X(33).
1774          05 VALUE ' END-SUBTRACT                  ' PIC X(33).
1775          05 VALUE ' END-UNSTRING                  ' PIC X(33).
1776          05 VALUE ' END-WRITE                     ' PIC X(33).
1777          05 VALUE ' VENTRY                        ' PIC X(33).
1778          05 VALUE ' ENTRY-CONVENTION              ' PIC X(33).      UNIMPLEMENTED
1779          05 VALUE ' KENVIRONMENT                  ' PIC X(33).
1780          05 VALUE ' ENVIRONMENT-NAME              ' PIC X(33).
1781          05 VALUE ' ENVIRONMENT-VALUE            ' PIC X(33).
1782          05 VALUE ' EO                           ' PIC X(33).      UNIMPLEMENTED
1783          05 VALUE ' EOL                           ' PIC X(33).
1784          05 VALUE ' EOP                           ' PIC X(33).
1785          05 VALUE ' EOS                           ' PIC X(33).
1786          05 VALUE ' EQUAL                         ' PIC X(33).
1787          05 VALUE ' KEQUALS                       ' PIC X(33).
1788          05 VALUE ' ERASE                         ' PIC X(33).
1789          05 VALUE ' ERROR                         ' PIC X(33).
1790          05 VALUE ' ESCAPE                        ' PIC X(33).
1791          05 VALUE ' ESI                           ' PIC X(33).      OBSOLETE
1792          05 VALUE ' VEVALUATE                      ' PIC X(33).
1793          05 VALUE ' EXCEPTION                     ' PIC X(33).
1794 GC1213     05 VALUE ' FEXCEPTION-FILE             ' PIC X(33).
1795 GC1213     05 VALUE ' FEXCEPTION-FILE-N          ' PIC X(33).      UNIMPLEMENTED
1796 GC1213     05 VALUE ' FEXCEPTION-LOCATION          ' PIC X(33).
1797 GC1213     05 VALUE ' FEXCEPTION-LOCATION-N        ' PIC X(33).      UNIMPLEMENTED
1798          05 VALUE ' EXCEPTION-OBJECT             ' PIC X(33).      UNIMPLEMENTED
1799 GC1213     05 VALUE ' FEXCEPTION-STATEMENT        ' PIC X(33).
1800 GC1213     05 VALUE ' FEXCEPTION-STATUS          ' PIC X(33).
1801          05 VALUE ' EXCLUSIVE                     ' PIC X(33).
1802          05 VALUE ' VEXIT                         ' PIC X(33).
1803 GC1213     05 VALUE ' FEXP                        ' PIC X(33).
1804 GC1213     05 VALUE ' FEXP10                      ' PIC X(33).
1805          05 VALUE ' EXPANDS                       ' PIC X(33).      UNIMPLEMENTED
1806          05 VALUE ' EXTEND                        ' PIC X(33).
1807          05 VALUE ' EXTERNAL                      ' PIC X(33).
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1808 GC1213      05 VALUE 'FFACTORIAL          ' PIC X(33).
1809              05 VALUE ' FACTORY          ' PIC X(33).      UNIMPLEMENTED
1810              05 VALUE ' FALSE            ' PIC X(33).
1811              05 VALUE ' KFD              ' PIC X(33).
1812              05 VALUE ' KFILE           ' PIC X(33).
1813              05 VALUE ' FILE-CONTROL     ' PIC X(33).
1814              05 VALUE ' FILE-ID          ' PIC X(33).
1815 GC1113      05 VALUE ' FILLER            ' PIC X(33).
1816              05 VALUE ' FINAL            ' PIC X(33).
1817              05 VALUE ' FIRST            ' PIC X(33).
1818 GC0712      05 VALUE ' FLOAT-BINARY-128   ' PIC X(33).      UNIMPLEMENTED
1819 GC0712      05 VALUE ' FLOAT-BINARY-32    ' PIC X(33).      UNIMPLEMENTED
1820 GC0712      05 VALUE ' FLOAT-BINARY-64    ' PIC X(33).      UNIMPLEMENTED
1821              05 VALUE ' FLOAT-DECIMAL-16  ' PIC X(33).
1822              05 VALUE ' FLOAT-DECIMAL-34  ' PIC X(33).
1823              05 VALUE ' FLOAT-EXTENDED    ' PIC X(33).      UNIMPLEMENTED
1824 GC0712      05 VALUE ' FLOAT-INFINITY     ' PIC X(33).      UNIMPLEMENTED
1825              05 VALUE ' FLOAT-LONG        ' PIC X(33).
1826 GC0712      05 VALUE ' FLOAT-NOT-A-NUMBER  ' PIC X(33).      UNIMPLEMENTED
1827              05 VALUE ' FLOAT-SHORT      ' PIC X(33).
1828              05 VALUE ' FOOTING           ' PIC X(33).
1829              05 VALUE ' FOR               ' PIC X(33).
1830              05 VALUE ' FOREGROUND-COLOR   ' PIC X(33).
1831              05 VALUE ' FOREGROUND-COLOUR  ' PIC X(33).
1832 GC0711      05 VALUE ' FOREVER            ' PIC X(33).
1833              05 VALUE ' FORMAT            ' PIC X(33).      UNIMPLEMENTED
1834 GC1213      05 VALUE ' FFORMATTED-CURRENT-DATE ' PIC X(33).      UNIMPLEMENTED
1835 GC1213      05 VALUE ' FFORMATTED-DATE    ' PIC X(33).      UNIMPLEMENTED
1836 GC1213      05 VALUE ' FFORMATTED-DATETIME ' PIC X(33).      UNIMPLEMENTED
1837 GC1213      05 VALUE ' FFORMATTED-TIME    ' PIC X(33).      UNIMPLEMENTED
1838              05 VALUE ' MFORMFEED        ' PIC X(33).
1839 GC1213      05 VALUE ' FFRACTION-PART      ' PIC X(33).
1840              05 VALUE ' VFREE             ' PIC X(33).
1841              05 VALUE ' FROM              ' PIC X(33).
1842              05 VALUE ' FULL              ' PIC X(33).
1843              05 VALUE ' FUNCTION           ' PIC X(33).
1844 GC0712      05 VALUE ' KFUNCTION-ID        ' PIC X(33).
1845              05 VALUE ' FUNCTION-POINTER   ' PIC X(33).      UNIMPLEMENTED
1846              05 VALUE ' VGENERATE          ' PIC X(33).
1847              05 VALUE ' GET               ' PIC X(33).      UNIMPLEMENTED
1848              05 VALUE ' KGIVING            ' PIC X(33).
1849              05 VALUE ' GLOBAL             ' PIC X(33).
1850              05 VALUE ' VGO               ' PIC X(33).
1851              05 VALUE ' VGOBACK           ' PIC X(33).
1852              05 VALUE ' GREATER            ' PIC X(33).
1853              05 VALUE ' GROUP              ' PIC X(33).
1854              05 VALUE ' GROUP-USAGE        ' PIC X(33).      UNIMPLEMENTED
1855              05 VALUE ' HEADING            ' PIC X(33).
1856              05 VALUE ' HIGH-VALUE        ' PIC X(33).
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1857          05 VALUE ' HIGH-VALUES                ' PIC X(33).
1858 GC1213    05 VALUE 'FHIGHEST-ALGEBRAIC          ' PIC X(33).
1859          05 VALUE ' HIGHLIGHT                    ' PIC X(33).
1860          05 VALUE ' I-O                            ' PIC X(33).
1861          05 VALUE ' I-O-CONTROL                   ' PIC X(33).
1862          05 VALUE ' KID                            ' PIC X(33).
1863          05 VALUE ' KIDENTIFICATION                ' PIC X(33).
1864          05 VALUE ' VIF                            ' PIC X(33).
1865          05 VALUE ' IGNORE                        ' PIC X(33).
1866          05 VALUE ' IGNORING                      ' PIC X(33).
1867          05 VALUE ' IMPLEMENTS                     ' PIC X(33).      UNIMPLEMENTED
1868          05 VALUE ' IN                            ' PIC X(33).
1869          05 VALUE ' INDEX                         ' PIC X(33).
1870          05 VALUE ' KINDEXED                      ' PIC X(33).
1871          05 VALUE ' INDICATE                      ' PIC X(33).
1872          05 VALUE ' INDIRECT                      ' PIC X(33).      UNIMPLEMENTED
1873          05 VALUE ' INHERITS                      ' PIC X(33).      UNIMPLEMENTED
1874          05 VALUE ' INITIAL                      ' PIC X(33).
1875          05 VALUE ' VINITIALISE                   ' PIC X(33).
1876          05 VALUE ' INITIALISED                  ' PIC X(33).
1877          05 VALUE ' VINITIALIZE                   ' PIC X(33).
1878          05 VALUE ' INITIALIZED                   ' PIC X(33).
1879          05 VALUE ' VINITIATE                     ' PIC X(33).
1880          05 VALUE ' INPUT                         ' PIC X(33).
1881          05 VALUE ' KINPUT-OUTPUT                 ' PIC X(33).
1882          05 VALUE ' VINSPECT                      ' PIC X(33).
1883          05 VALUE ' INSTALLATION                  ' PIC X(33).      OBSOLETE
1884 GC1213    05 VALUE ' FINTEGER                    ' PIC X(33).
1885 GC1213    05 VALUE ' FINTEGER-OF-BOOLEAN          ' PIC X(33).      UNIMPLEMENTED
1886 GC1213    05 VALUE ' FINTEGER-OF-DATE            ' PIC X(33).
1887 GC1213    05 VALUE ' FINTEGER-OF-DAY             ' PIC X(33).
1888 GC1213    05 VALUE ' FINTEGER-OF-FORMATTED-DATE  ' PIC X(33).      UNIMPLEMENTED
1889 GC1213    05 VALUE ' FINTEGER-PART               ' PIC X(33).
1890          05 VALUE ' INTERFACE                    ' PIC X(33).      UNIMPLEMENTED
1891          05 VALUE ' INTERFACE-ID                  ' PIC X(33).      UNIMPLEMENTED
1892          05 VALUE ' INTERMEDIATE                  ' PIC X(33).      UNIMPLEMENTED
1893          05 VALUE ' KINTO                        ' PIC X(33).
1894          05 VALUE ' INTRINSIC                    ' PIC X(33).
1895          05 VALUE ' INVALID                      ' PIC X(33).
1896          05 VALUE ' INVOKE                      ' PIC X(33).      UNIMPLEMENTED
1897          05 VALUE ' IS                          ' PIC X(33).
1898          05 VALUE ' JUST                        ' PIC X(33).
1899          05 VALUE ' JUSTIFIED                    ' PIC X(33).
1900          05 VALUE ' KEPT                        ' PIC X(33).
1901          05 VALUE ' KEY                          ' PIC X(33).
1902          05 VALUE ' KEYBOARD                    ' PIC X(33).
1903          05 VALUE ' LABEL                      ' PIC X(33).
1904          05 VALUE ' LAST                        ' PIC X(33).
1905          05 VALUE ' LC_ALL                      ' PIC X(33).      UNIMPLEMENTED
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=====
1906          05 VALUE ' LC_COLLATE          ' PIC X(33).      UNIMPLEMENTED
1907          05 VALUE ' LC_CTYPE           ' PIC X(33).      UNIMPLEMENTED
1908          05 VALUE ' LC_MESSAGES         ' PIC X(33).      UNIMPLEMENTED
1909          05 VALUE ' LC_MONETARY         ' PIC X(33).      UNIMPLEMENTED
1910          05 VALUE ' LC_NUMERIC          ' PIC X(33).      UNIMPLEMENTED
1911          05 VALUE ' LC_TIME              ' PIC X(33).      UNIMPLEMENTED
1912          05 VALUE ' LEADING              ' PIC X(33).
1913          05 VALUE ' LEFT                 ' PIC X(33).
1914          05 VALUE ' LEFT-JUSTIFY         ' PIC X(33).      UNIMPLEMENTED
1915          05 VALUE ' LEFTLINE             ' PIC X(33).
1916 GC1213     05 VALUE ' FLENGTH            ' PIC X(33).
1917 GC1213     05 VALUE ' FLENGTH-AN        ' PIC X(33).
1918          05 VALUE ' LENGTH-CHECK        ' PIC X(33).
1919          05 VALUE ' LESS                  ' PIC X(33).
1920          05 VALUE ' LIMIT                 ' PIC X(33).
1921          05 VALUE ' LIMITS               ' PIC X(33).
1922          05 VALUE ' LINAGE               ' PIC X(33).
1923          05 VALUE ' ILINAGE-COUNTER      ' PIC X(33).
1924          05 VALUE ' LINE                 ' PIC X(33).
1925 GC1213     05 VALUE ' ILINE-COUNTER     ' PIC X(33).
1926          05 VALUE ' LINES                ' PIC X(33).
1927          05 VALUE ' KLINKAGE             ' PIC X(33).
1928          05 VALUE ' KLOCAL-STORAGE       ' PIC X(33).
1929          05 VALUE ' LOCALE               ' PIC X(33).
1930 GC1213     05 VALUE ' FLOCALE-COMPARE    ' PIC X(33).
1931 GC1213     05 VALUE ' FLOCALE-DATE       ' PIC X(33).
1932 GC1213     05 VALUE ' FLOCALE-TIME      ' PIC X(33).
1933 GC1213     05 VALUE ' FLOCALE-TIME-FROM-SECONDS ' PIC X(33).
1934          05 VALUE ' LOCK                ' PIC X(33).
1935 GC1213     05 VALUE ' FLOG               ' PIC X(33).
1936 GC1213     05 VALUE ' FLOG10            ' PIC X(33).
1937          05 VALUE ' LOW-VALUE           ' PIC X(33).
1938          05 VALUE ' LOW-VALUES           ' PIC X(33).
1939          05 VALUE ' LOWER                ' PIC X(33).
1940 GC1213     05 VALUE ' FLOWER-CASE        ' PIC X(33).
1941 GC1213     05 VALUE ' FLOWEST-ALGEBRAIC  ' PIC X(33).
1942          05 VALUE ' LOWLIGHT            ' PIC X(33).
1943          05 VALUE ' MANUAL               ' PIC X(33).
1944 GC1213     05 VALUE ' FMAX               ' PIC X(33).
1945 GC1213     05 VALUE ' FMEAN             ' PIC X(33).
1946 GC1213     05 VALUE ' FMEDIAN           ' PIC X(33).
1947          05 VALUE ' MEMORY              ' PIC X(33).
1948          05 VALUE ' VMERGE               ' PIC X(33).
1949          05 VALUE ' MESSAGE             ' PIC X(33).      OBSOLETE
1950          05 VALUE ' METHOD               ' PIC X(33).      UNIMPLEMENTED
1951          05 VALUE ' METHOD-ID            ' PIC X(33).      UNIMPLEMENTED
1952 GC1213     05 VALUE ' FMIDRANGE         ' PIC X(33).
1953 GC1213     05 VALUE ' FMIN              ' PIC X(33).
1954          05 VALUE ' MINUS                ' PIC X(33).
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=====
1955 GC1213      05 VALUE 'FMOD                      ' PIC X(33).
1956              05 VALUE ' MODE                      ' PIC X(33).
1957 GC1213      05 VALUE 'FMODULE-CALLER-ID          ' PIC X(33).
1958 GC1213      05 VALUE 'FMODULE-DATE              ' PIC X(33).
1959 GC1213      05 VALUE 'FMODULE-FORMATTED-DATE      ' PIC X(33).
1960 GC1213      05 VALUE 'FMODULE-ID                  ' PIC X(33).
1961 GC1213      05 VALUE 'FMODULE-PATH                ' PIC X(33).
1962 GC1213      05 VALUE 'FMODULE-SOURCE              ' PIC X(33).
1963 GC1213      05 VALUE 'FMODULE-TIME                ' PIC X(33).
1964 GC1213      05 VALUE 'FMONETARY-DECIMAL-POINT     ' PIC X(33).
1965 GC1213      05 VALUE 'FMONETARY-THOUSANDS-SEPARATOR ' PIC X(33).
1966              05 VALUE 'VMOVE                      ' PIC X(33).
1967              05 VALUE ' MULTIPLE                  ' PIC X(33).
1968              05 VALUE 'VMULTIPLY                   ' PIC X(33).
1969 GC0711      05 VALUE ' NAME                      ' PIC X(33).
1970              05 VALUE ' NATIONAL                  ' PIC X(33).
1971              05 VALUE ' NATIONAL-EDITED             ' PIC X(33).
1972 GC1213      05 VALUE 'FNATIONAL-OF                ' PIC X(33).      UNIMPLEMENTED
1973              05 VALUE ' NATIVE                    ' PIC X(33).
1974              05 VALUE ' NEAREST-AWAY-FROM-ZERO      ' PIC X(33).
1975              05 VALUE ' NEAREST-EVEN               ' PIC X(33).
1976              05 VALUE ' NEAREST-TOWARD-ZERO         ' PIC X(33).
1977              05 VALUE ' NEGATIVE                   ' PIC X(33).
1978              05 VALUE ' NESTED                     ' PIC X(33).      UNIMPLEMENTED
1979              05 VALUE 'VNEXT                      ' PIC X(33).
1980              05 VALUE ' NO                         ' PIC X(33).
1981              05 VALUE ' NO-ECHO                     ' PIC X(33).
1982              05 VALUE ' NONE                      ' PIC X(33).      UNIMPLEMENTED
1983              05 VALUE ' NORMAL                     ' PIC X(33).
1984              05 VALUE ' NOT                        ' PIC X(33).
1985              05 VALUE ' NULL                       ' PIC X(33).
1986              05 VALUE ' NULLS                      ' PIC X(33).
1987              05 VALUE ' NUMBER                     ' PIC X(33).
1988              05 VALUE ' INUMBER-OF-CALL-PARAMETERS   ' PIC X(33).
1989              05 VALUE ' NUMBERS                    ' PIC X(33).
1990              05 VALUE ' NUMERIC                    ' PIC X(33).
1991 GC1213      05 VALUE 'FNUMERIC-DECIMAL-POINT       ' PIC X(33).
1992              05 VALUE ' NUMERIC-EDITED             ' PIC X(33).
1993 GC1213      05 VALUE 'FNUMERIC-THOUSANDS-SEPARATOR ' PIC X(33).
1994 GC1213      05 VALUE 'FNUMVAL                     ' PIC X(33).
1995 GC1213      05 VALUE 'FNUMVAL-C                   ' PIC X(33).
1996 GC1213      05 VALUE 'FNUMVAL-F                   ' PIC X(33).
1997              05 VALUE ' OBJECT                     ' PIC X(33).      UNIMPLEMENTED
1998              05 VALUE ' OBJECT-COMPUTER            ' PIC X(33).
1999              05 VALUE ' OBJECT-REFERENCE           ' PIC X(33).      UNIMPLEMENTED
2000              05 VALUE ' OCCURS                     ' PIC X(33).
2001              05 VALUE ' OF                        ' PIC X(33).
2002              05 VALUE ' OFF                       ' PIC X(33).
2003              05 VALUE ' OMITTED                    ' PIC X(33).
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2004          05 VALUE ' ON                      ' PIC X(33).
2005          05 VALUE ' ONLY                    ' PIC X(33).
2006          05 VALUE 'VOPEN                   ' PIC X(33).
2007          05 VALUE ' OPTIONAL                ' PIC X(33).
2008          05 VALUE ' OPTIONS                 ' PIC X(33).      UNIMPLEMENTED
2009          05 VALUE ' OR                     ' PIC X(33).
2010 GC1213    05 VALUE 'FORD                    ' PIC X(33).
2011 GC1213    05 VALUE 'FORD-MAX                ' PIC X(33).
2012 GC1213    05 VALUE 'FORD-MIN                ' PIC X(33).
2013          05 VALUE ' ORDER                  ' PIC X(33).
2014          05 VALUE ' ORGANISATION            ' PIC X(33).
2015          05 VALUE ' ORGANIZATION           ' PIC X(33).
2016          05 VALUE ' OTHER                  ' PIC X(33).
2017          05 VALUE ' OUTPUT                  ' PIC X(33).
2018          05 VALUE ' OVERFLOW                ' PIC X(33).
2019          05 VALUE ' OVERLINE                ' PIC X(33).
2020          05 VALUE ' OVERRIDE                ' PIC X(33).
2021          05 VALUE ' PACKED-DECIMAL          ' PIC X(33).
2022          05 VALUE ' PADDING                 ' PIC X(33).
2023          05 VALUE ' PAGE                   ' PIC X(33).
2024 GC1213    05 VALUE 'IPAGE-COUNTER           ' PIC X(33).
2025          05 VALUE ' PARAGRAPH               ' PIC X(33).
2026          05 VALUE 'VPERFORM                 ' PIC X(33).
2027          05 VALUE ' PF                      ' PIC X(33).
2028          05 VALUE ' PH                      ' PIC X(33).
2029 GC1213    05 VALUE 'FPI                     ' PIC X(33).
2030          05 VALUE 'KPIC                     ' PIC X(33).
2031          05 VALUE 'KPICTURE                 ' PIC X(33).
2032          05 VALUE ' PLUS                    ' PIC X(33).
2033          05 VALUE 'KPOINTER                 ' PIC X(33).
2034          05 VALUE ' POSITION                  ' PIC X(33).
2035          05 VALUE ' POSITIVE                 ' PIC X(33).
2036          05 VALUE ' PREFIXED                 ' PIC X(33).      UNIMPLEMENTED
2037          05 VALUE ' PRESENT                  ' PIC X(33).
2038 GC1213    05 VALUE 'FPRESENT-VALUE           ' PIC X(33).
2039          05 VALUE ' PREVIOUS                 ' PIC X(33).
2040          05 VALUE 'MPRINTER                  ' PIC X(33).
2041          05 VALUE ' PRINTING                 ' PIC X(33).
2042          05 VALUE 'KPROCEDURE                ' PIC X(33).
2043          05 VALUE ' PROCEDURE-POINTER        ' PIC X(33).
2044          05 VALUE ' PROCEDURES               ' PIC X(33).
2045          05 VALUE ' PROCEED                  ' PIC X(33).
2046          05 VALUE ' PROGRAM                 ' PIC X(33).
2047          05 VALUE 'KPROGRAM-ID               ' PIC X(33).
2048          05 VALUE ' PROGRAM-POINTER          ' PIC X(33).
2049          05 VALUE ' PROHIBITED               ' PIC X(33).
2050          05 VALUE ' PROMPT                   ' PIC X(33).
2051          05 VALUE ' PROPERTY                 ' PIC X(33).      UNIMPLEMENTED
2052          05 VALUE ' PROTOTYPE                ' PIC X(33).      UNIMPLEMENTED
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=====
2053          05 VALUE 'PURGE'          'PIC X(33).  OBSOLETE
2054          05 VALUE 'QUEUE'         'PIC X(33).  OBSOLETE
2055          05 VALUE 'QUOTE'         'PIC X(33).
2056          05 VALUE 'QUOTES'        'PIC X(33).
2057          05 VALUE 'RAISE'         'PIC X(33).  UNIMPLEMENTED
2058          05 VALUE 'RAISING'       'PIC X(33).  UNIMPLEMENTED
2059 GC1213    05 VALUE 'FRANDOM'       'PIC X(33).
2060 GC1213    05 VALUE 'FRANGE'        'PIC X(33).
2061 GC1213    05 VALUE 'KRD'          'PIC X(33).
2062          05 VALUE 'VREAD'          'PIC X(33).
2063          05 VALUE 'VREADY'         'PIC X(33).
2064          05 VALUE 'VRECEIVE'       'PIC X(33).  OBSOLETE
2065          05 VALUE 'RECORD'         'PIC X(33).
2066          05 VALUE 'RECORDING'      'PIC X(33).
2067          05 VALUE 'RECORDS'       'PIC X(33).
2068          05 VALUE 'RECURSIVE'     'PIC X(33).
2069          05 VALUE 'KREDEFINES'    'PIC X(33).
2070          05 VALUE 'REEL'           'PIC X(33).
2071 GC0712    05 VALUE 'AREREFERENCE'  'PIC X(33).
2072          05 VALUE 'REFERENCES'     'PIC X(33).
2073          05 VALUE 'RELATION'       'PIC X(33).  UNIMPLEMENTED
2074          05 VALUE 'RELATIVE'      'PIC X(33).
2075          05 VALUE 'VRELEASE'       'PIC X(33).
2076 GC1213    05 VALUE 'FREM'         'PIC X(33).
2077          05 VALUE 'REMAINDER'     'PIC X(33).
2078          05 VALUE 'REMARKS'        'PIC X(33).  OBSOLETE
2079          05 VALUE 'REMOVAL'        'PIC X(33).
2080          05 VALUE 'KRENAMES'       'PIC X(33).
2081          05 VALUE 'REPLACE'        'PIC X(33).
2082          05 VALUE 'KREPLACING'     'PIC X(33).
2083          05 VALUE 'KREPORT'        'PIC X(33).
2084          05 VALUE 'REPORTING'      'PIC X(33).
2085          05 VALUE 'REPORTS'        'PIC X(33).
2086          05 VALUE 'REPOSITORY'     'PIC X(33).
2087          05 VALUE 'REQUIRED'       'PIC X(33).
2088          05 VALUE 'RESERVE'        'PIC X(33).
2089          05 VALUE 'VRESET'         'PIC X(33).
2090          05 VALUE 'RESUME'          'PIC X(33).  UNIMPLEMENTED
2091          05 VALUE 'RETRY'          'PIC X(33).  UNIMPLEMENTED
2092          05 VALUE 'VRETURN'        'PIC X(33).
2093          05 VALUE 'IRETURN-CODE'   'PIC X(33).
2094          05 VALUE 'KRETURNING'     'PIC X(33).
2095 GC1213    05 VALUE 'FREVERSE'      'PIC X(33).
2096          05 VALUE 'REVERSE-VIDEO'  'PIC X(33).
2097          05 VALUE 'REVERSED'       'PIC X(33).
2098          05 VALUE 'REWIND'         'PIC X(33).
2099          05 VALUE 'VREWRITE'       'PIC X(33).
2100          05 VALUE 'RF'             'PIC X(33).
2101          05 VALUE 'RH'            'PIC X(33).
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2102          05 VALUE ' RIGHT                ' PIC X(33).
2103          05 VALUE ' RIGHT-JUSTIFY         ' PIC X(33).      UNIMPLEMENTED
2104          05 VALUE ' VROLLBACK             ' PIC X(33).
2105          05 VALUE ' ROUNDED               ' PIC X(33).
2106          05 VALUE ' ROUNDING              ' PIC X(33).      UNIMPLEMENTED
2107          05 VALUE ' RUN                   ' PIC X(33).
2108          05 VALUE ' SAME                   ' PIC X(33).
2109          05 VALUE ' KSCREEN                ' PIC X(33).
2110          05 VALUE ' SCROLL                 ' PIC X(33).
2111          05 VALUE ' KSD                   ' PIC X(33).
2112          05 VALUE ' VSEARCH                ' PIC X(33).
2113          05 VALUE ' SECONDS               ' PIC X(33).      UNIMPLEMENTED
2114 GC1213    05 VALUE ' FSECONDS-FROM-FORMATTED-TIME ' PIC X(33).
2115 GC1213    05 VALUE ' FSECONDS-PAST-MIDNIGHT      ' PIC X(33).
2116          05 VALUE ' KSECTION              ' PIC X(33).
2117          05 VALUE ' SECURE                 ' PIC X(33).
2118          05 VALUE ' SECURITY                ' PIC X(33).      OBSOLETE
2119          05 VALUE ' SEGMENT                ' PIC X(33).      OBSOLETE
2120          05 VALUE ' SEGMENT-LIMIT          ' PIC X(33).
2121          05 VALUE ' SELECT                 ' PIC X(33).
2122          05 VALUE ' SELF                   ' PIC X(33).      UNIMPLEMENTED
2123          05 VALUE ' VSEND                  ' PIC X(33).      OBSOLETE
2124          05 VALUE ' SENTENCE               ' PIC X(33).
2125          05 VALUE ' SEPARATE               ' PIC X(33).
2126          05 VALUE ' SEQUENCE              ' PIC X(33).
2127          05 VALUE ' SEQUENTIAL             ' PIC X(33).
2128          05 VALUE ' VSET                   ' PIC X(33).
2129          05 VALUE ' SHARING                ' PIC X(33).
2130 GC1213    05 VALUE ' FSIGN                 ' PIC X(33).
2131          05 VALUE ' SIGNED                 ' PIC X(33).
2132          05 VALUE ' SIGNED-INT              ' PIC X(33).
2133          05 VALUE ' SIGNED-LONG            ' PIC X(33).
2134          05 VALUE ' SIGNED-SHORT           ' PIC X(33).
2135 GC1213    05 VALUE ' FSIN                  ' PIC X(33).
2136          05 VALUE ' SIZE                   ' PIC X(33).
2137          05 VALUE ' VSORT                  ' PIC X(33).
2138          05 VALUE ' SORT-MERGE              ' PIC X(33).
2139          05 VALUE ' ISORT-RETURN            ' PIC X(33).
2140          05 VALUE ' SOURCE                  ' PIC X(33).
2141          05 VALUE ' SOURCE-COMPUTER         ' PIC X(33).
2142          05 VALUE ' SOURCES                 ' PIC X(33).      UNIMPLEMENTED
2143          05 VALUE ' SPACE                  ' PIC X(33).
2144          05 VALUE ' SPACE-FILL              ' PIC X(33).      UNIMPLEMENTED
2145          05 VALUE ' SPACES                 ' PIC X(33).
2146          05 VALUE ' SPECIAL-NAMES          ' PIC X(33).
2147 GC1213    05 VALUE ' FSQRT                 ' PIC X(33).
2148          05 VALUE ' STANDARD               ' PIC X(33).
2149          05 VALUE ' STANDARD-1              ' PIC X(33).
2150          05 VALUE ' STANDARD-2             ' PIC X(33).
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2151          05 VALUE ' STANDARD-BINARY          ' PIC X(33).      UNIMPLEMENTED
2152 GC1213    05 VALUE 'FSTANDARD-COMPARE        ' PIC X(33).      UNIMPLEMENTED
2153          05 VALUE ' STANDARD-DECIMAL        ' PIC X(33).      UNIMPLEMENTED
2154 GC1213    05 VALUE 'FSTANDARD-DEVIATION      ' PIC X(33).
2155          05 VALUE 'VSTART                    ' PIC X(33).
2156          05 VALUE ' STATEMENT                ' PIC X(33).      UNIMPLEMENTED
2157          05 VALUE ' STATIC                   ' PIC X(33).
2158          05 VALUE ' STATUS                   ' PIC X(33).
2159          05 VALUE ' STDCALL                  ' PIC X(33).
2160          05 VALUE 'MSTDERR                   ' PIC X(33).
2161          05 VALUE 'MSTDIN                    ' PIC X(33).
2162          05 VALUE 'MSTDOUT                   ' PIC X(33).
2163          05 VALUE ' STEP                     ' PIC X(33).
2164          05 VALUE 'VSTOP                     ' PIC X(33).
2165 GC1213    05 VALUE 'FSTORED-CHAR-LENGTH      ' PIC X(33).
2166          05 VALUE 'VSTRING                   ' PIC X(33).
2167          05 VALUE ' STRONG                    ' PIC X(33).      UNIMPLEMENTED
2168          05 VALUE ' SUB-QUEUE-1              ' PIC X(33).      OBSOLETE
2169          05 VALUE ' SUB-QUEUE-2              ' PIC X(33).      OBSOLETE
2170          05 VALUE ' SUB-QUEUE-3              ' PIC X(33).      OBSOLETE
2171 GC1213    05 VALUE 'FSUBSTITUTE               ' PIC X(33).
2172 GC1213    05 VALUE 'FSUBSTITUTE-CASE          ' PIC X(33).
2173          05 VALUE 'VSUBTRACT                 ' PIC X(33).
2174 GC1213    05 VALUE 'FSUM                     ' PIC X(33).
2175          05 VALUE ' SUPER                    ' PIC X(33).      UNIMPLEMENTED
2176          05 VALUE 'VSUPPRESS                 ' PIC X(33).
2177          05 VALUE 'MSW0                      ' PIC X(33).
2178          05 VALUE 'MSW1                      ' PIC X(33).
2179          05 VALUE 'MSW10                     ' PIC X(33).
2180          05 VALUE 'MSW11                     ' PIC X(33).
2181          05 VALUE 'MSW12                     ' PIC X(33).
2182          05 VALUE 'MSW13                     ' PIC X(33).
2183          05 VALUE 'MSW14                     ' PIC X(33).
2184          05 VALUE 'MSW15                     ' PIC X(33).
2185          05 VALUE 'MSW2                      ' PIC X(33).
2186          05 VALUE 'MSW3                      ' PIC X(33).
2187          05 VALUE 'MSW4                      ' PIC X(33).
2188          05 VALUE 'MSW5                      ' PIC X(33).
2189          05 VALUE 'MSW6                      ' PIC X(33).
2190          05 VALUE 'MSW7                      ' PIC X(33).
2191          05 VALUE 'MSW8                      ' PIC X(33).
2192          05 VALUE 'MSW9                      ' PIC X(33).
2193          05 VALUE 'MSWITCH-0                 ' PIC X(33).
2194          05 VALUE 'MSWITCH-1                 ' PIC X(33).
2195          05 VALUE 'MSWITCH-10                ' PIC X(33).
2196          05 VALUE 'MSWITCH-11                ' PIC X(33).
2197          05 VALUE 'MSWITCH-12                ' PIC X(33).
2198          05 VALUE 'MSWITCH-13                ' PIC X(33).
2199          05 VALUE 'MSWITCH-14                ' PIC X(33).
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2200          05 VALUE 'MSWITCH-15          ' PIC X(33).
2201          05 VALUE 'MSWITCH-2          ' PIC X(33).
2202          05 VALUE 'MSWITCH-3          ' PIC X(33).
2203          05 VALUE 'MSWITCH-4          ' PIC X(33).
2204          05 VALUE 'MSWITCH-5          ' PIC X(33).
2205          05 VALUE 'MSWITCH-6          ' PIC X(33).
2206          05 VALUE 'MSWITCH-7          ' PIC X(33).
2207          05 VALUE 'MSWITCH-8          ' PIC X(33).
2208          05 VALUE 'MSWITCH-9          ' PIC X(33).
2209          05 VALUE ' SYMBOL              ' PIC X(33).      UNIMPLEMENTED
2210          05 VALUE ' SYMBOLIC            ' PIC X(33).
2211          05 VALUE ' SYNC                ' PIC X(33).
2212          05 VALUE ' SYNCHRONISED        ' PIC X(33).
2213          05 VALUE ' SYNCHRONIZED        ' PIC X(33).
2214          05 VALUE 'MSYSERR              ' PIC X(33).
2215          05 VALUE 'MSYSIN              ' PIC X(33).
2216          05 VALUE 'MSYSIPT              ' PIC X(33).
2217          05 VALUE 'MSYSLIST             ' PIC X(33).
2218          05 VALUE 'MSYSLST              ' PIC X(33).
2219          05 VALUE 'MSYSOUT              ' PIC X(33).
2220          05 VALUE ' SYSTEM-DEFAULT       ' PIC X(33).
2221          05 VALUE ' TABLE               ' PIC X(33).      UNIMPLEMENTED
2222          05 VALUE 'KTALLYING             ' PIC X(33).
2223 GC1213    05 VALUE 'FTAN                ' PIC X(33).
2224          05 VALUE ' TAPE                 ' PIC X(33).
2225          05 VALUE ' TERMINAL              ' PIC X(33).      OBSOLETE
2226          05 VALUE 'VTERMINATE            ' PIC X(33).
2227          05 VALUE ' TEST                 ' PIC X(33).
2228 GC1213    05 VALUE 'FTEST-DATE-YYYYMMDD ' PIC X(33).
2229 GC1213    05 VALUE 'FTEST-DAY-YYYYDDD   ' PIC X(33).
2230 GC1213    05 VALUE 'FTEST-FORMATTED-DATETIME ' PIC X(33).      UNIMPLEMENTED
2231 GC1213    05 VALUE 'FTEST-NUMVAL        ' PIC X(33).
2232 GC1213    05 VALUE 'FTEST-NUMVAL-C      ' PIC X(33).
2233 GC1213    05 VALUE 'FTEST-NUMVAL-F      ' PIC X(33).
2234          05 VALUE ' TEXT                 ' PIC X(33).      OBSOLETE
2235          05 VALUE ' THAN                  ' PIC X(33).
2236          05 VALUE ' THEN                  ' PIC X(33).
2237          05 VALUE ' THROUGH               ' PIC X(33).
2238          05 VALUE ' THRU                  ' PIC X(33).
2239          05 VALUE ' TIME                  ' PIC X(33).
2240 GC0711     05 VALUE ' TIME-OUT             ' PIC X(33).
2241 GC0711     05 VALUE ' TIMEOUT             ' PIC X(33).
2242          05 VALUE ' TIMES                  ' PIC X(33).
2243          05 VALUE 'KTO                    ' PIC X(33).
2244          05 VALUE ' TOP                    ' PIC X(33).
2245          05 VALUE ' TOWARD-GREATER        ' PIC X(33).
2246          05 VALUE ' TOWARD-LESSER        ' PIC X(33).
2247          05 VALUE ' TRAILING              ' PIC X(33).
2248          05 VALUE ' TRAILING-SIGN        ' PIC X(33).      UNIMPLEMENTED
=====

```

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```

=====
2249          05 VALUE 'VTRANSFORM          ' PIC X(33).
2250 GC1213    05 VALUE 'FTRIM              ' PIC X(33).
2251          05 VALUE ' TRUE                ' PIC X(33).
2252          05 VALUE ' TRUNCATION          ' PIC X(33).
2253          05 VALUE ' TYPE                ' PIC X(33).
2254          05 VALUE ' TYPEDEF             ' PIC X(33).      UNIMPLEMENTED
2255          05 VALUE ' UCS-4               ' PIC X(33).      UNIMPLEMENTED
2256          05 VALUE ' UNDERLINE          ' PIC X(33).
2257          05 VALUE ' UNIT                ' PIC X(33).
2258          05 VALUE ' UNIVERSAL           ' PIC X(33).      UNIMPLEMENTED
2259          05 VALUE ' VUNLOCK             ' PIC X(33).
2260          05 VALUE ' UNSIGNED            ' PIC X(33).
2261          05 VALUE ' UNSIGNED-INT        ' PIC X(33).
2262          05 VALUE ' UNSIGNED-LONG       ' PIC X(33).
2263          05 VALUE ' UNSIGNED-SHORT      ' PIC X(33).
2264          05 VALUE ' VUNSTRING           ' PIC X(33).
2265          05 VALUE ' UNTIL               ' PIC X(33).
2266          05 VALUE ' KUP                 ' PIC X(33).
2267          05 VALUE ' UPDATE              ' PIC X(33).
2268          05 VALUE ' UPON                ' PIC X(33).
2269          05 VALUE ' UPPER               ' PIC X(33).
2270 GC1213    05 VALUE ' FUPPER-CASE        ' PIC X(33).
2271          05 VALUE ' USAGE               ' PIC X(33).
2272          05 VALUE ' VUSE                ' PIC X(33).
2273 GC0711     05 VALUE ' USER              ' PIC X(33).
2274          05 VALUE ' USER-DEFAULT        ' PIC X(33).
2275          05 VALUE ' KUSING              ' PIC X(33).
2276          05 VALUE ' UTF-16             ' PIC X(33).      UNIMPLEMENTED
2277          05 VALUE ' UTF-8              ' PIC X(33).      UNIMPLEMENTED
2278          05 VALUE ' VAL-STATUS          ' PIC X(33).      UNIMPLEMENTED
2279          05 VALUE ' VALID               ' PIC X(33).      UNIMPLEMENTED
2280          05 VALUE ' VALIDATE            ' PIC X(33).      UNIMPLEMENTED
2281          05 VALUE ' VALIDATE-STATUS     ' PIC X(33).      UNIMPLEMENTED
2282 GC0712     05 VALUE ' AVALUE            ' PIC X(33).
2283          05 VALUE ' VALUES             ' PIC X(33).
2284 GC1213     05 VALUE ' FVARIANCE         ' PIC X(33).
2285          05 VALUE ' KVARYING            ' PIC X(33).
2286          05 VALUE ' VDISABLE            ' PIC X(33).      UNIMPLEMENTED
2287          05 VALUE ' WAIT                ' PIC X(33).
2288          05 VALUE ' VWHEN              ' PIC X(33).
2289 GC1213     05 VALUE ' FWHEN-COMPILED    ' PIC X(33).
2290          05 VALUE ' WITH                ' PIC X(33).
2291          05 VALUE ' WORDS               ' PIC X(33).
2292          05 VALUE ' KWORKING-STORAGE    ' PIC X(33).
2293          05 VALUE ' VWRITE              ' PIC X(33).
2294 GC1213     05 VALUE ' FYEAR-TO-YYYY     ' PIC X(33).
2295          05 VALUE ' YYYYDDD            ' PIC X(33).
2296          05 VALUE ' YYYYMMDD           ' PIC X(33).
2297          05 VALUE ' ZERO                ' PIC X(33).
=====

```

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=====
2298          05 VALUE ' ZERO-FILL          ' PIC X(33).      UNIMPLEMENTED
2299          05 VALUE ' ZEROES            ' PIC X(33).
2300          05 VALUE ' ZEROS              ' PIC X(33).
2301      01    WS-Reserved-Word-Table-TXT REDEFINES WS-Reserved-Words-TXT.
2302 GC1113    05 WS-Reserved-Word-TXT      OCCURS 754 TIMES
2303                                     ASCENDING KEY
2304                                     WS-RW-Word-TXT
2305                                     INDEXED WS-RW-IDX.
2306          10 WS-RW-Type-CD              PIC X(1).
2307          10 WS-RW-Word-TXT              PIC X(32).
2308
2309      01    WS-Runtime-Switches.
2310 GC0710    05 WS-RS-Duplicate-CHR        PIC X(1).
2311          05 WS-RS-In-Which-Pgm-CHR      PIC X(1).
2312          88 WS-RS-In-Main-Module-BOOL   VALUE 'M'.
2313          88 WS-RS-In-Copybook-BOOL      VALUE 'C'.
2314          05 WS-RS-Last-Token-Ended-Sent-CHR PIC X(1).
2315          05 WS-RS-Processing-PICTURE-CHR PIC X(1).
2316          05 WS-RS-Token-Ended-Sentence-CHR PIC X(1).
2317 GC0710    05 WS-RS-Verb-Has-Been-Found-CHR PIC X(1).
2318
2319      01    WS-Saved-Section-TXT          PIC X(15).
2320
2321 GC1213 01    WS-Src-Dashes-TXT.
2322 GC0712    05 VALUE '====='              PIC X(7).
2323 GC0712    05 VALUE ALL '='              PIC X(128).
2324
2325      01    WS-Src-Detail-Line-TXT.
2326          05 WS-SDL-Line-NUM              PIC ZZZZZ9.
2327          05 FILLER                      PIC X(1).
2328          05 WS-SDL-Statement-TXT        PIC X(256).
2329
2330 GC1213 01    WS-Src-Hold-TXT             PIC X(256).
2331
2332      01    WS-Src-Line-NUM               PIC 9(6).
2333
2334 GC1213 01    WS-Src-Lines-NUM            USAGE BINARY-LONG.
2335
2336      01    WS-Src-SUB                   USAGE BINARY-LONG.
2337
2338      01    WS-Tally-QTY                  USAGE BINARY-LONG.
2339
2340      01    WS-Temp-10-Chars-TXT          PIC X(10).
2341
2342      01    WS-Temp-32-Chars-1-TXT        PIC X(32).
2343
2344 GC0711 01    WS-Temp-32-Chars-2-TXT      PIC X(32).
2345
2346 GC0711 01    WS-Temp-32-Chars-3-TXT      PIC X(32).
=====

```

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```

=====
2347
2348 GC0712 01  WS-Temp-65-Chars-TXT          PIC X(65).
2349
2350          01  WS-Temp-256-Chars-TXT        PIC X(256).
2351
2352          01  WS-Today-DT                   PIC 9(8).
2353
2354          01  WS-Token-Curr-TXT             PIC X(32).
2355
2356          01  WS-Token-Curr-Uc-TXT          PIC X(32).
2357
2358          01  WS-Token-Prev-TXT             PIC X(32).
2359
2360          01  WS-Token-Search-TXT           PIC X(32).
2361
2362          01  WS-Token-Type-CD              PIC X(1).
2363 GC0712      88 WS-TT-Token-Is-Argtype-BOOL  VALUE 'A'.
2364            88 WS-TT-Token-Is-EOF-BOOL      VALUE HIGH-VALUES.
2365 GC1213      88 WS-TT-Token-Is-Function-BOOL VALUE 'F'.
2366            88 WS-TT-Token-Is-Identifier-BOOL VALUE 'I'.
2367 GC0712      88 WS-TT-Token-Is-Keyword-BOOL  VALUE 'K', 'V', 'A'.
2368            88 WS-TT-Token-Is-Lit-Alpha-BOOL  VALUE 'L'.
2369            88 WS-TT-Token-Is-Lit-Number-BOOL  VALUE 'N'.
2370            88 WS-TT-Token-Is-Verb-BOOL      VALUE 'V'.
2371 GC1213      88 WS-TT-Token-Is-Reserved-Wd-BOOL VALUE ' ', 'F'.
2372
2373          01  WS-Usernames-QTY              USAGE BINARY-LONG.
2374
2375          01  WS-Version-TXT                PIC X(23).
2376
2377          01  WS-Xref-Detail-Line-TXT.
2378            05 WS-XDL-Prog-ID-TXT           PIC X(15).
2379            05 FILLER                       PIC X(1).
2380            05 WS-XDL-Token-TXT             PIC X(32).
2381            05 FILLER                       PIC X(1).
2382            05 WS-XDL-Def-Line-NUM          PIC ZZZZZ9.
2383            05 FILLER                       PIC X(1).
2384            05 WS-XDL-Section-TXT           PIC X(15).
2385            05 FILLER                       PIC X(1).
2386            05 WS-XDL-Reference-TXT         OCCURS 8 TIMES.
2387              10 WS-XDL-Ref-Line-NUM       PIC ZZZZZ9.
2388              10 WS-XDL-Ref-Flag-CHR       PIC X(1).
2389              10 FILLER                     PIC X(1).
2390
2391 GC1213 01  WS-Xref-Lines-Per-Rec-NUM       PIC 9(1).
2392
2393          LINKAGE SECTION.
2394 GC0712 01  L-Listing-Fn-TXT               PIC X(256).
2395
=====

```

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```
=====
2396          01  L-Src-Fn-TXT                      PIC X(256) .
2397
2398 GC0712 01  L-OS-Type-CD                          PIC 9(1) .
2399
2400 GC1213 01  L-LPP-NUM                             USAGE BINARY-LONG .
2401
2402 GC1213 01  L-LPP-Port-NUM                         USAGE BINARY-LONG .
2403
2404 GC1213 01  L-Listing-CD                          PIC 9(1) .
=====
```

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```

=====
2406 GC0712 PROCEDURE DIVISION USING L-Listing-Fn-TXT
2407 GC0712                      L-Src-Fn-TXT
2408 GC0712                      L-OS-Type-CD
2409 GC1213                      L-LPP-NUM
2410 GC1213                      L-LPP-Port-NUM
2411 GC1213                      L-Listing-CD.
2412      000-Main SECTION.
2413      PERFORM 100-Initialization
2414 GC0712      OPEN OUTPUT F-Listing-FILE
2415 GC0712      PERFORM 500-Produce-Source-Listing
2416 GC0712      SORT F-Sort-Work-FILE
2417 GC0712          ASCENDING KEY      F-SW-Prog-ID-TXT
2418 GC0712          F-SW-Token-Uc-TXT
2419 GC0712          F-SW-Ref-Line-NUM
2420 GC0712          INPUT PROCEDURE 300-Tokenize-Source
2421 GC0712          OUTPUT PROCEDURE 400-Produce-Xref-Listing
2422 GC0712      CLOSE F-Listing-FILE
2423      GOBACK
2424      .

```

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```

=====
2426      *>*****
2427      *> Perform all program-wide initialization operations      **
2428      *>*****
2429      100-Initialization SECTION.
2430 GC1213      MOVE 0 TO WS-Page-NUM
2431 GC1213      MOVE 'N' TO WS-Suppress-FF-CHR
2432 GC1213      MOVE SPACES TO WS-Copyright-TXT
2433 GC1213      STRING 'GCic for '                DELIMITED SIZE
2434 GC1213              WS-OS-Type-TXT(L-OS-Type-CD) DELIMITED SPACE
2435 GC1213              ' Copyright (C) 2009-2014, Gary L. Cutler, GPL'
2436 GC1213              DELIMITED SIZE
2437 GC1213      INTO WS-Copyright-TXT
2438 GC1213      MOVE 'GNU COBOL 2.1 23NOV2013' TO WS-Version-TXT
2439      MOVE TRIM(L-Src-Fn-TXT,Leading) TO L-Src-Fn-TXT
2440 GC1010      PERFORM VARYING WS-I-SUB FROM LENGTH(L-Src-Fn-TXT) BY -1 *> Locate last direct
               ory delimiter character so that the filename can be extracted
2441 GC1010              UNTIL L-Src-Fn-TXT(WS-I-SUB:1) = '/' OR '\',
2442 GC1010              OR WS-I-SUB = 0
2443 GC1010      END-PERFORM
2444 GC1010      IF WS-I-SUB = 0
2445 GC1010          MOVE UPPER-CASE(L-Src-Fn-TXT) TO WS-Main-Module-Name-TXT *> No directory d
               elimiter, whole thing is filename
2446 GC1010      ELSE
2447 GC1010          ADD 1 TO WS-I-SUB
2448 GC1010          MOVE UPPER-CASE(L-Src-Fn-TXT(WS-I-SUB:))
2449 GC1010              TO WS-Main-Module-Name-TXT *> Extract filename
2450 GC1010      END-IF
2451 GC1213      IF L-Listing-CD = 1 *> LANDSCAPE
2452 GC1213          MOVE 8 TO WS-Xref-Lines-Per-Rec-NUM
2453 GC1213          ACCEPT WS-Lines-Per-Page-Env-TXT
2454 GC1213              FROM ENVIRONMENT 'GCXREF_LINES'
2455 GC1213      ELSE *> PORTRAIT
2456 GC1213          MOVE 3 TO WS-Xref-Lines-Per-Rec-NUM
2457 GC1213          ACCEPT WS-Lines-Per-Page-Env-TXT
2458 GC1213              FROM ENVIRONMENT 'GCXREF_LINES_PORT'
2459 GC1213      END-IF
2460      INSPECT L-Src-Fn-TXT REPLACING ALL '\', BY '/'
2461      MOVE L-Src-Fn-TXT TO WS-Program-Path-TXT
2462      CALL 'C$JUSTIFY' USING WS-Program-Path-TXT, 'Right'
2463      MOVE LENGTH(TRIM(L-Src-Fn-TXT,Trailing)) TO WS-I-SUB
2464      MOVE 0 TO WS-J-SUB
2465      PERFORM UNTIL L-Src-Fn-TXT(WS-I-SUB:1) = '/'
2466          OR WS-I-SUB = 0
2467          SUBTRACT 1 FROM WS-I-SUB
2468          ADD      1 TO      WS-J-SUB
2469      END-PERFORM
2470      UNSTRING L-Src-Fn-TXT((WS-I-SUB + 1):WS-J-SUB)
2471      DELIMITED BY '.,'
=====

```

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=====
2472          INTO WS-Filename-TXT
2473          WS-Dummy-TXT
2474 GC1010    STRING
2475 GC1010          TRIM(WS-Filename-TXT,Trailing)
2476 GC1010          '.i'
2477 GC1010          DELIMITED SIZE
2478 GC1010          INTO WS-Expanded-Src-Fn-TXT
2479 GC1010    CALL 'CBL_CHECK_FILE_EXIST' USING WS-Expanded-Src-Fn-TXT
2480 GC1010          WS-Temp-256-Chars-TXT
2481 GC1010    IF RETURN-CODE NOT = 0
2482 GC1010          GOBACK
2483 GC1010    END-IF
2484          IF WS-Lines-Per-Page-Env-TXT NOT = SPACES
2485              MOVE NUMVAL(WS-Lines-Per-Page-Env-TXT)
2486              TO WS-Lines-Per-Page-NUM
2487          ELSE
2488 GC1213      IF L-LISTING-CD = 1 *> LANDSCAPE
2489 GC1213          MOVE L-LPP-NUM TO WS-Lines-Per-Page-NUM
2490 GC1213      ELSE
2491 GC1213          MOVE L-LPP-Port-NUM TO WS-Lines-Per-Page-NUM
2492 GC1213      END-IF
2493          END-IF
2494 GC1213    SUBTRACT 3 FROM WS-Lines-Per-Page-NUM *> FOR PAGE FOOTER
2495          ACCEPT WS-Today-DT FROM DATE YYYYMMDD
2496 GC1213    MOVE WS-Today-DT TO WS-Formatted-DT
2497          MOVE '??????????????...' TO WS-Curr-Prog-ID-TXT
2498          MOVE SPACES              TO WS-Curr-Verb-TXT
2499          WS-Held-Reference-TXT
2500          .
=====

```

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```

=====
2502      300-Tokenize-Source SECTION.
2503      OPEN INPUT F-Expanded-Src-FILE
2504      MOVE SPACES TO F-Expanded-Src-REC
2505      MOVE 256 TO WS-Src-SUB
2506      MOVE 0 TO WS-Usernames-QTY
2507      WS-Curr-Line-NUM
2508      MOVE '?' TO WS-Curr-Division-TXT
2509 GC0710  MOVE 'N' TO WS-RS-Verb-Has-Been-Found-CHR
2510      PERFORM FOREVER
2511          PERFORM 310-Get-Token
2512          IF WS-TT-Token-Is-EOF-BOOL
2513              EXIT PERFORM
2514          END-IF
2515          MOVE UPPER-CASE(WS-Token-Curr-TXT)
2516              TO WS-Token-Curr-Uc-TXT
2517 GC1010  IF WS-TT-Token-Is-Keyword-BOOL
2518 GC1010  OR WS-TT-Token-Is-Reserved-Wd-BOOL
2519 GC1010  MOVE WS-Token-Curr-Uc-TXT TO WS-Token-Curr-TXT
2520 GC1010  END-IF
2521      IF WS-TT-Token-Is-Verb-BOOL
2522          MOVE WS-Token-Curr-Uc-TXT TO WS-Curr-Verb-TXT
2523              WS-Token-Prev-TXT
2524          IF WS-Held-Reference-TXT NOT = SPACES
2525              MOVE WS-Held-Reference-TXT TO F-Sort-Work-REC
2526              MOVE SPACES TO WS-Held-Reference-TXT
2527              RELEASE F-Sort-Work-REC
2528          END-IF
2529      END-IF
2530      EVALUATE TRUE
2531      WHEN WS-CD-In-IDENT-DIV-BOOL
2532          PERFORM 320-IDENTIFICATION-DIVISION
2533      WHEN WS-CD-In-ENV-DIV-BOOL
2534          PERFORM 330-ENVIRONMENT-DIVISION
2535      WHEN WS-CD-In-DATA-DIV-BOOL
2536          PERFORM 340-DATA-DIVISION
2537      WHEN WS-CD-In-PROC-DIV-BOOL
2538          PERFORM 350-PROCEDURE-DIVISION
2539      END-EVALUATE
2540      IF WS-TT-Token-Is-Keyword-BOOL
2541          MOVE WS-Token-Curr-Uc-TXT TO WS-Token-Prev-TXT
2542      END-IF
2543      IF WS-RS-Token-Ended-Sentence-CHR = 'Y'
2544      AND WS-Curr-Division-TXT NOT = 'I'
2545          MOVE SPACES TO WS-Token-Prev-TXT
2546              WS-Curr-Verb-TXT
2547      END-IF
2548
2549      END-PERFORM
=====

```

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```
=====
2550      CLOSE F-Expanded-Src-FILE
2551      .
```


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=====
2553      310-Get-Token SECTION.
2554      *>-- Position to 1st non-blank character
2555          MOVE WS-RS-Token-Ended-Sentence-CHR
2556              TO WS-RS-Last-Token-Ended-Sent-CHR
2557          MOVE 'N' TO WS-RS-Token-Ended-Sentence-CHR
2558          PERFORM UNTIL F-Expanded-Src-REC(WS-Src-SUB : 1) NOT = SPACE
2559              IF WS-Src-SUB > 255
2560                  READ F-Expanded-Src-FILE AT END
2561                  IF WS-Held-Reference-TXT NOT = SPACES
2562                      MOVE WS-Held-Reference-TXT TO F-Sort-Work-REC
2563                      MOVE SPACES TO WS-Held-Reference-TXT
2564                      RELEASE F-Sort-Work-REC
2565                  END-IF
2566                  SET WS-TT-Token-Is-EOF-BOOL TO TRUE
2567                  MOVE 0 TO WS-Curr-Line-NUM
2568                  EXIT SECTION
2569              END-READ
2570          IF F-ES-1-7-TXT NOT = '#DEFLIT'
2571              IF F-ES-1-CHR = '#'
2572                  PERFORM 311-Control-Record
2573              ELSE
2574                  PERFORM 312-Expanded-Src-Record
2575              END-IF
2576          END-IF
2577      ELSE
2578          ADD 1 TO WS-Src-SUB
2579      END-IF
2580  END-PERFORM
2581      *>-- Extract token string
2582          MOVE F-Expanded-Src-REC(WS-Src-SUB : 1)
2583              TO WS-Curr-CHR
2584          MOVE F-Expanded-Src-REC(WS-Src-SUB + 1: 1)
2585              TO WS-Next-CHR
2586          IF WS-Curr-CHR = '.'
2587              ADD 1 TO WS-Src-SUB
2588              MOVE WS-Curr-CHR TO WS-Token-Curr-TXT
2589              MOVE SPACE TO WS-Token-Type-CD
2590              MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
2591          EXIT SECTION
2592      END-IF
2593      IF WS-Curr-Char-Is-Punct-BOOL
2594          AND WS-Curr-CHR = '='
2595          AND WS-Curr-Division-TXT = 'P'
2596              ADD 1 TO WS-Src-SUB
2597              MOVE 'EQUALS' TO WS-Token-Curr-TXT
2598              MOVE 'K' TO WS-Token-Type-CD
2599          EXIT SECTION
2600      END-IF
=====

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```

=====
2601      IF WS-Curr-Char-Is-Punct-BOOL *> So subscripts don't get flagged w/ '*'
2602      AND WS-Curr-CHR = '('
2603      AND WS-Curr-Division-TXT = 'P'
2604          MOVE SPACES TO WS-Token-Prev-TXT
2605      END-IF
2606      IF WS-Curr-Char-Is-Punct-BOOL
2607          ADD 1 TO WS-Src-SUB
2608          MOVE WS-Curr-CHR TO WS-Token-Curr-TXT
2609          MOVE SPACE TO WS-Token-Type-CD
2610          EXIT SECTION
2611      END-IF
2612      IF WS-Curr-Char-Is-Quote-BOOL
2613          ADD 1 TO WS-Src-SUB
2614          UNSTRING F-Expanded-Src-REC
2615              DELIMITED BY WS-Curr-CHR
2616              INTO WS-Token-Curr-TXT
2617              WITH POINTER WS-Src-SUB
2618          IF F-Expanded-Src-REC(WS-Src-SUB : 1) = '.'
2619              MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
2620              ADD 1 TO WS-Src-SUB
2621          END-IF
2622          SET WS-TT-Token-Is-Lit-Alpha-BOOL TO TRUE
2623          EXIT SECTION
2624      END-IF
2625      IF WS-Curr-Char-Is-X-BOOL AND WS-Next-Char-Is-Quote-BOOL
2626          ADD 2 TO WS-Src-SUB
2627          UNSTRING F-Expanded-Src-REC
2628              DELIMITED BY WS-Next-CHR
2629              INTO WS-Token-Curr-TXT
2630              WITH POINTER WS-Src-SUB
2631          IF F-Expanded-Src-REC(WS-Src-SUB : 1) = '.'
2632              MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
2633              ADD 1 TO WS-Src-SUB
2634          END-IF
2635          SET WS-TT-Token-Is-Lit-Number-BOOL TO TRUE
2636          EXIT SECTION
2637      END-IF
2638      IF WS-Curr-Char-Is-Z-BOOL AND WS-Next-Char-Is-Quote-BOOL
2639          ADD 2 TO WS-Src-SUB
2640          UNSTRING F-Expanded-Src-REC
2641              DELIMITED BY WS-Next-CHR
2642              INTO WS-Token-Curr-TXT
2643              WITH POINTER WS-Src-SUB
2644          IF F-Expanded-Src-REC(WS-Src-SUB : 1) = '.'
2645              MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
2646              ADD 1 TO WS-Src-SUB
2647          END-IF
2648          SET WS-TT-Token-Is-Lit-Alpha-BOOL TO TRUE
2649          EXIT SECTION
=====

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```

=====
2650      END-IF
2651      IF WS-RS-Processing-PICTURE-CHR = 'Y'
2652          UNSTRING F-Expanded-Src-REC
2653              DELIMITED BY ' ' OR ' '
2654              INTO WS-Token-Curr-TXT
2655              DELIMITER IN WS-Delim-TXT
2656              WITH POINTER WS-Src-SUB
2657      IF WS-Delim-TXT = ' '
2658          MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
2659          ADD 1 TO WS-Src-SUB
2660      END-IF
2661      IF UPPER-CASE(WS-Token-Curr-TXT) = 'IS'
2662          MOVE SPACE TO WS-Token-Type-CD
2663          EXIT SECTION
2664      ELSE
2665          MOVE 'N' TO WS-RS-Processing-PICTURE-CHR
2666          MOVE SPACE TO WS-Token-Type-CD
2667          EXIT SECTION
2668      END-IF
2669  END-IF
2670  UNSTRING F-Expanded-Src-REC
2671      DELIMITED BY ' ' OR ' ' OR '=' OR '(' OR ')' OR '*'
2672                  OR '/' OR '&' OR ';' OR ',' OR '<'
2673                  OR '>' OR ':'
2674      INTO WS-Token-Curr-TXT
2675      DELIMITER IN WS-Delim-TXT
2676      WITH POINTER WS-Src-SUB
2677  IF WS-Delim-TXT = ' '
2678      MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
2679  END-IF
2680  IF WS-Delim-TXT NOT = ' ' AND ' '
2681      SUBTRACT 1 FROM WS-Src-SUB
2682  END-IF
2683  *>-- Classify Token
2684  MOVE UPPER-CASE(WS-Token-Curr-TXT) TO WS-Token-Search-TXT
2685  IF WS-Token-Search-TXT = 'EQUAL' OR 'EQUALS'
2686      MOVE 'EQUALS' TO WS-Token-Curr-TXT
2687      MOVE 'K'      TO WS-Token-Type-CD
2688      EXIT SECTION
2689  END-IF
2690  SEARCH ALL WS-Reserved-Word-TXT
2691      WHEN WS-RW-Word-TXT (WS-RW-IDX) = WS-Token-Search-TXT
2692          MOVE WS-RW-Type-CD (WS-RW-IDX) TO WS-Token-Type-CD
2693 GC0710      IF WS-TT-Token-Is-Verb-BOOL
2694 GC0710          MOVE 'Y' TO WS-RS-Verb-Has-Been-Found-CHR
2695 GC0710      END-IF
2696      EXIT SECTION
2697  END-SEARCH
2698  *>-- Not a reserved word, must be a user name
=====

```

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```

=====
2699      SET WS-TT-Token-Is-Identifier-BOOL TO TRUE
2700      PERFORM 313-Check-For-Numeric-Token
2701      IF WS-TT-Token-Is-Lit-Number-BOOL
2702          IF (WS-RS-Last-Token-Ended-Sent-CHR = 'Y')
2703              AND (WS-Curr-Division-TXT = 'D')
2704                  MOVE 'LEVEL #' TO WS-Token-Curr-TXT
2705                  MOVE 'K'      TO WS-Token-Type-CD
2706              EXIT SECTION
2707          ELSE
2708              EXIT SECTION
2709          END-IF
2710      END-IF
2711      .
=====

```

```

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=====
2713      311-Control-Record SECTION.
2714      UNSTRING F-ES-2-256-TXT-256
2715          DELIMITED BY '''
2716      INTO WS-Temp-10-Chars-TXT
2717          WS-Temp-256-Chars-TXT
2718          WS-Dummy-TXT
2719      INSPECT WS-Temp-10-Chars-TXT REPLACING ALL ''' BY SPACE
2720 GC0712  IF WS-Temp-10-Chars-TXT(1:4) = 'line'
2721 GC0712      MOVE SPACES TO WS-Temp-10-Chars-TXT(1:4)
2722 GC0712  END-IF
2723      COMPUTE WS-I-SUB = NUMVAL(WS-Temp-10-Chars-TXT) - 1
2724 GC1010  IF UPPER-CASE(TRIM(WS-Temp-256-Chars-TXT,Trailing)) =
2725 GC1010      TRIM(WS-Main-Module-Name-TXT)
2726      MOVE WS-I-SUB TO WS-Curr-Line-NUM
2727      SET WS-RS-In-Main-Module-BOOL TO TRUE
2728      IF WS-Saved-Section-TXT NOT = SPACES
2729          MOVE WS-Saved-Section-TXT TO WS-Curr-Section-TXT
2730      END-IF
2731  ELSE
2732      SET WS-RS-In-Copybook-BOOL TO TRUE
2733      IF WS-Saved-Section-TXT = SPACES
2734          MOVE WS-Curr-Section-TXT TO WS-Saved-Section-TXT
2735      END-IF
2736      MOVE LENGTH(TRIM(WS-Temp-256-Chars-TXT,Trailing))
2737      TO WS-I-SUB
2738      MOVE 0 TO WS-J-SUB
2739      PERFORM UNTIL WS-Temp-256-Chars-TXT(WS-I-SUB:1) = '/'
2740          OR WS-I-SUB = 0
2741          SUBTRACT 1 FROM WS-I-SUB
2742          ADD 1 TO WS-J-SUB
2743      END-PERFORM
2744      UNSTRING WS-Temp-256-Chars-TXT((WS-I-SUB + 1):WS-J-SUB)
2745          DELIMITED BY ' .'
2746      INTO WS-Filename-TXT
2747          WS-Dummy-TXT
2748      MOVE '[' TO WS-CS-1-CHR
2749      MOVE WS-Filename-TXT TO WS-CS-2-14-TXT
2750      IF WS-CS-11-14-TXT NOT = SPACES
2751          MOVE '...' TO WS-CS-11-14-TXT
2752      END-IF
2753      MOVE ']' TO WS-CS-15-CHR
2754  END-IF
2755      MOVE SPACES TO F-Expanded-Src-REC *> Force another READ
2756      MOVE 256 TO WS-Src-SUB
2757      .
=====

```

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```

=====
2759      312-Expanded-Src-Record SECTION.
2760 GC0314      IF F-Expanded-Src-REC(1:1) = SPACE
2761 GC0314          MOVE 2 TO WS-Src-SUB
2762 GC0314      ELSE
2763 GC0314          MOVE 1 TO WS-Src-SUB
2764 GC0314      END-IF
2765      IF WS-RS-In-Main-Module-BOOL
2766          ADD 1 To WS-Curr-Line-NUM
2767      END-IF
2768      .

```

```

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=====
2770      313-Check-For-Numeric-Token SECTION.
2771      MOVE WS-Token-Curr-TXT TO WS-Temp-32-Chars-1-TXT
2772      INSPECT WS-Temp-32-Chars-1-TXT
2773 GC0711      CONVERTING '0123456789' TO SPACES
2774 GC0711      IF WS-Temp-32-Chars-1-TXT = SPACES                *> Simple Unsigned Integer
2775      SET WS-TT-Token-Is-Lit-Number-BOOL TO TRUE
2776      EXIT SECTION
2777      END-IF
2778 GC0711      MOVE SPACES TO WS-Temp-32-Chars-2-TXT
2779 GC0711      WS-Temp-32-Chars-3-TXT
2780 GC0711      WS-Dummy-TXT
2781 GC0711      UNSTRING WS-Temp-32-Chars-1-TXT
2782 GC0711      DELIMITED BY 'e' OR 'E'
2783 GC0711      INTO WS-Temp-32-Chars-2-TXT
2784 GC0711      WS-Temp-32-Chars-3-TXT
2785 GC0711      WS-Dummy-TXT
2786 GC0711      IF WS-Dummy-TXT NOT = SPACES                      *> More than one 'E' - Not Numeric
2787 GC0711      EXIT SECTION
2788 GC0711      END-IF
2789 GC0711      IF WS-Temp-32-Chars-2-TXT(1:1) = '+' OR '-'
2790 GC0711      MOVE SPACE TO WS-Temp-32-Chars-2-TXT(1:1)
2791 GC0711      END-IF
2792 GC0711      IF WS-Temp-32-Chars-3-TXT(1:1) = '+' OR '-'
2793 GC0711      MOVE SPACE TO WS-Temp-32-Chars-3-TXT(1:1)
2794 GC0711      END-IF
2795      MOVE 0 TO WS-Tally-QTY
2796 GC0711      INSPECT WS-Temp-32-Chars-2-TXT
2797      TALLYING WS-Tally-QTY FOR ALL '.'
2798      IF WS-Tally-QTY = 1
2799 GC0711      INSPECT WS-Temp-32-Chars-2-TXT REPLACING ALL '.' BY SPACE
2800      END-IF
2801 GC0711      INSPECT WS-Temp-32-Chars-3-TXT
2802 GC0711      TALLYING WS-Tally-QTY FOR ALL '.'
2803 GC0711      IF WS-Tally-QTY = 1
2804 GC0711      INSPECT WS-Temp-32-Chars-3-TXT REPLACING ALL '.' BY SPACE
2805 GC0711      END-IF
2806 GC0711      IF WS-Temp-32-Chars-2-TXT = SPACES AND WS-Temp-32-Chars-3-TXT = SPACES
2807      SET WS-TT-Token-Is-Lit-Number-BOOL TO TRUE
2808      EXIT SECTION
2809      END-IF
2810      .
=====

```

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```

=====
2812      320-IDENTIFICATION-DIVISION SECTION.
2813 GC0712      IF WS-TT-Token-Is-Argtype-BOOL
2814 GC0712          SET WS-TT-Token-Is-Reserved-Wd-BOOL TO TRUE
2815 GC0712      END-IF
2816 GC0710      MOVE 'N' TO WS-RS-Verb-Has-Been-Found-CHR
2817              IF WS-TT-Token-Is-Keyword-BOOL
2818                  AND WS-Token-Curr-TXT = 'DIVISION'
2819                      MOVE WS-Token-Prev-TXT TO WS-Curr-Division-TXT
2820                      EXIT SECTION
2821      END-IF
2822 GC0712      IF WS-Token-Prev-TXT = 'PROGRAM-ID' OR 'FUNCTION-ID'
2823              MOVE SPACES TO WS-Token-Prev-TXT
2824              MOVE WS-Token-Curr-TXT TO WS-Curr-Prog-ID-TXT
2825 GC0712      IF WS-CPI-16-CHR NOT = SPACES
2826              MOVE '...' TO WS-CPI-13-15-TXT
2827      END-IF
2828      EXIT SECTION
2829      END-IF
2830      .
=====

```

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=====
2832      330-ENVIRONMENT-DIVISION SECTION.
2833 GC0712      IF WS-TT-Token-Is-Argtype-BOOL
2834 GC0712          SET WS-TT-Token-Is-Reserved-Wd-BOOL TO TRUE
2835 GC0712      END-IF
2836      IF WS-TT-Token-Is-Keyword-BOOL
2837      AND WS-Token-Curr-TXT = 'DIVISION'
2838          MOVE WS-Token-Prev-TXT TO WS-Curr-Division-TXT
2839      EXIT SECTION
2840      END-IF
2841      IF WS-TT-Token-Is-Keyword-BOOL
2842      AND WS-Token-Curr-TXT = 'SECTION'
2843          MOVE WS-Token-Prev-TXT TO WS-Curr-Section-TXT
2844      EXIT SECTION
2845      END-IF
2846      IF WS-TT-Token-Is-Identifier-BOOL
2847 GC0712          IF WS-Token-Prev-TXT = 'FUNCTION'
2848 GC0712              PERFORM 360-Release-Def
2849 GC0712          ELSE
2850 GC0712              PERFORM 361-Release-Ref
2851 GC0712          END-IF
2852      END-IF
2853 GC1213      IF WS-TT-Token-Is-Function-BOOL
2854 GC1213          PERFORM 361-Release-Ref
2855 GC1213      END-IF
2856      .

```

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=====
2858      340-DATA-DIVISION SECTION.
2859 GC0712      IF WS-TT-Token-Is-Argtype-BOOL
2860 GC0712          SET WS-TT-Token-Is-Reserved-Wd-BOOL TO TRUE
2861 GC0712      END-IF
2862          IF WS-TT-Token-Is-Keyword-BOOL
2863      AND WS-Token-Curr-TXT = 'DIVISION'
2864          MOVE WS-Token-Prev-TXT TO WS-Curr-Division-TXT
2865          EXIT SECTION
2866      END-IF
2867          IF WS-TT-Token-Is-Keyword-BOOL
2868      AND WS-Token-Curr-TXT = 'SECTION'
2869          MOVE WS-Token-Prev-TXT TO WS-Curr-Section-TXT
2870          EXIT SECTION
2871      END-IF
2872          IF (WS-Token-Curr-TXT = 'PIC' OR 'PICTURE')
2873      AND (WS-TT-Token-Is-Keyword-BOOL)
2874          MOVE 'Y' TO WS-RS-Processing-PICTURE-CHR
2875          EXIT SECTION
2876      END-IF
2877 GC0710      IF WS-TT-Token-Is-Reserved-Wd-BOOL
2878 GC0710      AND WS-Token-Prev-TXT = 'LEVEL #'
2879 GC0710          MOVE SPACES TO WS-Token-Prev-TXT
2880 GC0710      EXIT SECTION
2881 GC0710      END-IF
2882          IF WS-TT-Token-Is-Identifier-BOOL
2883      EVALUATE WS-Token-Prev-TXT
2884      WHEN 'FD'
2885          PERFORM 360-Release-Def
2886          MOVE SPACES TO WS-Token-Prev-TXT
2887 GC1213      WHEN 'RD'
2888 GC1213          PERFORM 360-Release-Def
2889 GC1213          MOVE SPACES TO WS-Token-Prev-TXT
2890      WHEN 'SD'
2891          PERFORM 360-Release-Def
2892          MOVE SPACES TO WS-Token-Prev-TXT
2893      WHEN 'LEVEL #'
2894          PERFORM 360-Release-Def
2895          MOVE SPACES TO WS-Token-Prev-TXT
2896      WHEN 'INDEXED'
2897          PERFORM 360-Release-Def
2898          MOVE SPACES TO WS-Token-Prev-TXT
2899      WHEN 'USING'
2900          PERFORM 362-Release-Upd
2901          MOVE SPACES TO WS-Token-Prev-TXT
2902      WHEN 'INTO'
2903          PERFORM 362-Release-Upd
2904          MOVE SPACES TO WS-Token-Prev-TXT
2905      WHEN OTHER

```

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```
=====
2906 GC1213          IF WS-Token-Curr-TXT NOT = 'SUM'
2907 GC1213          PERFORM 361-Release-Ref
2908 GC1213          END-IF
2909                END-EVALUATE
2910                EXIT SECTION
2911                END-IF
2912                .
=====
```

```
=====
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```

=====
2914      350-PROCEDURE-DIVISION SECTION.
2915          IF WS-Curr-Section-TXT NOT = 'PROCEDURE'
2916              MOVE 'PROCEDURE' TO WS-Curr-Section-TXT
2917          END-IF
2918 GC0710      IF WS-Token-Curr-Uc-TXT = 'PROGRAM'
2919 GC0710      AND WS-Token-Prev-TXT = 'END'
2920 GC0710          MOVE '?' TO WS-Curr-Division-TXT
2921 GC0710          EXIT SECTION
2922 GC0710      END-IF
2923          IF WS-TT-Token-Is-Keyword-BOOL
2924          AND WS-Token-Curr-TXT = 'DIVISION'
2925              MOVE WS-Token-Prev-TXT TO WS-Curr-Division-TXT
2926          EXIT SECTION
2927          END-IF
2928 GC0313      IF WS-TT-Token-Is-Identifier-BOOL
2929 GC0313      AND WS-Token-Prev-TXT = SPACES
2930 GC0313      AND WS-Curr-Verb-TXT = SPACES
2931 GC0313*> ----- Definition of a Paragraph or Section
2932 GC0313          PERFORM 360-Release-Def
2933 GC0313          MOVE SPACES TO WS-Token-Prev-TXT
2934 GC0313          EXIT SECTION
2935 GC0313      END-IF
2936          IF NOT WS-TT-Token-Is-Identifier-BOOL
2937          EXIT SECTION
2938          END-IF
2939          EVALUATE WS-Curr-Verb-TXT
2940          WHEN 'ACCEPT'
2941              PERFORM 351-ACCEPT
2942          WHEN 'ADD'
2943              PERFORM 351-ADD
2944          WHEN 'ALLOCATE'
2945              PERFORM 351-ALLOCATE
2946          WHEN 'CALL'
2947              PERFORM 351-CALL
2948          WHEN 'COMPUTE'
2949              PERFORM 351-COMPUTE
2950          WHEN 'DIVIDE'
2951              PERFORM 351-DIVIDE
2952          WHEN 'FREE'
2953              PERFORM 351-FREE
2954 GC1213      WHEN 'GENERATE'
2955 GC1213          PERFORM 351-GENERATE
2956          WHEN 'INITIALIZE'
2957              PERFORM 351-INITIALIZE
2958 GC1213      WHEN 'INITIATE'
2959 GC1213          PERFORM 351-GENERATE
2960          WHEN 'INSPECT'
2961              PERFORM 351-INSPECT
=====

```

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```

=====
2962          WHEN 'MOVE'
2963              PERFORM 351-MOVE
2964          WHEN 'MULTIPLY'
2965              PERFORM 351-MULTIPLY
2966          WHEN 'PERFORM'
2967              PERFORM 351-PERFORM
2968          WHEN 'SET'
2969              PERFORM 351-SET
2970          WHEN 'STRING'
2971              PERFORM 351-STRING
2972          WHEN 'SUBTRACT'
2973              PERFORM 351-SUBTRACT
2974 GC1213     WHEN 'TERMINATE'
2975 GC1213     PERFORM 351-GENERATE
2976          WHEN 'TRANSFORM'
2977              PERFORM 351-TRANSFORM
2978          WHEN 'UNSTRING'
2979              PERFORM 351-UNSTRING
2980          WHEN OTHER
2981              PERFORM 361-Release-Ref
2982          END-EVALUATE
2983          .
=====

```

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=====
2985      351-ACCEPT SECTION.
2986          EVALUATE WS-Token-Prev-TXT
2987              WHEN 'ACCEPT'
2988                  PERFORM 362-Release-Upd
2989                  MOVE SPACES TO WS-Token-Prev-TXT
2990              WHEN OTHER
2991                  PERFORM 361-Release-Ref
2992          END-EVALUATE
2993      .
2994
2995      351-ADD SECTION.
2996          EVALUATE WS-Token-Prev-TXT
2997              WHEN 'GIVING'
2998                  PERFORM 362-Release-Upd
2999              WHEN 'TO'
3000                  PERFORM 362-Release-Upd
3001              WHEN OTHER
3002                  PERFORM 361-Release-Ref
3003          END-EVALUATE
3004      .
3005
3006      351-ALLOCATE SECTION.
3007          EVALUATE WS-Token-Prev-TXT
3008              WHEN 'ALLOCATE'
3009                  PERFORM 362-Release-Upd
3010                  MOVE SPACES TO WS-Token-Prev-TXT
3011              WHEN 'RETURNING'
3012                  PERFORM 362-Release-Upd
3013              WHEN OTHER
3014                  PERFORM 361-Release-Ref
3015          END-EVALUATE
3016      .
3017
3018      351-CALL SECTION.
3019          EVALUATE WS-Token-Prev-TXT
3020              WHEN 'RETURNING'
3021                  PERFORM 362-Release-Upd
3022              WHEN 'GIVING'
3023                  PERFORM 362-Release-Upd
3024              WHEN OTHER
3025 GC1213      PERFORM 365-Release-Arg
3026          END-EVALUATE
3027      .
3028
3029      351-COMPUTE SECTION.
3030          EVALUATE WS-Token-Prev-TXT
3031              WHEN 'COMPUTE'
3032          PERFORM 362-Release-Upd
=====

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=====
3033         WHEN OTHER
3034             PERFORM 361-Release-Ref
3035         END-EVALUATE
3036         .
3037
3038     351-DIVIDE SECTION.
3039         EVALUATE WS-Token-Prev-TXT
3040         WHEN 'INTO'
3041             PERFORM 363-Set-Upd
3042             MOVE F-Sort-Work-REC TO WS-Held-Reference-TXT
3043         WHEN 'GIVING'
3044             IF WS-Held-Reference-TXT NOT = SPACES
3045                 MOVE WS-Held-Reference-TXT To F-Sort-Work-REC
3046                 MOVE SPACES          To WS-Held-Reference-TXT
3047                                     F-SW-Ref-Flag-CHR
3048             RELEASE F-Sort-Work-REC
3049         END-IF
3050         PERFORM 362-Release-Upd
3051     WHEN 'REMAINDER'
3052         PERFORM 362-Release-Upd
3053     WHEN OTHER
3054         PERFORM 361-Release-Ref
3055     END-EVALUATE
3056     .
3057
3058     351-FREE SECTION.
3059         PERFORM 362-Release-Upd
3060     .
3061
3062 GC1213 351-GENERATE SECTION.
3063 GC1213     PERFORM 362-Release-Upd
3064 GC1213     .
3065
3066     351-INITIALIZE SECTION.
3067         EVALUATE WS-Token-Prev-TXT
3068         WHEN 'INITIALIZE'
3069             PERFORM 362-Release-Upd
3070         WHEN 'REPLACING'
3071             PERFORM 361-Release-Ref
3072         END-EVALUATE
3073     .
3074
3075 GC1213 351-INITIATE SECTION.
3076 GC1213     PERFORM 362-Release-Upd
3077 GC1213     .
3078
3079     351-INSPECT SECTION.
3080         EVALUATE WS-Token-Prev-TXT
3081     WHEN 'INSPECT'

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```

=====
3082          PERFORM 364-Set-Ref
3083          MOVE SPACES TO WS-Held-Reference-TXT
3084          MOVE SPACES TO WS-Token-Prev-TXT
3085      WHEN 'TALLYING'
3086          PERFORM 362-Release-Upd
3087          MOVE SPACES TO WS-Token-Prev-TXT
3088      WHEN 'REPLACING'
3089          IF WS-Held-Reference-TXT NOT = SPACES
3090              MOVE WS-Held-Reference-TXT TO F-Sort-Work-REC
3091              MOVE SPACES          TO WS-Held-Reference-TXT
3092              MOVE '*'              TO F-SW-Ref-Flag-CHR
3093              RELEASE F-Sort-Work-REC
3094          END-IF
3095          MOVE SPACES TO WS-Token-Prev-TXT
3096      WHEN 'CONVERTING'
3097          IF WS-Held-Reference-TXT NOT = SPACES
3098              MOVE WS-Held-Reference-TXT TO F-Sort-Work-REC
3099              MOVE SPACES          TO WS-Held-Reference-TXT
3100              MOVE '*'              TO F-SW-Ref-Flag-CHR
3101              RELEASE F-Sort-Work-REC
3102          END-IF
3103          MOVE SPACES TO WS-Token-Prev-TXT
3104      WHEN OTHER
3105          PERFORM 361-Release-Ref
3106      END-EVALUATE
3107      .
3108
3109      351-MOVE SECTION.
3110          EVALUATE WS-Token-Prev-TXT
3111      WHEN 'TO'
3112          PERFORM 362-Release-Upd
3113      WHEN OTHER
3114          PERFORM 361-Release-Ref
3115      END-EVALUATE
3116      .
3117
3118      351-MULTIPLY SECTION.
3119          EVALUATE WS-Token-Prev-TXT
3120      WHEN 'BY'
3121          PERFORM 363-Set-Upd
3122          MOVE F-Sort-Work-REC TO WS-Held-Reference-TXT
3123      WHEN 'GIVING'
3124          MOVE WS-Held-Reference-TXT TO F-Sort-Work-REC
3125          MOVE SPACES          TO WS-Held-Reference-TXT
3126                               F-SW-Ref-Flag-CHR
3127          RELEASE F-Sort-Work-REC
3128          PERFORM 362-Release-Upd
3129      WHEN OTHER
3130          PERFORM 361-Release-Ref
=====

```

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```

=====
3131         END-EVALUATE
3132         .
3133
3134     351-PERFORM SECTION.
3135         EVALUATE WS-Token-Prev-TXT
3136         WHEN 'VARYING'
3137             PERFORM 362-Release-Upd
3138             MOVE SPACES TO WS-Token-Prev-TXT
3139         WHEN 'AFTER'
3140             PERFORM 362-Release-Upd
3141             MOVE SPACES TO WS-Token-Prev-TXT
3142         WHEN OTHER
3143             PERFORM 361-Release-Ref
3144         END-EVALUATE
3145         .
3146
3147     351-SET SECTION.
3148         EVALUATE WS-Token-Prev-TXT
3149         WHEN 'SET'
3150             PERFORM 362-Release-Upd
3151         WHEN OTHER
3152             PERFORM 361-Release-Ref
3153         END-EVALUATE
3154         .
3155
3156     351-STRING SECTION.
3157         EVALUATE WS-Token-Prev-TXT
3158         WHEN 'INTO'
3159             PERFORM 362-Release-Upd
3160         WHEN 'POINTER'
3161             PERFORM 362-Release-Upd
3162         WHEN OTHER
3163             PERFORM 361-Release-Ref
3164         END-EVALUATE
3165         .
3166
3167     351-SUBTRACT SECTION.
3168         EVALUATE WS-Token-Prev-TXT
3169         WHEN 'GIVING'
3170             PERFORM 362-Release-Upd
3171         WHEN 'FROM'
3172             PERFORM 362-Release-Upd
3173         WHEN OTHER
3174             PERFORM 361-Release-Ref
3175         END-EVALUATE
3176         .
3177
3178 GC1213 351-TERMINATE SECTION.
3179 GC1213     PERFORM 362-Release-Upd

```

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=====
3180 GC1213      .
3181
3182      351-TRANSFORM SECTION.
3183          EVALUATE WS-Token-Prev-TXT
3184              WHEN 'TRANSFORM'
3185                  PERFORM 362-Release-Upd
3186                  MOVE SPACES TO WS-Token-Prev-TXT
3187              WHEN OTHER
3188                  PERFORM 361-Release-Ref
3189          END-EVALUATE
3190      .
3191
3192      351-UNSTRING SECTION.
3193          EVALUATE WS-Token-Prev-TXT
3194              WHEN 'INTO'
3195                  PERFORM 362-Release-Upd
3196              WHEN 'DELIMITER'
3197                  PERFORM 362-Release-Upd
3198              WHEN 'COUNT'
3199                  PERFORM 362-Release-Upd
3200              WHEN 'POINTER'
3201                  PERFORM 362-Release-Upd
3202              WHEN 'TALLYING'
3203                  PERFORM 362-Release-Upd
3204              WHEN OTHER
3205                  PERFORM 361-Release-Ref
3206          END-EVALUATE
3207      .
3208
3209      360-Release-Def SECTION.
3210          MOVE SPACES                TO F-Sort-Work-REC
3211          MOVE WS-Curr-Prog-ID-TXT   TO F-SW-Prog-ID-TXT
3212          MOVE WS-Token-Curr-Uc-TXT  TO F-SW-Token-Uc-TXT
3213          MOVE WS-Token-Curr-TXT     TO F-SW-Token-TXT
3214          MOVE WS-Curr-Section-TXT   TO F-SW-Section-TXT
3215          MOVE WS-Curr-Line-NUM      TO F-SW-Def-Line-NUM
3216          MOVE 0                    TO F-SW-Ref-Line-NUM
3217          RELEASE F-Sort-Work-REC
3218      .
3219
3220      361-Release-Ref SECTION.
3221          PERFORM 364-Set-Ref
3222          RELEASE F-Sort-Work-REC
3223      .
3224
3225      362-Release-Upd SECTION.
3226          PERFORM 363-Set-Upd
3227          RELEASE F-Sort-Work-REC
3228      .
=====

```

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=====
3229
3230      363-Set-Upd SECTION.
3231          MOVE SPACES              TO F-Sort-Work-REC
3232          MOVE WS-Curr-Prog-ID-TXT  TO F-SW-Prog-ID-TXT
3233          MOVE WS-Token-Curr-Uc-TXT TO F-SW-Token-Uc-TXT
3234          MOVE WS-Token-Curr-TXT    TO F-SW-Token-TXT
3235          MOVE WS-Curr-Section-TXT  TO F-SW-Section-TXT
3236          MOVE WS-Curr-Line-NUM     TO F-SW-Ref-Line-NUM
3237          MOVE '*'                  TO F-SW-Ref-Flag-CHR
3238          .
3239
3240      364-Set-Ref SECTION.
3241          MOVE SPACES              TO F-Sort-Work-REC
3242          MOVE WS-Curr-Prog-ID-TXT  TO F-SW-Prog-ID-TXT
3243          MOVE WS-Token-Curr-Uc-TXT TO F-SW-Token-Uc-TXT
3244          MOVE WS-Token-Curr-TXT    TO F-SW-Token-TXT
3245          MOVE WS-Curr-Section-TXT  TO F-SW-Section-TXT
3246          MOVE WS-Curr-Line-NUM     TO F-SW-Ref-Line-NUM
3247          .
3248
3249 GC1213 365-Release-Arg SECTION.
3250 GC1213     PERFORM 366-Set-Arg
3251 GC1213     RELEASE F-Sort-Work-REC
3252 GC1213     .
3253
3254 GC1213 366-Set-Arg SECTION.
3255 GC1213     MOVE SPACES              TO F-Sort-Work-REC
3256 GC1213     MOVE WS-Curr-Prog-ID-TXT TO F-SW-Prog-ID-TXT
3257 GC1213     MOVE WS-Token-Curr-Uc-TXT TO F-SW-Token-Uc-TXT
3258 GC1213     MOVE WS-Token-Curr-TXT   TO F-SW-Token-TXT
3259 GC1213     MOVE WS-Curr-Section-TXT TO F-SW-Section-TXT
3260 GC1213     MOVE WS-Curr-Line-NUM    TO F-SW-Ref-Line-NUM
3261 GC1213     MOVE 'C'                  TO F-SW-Ref-Flag-CHR
3262 GC1213     .
3263
=====

```

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```

=====
3265      400-Produce-Xref-Listing SECTION.
3266          MOVE SPACES          TO WS-Xref-Detail-Line-TXT
3267                      WS-Group-Indicators-TXT
3268          MOVE 0                TO WS-I-SUB
3269                      WS-Lines-Left-NUM
3270 GC0710      MOVE 'N'          TO WS-RS-Duplicate-CHR
3271          PERFORM FOREVER
3272              RETURN F-Sort-Work-FILE AT END
3273 GC1213          IF WS-Xref-Detail-Line-TXT NOT = SPACES
3274 GC1213              PERFORM 410-Generate-Report-Line
3275 GC1213          END-IF
3276 GC1213          MOVE SPACES TO WS-Xref-Detail-Line-TXT
3277 GC1213          PERFORM 410-Generate-Report-Line
3278 GC1213              UNTIL WS-Lines-Left-NUM = 0
3279 GC1213          MOVE 'Y' TO WS-Suppress-FF-CHR
3280 GC1213          PERFORM 420-Generate-Xref-Footer
3281          EXIT PERFORM
3282      END-RETURN
3283      IF F-SW-Prog-ID-TXT NOT = WS-GI-Prog-ID-TXT
3284      OR F-SW-Token-Uc-TXT NOT = WS-GI-Token-TXT
3285 GC0710          MOVE 'N' TO WS-RS-Duplicate-CHR
3286          IF WS-Xref-Detail-Line-TXT NOT = SPACES
3287              PERFORM 410-Generate-Report-Line
3288          END-IF
3289          IF F-SW-Prog-ID-TXT NOT = WS-GI-Prog-ID-TXT
3290 GC1213              MOVE SPACES TO WS-Xref-Detail-Line-TXT
3291 GC1213              PERFORM 410-Generate-Report-Line
3292 GC1213              UNTIL WS-Lines-Left-NUM = 0
3293          END-IF
3294          MOVE F-SW-Prog-ID-TXT TO WS-GI-Prog-ID-TXT
3295          MOVE F-SW-Token-Uc-TXT TO WS-GI-Token-TXT
3296      END-IF
3297 GC0710      IF F-SW-Token-Uc-TXT = WS-GI-Token-TXT
3298 GC0710          AND F-SW-Def-Line-NUM NOT = SPACES
3299 GC0710          AND WS-Xref-Detail-Line-TXT NOT = SPACES
3300 GC0710          MOVE 'Y' TO WS-RS-Duplicate-CHR
3301 GC0710          PERFORM 410-Generate-Report-Line
3302 GC0710          MOVE 0 TO WS-I-SUB
3303 GC0710          MOVE F-SW-Prog-ID-TXT TO WS-XDL-Prog-ID-TXT
3304 GC0710          MOVE ' (Duplicate Definition)' TO WS-XDL-Token-TXT
3305 GC0710          MOVE F-SW-Section-TXT TO WS-XDL-Section-TXT
3306 GC0710          MOVE F-SW-Def-Line-NUM TO WS-XDL-Def-Line-NUM
3307 GC0710          EXIT PERFORM CYCLE
3308 GC0710      END-IF
3309 GC0710      IF F-SW-Token-Uc-TXT = WS-GI-Token-TXT
3310 GC0710          AND F-SW-Def-Line-NUM = SPACES
3311 GC0710          AND WS-RS-Duplicate-CHR = 'Y'
3312 GC0710          MOVE 'N' TO WS-RS-Duplicate-CHR
=====

```

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=====
3313 GC0710      PERFORM 410-Generate-Report-Line
3314 GC0710      MOVE 0 TO WS-I-SUB
3315 GC0710      MOVE F-SW-Prog-ID-TXT TO WS-XDL-Prog-ID-TXT
3316 GC0710      MOVE ' (Duplicate References)' TO WS-XDL-Token-TXT
3317 GC0710      END-IF
3318             IF WS-Xref-Detail-Line-TXT = SPACES
3319                 MOVE F-SW-Prog-ID-TXT TO WS-XDL-Prog-ID-TXT
3320                 MOVE F-SW-Token-TXT TO WS-XDL-Token-TXT
3321                 MOVE F-SW-Section-TXT TO WS-XDL-Section-TXT
3322                 IF F-SW-Def-Line-NUM NOT = SPACES
3323                     MOVE F-SW-Def-Line-NUM TO WS-XDL-Def-Line-NUM
3324                 END-IF
3325             END-IF
3326             IF F-SW-Reference-TXT > '000000'
3327                 ADD 1 TO WS-I-SUB
3328                 IF WS-I-SUB > WS-Xref-Lines-Per-Rec-NUM
3329                     PERFORM 410-Generate-Report-Line
3330                     MOVE 1 TO WS-I-SUB
3331                 END-IF
3332                 MOVE F-SW-Ref-Line-NUM
3333                     TO WS-XDL-Ref-Line-NUM (WS-I-SUB)
3334                 MOVE F-SW-Ref-Flag-CHR
3335                     TO WS-XDL-Ref-Flag-CHR (WS-I-SUB)
3336             END-IF
3337             END-PERFORM
3338             IF WS-Xref-Detail-Line-TXT NOT = SPACES
3339                 PERFORM 410-Generate-Report-Line
3340             END-IF
3341             .
=====

```

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=====
3343      410-Generate-Report-Line SECTION.
3344      IF WS-Lines-Left-NUM < 1
3345 GC1213      PERFORM 420-Generate-Xref-Footer
3346 GC1213      ADD 1 TO WS-Page-NUM
3347 GC1213      MOVE 'Page:' TO WS-PN-Literal-TXT
3348 GC1213      MOVE WS-Page-NUM TO WS-PN-Page-NUM
3349 GC1213      CALL 'C$JUSTIFY' USING WS-PN-Page-NUM, 'Left'
3350 GC1213      CALL 'C$JUSTIFY' USING WS-Page-No-TXT, 'Right'
3351 GC1213      IF L-Listing-CD = 1 *> LANDSCAPE
3352 GC1213          MOVE WS-Version-TXT
3353 GC1213              TO F-Listing-135-REC
3354 GC1213          MOVE 'Cross-Reference Listing'
3355 GC1213              TO F-Listing-135-REC(25:23)
3356 GC1213          MOVE WS-Formatted-DT
3357 GC1213              TO F-Listing-135-REC(126:10)
3358 GC1213          WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #1
3359 GC1213          MOVE WS-Program-Path-TXT
3360 GC1213              TO F-Listing-135-REC
3361 GC1213          WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #2
3362 GC1213          MOVE 'PROGRAM-ID Identifier/Register/Function' &
3363 GC1213              ' Defn Where Defined References'
3364 GC1213              TO F-Listing-135-REC
3365 GC1213          MOVE WS-Page-No-TXT
3366 GC1213              TO F-Listing-135-REC(126:10)
3367 GC1213          WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #3
3368 GC1213          MOVE ALL '=' TO F-Listing-135-REC
3369 GC1213          MOVE SPACE TO F-Listing-135-REC(16:1)
3370 GC1213              F-Listing-135-REC(49:1)
3371 GC1213              F-Listing-135-REC(56:1)
3372 GC1213              F-Listing-135-REC(72:1)
3373 GC1213          WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #4
3374 GC1213      ELSE *> PORTRAIT
3375 GC1213          MOVE WS-Version-TXT
3376 GC1213              TO F-Listing-96-REC
3377 GC1213          MOVE 'Cross-Reference Listing'
3378 GC1213              TO F-Listing-96-REC(25:23)
3379 GC1213          MOVE WS-Formatted-DT
3380 GC1213              TO F-Listing-96-REC(87:10)
3381 GC1213          WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #1
3382 GC1213          MOVE WS-Program-Path-TXT(40:96)
3383 GC1213              TO F-Listing-96-REC
3384 GC1213          WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #2
3385 GC1213          MOVE 'PROGRAM-ID Identifier/Register/Function' &
3386 GC1213              ' Defn Where Defined References'
3387 GC1213              TO F-Listing-96-REC
3388 GC1213          MOVE WS-Page-No-TXT
3389 GC1213              TO F-Listing-96-REC(87:10)
3390 GC1213          WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #3
=====

```

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```

=====
3391 GC1213          MOVE ALL '=' TO F-Listing-96-REC
3392 GC1213          MOVE SPACE TO F-Listing-96-REC(16:1)
3393 GC1213                      F-Listing-96-REC(49:1)
3394 GC1213                      F-Listing-96-REC(56:1)
3395 GC1213                      F-Listing-96-REC(72:1)
3396 GC1213          WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #4
3397 GC1213          END-IF
3398 GC1213          COMPUTE WS-Lines-Left-NUM = WS-Lines-Per-Page-NUM - 4
3399          END-IF
3400 GC1213          IF L-Listing-CD = 1 *> LANDSCAPE
3401 GC1213              WRITE F-Listing-135-REC FROM WS-Xref-Detail-Line-TXT
3402 GC1213                  BEFORE 1
3403 GC1213          ELSE                      *> PORTRAIT
3404 GC1213              WRITE F-Listing-96-REC FROM WS-Xref-Detail-Line-TXT
3405 GC1213                  BEFORE 1
3406 GC1213          END-IF
3407          MOVE SPACES TO WS-Xref-Detail-Line-TXT
3408          MOVE 0 TO WS-I-SUB
3409          SUBTRACT 1 FROM WS-Lines-Left-NUM
3410          .
3411 GC1213 420-Generate-Xref-Footer SECTION.
3412 GC1213          IF L-Listing-CD = 1 *> LANDSCAPE
3413 GC1213              WRITE F-Listing-135-REC FROM SPACES BEFORE 1 *> Footer Line #1
3414 GC1213              MOVE ALL '='
3415 GC1213                  TO F-Listing-135-REC
3416 GC1213              WRITE F-Listing-135-REC BEFORE 1 *> Footer Line #2
3417 GC1213              MOVE WS-Copyright-TXT
3418 GC1213                  TO F-Listing-135-REC
3419 GC1213              MOVE WS-Page-No-TXT
3420 GC1213                  TO F-Listing-135-REC(126:10)
3421 GC1213              IF WS-Suppress-FF-CHR = 'Y'
3422 GC1213                  WRITE F-Listing-135-REC BEFORE 1 *> Footer Line #3
3423 GC1213              ELSE
3424 GC1213                  WRITE F-Listing-135-REC BEFORE PAGE *> Footer Line #3
3425 GC1213                  WRITE F-Listing-135-REC FROM SPACES BEFORE 1 *> Spaces After FF Charac
3426 GC1213              ter
3427 GC1213          ELSE                      *> PORTRAIT
3428 GC1213              WRITE F-Listing-96-REC FROM SPACES BEFORE 1 *> Footer Line #1
3429 GC1213              MOVE ALL '='
3430 GC1213                  TO F-Listing-96-REC
3431 GC1213              WRITE F-Listing-96-REC BEFORE 1 *> Footer Line #2
3432 GC1213              MOVE WS-Copyright-TXT
3433 GC1213                  TO F-Listing-96-REC
3434 GC1213              MOVE WS-Page-No-TXT
3435 GC1213                  TO F-Listing-96-REC(87:10)
3436 GC1213              IF WS-Suppress-FF-CHR = 'Y'
3437 GC1213                  WRITE F-Listing-96-REC BEFORE 1 *> Footer Line #3
3438 GC1213              ELSE
=====

```

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```
=====
3439 GC1213          WRITE F-Listing-96-REC BEFORE PAGE *> Footer Line #3
3440 GC1213          WRITE F-Listing-96-REC FROM SPACES BEFORE 1 *> Spaces After FF Charact
    er
3441 GC1213          END-IF
3442 GC1213          END-IF
3443 GC1213          .
=====
```

```
=====
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=====
3445      500-Produce-Source-Listing SECTION.
3446      OPEN INPUT F-Original-Src-FILE
3447              F-Expanded-Src-FILE
3448      MOVE 0 TO WS-Src-Line-NUM
3449      PERFORM FOREVER
3450              READ F-Expanded-Src-FILE AT END
3451 GC1213      MOVE SPACES TO WS-Src-Detail-Line-TXT
3452 GC1213      PERFORM 530-Generate-Source-Line
3453 GC1213      UNTIL WS-Lines-Left-NUM = 0
3454      EXIT PERFORM
3455      END-READ
3456 GC0712      IF F-ES-1-7-TXT NOT = '#DEFLIT'
3457 GC0712      IF F-ES-1-CHR = '#'
3458 GC0712      PERFORM 510-Control-Record
3459 GC0712      ELSE
3460 GC0712      PERFORM 520-Expanded-Src-Record
3461 GC0712      END-IF
3462 GC0712      END-IF
3463      END-PERFORM
3464      CLOSE F-Original-Src-FILE
3465              F-Expanded-Src-FILE
3466      .
=====

```

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=====
3468      510-Control-Record SECTION.
3469      UNSTRING F-ES-2-256-TXT-256
3470      DELIMITED BY '''
3471      INTO WS-Temp-10-Chars-TXT
3472      WS-Temp-256-Chars-TXT
3473      WS-Dummy-TXT
3474 GC1010      IF UPPER-CASE(TRIM(WS-Temp-256-Chars-TXT,Trailing)) =
3475 GC1010      TRIM(WS-Main-Module-Name-TXT) *> Main Pgm
3476      SET WS-RS-In-Main-Module-BOOL TO TRUE
3477      IF WS-Src-Line-NUM > 0
3478      READ F-Expanded-Src-FILE END-READ
3479      END-IF
3480      ELSE *> COPY
3481      SET WS-RS-In-Copybook-BOOL TO TRUE
3482      END-IF
3483      .

```

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=====
3485      520-Expanded-Src-Record SECTION.
3486      IF WS-RS-In-Main-Module-BOOL
3487          ADD 1 To WS-Curr-Line-NUM
3488 GC0712      READ F-Original-Src-FILE AT END CONTINUE END-READ
3489          ADD 1 TO WS-Src-Line-NUM
3490          MOVE SPACES TO WS-Src-Detail-Line-TXT
3491          MOVE WS-Src-Line-NUM TO WS-SDL-Line-NUM
3492 GC1213      MOVE F-Original-Src-REC TO WS-SDL-Statement-TXT
3493 GC0712      MOVE LOWER-CASE(TRIM(F-OS-8-72-TXT,LEADING))
3494 GC0712          TO WS-Temp-65-Chars-TXT
3495 GC0712      INSPECT WS-Temp-65-Chars-TXT REPLACING ALL '.' BY SPACE
3496 GC0712      EVALUATE TRUE
3497 GC0712          WHEN F-OS-7-CHR = '/'
3498 GC1213              MOVE SPACES TO WS-Src-Detail-Line-TXT
3499 GC1213              PERFORM 530-Generate-Source-Line
3500 GC1213                  UNTIL WS-Lines-Left-NUM = 0
3501 GC0712          WHEN WS-Temp-65-Chars-TXT = "eject"
3502 GC1213              MOVE SPACES TO WS-Src-Detail-Line-TXT
3503 GC1213              PERFORM 530-Generate-Source-Line
3504 GC1213                  UNTIL WS-Lines-Left-NUM = 0
3505 GC0712          EXIT SECTION
3506 GC0712          WHEN WS-Temp-65-Chars-TXT = "skip1"
3507 GC0712              MOVE SPACES TO WS-Src-Detail-Line-TXT
3508 GC0712              PERFORM 530-Generate-Source-Line
3509 GC0712          EXIT SECTION
3510 GC0712          WHEN WS-Temp-65-Chars-TXT = "skip2"
3511 GC0712              MOVE SPACES TO WS-Src-Detail-Line-TXT
3512 GC0712              PERFORM 530-Generate-Source-Line 2 TIMES
3513 GC0712          EXIT SECTION
3514 GC0712          WHEN WS-Temp-65-Chars-TXT = "skip3"
3515 GC0712              MOVE SPACES TO WS-Src-Detail-Line-TXT
3516 GC0712              PERFORM 530-Generate-Source-Line 3 TIMES
3517 GC0712          EXIT SECTION
3518 GC0712      END-EVALUATE
3519      PERFORM 530-Generate-Source-Line
3520  ELSE
3521      IF F-Expanded-Src-REC NOT = SPACES
3522          MOVE SPACES TO WS-Src-Detail-Line-TXT
3523 GC1213      MOVE F-Expanded-Src-REC
3524          TO WS-SDL-Statement-TXT
3525 GC0712      MOVE LOWER-CASE(TRIM(F-OS-8-72-TXT,LEADING))
3526 GC0712          TO WS-Temp-65-Chars-TXT
3527 GC0712      INSPECT WS-Temp-65-Chars-TXT
3528 GC0712          REPLACING ALL '.' BY SPACE
3529 GC0712      EVALUATE TRUE
3530 GC0712          WHEN WS-Temp-65-Chars-TXT = "eject"
3531 GC0712              MOVE 0 TO WS-Lines-Left-NUM
3532 GC0712          EXIT SECTION
=====

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```

=====
3533 GC0712          WHEN WS-Temp-65-Chars-TXT = "skip1"
3534 GC0712          MOVE SPACES TO WS-Src-Detail-Line-TXT
3535 GC0712          PERFORM 530-Generate-Source-Line
3536 GC0712          EXIT SECTION
3537 GC0712          WHEN WS-Temp-65-Chars-TXT = "skip2"
3538 GC0712          MOVE SPACES TO WS-Src-Detail-Line-TXT
3539 GC0712          PERFORM 530-Generate-Source-Line 2 TIMES
3540 GC0712          EXIT SECTION
3541 GC0712          WHEN WS-Temp-65-Chars-TXT = "skip3"
3542 GC0712          MOVE SPACES TO WS-Src-Detail-Line-TXT
3543 GC0712          PERFORM 530-Generate-Source-Line 3 TIMES
3544 GC0712          EXIT SECTION
3545 GC0712          END-EVALUATE
3546                  PERFORM 530-Generate-Source-Line
3547                  END-IF
3548          END-IF
3549          .
=====

```

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```

=====
3551      530-Generate-Source-Line SECTION.
3552 GC1213      MOVE 1 TO WS-Src-Lines-NUM
3553 GC1213      IF L-Listing-CD = 1 *> LANDSCAPE
3554 GC1213          IF WS-SDL-Statement-TXT(129:128) > SPACES
3555 GC1213              ADD 1 TO WS-Src-Lines-NUM
3556 GC1213          END-IF
3557 GC1213      ELSE
3558 GC1213          IF WS-SDL-Statement-TXT(90:167) > SPACES
3559 GC1213              ADD 1 TO WS-Src-Lines-NUM
3560 GC1213          IF WS-SDL-Statement-TXT(179:78) > SPACES
3561 GC1213              ADD 1 TO WS-Src-Lines-NUM
3562 GC1213          END-IF
3563 GC1213      END-IF
3564 GC1213      END-IF
3565 GC1213      IF WS-Lines-Left-NUM < WS-Src-Lines-NUM
3566 GC1213          IF WS-Page-Num > 0 *> Don't print footer before page 1
3567 GC1213              IF L-Listing-CD = 1 *> LANDSCAPE
3568 GC1213                  IF WS-Src-Lines-NUM = 2
3569 GC1213                      WRITE F-Listing-135-REC FROM SPACES BEFORE 1 *> Blank Line
3570 GC1213                  END-IF
3571 GC1213                  WRITE F-Listing-135-REC FROM SPACES BEFORE 1 *> Footer Line #1
3572 GC1213                  MOVE ALL '='
3573 GC1213                      TO F-Listing-135-REC
3574 GC1213                  WRITE F-Listing-135-REC BEFORE 1 *> Footer Line #2
3575 GC1213                  MOVE WS-Copyright-TXT
3576 GC1213                      TO F-Listing-135-REC
3577 GC1213                  MOVE WS-Page-No-TXT
3578 GC1213                      TO F-Listing-135-REC(126:10)
3579 GC1213                  WRITE F-Listing-135-REC BEFORE PAGE *> Footer Line #3
3580 GC1213                  WRITE F-Listing-135-REC FROM SPACES BEFORE 1 *> Spaces After FF Ch
aracter
3581 GC1213              ELSE
3582 GC1213                  EVALUATE WS-Src-Lines-NUM
3583 GC1213                      WHEN 1 *> Need no extra blank lines
3584 GC1213                          CONTINUE
3585 GC1213                      WHEN 2 *> Need 1 extra blank line
3586 GC1213                          WRITE F-Listing-96-REC FROM SPACES BEFORE 1
3587 GC1213                      WHEN 3 *> Need 2 extra blank lines
3588 GC1213                          WRITE F-Listing-96-REC FROM SPACES BEFORE 1
3589 GC1213                          WRITE F-Listing-96-REC FROM SPACES BEFORE 1
3590 GC1213                      END-EVALUATE
3591 GC1213                  WRITE F-Listing-96-REC FROM SPACES BEFORE 1 *> Footer Line #1
3592 GC1213                  MOVE ALL '='
3593 GC1213                      TO F-Listing-96-REC
3594 GC1213                  WRITE F-Listing-96-REC BEFORE 1 *> Footer Line #2
3595 GC1213                  MOVE WS-Copyright-TXT
3596 GC1213                      TO F-Listing-96-REC
3597 GC1213                  MOVE WS-Page-No-TXT
=====

```

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=====
3598 GC1213          TO F-Listing-96-REC(87:10)
3599 GC1213          WRITE F-Listing-96-REC BEFORE PAGE *> Footer Line #3
3600 GC1213          WRITE F-Listing-96-REC FROM SPACES BEFORE 1 *> Spaces After FF Cha
      racter
3601 GC1213          END-IF
3602 GC1213          END-IF
3603 GC1213          ADD 1          TO WS-Page-NUM
3604 GC1213          MOVE 'Page:'    TO WS-PN-Literal-TXT
3605 GC1213          MOVE WS-Page-NUM TO WS-PN-Page-NUM
3606 GC1213          CALL 'C$JUSTIFY' USING WS-PN-Page-NUM, 'Left'
3607 GC1213          CALL 'C$JUSTIFY' USING WS-Page-No-TXT, 'Right'
3608 GC1213          IF L-Listing-CD = 1 *> LANDSCAPE
3609 GC1213              MOVE WS-Version-TXT
3610 GC1213                  TO F-Listing-135-REC
3611 GC1213              MOVE 'Source Listing'
3612 GC1213                  TO F-Listing-135-REC(25:14)
3613 GC1213              MOVE WS-Formatted-DT
3614 GC1213                  TO F-Listing-135-REC(126:10)
3615 GC1213              WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #1
3616 GC1213              MOVE WS-Program-Path-TXT
3617 GC1213                  TO F-Listing-135-REC
3618 GC1213              WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #2
3619 GC1213              MOVE 'Line Statement'
3620 GC1213                  TO F-Listing-135-REC
3621 GC1213              MOVE WS-Page-No-TXT
3622 GC1213                  TO F-Listing-135-REC(126:10)
3623 GC1213              WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #3
3624 GC1213              MOVE WS-Src-Dashes-TXT
3625 GC1213                  TO F-Listing-135-REC
3626 GC1213              WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #4
3627 GC1213          ELSE          *> PORTRAIT
3628 GC1213              MOVE WS-Version-TXT
3629 GC1213                  TO F-Listing-96-REC
3630 GC1213              MOVE 'Source Listing'
3631 GC1213                  TO F-Listing-96-REC(25:14)
3632 GC1213              MOVE WS-Formatted-DT
3633 GC1213                  TO F-Listing-96-REC(87:10)
3634 GC1213              WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #1
3635 GC1213              MOVE WS-Program-Path-TXT(40:96)
3636 GC1213                  TO F-Listing-96-REC
3637 GC1213              WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #2
3638 GC1213              MOVE 'Line Statement'
3639 GC1213                  TO F-Listing-96-REC
3640 GC1213              MOVE WS-Page-No-TXT
3641 GC1213                  TO F-Listing-96-REC(87:10)
3642 GC1213              WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #3
3643 GC1213              MOVE WS-Src-Dashes-TXT
3644 GC1213                  TO F-Listing-96-REC
3645 GC1213              WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #4
=====

```

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```

=====
3646 GC1213      END-IF
3647 GC1213      COMPUTE WS-Lines-Left-NUM = WS-Lines-Per-Page-NUM - 4
3648 GC1213      END-IF
3649 GC1213      IF L-Listing-CD = 1 *> LANDSCAPE
3650 GC1213          EVALUATE WS-Src-Lines-NUM
3651 GC1213          WHEN 1
3652 GC1213              MOVE WS-Src-Detail-Line-TXT TO F-Listing-135-REC
3653 GC1213              WRITE F-Listing-96-REC BEFORE 1
3654 GC1213              SUBTRACT 1 FROM WS-Lines-Left-NUM
3655 GC1213          WHEN 2
3656 GC1213              MOVE WS-SDL-Statement-TXT TO WS-Src-Hold-TXT
3657 GC1213              MOVE WS-Src-Detail-Line-TXT TO F-Listing-135-REC
3658 GC1213              WRITE F-Listing-135-REC BEFORE 1 *> Prints chars 1-128 of stmtnt
3659 GC1213              MOVE SPACES TO WS-Src-Detail-Line-TXT
3660 GC1213              MOVE WS-Src-Hold-TXT(129:128) TO WS-SDL-Statement-TXT
3661 GC1213              MOVE WS-Src-Detail-Line-TXT TO F-Listing-135-REC
3662 GC1213              WRITE F-Listing-135-REC BEFORE 1 *> Prints chars 129-256 of stmtnt
3663 GC1213              SUBTRACT 2 FROM WS-Lines-Left-NUM
3664 GC1213          END-EVALUATE
3665 GC1213      ELSE          *> PORTRAIT
3666 GC1213          EVALUATE WS-Src-Lines-NUM
3667 GC1213          WHEN 1 *> Print only chars 1-89 of stmtnt
3668 GC1213              WRITE F-Listing-96-REC FROM WS-Src-Detail-Line-TXT
3669 GC1213              BEFORE 1
3670 GC1213              SUBTRACT 1 FROM WS-Lines-Left-NUM
3671 GC1213          WHEN 2 *> Print only chars 1-89 and 90-178 of text
3672 GC1213              MOVE WS-SDL-Statement-TXT TO WS-Src-Hold-TXT
3673 GC1213              WRITE F-Listing-96-REC FROM WS-Src-Detail-Line-TXT
3674 GC1213              BEFORE 1
3675 GC1213              MOVE SPACES TO WS-Src-Detail-Line-TXT
3676 GC1213              MOVE WS-Src-Hold-TXT(90:89) TO WS-SDL-Statement-TXT
3677 GC1213              WRITE F-Listing-96-REC FROM WS-Src-Detail-Line-TXT
3678 GC1213              BEFORE 1
3679 GC1213              SUBTRACT 2 FROM WS-Lines-Left-NUM
3680 GC1213          WHEN 3 *> Print chars 1-89, 90-178 and 179-256 of stmtnt
3681 GC1213              MOVE WS-SDL-Statement-TXT TO WS-Src-Hold-TXT
3682 GC1213              WRITE F-Listing-96-REC FROM WS-Src-Detail-Line-TXT
3683 GC1213              BEFORE 1
3684 GC1213              MOVE SPACES TO WS-Src-Detail-Line-TXT
3685 GC1213              MOVE WS-Src-Hold-TXT(90:89) TO WS-SDL-Statement-TXT
3686 GC1213              WRITE F-Listing-96-REC FROM WS-Src-Detail-Line-TXT
3687 GC1213              BEFORE 1
3688 GC1213              MOVE SPACES TO WS-Src-Detail-Line-TXT
3689 GC1213              MOVE WS-Src-Hold-TXT(179:78) TO WS-SDL-Statement-TXT
3690 GC1213              WRITE F-Listing-96-REC FROM WS-Src-Detail-Line-TXT
3691 GC1213              BEFORE 1
3692 GC1213              SUBTRACT 3 FROM WS-Lines-Left-NUM
3693 GC1213          END-EVALUATE
3694 GC1213      END-IF
=====

```

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```
=====
3695      MOVE SPACES TO WS-Src-Detail-Line-TXT
3696      .
3697
3698      END PROGRAM LISTING.
```


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PROGRAM-ID	Identifier/Register/Function	Defn	Where Defined	References	Page: 96	
CHECKSRC	000-Main	1321	PROCEDURE			
CHECKSRC	L-A1-CHR	1311	LINKAGE	1323 1335 1338 1345		
CHECKSRC	L-A2-IDENT-DIVISION-BOOL	1316	LINKAGE	1367*		
CHECKSRC	L-A2-LINKAGE-SECTION-BOOL	1315	LINKAGE	1361*		
CHECKSRC	L-A2-Nothing-Special-BOOL	1317	LINKAGE	1322*		
CHECKSRC	L-Argument-1-TXT	1310	LINKAGE	1319		
CHECKSRC	L-Argument-2-CHR	1314	LINKAGE	1320		
CHECKSRC	WS-Compressed-Src-TXT	1297	WORKING-STORAGE	1332* 1355 1359 1365		
CHECKSRC	WS-CS-CHR	1298	WORKING-STORAGE	1339* 1345* 1354 1358 1364		
CHECKSRC	WS-I-SUB	1306	WORKING-STORAGE	1333* 1334 1335 1338 1345 1351* 1352 1354 1355 1358 1358 1359 1364 1364 1365		
CHECKSRC	WS-J-SUB	1308	WORKING-STORAGE	1331* 1337* 1339 1344* 1345		
CHECKSRC	WS-RS-Found-SPACE-CHR	1302	WORKING-STORAGE			
CHECKSRC	WS-RS-Not-Skipping-SPACE-BOOL	1304	WORKING-STORAGE	1330* 1336 1343*		
CHECKSRC	WS-RS-Skipping-SPACE-BOOL	1303	WORKING-STORAGE	1340*		
CHECKSRC	WS-Runtime-Switches-TXT	1301	WORKING-STORAGE			

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PROGRAM-ID	Identifier/Register/Function	Defn	Where Defined	References	Page: 97	
GCic	000-File-Error	661	PROCEDURE			
GCic	000-Main	682	PROCEDURE			
GCic	100-Initialization	706	PROCEDURE	683		
GCic	200-Let-User-Set-Switches	819	PROCEDURE	686		
GCic	210-Run-Compiler	910	PROCEDURE	687		
GCic	220-Make-Listing	1046	PROCEDURE	691		
GCic	230-Run-Program	1077	PROCEDURE	695		
GCic	240-Find-LINKAGE-SECTION	1179	PROCEDURE	753		
GCic	250-Autoload-Listing	1218	PROCEDURE	697	1037	1071
GCic	900-Terminate	1264	PROCEDURE	699	747	890
				1038	1172	
GCic	COB-COLOR-BLACK	185	[screenio]	446	451	541
				551	561	566
				576	583	598
				613	629	636
				643		
GCic	COB-COLOR-BLUE	185	[screenio]	529		
GCic	COB-COLOR-CYAN	185	[screenio]	542		
GCic	COB-COLOR-GREEN	185	[screenio]	452	567	614
				630		
GCic	COB-COLOR-MAGENTA	185	[screenio]			
GCic	COB-COLOR-RED	185	[screenio]	535	599	
GCic	COB-COLOR-WHITE	185	[screenio]	447	530	536
				552	562	577
				584	637	644
GCic	COB-COLOR-YELLOW	185	[screenio]			
GCic	COB-SCR-ESC	185	[screenio]	889		
GCic	COB-SCR-F1	185	[screenio]	836		
GCic	COB-SCR-F10	185	[screenio]			
GCic	COB-SCR-F11	185	[screenio]			
GCic	COB-SCR-F12	185	[screenio]	892		
GCic	COB-SCR-F13	185	[screenio]			
GCic	COB-SCR-F14	185	[screenio]			
GCic	COB-SCR-F15	185	[screenio]			
GCic	COB-SCR-F16	185	[screenio]			
GCic	COB-SCR-F17	185	[screenio]			
GCic	COB-SCR-F18	185	[screenio]			
GCic	COB-SCR-F19	185	[screenio]			
GCic	COB-SCR-F2	185	[screenio]	842		
GCic	COB-SCR-F20	185	[screenio]			
GCic	COB-SCR-F21	185	[screenio]			
GCic	COB-SCR-F22	185	[screenio]			
GCic	COB-SCR-F23	185	[screenio]			
GCic	COB-SCR-F24	185	[screenio]			
GCic	COB-SCR-F25	185	[screenio]			
GCic	COB-SCR-F26	185	[screenio]			
GCic	COB-SCR-F27	185	[screenio]			
GCic	COB-SCR-F28	185	[screenio]			
GCic	COB-SCR-F29	185	[screenio]			

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GCic	COB-SCR-F3	185	[screenio]	848	
GCic	COB-SCR-F30	185	[screenio]		
GCic	COB-SCR-F31	185	[screenio]		
GCic	COB-SCR-F32	185	[screenio]		
GCic	COB-SCR-F33	185	[screenio]		
GCic	COB-SCR-F34	185	[screenio]		
GCic	COB-SCR-F35	185	[screenio]		
GCic	COB-SCR-F36	185	[screenio]		
GCic	COB-SCR-F37	185	[screenio]		
GCic	COB-SCR-F38	185	[screenio]		
GCic	COB-SCR-F39	185	[screenio]		
GCic	COB-SCR-F4	185	[screenio]	854	
GCic	COB-SCR-F40	185	[screenio]		
GCic	COB-SCR-F41	185	[screenio]		
GCic	COB-SCR-F42	185	[screenio]		
GCic	COB-SCR-F43	185	[screenio]		
GCic	COB-SCR-F44	185	[screenio]		
GCic	COB-SCR-F45	185	[screenio]		
GCic	COB-SCR-F46	185	[screenio]		
GCic	COB-SCR-F47	185	[screenio]		
GCic	COB-SCR-F48	185	[screenio]		
GCic	COB-SCR-F49	185	[screenio]		
GCic	COB-SCR-F5	185	[screenio]	860	
GCic	COB-SCR-F50	185	[screenio]		
GCic	COB-SCR-F51	185	[screenio]		
GCic	COB-SCR-F52	185	[screenio]		
GCic	COB-SCR-F53	185	[screenio]		
GCic	COB-SCR-F54	185	[screenio]		
GCic	COB-SCR-F55	185	[screenio]		
GCic	COB-SCR-F56	185	[screenio]		
GCic	COB-SCR-F57	185	[screenio]		
GCic	COB-SCR-F58	185	[screenio]		
GCic	COB-SCR-F59	185	[screenio]		
GCic	COB-SCR-F6	185	[screenio]	865	
GCic	COB-SCR-F60	185	[screenio]		
GCic	COB-SCR-F61	185	[screenio]		
GCic	COB-SCR-F62	185	[screenio]		
GCic	COB-SCR-F63	185	[screenio]		
GCic	COB-SCR-F64	185	[screenio]		
GCic	COB-SCR-F7	185	[screenio]	871	
GCic	COB-SCR-F8	185	[screenio]	877	
GCic	COB-SCR-F9	185	[screenio]	883	
GCic	COB-SCR-FATAL	185	[screenio]		
GCic	COB-SCR-KEY-DOWN	185	[screenio]		
GCic	COB-SCR-KEY-UP	185	[screenio]		
GCic	COB-SCR-MAX-FIELD	185	[screenio]		
GCic	COB-SCR-NO-FIELD	185	[screenio]		
GCic	COB-SCR-OK	185	[screenio]		
GCic	COB-SCR-PAGE_DOWN	185	[screenio]		

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GCic	COB-SCR-PAGE_UP	185	[screenio]			
GCic	COB-SCR-PRINT	185	[screenio]			
GCic	COB-SCR-TIME-OUT	185	[screenio]			
GCic	F-Cobc-Output-FILE	178	FILE	169	1014	1032
GCic	F-Cobc-Output-REC	179	FILE	1015	1020*	1021
				1029*	1030	
GCic	F-Source-Code-FILE	181	FILE	172	662	1180
				1184	1185	1198
				1199	1206	
GCic	F-Source-Code-REC	182	FILE	1189C	1203C	
GCic	F1		WORKING-STORAGE	213		
GCic	F12		WORKING-STORAGE	207		
GCic	F2		WORKING-STORAGE	220		
GCic	F3		WORKING-STORAGE	216		
GCic	F4		WORKING-STORAGE	214		
GCic	F5		WORKING-STORAGE	217	264	
GCic	F6		WORKING-STORAGE	218		
GCic	F7		WORKING-STORAGE	221		
GCic	F8		WORKING-STORAGE	215		
GCic	F9		WORKING-STORAGE	219		
GCic	LD-Horiz-Line	431	SCREEN	807		
GCic	LD-LL-Corner	426	SCREEN	463	493	509
				523		
GCic	LD-Lower-T	430	SCREEN	495		
GCic	LD-LR-Corner	428	SCREEN	465	497	511
				525		
GCic	LD-UL-Corner	425	SCREEN	453	467	499
				513		
GCic	LD-Upper-T	429	SCREEN	469		
GCic	LD-UR-Corner	427	SCREEN	455	471	501
				515		
GCic	LD-Vert-Line	432	SCREEN	457	458	460
				461	473	474
				475	477	478
				479	481	482
				483	485	486
				487	489	490
				491	503	504
				506	507	517
				518	520	521
GCic	LPP		PROCEDURE	1057C		
GCic	LPPP		PROCEDURE	1058C		
GCic	RETURN-CODE		PROCEDURE	1016	1049*	1063*
				1065		
GCic	S-Blank-SCR	444	SCREEN	690	1240	1269
GCic	S-Switches-SCR	446	SCREEN	833*	914	1004
				1033	1048	1069
				1080	1266	
GCic	SELCHAR		PROCEDURE	725	828	831

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=====	=====	=====	=====	=====	=====	
				838	844	850
				856	867	873
				879	885	1208
GCic	WS-Cmd-Args-TXT	236	WORKING-STORAGE	729*	731	732
				735	740	
GCic	WS-Cmd-End-Quote-CHR	238	WORKING-STORAGE	733*	736	
GCic	WS-Cmd-SUB	240	WORKING-STORAGE	730*	731	732
				734*	738*	743*
GCic	WS-Cmd-TXT	234	WORKING-STORAGE	911*	1006*	1011*
				1013C	1082*	1089*
				1099*	1102*	1109*
				1113*	1119*	1124*
				1129*	1137*	1145*
				1151*	1157*	1162*
				1169C	1221*	1225*
				1226C	1228*	1232*
				1233C	1243*	1246*
				1249C	1251C	1253C
				1255C	1257C	
GCic	WS-Cobc-Cmd-TXT	242	WORKING-STORAGE	912*	921*	925*
				929*	933*	938*
				943*	948*	953*
				958*	963*	967*
				980*	988*	992*
				1007		
GCic	WS-Compilation-Switches-TXT	187	WORKING-STORAGE			
GCic	WS-Config-Fn-TXT	244	WORKING-STORAGE	917*	923	
GCic	WS-CS-All-Switches-TXT	222	WORKING-STORAGE			
GCic	WS-CS-Arg-H1-TXT	189	WORKING-STORAGE	647*		
GCic	WS-CS-Arg-H2-TXT	190	WORKING-STORAGE	648*		
GCic	WS-CS-Args-TXT	188	WORKING-STORAGE	1160	1161	
GCic	WS-CS-Config-NUM	207	WORKING-STORAGE	639	893*	894
				895*	916	
GCic	WS-CS-DEBUG-CHR	224	WORKING-STORAGE	600	837	838*
				840*	936	
GCic	WS-CS-EXECUTE-CHR	225	WORKING-STORAGE	603	693	855
				856*	858*	
GCic	WS-CS-Extra-H1-TXT	210	WORKING-STORAGE	645*		
GCic	WS-CS-Extra-H2-TXT	211	WORKING-STORAGE	646*		
GCic	WS-CS-Extra-TXT	209	WORKING-STORAGE	984	986	
GCic	WS-CS-Filename-TXT	200	WORKING-STORAGE	639	916	
GCic	WS-CS-Filenames-Table-TXT	199	WORKING-STORAGE			
GCic	WS-CS-Filenames-TXT	191	WORKING-STORAGE	199		
GCic	WS-CS-FREE-CHR	226	WORKING-STORAGE	608	878	879*
				881*	961	
GCic	WS-CS-LIBRARY-CHR	227	WORKING-STORAGE	602	849	850*
				852*	927	1087
				1142	1181*	1208*
GCic	WS-CS-LISTING-CHR	228	WORKING-STORAGE	604	689	825*
=====						
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				828* 831* 974	
				976* 978	
GCic	WS-CS-NOFUNC-CHR	229	WORKING-STORAGE	606 866 867*	
				869* 951	
GCic	WS-CS-NOTRUNC-CHR	230	WORKING-STORAGE	609 884 885*	
				887* 941	
GCic	WS-CS-Switch-Defaults-TXT	212	WORKING-STORAGE	223	
GCic	WS-CS-TRACEALL-CHR	231	WORKING-STORAGE	601 843 844*	
				846* 946	
GCic	WS-CS-WARNALL-CHR	232	WORKING-STORAGE	607 872 873*	
				875* 956	
GCic	WS-Delete-Fn-TXT	246	WORKING-STORAGE		
GCic	WS-File-Name-TXT	248	WORKING-STORAGE	172 670 675	
				737* 742* 745	
				758 761 768	
				771 782 1055C	
GCic	WS-File-Status-Message-TXT	252	WORKING-STORAGE		
GCic	WS-FN-CHR	249	WORKING-STORAGE	763 770* 774*	
GCic	WS-FSM-Msg-TXT	256	WORKING-STORAGE	665* 665* 665*	
				665* 665* 665*	
				665* 665* 665*	
				665* 665* 665*	
				665* 665* 665*	
				665* 665* 665*	
				665* 665* 665*	
				665* 665* 665*	
				665* 665* 665*	
GCic	WS-FSM-Status-CD	254	WORKING-STORAGE	174 665 667	
GCic	WS-Horizontal-Line-TXT	258	WORKING-STORAGE	454 464 468	
				470 494 496	
				500 510 514	
				524 807*	
GCic	WS-I-SUB	260	WORKING-STORAGE	761* 762 763	
				764 766 770	
				774 789* 790	
				791 792 794	
				798 802 915*	
				926* 930* 934*	
				939* 944* 949*	
				954* 959* 964*	
				968* 981* 989*	
				993* 1083* 1090*	
				1100* 1103* 1110*	
				1114* 1120* 1125*	
				1130* 1138* 1146*	
				1152* 1158* 1163*	
GCic	WS-J-SUB	262	WORKING-STORAGE	1105* 1106 1107	
				1112	

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GCic	WS-Listing-CD	264	WORKING-STORAGE	822	861*	862
				863*	1059C	
GCic	WS-Listing-Filename-TXT	266	WORKING-STORAGE	169	998*	999C
				1008	1026	1054C
				1224	1231	
GCic	WS-Listing-TXT	268	WORKING-STORAGE	620	824*	827*
				830*		
GCic	WS-OC-Compile-DT	270	WORKING-STORAGE	532	715*	
GCic	WS-OS-Cygwin-BOOL	304	WORKING-STORAGE	758	782	1097
				1127	1220	
GCic	WS-OS-Dir-CHR	279	WORKING-STORAGE	759*	763	774
				783*	1123	
GCic	WS-OS-Exe-Ext-CONST	280	WORKING-STORAGE	1143	1144	
GCic	WS-OS-Lib-Ext-CONST	281	WORKING-STORAGE	1149	1150	
GCic	WS-OS-Lib-Type-CONST	282	WORKING-STORAGE	618		
GCic	WS-OS-OSX-BOOL	306	WORKING-STORAGE	1227		
GCic	WS-OS-Type-CD	283	WORKING-STORAGE	809	1056C	
GCic	WS-OS-Type-FILLER-TXT	308	WORKING-STORAGE	314		
GCic	WS-OS-Type-TXT	315	WORKING-STORAGE	809		
GCic	WS-OS-Types-TXT	314	WORKING-STORAGE			
GCic	WS-OS-UNIX-BOOL	305	WORKING-STORAGE	1127		
GCic	WS-OS-Windows-BOOL	303	WORKING-STORAGE	1220	1241	
GCic	WS-Output-Msg-TXT	318	WORKING-STORAGE	537	666*	812*
				899*	913*	1003*
				1018*	1019	1027*
				1035*	1047*	1053*
				1062*	1067*	1079*
				1170*	1171*	1265
GCic	WS-Path-Delimiter-CHR	320	WORKING-STORAGE			
GCic	WS-PFN-CHR	327	WORKING-STORAGE	791	798*	802*
GCic	WS-Pgm-Nm-TXT	330	WORKING-STORAGE	795*	800*	997
				1136	1242	1245
GCic	WS-Prog-Extension-TXT	322	WORKING-STORAGE	796*	801*	
GCic	WS-Prog-File-Name-TXT	326	WORKING-STORAGE	578	768*	773*
				789	795	799
				991		
GCic	WS-Prog-Folder-TXT	324	WORKING-STORAGE	579	767*	772*
				776	777*	780C
				1096	1097	1101
				1106	1107	1112
				1118		
GCic	WS-RS-1st-Prog-Complete-BOOL	343	WORKING-STORAGE	1183	1192*	
GCic	WS-RS-Compile-Failed-BOOL	336	WORKING-STORAGE	1024*	1036	
GCic	WS-RS-Compile-OK-BOOL	334	WORKING-STORAGE	688	1017*	
GCic	WS-RS-Compile-OK-CHR	333	WORKING-STORAGE			
GCic	WS-RS-Compile-OK-Warn-BOOL	335	WORKING-STORAGE	688		
GCic	WS-RS-Complete-BOOL	338	WORKING-STORAGE	685	1022*	
GCic	WS-RS-Complete-CHR	337	WORKING-STORAGE			
GCic	WS-RS-Double-Quote-Used-BOOL	341	WORKING-STORAGE	1095*	1121*	1155

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GCic	WS-RS-IDENT-DIV-CHR	342	WORKING-STORAGE		
GCic	WS-RS-More-To-1st-Prog-BOOL	344	WORKING-STORAGE	1182*	
GCic	WS-RS-No-Switch-Changes-BOOL	346	WORKING-STORAGE	821	902*
GCic	WS-RS-No-Switch-Chgs-CHR	345	WORKING-STORAGE		
GCic	WS-RS-Not-Complete-BOOL	339	WORKING-STORAGE	684*	
GCic	WS-RS-Output-File-Avail-BOOL	350	WORKING-STORAGE	694	1005*
GCic	WS-RS-Output-File-Busy-BOOL	349	WORKING-STORAGE		
GCic	WS-RS-Output-File-Busy-CHR	348	WORKING-STORAGE		
GCic	WS-RS-Quote-CHR	340	WORKING-STORAGE		
GCic	WS-RS-Source-Rec-Ident-BOOL	353	WORKING-STORAGE	1191	1197
GCic	WS-RS-Source-Rec-Ignored-BOOL	354	WORKING-STORAGE	1195*	
GCic	WS-RS-Source-Rec-Linkage-BOOL	352	WORKING-STORAGE	1196	1207
GCic	WS-RS-Source-Record-Type-CHR	351	WORKING-STORAGE	1190C	1204C
GCic	WS-RS-Switch-Changes-BOOL	347	WORKING-STORAGE	820*	
GCic	WS-RS-Switch-Error-CHR	355	WORKING-STORAGE		
GCic	WS-RS-Switch-Is-Bad-BOOL	356	WORKING-STORAGE		
GCic	WS-RS-Switch-Is-Good-BOOL	357	WORKING-STORAGE		
GCic	WS-Runtime-Switches-TXT	332	WORKING-STORAGE		
GCic	WS-Tally-QTY	359	WORKING-STORAGE	971*	973* 975

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LISTING	100-Initialization	2429	PROCEDURE	2413	
LISTING	300-Tokenize-Source	2502	PROCEDURE	2420	
LISTING	310-Get-Token	2553	PROCEDURE	2511	
LISTING	311-Control-Record	2713	PROCEDURE	2572	
LISTING	312-Expanded-Src-Record	2759	PROCEDURE	2574	
LISTING	313-Check-For-Numeric-Token	2770	PROCEDURE	2700	
LISTING	320-IDENTIFICATION-DIVISION	2812	PROCEDURE	2532	
LISTING	330-ENVIRONMENT-DIVISION	2832	PROCEDURE	2534	
LISTING	340-DATA-DIVISION	2858	PROCEDURE	2536	
LISTING	350-PROCEDURE-DIVISION	2914	PROCEDURE	2538	
LISTING	351-ACCEPT	2985	PROCEDURE	2941	
LISTING	351-ADD	2995	PROCEDURE	2943	
LISTING	351-ALLOCATE	3006	PROCEDURE	2945	
LISTING	351-CALL	3018	PROCEDURE	2947	
LISTING	351-COMPUTE	3029	PROCEDURE	2949	
LISTING	351-DIVIDE	3038	PROCEDURE	2951	
LISTING	351-FREE	3058	PROCEDURE	2953	
LISTING	351-GENERATE	3062	PROCEDURE	2955	2959 2975
LISTING	351-INITIALIZE	3066	PROCEDURE	2957	
LISTING	351-INITIATE	3075	PROCEDURE		
LISTING	351-INSPECT	3079	PROCEDURE	2961	
LISTING	351-MOVE	3109	PROCEDURE	2963	
LISTING	351-MULTIPLY	3118	PROCEDURE	2965	
LISTING	351-PERFORM	3134	PROCEDURE	2967	
LISTING	351-SET	3147	PROCEDURE	2969	
LISTING	351-STRING	3156	PROCEDURE	2971	
LISTING	351-SUBTRACT	3167	PROCEDURE	2973	
LISTING	351-TERMINATE	3178	PROCEDURE		
LISTING	351-TRANSFORM	3182	PROCEDURE	2977	
LISTING	351-UNSTRING	3192	PROCEDURE	2979	
LISTING	360-Release-Def	3209	PROCEDURE	2848 2891 2932	2885 2888 2897
LISTING	361-Release-Ref	3220	PROCEDURE	2850 2981 3014 3071 3130 3163 3205	2854 2907 3002 3054 3114 3152 3188
LISTING	362-Release-Upd	3225	PROCEDURE	2900 2998 3012 3032 3059 3076 3128 3150	2903 2988 3000 3009 3023 3052 3069 3112 3140 3161

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				3185	3195	3197	
				3199	3201	3203	
LISTING	363-Set-Upd	3230	PROCEDURE	3041	3121	3226	
LISTING	364-Set-Ref	3240	PROCEDURE	3082	3221		
LISTING	365-Release-Arg	3249	PROCEDURE	3025			
LISTING	366-Set-Arg	3254	PROCEDURE	3250			
LISTING	400-Produce-Xref-Listing	3265	PROCEDURE	2421			
LISTING	410-Generate-Report-Line	3343	PROCEDURE	3274	3277	3287	
				3291	3301	3313	
				3329	3339		
LISTING	420-Generate-Xref-Footer	3411	PROCEDURE	3280	3345		
LISTING	500-Produce-Source-Listing	3445	PROCEDURE	2415			
LISTING	510-Control-Record	3468	PROCEDURE	3458			
LISTING	520-Expanded-Src-Record	3485	PROCEDURE	3460			
LISTING	530-Generate-Source-Line	3551	PROCEDURE	3452	3499	3503	
				3508	3512	3516	
				3519	3535	3539	
				3543	3546		
LISTING	F-ES-1-7-TXT	1432	FILE	2570	3456		
LISTING	F-ES-1-CHR	1429	FILE	2571	3457		
LISTING	F-ES-2-256-TXT-256	1430	FILE	2714	3469		
LISTING	F-ES-8-256-TXT	1433	FILE				
LISTING	F-Expanded-Src-FILE	1427	FILE	1418	2503	2550	
				2560	3447	3450	
				3465	3478		
LISTING	F-Expanded-Src-REC	1428	FILE	2504*	2558	2582	
				2584	2614	2618	
				2627	2631	2640	
				2644	2652	2670	
				2755*	2760	3521	
				3523			
LISTING	F-Expanded-Src2-REC	1431	FILE				
LISTING	F-Listing-135-REC	1437	FILE	3353*	3355*	3357*	
				3358	3360*	3361	
				3364*	3366*	3367	
				3368*	3369*	3370	
				3371	3372	3373	
				3401	3413	3415*	
				3416	3418*	3420*	
				3422	3424	3425	
				3569	3571	3573*	
				3574	3576*	3578*	
				3579	3580	3610*	
				3612*	3614*	3615	
				3617*	3618	3620*	
				3622*	3623	3625*	
				3626	3652*	3657*	
				3658	3661*	3662	

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LISTING	F-Listing-96-REC	1436	FILE	3376* 3378* 3380* 3381 3383* 3384 3387* 3389* 3390 3391* 3392* 3393 3394 3395 3396 3404 3428 3430* 3431 3433* 3435* 3437 3439 3440 3586 3588 3589 3591 3593* 3594 3596* 3598* 3599 3600 3629* 3631* 3633* 3634 3636* 3637 3639* 3641* 3642 3644* 3645 3653 3668 3673 3677 3682 3686 3690	3384 3390 3393 3396 3430* 3435* 3440 3589 3594 3599 3631* 3636* 3641* 3645 3673 3686	
LISTING	F-Listing-FILE	1435	FILE	1420	2414	2422
LISTING	F-Listing-REC	1438	FILE			
LISTING	F-Original-Src-FILE	1440	FILE	1422 3446 3464 3488		
LISTING	F-Original-Src-REC	1441	FILE	3492		
LISTING	F-OS-1-128-TXT	1442	FILE			
LISTING	F-OS-129-256-TXT	1447	FILE			
LISTING	F-OS-7-CHR	1444	FILE	3497		
LISTING	F-OS-8-72-TXT	1445	FILE	3493	3525	
LISTING	F-Sort-Work-FILE	1449	FILE	1424	2416	3272
LISTING	F-Sort-Work-REC	1450	FILE	2525* 2527 2562* 2564 3042 3045* 3048 3090* 3093 3098* 3101 3122 3124* 3127 3210* 3217 3222 3227 3231* 3241* 3251 3255*	2562* 3045* 3093 3122 3210* 3227 3251	
LISTING	F-SW-Def-Line-NUM	1455	FILE	3215* 3298 3306 3310 3322 3323		
LISTING	F-SW-Prog-ID-TXT	1451	FILE	2417 3211* 3232* 3242* 3256* 3283 3289 3294 3303 3315 3319		
LISTING	F-SW-Ref-Flag-CHR	1458	FILE	3047* 3092* 3100* 3126* 3237* 3261* 3334		
LISTING	F-SW-Ref-Line-NUM	1457	FILE	2419 3216* 3236* 3246* 3260* 3332		
LISTING	F-SW-Reference-TXT	1456	FILE	3326		
LISTING	F-SW-Section-TXT	1454	FILE	3214* 3235* 3245*		
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LISTING	F-SW-Token-TXT	1453	FILE	3259* 3213* 3258*	3305 3234* 3320	3321 3244*
LISTING	F-SW-Token-Uc-TXT	1452	FILE	2418 3243* 3295	3212* 3257* 3297	3233* 3284 3309
LISTING	L-Listing-CD	2404	LINKAGE	2411 3351 3553 3649	2451 3400 3567	2488 3412 3608
LISTING	L-Listing-Fn-TXT	2394	LINKAGE	1420	2406	
LISTING	L-LPP-NUM	2400	LINKAGE	2409	2489	
LISTING	L-LPP-Port-NUM	2402	LINKAGE	2410	2491	
LISTING	L-OS-Type-CD	2398	LINKAGE	2408	2434	
LISTING	L-Src-Fn-TXT	2396	LINKAGE	1422 2439* 2445 2463	2407 2440 2448 2465	2439 2441 2461 2470
LISTING	RETURN-CODE		PROCEDURE	2481		
LISTING	WS-CD-In-DATA-DIV-BOOL	1475	WORKING-STORAGE	2535		
LISTING	WS-CD-In-ENV-DIV-BOOL	1474	WORKING-STORAGE	2533		
LISTING	WS-CD-In-IDENT-DIV-BOOL	1473	WORKING-STORAGE	2531		
LISTING	WS-CD-In-PROC-DIV-BOOL	1476	WORKING-STORAGE	2537		
LISTING	WS-Copyright-TXT	1461	WORKING-STORAGE	2432* 3432	2437* 3575	3417 3595
LISTING	WS-CPI-13-15-TXT	1482	WORKING-STORAGE	2826*		
LISTING	WS-CPI-16-CHR	1483	WORKING-STORAGE	2825		
LISTING	WS-CS-1-CHR	1486	WORKING-STORAGE	2748*		
LISTING	WS-CS-11-14-TXT	1489	WORKING-STORAGE	2750	2751*	
LISTING	WS-CS-15-CHR	1490	WORKING-STORAGE	2753*		
LISTING	WS-CS-2-14-TXT	1487	WORKING-STORAGE	2749*		
LISTING	WS-Curr-Char-Is-Punct-BOOL	1464	WORKING-STORAGE	2593	2601	2606
LISTING	WS-Curr-Char-Is-Quote-BOOL	1468	WORKING-STORAGE	2612		
LISTING	WS-Curr-Char-Is-X-BOOL	1469	WORKING-STORAGE	2625		
LISTING	WS-Curr-Char-Is-Z-BOOL	1470	WORKING-STORAGE	2638		
LISTING	WS-Curr-CHR	1463	WORKING-STORAGE	2583* 2594 2615	2586 2602	2588 2608
LISTING	WS-Curr-Division-TXT	1472	WORKING-STORAGE	2508* 2603 2838* 2925*	2544 2703 2864*	2595 2819* 2920*
LISTING	WS-Curr-Line-NUM	1478	WORKING-STORAGE	2507* 2766* 3246	2567* 3215 3260	2726* 3236 3487*
LISTING	WS-Curr-Prog-ID-TXT	1480	WORKING-STORAGE	2497* 3232	2824* 3242	3211 3256
LISTING	WS-Curr-Section-TXT	1485	WORKING-STORAGE	2729* 2869*	2734 2915	2843* 2916*
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				3214	3235	3245
				3259		
LISTING	WS-Curr-Verb-TXT	1492	WORKING-STORAGE	2498*	2522*	2546*
				2930	2939	
LISTING	WS-Delim-TXT	1494	WORKING-STORAGE	2655*	2657	2675*
				2677	2680	
LISTING	WS-Dummy-TXT	1496	WORKING-STORAGE	2473*	2718*	2747*
				2780*	2785*	2786
				3473*		
LISTING	WS-Expanded-Src-Fn-TXT	1498	WORKING-STORAGE	1418	2478*	2479C
LISTING	WS-Filename-TXT	1500	WORKING-STORAGE	2472*	2475	2746*
				2749		
LISTING	WS-Flags-TXT	1502	WORKING-STORAGE			
LISTING	WS-Formatted-DT	1505	WORKING-STORAGE	2496*	3356	3379
				3613	3632	
LISTING	WS-GI-Prog-ID-TXT	1508	WORKING-STORAGE	3283	3289	3294*
LISTING	WS-GI-Token-TXT	1509	WORKING-STORAGE	3284	3295*	3297
				3309		
LISTING	WS-Group-Indicators-TXT	1507	WORKING-STORAGE	3267*		
LISTING	WS-Held-Reference-TXT	1511	WORKING-STORAGE	2499*	2524	2525
				2526*	2561	2562
				2563*	3042*	3044
				3045	3046*	3083*
				3089	3090	3091*
				3097	3098	3099*
				3122*	3124	3125*
LISTING	WS-I-SUB	1513	WORKING-STORAGE	2440*	2441	2442
				2444	2447*	2448
				2463*	2465	2466
				2467	2470	2723*
				2726	2737*	2739
				2740	2741	2744
				3268*	3302*	3314*
				3327*	3328	3330*
				3333	3335	3408*
LISTING	WS-J-SUB	1515	WORKING-STORAGE	2464*	2468*	2470
				2738*	2742*	2744
LISTING	WS-Lines-Left-NUM	1517	WORKING-STORAGE	3269*	3278	3292
				3344	3398*	3409
				3453	3500	3504
				3531*	3565	3647*
				3654	3663	3670
				3679	3692	
LISTING	WS-Lines-Per-Page-Env-TXT	1521	WORKING-STORAGE	2453*	2457*	2484
				2485		
LISTING	WS-Lines-Per-Page-NUM	1519	WORKING-STORAGE	2486*	2489*	2491*
				2494	3398	3647
LISTING	WS-Main-Module-Name-TXT	1523	WORKING-STORAGE	2445*	2449*	2725
				3475		

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LISTING	WS-Next-CHR	1525	WORKING-STORAGE	2585*	2628 2641
LISTING	WS-OS-Type-FILLER-TXT	1528	WORKING-STORAGE	1534	
LISTING	WS-OS-Type-TXT	1535	WORKING-STORAGE	2434	
LISTING	WS-OS-Types-TXT	1534	WORKING-STORAGE		
LISTING	WS-Page-No-TXT	1540	WORKING-STORAGE	3350C 3419 3597 3640	3365 3434 3607C 3388 3577 3621
LISTING	WS-Page-NUM	1538	WORKING-STORAGE	2430* 3566	3346* 3603* 3348 3605
LISTING	WS-PN-Literal-TXT	1541	WORKING-STORAGE	3347*	3604*
LISTING	WS-PN-Page-NUM	1542	WORKING-STORAGE	3348* 3606C	3349C 3605*
LISTING	WS-Program-Path-TXT	1544	WORKING-STORAGE	2461* 3382	2462C 3359 3635
LISTING	WS-Reserved-Word-Table-TXT	2301	WORKING-STORAGE		
LISTING	WS-Reserved-Word-TXT	2302	WORKING-STORAGE	2690	
LISTING	WS-Reserved-Words-TXT	1546	WORKING-STORAGE	2301	
LISTING	WS-RS-Duplicate-CHR	2310	WORKING-STORAGE	3270* 3311	3285* 3300* 3312*
LISTING	WS-RS-In-Copybook-BOOL	2313	WORKING-STORAGE	2732*	3481*
LISTING	WS-RS-In-Main-Module-BOOL	2312	WORKING-STORAGE	2727* 3486	2765 3476*
LISTING	WS-RS-In-Which-Pgm-CHR	2311	WORKING-STORAGE		
LISTING	WS-RS-Last-Token-Ended-Sent-CHR	2314	WORKING-STORAGE	2556*	2702
LISTING	WS-RS-Processing-PICTURE-CHR	2315	WORKING-STORAGE	2651	2665* 2874*
LISTING	WS-RS-Token-Ended-Sentence-CHR	2316	WORKING-STORAGE	2543 2590* 2645* 2509*	2555 2619* 2658* 2694* 2557* 2632* 2678* 2816*
LISTING	WS-RS-Verb-Has-Been-Found-CHR	2317	WORKING-STORAGE		
LISTING	WS-Runtime-Switches	2309	WORKING-STORAGE		
LISTING	WS-RW-IDX	2305	WORKING-STORAGE	2691	2692
LISTING	WS-RW-Type-CD	2306	WORKING-STORAGE	2692	
LISTING	WS-RW-Word-TXT	2307	WORKING-STORAGE	2304	2691
LISTING	WS-Saved-Section-TXT	2319	WORKING-STORAGE	2728 2734*	2729 2733
LISTING	WS-SDL-Line-NUM	2326	WORKING-STORAGE	3491*	
LISTING	WS-SDL-Statement-TXT	2328	WORKING-STORAGE	3492* 3558 3660* 3681	3524* 3560 3672 3685* 3554 3656 3676* 3689*
LISTING	WS-Src-Dashes-TXT	2321	WORKING-STORAGE	3624	3643
LISTING	WS-Src-Detail-Line-TXT	2325	WORKING-STORAGE	3451* 3502* 3515* 3538* 3657 3668	3490* 3507* 3522* 3542* 3659* 3673 3498* 3511* 3534* 3652 3661 3675*

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				C:/Users/tda010/Documents/Programs/Samples/GCic.cbl		
PROGRAM-ID	Identifier/Register/Function	Defn	Where Defined	References	Page: 110	
=====	=====	=====	=====	=====	=====	
				3677	3682	3684*
				3686	3688*	3690
				3695*		
LISTING	WS-Src-Hold-TXT	2330	WORKING-STORAGE	3656*	3660	3672*
				3676	3681*	3685
				3689		
LISTING	WS-Src-Line-NUM	2332	WORKING-STORAGE	3448*	3477	3489*
				3491		
LISTING	WS-Src-Lines-NUM	2334	WORKING-STORAGE	3552*	3555*	3559*
				3561*	3565	3568
				3582	3650	3666
LISTING	WS-Src-SUB	2336	WORKING-STORAGE	2505*	2558	2559
				2578*	2582	2584
				2587*	2596*	2607*
				2613*	2617*	2618
				2620*	2626*	2630*
				2631	2633*	2639*
				2643*	2644	2646*
				2656*	2659*	2676*
				2681	2756*	2761*
				2763*		
LISTING	WS-Suppress-FF-CHR	1503	WORKING-STORAGE	2431*	3279*	3421
				3436		
LISTING	WS-Tally-QTY	2338	WORKING-STORAGE	2795*	2797*	2798
				2802*	2803	
LISTING	WS-Temp-10-Chars-TXT	2340	WORKING-STORAGE	2716*	2720	2721*
				2723	3471*	
LISTING	WS-Temp-256-Chars-TXT	2350	WORKING-STORAGE	2480C	2717*	2724
				2736	2739	2744
				3472*	3474	
LISTING	WS-Temp-32-Chars-1-TXT	2342	WORKING-STORAGE	2771*	2774	2781
LISTING	WS-Temp-32-Chars-2-TXT	2344	WORKING-STORAGE	2778*	2783*	2789
				2790*	2806	
LISTING	WS-Temp-32-Chars-3-TXT	2346	WORKING-STORAGE	2779*	2784*	2792
				2793*	2806	
LISTING	WS-Temp-65-Chars-TXT	2348	WORKING-STORAGE	3494*	3501	3506
				3510	3514	3526*
				3530	3533	3537
				3541		
LISTING	WS-Today-DT	2352	WORKING-STORAGE	2495*	2496	
LISTING	WS-Token-Curr-TXT	2354	WORKING-STORAGE	2515	2519*	2588*
				2597*	2608*	2616*
				2629*	2642*	2654*
				2661	2674*	2684
				2686*	2704*	2771
				2818	2824	2837
				2842	2863	2868
				2872	2906	2924
				3213	3234	3244

GNU COBOL 2.1 23NOV2013 Cross-Reference Listing					2014/03/27	
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PROGRAM-ID	Identifier/Register/Function	Defn	Where Defined	References	Page: 111	
=====	=====	=====	=====	=====	=====	
				3258		
LISTING	WS-Token-Curr-Uc-TXT	2356	WORKING-STORAGE	2516*	2519	2522
				2541	2918	3212
				3233	3243	3257
LISTING	WS-Token-Prev-TXT	2358	WORKING-STORAGE	2523*	2541*	2545*
				2604*	2819	2822
				2823*	2838	2843
				2847	2864	2869
				2878	2879*	2883
				2886*	2889*	2892*
				2895*	2898*	2901*
				2904*	2919	2925
				2929	2933*	2986
				2989*	2996	3007
				3010*	3019	3030
				3039	3067	3080
				3084*	3087*	3095*
				3103*	3110	3119
				3135	3138*	3141*
				3148	3157	3168
				3183	3186*	3193
LISTING	WS-Token-Search-TXT	2360	WORKING-STORAGE	2684*	2685	2691
LISTING	WS-Token-Type-CD	2362	WORKING-STORAGE	2589*	2598*	2609*
				2662*	2666*	2687*
				2692*	2705*	
LISTING	WS-TT-Token-Is-Argtype-BOOL	2363	WORKING-STORAGE	2813	2833	2859
LISTING	WS-TT-Token-Is-EOF-BOOL	2364	WORKING-STORAGE	2512	2566*	
LISTING	WS-TT-Token-Is-Function-BOOL	2365	WORKING-STORAGE	2853		
LISTING	WS-TT-Token-Is-Identifier-BOOL	2366	WORKING-STORAGE	2699*	2846	2882
				2928	2936	
LISTING	WS-TT-Token-Is-Keyword-BOOL	2367	WORKING-STORAGE	2517	2540	2817
				2836	2841	2862
				2867	2873	2923
LISTING	WS-TT-Token-Is-Lit-Alpha-BOOL	2368	WORKING-STORAGE	2622*	2648*	
LISTING	WS-TT-Token-Is-Lit-Number-BOOL	2369	WORKING-STORAGE	2635*	2701	2775*
				2807*		
LISTING	WS-TT-Token-Is-Reserved-Wd-BOOL	2371	WORKING-STORAGE	2518	2814*	2834*
				2860*	2877	
LISTING	WS-TT-Token-Is-Verb-BOOL	2370	WORKING-STORAGE	2521	2693	
LISTING	WS-Usernames-QTY	2373	WORKING-STORAGE	2506*		
LISTING	WS-Version-TXT	2375	WORKING-STORAGE	2438*	3352	3375
				3609	3628	
LISTING	WS-XDL-Def-Line-NUM	2382	WORKING-STORAGE	3306*	3323*	
LISTING	WS-XDL-Prog-ID-TXT	2378	WORKING-STORAGE	3303*	3315*	3319*
LISTING	WS-XDL-Ref-Flag-CHR	2388	WORKING-STORAGE	3335*		
LISTING	WS-XDL-Ref-Line-NUM	2387	WORKING-STORAGE	3333*		
LISTING	WS-XDL-Reference-TXT	2386	WORKING-STORAGE			
LISTING	WS-XDL-Section-TXT	2384	WORKING-STORAGE	3305*	3321*	
LISTING	WS-XDL-Token-TXT	2380	WORKING-STORAGE	3304*	3316*	3320*


```

GNU COBOL 2.1 23NOV2013 Cross-Reference Listing
C:/Users/tda010/Documents/Programs/Samples/GCic.cbl
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PROGRAM-ID      Identifier/Register/Function      Defn  Where Defined  References      Page: 112
=====
LISTING         WS-Xref-Detail-Line-TXT          2377  WORKING-STORAGE  3266*  3273  3276*
                                           3286  3290*  3299
                                           3318  3338  3401
                                           3404  3407*
LISTING         WS-Xref-Lines-Per-Rec-NUM        2391  WORKING-STORAGE  2452*  2456*  3328

```


6. STREAMIO

STREAMIO is a utility I created to assist with handling stream I/O functions. I've used it to construct a number of useful little command-line utilities.

Usage of this subroutine is completely documented in the program comments. The program COPY's a copybook named STREAMIOcb, the format of which is described in the program comments.

Both STREAMIO.cbl and STREAMIOcb.cpy are included in the "samples" directory of any pre-built distributions of GnuCOBOL that I have created.

In addition to general GnuCOBOL concepts, this program provides a useful demonstration of the following:

- Coding a GnuCOBOL subroutine
- Using the "REPLACING" clause on a CDF "COPY" statement
- Using hexadecimal alphanumeric literals
- Using the following statements:
 - "ACCEPT FROM ENVIRONMENT" statement
 - "INSPECT" statement
 - "STRING" statement
- Using the following built-in subroutines:
 - "C\$PARAMSIZE" built-in system subroutine
 - "CBL_CLOSE_FILE" built-in system subroutine
 - "CBL_DELETE_FILE" built-in system subroutine
 - "CBL_EXIT_PROC" built-in system subroutine
 - "CBL_OPEN_FILE" built-in system subroutine
 - "CBL_READ_FILE" built-in system subroutine
 - "CBL_WRITE_FILE" built-in system subroutine
- Using the following intrinsic functions:
 - "RANDOM" intrinsic function
 - "TRIM" intrinsic function

First, here is the STREAMIOcb.cpy copybook:

```

05 SCB-Handle-NUM          PIC X(4) COMP-X.
05 SCB-Mode-CD             PIC X(1).
    88 SCB-MODE-Input-BOOL  VALUE 'I', 'i'.
    88 SCB-MODE-Output-BOOL VALUE 'O', 'o'.
    88 SCB-MODE-Both-BOOL   VALUE 'B', 'b'.
05 SCB-Function-CD         PIC X(2).
    88 SCB-Func-CLOSE-BOOL  VALUE 'C ', 'c '.
    88 SCB-Func-DELETE-BOOL VALUE 'D ', 'd '.
    88 SCB-Func-OPEN-BOOL   VALUE 'O ', 'o '.
    88 SCB-Func-READ-BOOL   VALUE 'R ', 'r '.
    88 SCB-Func-READ-Delim-BOOL VALUE 'RD', 'rd',
                                'rD', 'Rd'.
    88 SCB-Func-WRITE-BOOL  VALUE 'W ', 'w '.
    88 SCB-Func-WRITE-Delim-BOOL VALUE 'WD', 'wd',
                                'wD', 'Wd'.
05 SCB-Delimiter-Mode-CD   PIC X(1).
    88 SCB-DELIM-Unix-BOOL  VALUE 'U', 'u'.
    88 SCB-DELIM-Windows-BOOL VALUE 'W', 'w'.
05 SCB-Offset-NUM          PIC X(8) COMP-X.
05 SCB-Error-Routine-PTR   USAGE PROGRAM-POINTER.
05 SCB-Error-Routine-NUM REDEFINES SCB-Error-Routine-PTR
                                USAGE BINARY-LONG.
05 SCB-Return-CD           USAGE BINARY-LONG.
05 SCB-Filename-TXT        PIC X(256).

```

The program source and cross-reference listing, produced using the GnuCOBOL Interactive Compiler front-end (GCic.cbl, one of the sample programs included here), begins on the next page.

GNU COBOL 2.1 23NOV2013 Source Listing

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Line Statement

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```

=====
1      >>SOURCE FORMAT IS FIXED
2      IDENTIFICATION DIVISION.
3      PROGRAM-ID. STREAMIO.
4      *>*****
5      *> Author: Gary L. Cutler                      **
6      *>                                           **
7      *> This routine centralizes all bytestream file I/O functions **
8      *> into one routine. The manner in which this routine is    **
9      *> CALled is as follows:                                **
10     *>                                           **
11     *>          CALL "STREAMIO" USING control-block [ , arg2 ]  **
12     *>                                           **
13     *> where 'control-block' is defined by the "STREAMIOcb.cpy"  **
14     *> copybook and 'arg2' will vary, depending upon the function **
15     *> specified in the control block.                      **
16     *>                                           **
17     *> The STREAMIO routine has an advantage over the various   **
18     *> "CBL_XXXXXX_FILE" routines in that:                  **
19     *>                                           **
20     *> 1. It automates the establishment and on-going adjustment of **
21     *> the file-offset value in such a way as to simplify the    **
22     *> sequential processing of a bytestream file (you may still **
23     *> specify a file-offset manually on each read or write, if  **
24     *> you wish)                                                **
25     *>                                           **
26     *> 2. It auto-detects the size of the I/O buffer you supply to **
27     *> STREAMIO, using that as the byte-count of all read and   **
28     *> write operations.                                         **
29     *>                                           **
30     *> 3. Not only does it support the raw input and output of data **
31     *> that the CBL_READ_FILE and CBL_WRITE_FILE routines do,    **
32     *> but on input it is also capable of delivering just a     **
33     *> single newline-delimited or carriage-return/newline de-  **
34     *> limited record to the caller.                            **
35     *>                                           **
36     *> 4. On output, STREAMIO can optionally append either a new- **
37     *> line or carriage-return/newline sequence (your choice) to **
38     *> the end of every record it writes.                        **
39     *>                                           **
40     *> 5. STREAMIO can automatically generate filenames for output **
41     *> files if you wish, simplifying the process of creating    **
42     *> scratch or work files.                                     **
43     *>                                           **
44     *> 6. The STREAMIO routine also allows you to (optionally) re- **
45     *> gister a general error-handling routine to be given con-   **
46     *> trol should a fatal error be detected with STREAMIO.      **
47     *>                                           **
48     *> This routine can be "turned on" and "turned off" at will. **
49     *>                                           **
=====

```

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Line Statement

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```

=====
50      *> The control block format is as follows.  This structure must **
51      *> be defined under an 01-level data item of your creation and **
52      *> should be INITIALIZED before any items within it are used.  **
53      *> **
54      *> 05 SCB-Handle-NUM                PIC X(4) COMP-X.          **
55      *> 05 SCB-Mode-CD                  PIC X(1).                  **
56      *>    88 SCB-Mode-Input-BOOL       VALUE 'I', 'i'.            **
57      *>    88 SCB-Mode-Output-BOOL      VALUE 'O', 'o'.            **
58      *>    88 SCB-Mode-Both-BOOL        VALUE 'B', 'b'.            **
59      *> 05 SCB-Function-CD              PIC X(2).                  **
60      *>    88 SCB-Func-CLOSE-BOOL       VALUE 'C ', 'c '.          **
61      *>    88 SCB-Func-DELETE-BOOL      VALUE 'D ', 'd '.          **
62      *>    88 SCB-Func-OPEN-BOOL        VALUE 'O ', 'o '.          **
63      *>    88 SCB-Func-READ-BOOL        VALUE 'R ', 'r '.          **
64      *>    88 SCB-Func-READ-Delim-BOOL  VALUE 'RD', 'rd',          **
65      *>                                'rD', 'Rd'.                  **
66      *>    88 SCB-Func-WRITE-BOOL       VALUE 'W ', 'w '.          **
67      *>    88 SCB-Func-WRITE-Delim-BOOL VALUE 'WD', 'wd',          **
68      *>                                'wD', 'Wd'.                  **
69      *> 05 SCB-Delimiter-Mode-CD        PIC X(1).                  **
70      *>    88 SCB-Delim-Unix-BOOL       VALUE 'U', 'u'.            **
71      *>    88 SCB-Delim-Windows-BOOL    VALUE 'W', 'w'.            **
72      *> 05 SCB-Offset-NUM                PIC X(8) COMP-X.          **
73      *> 05 SCB-Error-Routine-PTR        USAGE PROGRAM-POINTER.    **
74      *> 05 SCB-Error-Routine-NUM REDEFINES SCB-Error-Routine-PTR **
75      *>                                USAGE BINARY-LONG.          **
76      *> 05 SCB-Return-CD                USAGE BINARY-LONG.        **
77      *> 05 SCB-Filename-TXT             PIC X(256).                **
78      *> **
79      *> Such a structure is defined for your use using the copybook **
80      *> "STREAMIOcb.cpy" (you may also define your own, provided it **
81      *> conforms to the above layout). **
82      *>-----**
83      *> SCB-Handle-NUM **
84      *>-----**
85      *> **
86      *> Serves as a file handle to the file once it has been opened **
87      *> (via the "SCB-Func-OPEN-BOOL" function). **
88      *> **
89      *>-----**
90      *> SCB-Mode-CD **
91      *>-----**
92      *> **
93      *> Prior to calling "STREAMIO" for the first time for a file, **
94      *> the appropriate subordinate level-88 must be set to TRUE to **
95      *> select an I/O mode.  You may also simply move one of the **
96      *> string values listed on the level-88 items to "SCB-Mode-CD". **
97      *> **
98      *>-----**
=====

```

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Line Statement

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```

=====
  99      *> SCB-Function-CD                                **
 100      *>-----**
 101      *>                                                **
 102      *> The appropriate subordinate level-88 must be set to TRUE to **
 103      *> select a function you'd like to execute against a file. You **
 104      *> may also simply move one of the string values listed on the **
 105      *> level-88 items to "SCB-Function-CD".                **
 106      *>                                                **
 107      *> Available functions are as follows:                **
 108      *>                                                **
 109      *> SCB-Func-OPEN-BOOL                                **
 110      *>                                                **
 111      *>     This must be the function specified the first time you **
 112      *>     call STREAMIO for any given file. It opens the file & **
 113      *>     makes it available for use according to the      **
 114      *>     "SCB-Mode-CD" specification.                    **
 115      *>                                                **
 116      *>     The filename being opened must be specified in the **
 117      *>     "SCB-Filename-TXT" field.                        **
 118      *>                                                **
 119      *>     The SCB-Offset-NUM field will be initialized to ZERO. **
 120      *>                                                **
 121      *>     If "arg2" is specified in conjunction with this funct- **
 122      *>     ion, it will be ignored.                          **
 123      *>                                                **
 124      *> SCB-Func-CLOSE-BOOL                                **
 125      *>                                                **
 126      *>     This function should be the one specified the LAST time **
 127      *>     you call STREAMIO against a specific file. After this **
 128      *>     function has been executed, you'll have to re-open the **
 129      *>     file if you wish to use it with STREAMIO again.    **
 130      *>                                                **
 131      *>     The SCB-Handle-NUM item will be reset to ZERO.    **
 132      *>                                                **
 133      *>     If "arg2" is specified in conjunction with this funct- **
 134      *>     ion, it will be ignored.                          **
 135      *>                                                **
 136      *> SCB-Func-DELETE-BOOL                                **
 137      *>                                                **
 138      *>     This function will delete the file specified in the **
 139      *>     control block (see SCB-Filename-TXT).              **
 140      *>                                                **
 141      *>     This function should not be performed against a file **
 142      *>     that is open.                                       **
 143      *>                                                **
 144      *>     If "arg2" is specified in conjunction with this funct- **
 145      *>     ion, it will be ignored.                          **
 146      *>                                                **
 147      *> SCB-Func-READ-BOOL                                **
=====

```

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Line Statement

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```

=====
148      *>                                     **
149      *>      This function invokes a standard CBL_READ_FILE against **
150      *>      the file specified in the control block (see **
151      *>      SCB-Filename-TXT). **
152      *>                                     **
153      *>      The buffer into which you wish to read data must be **
154      *>      supplied as "arg2". The size of that buffer, in bytes, **
155      *>      will define the "byte-count" value supplied to the **
156      *>      CBL_READ_FILE subroutine. The buffer data item will be **
157      *>      set to SPACES before the read takes place. **
158      *>                                     **
159      *>      If the file-offset value (SCB-Offset-NUM) is greater **
160      *>      than the size of the file, a "no more data" return code **
161      *>      (01) will be passed back in SCB-Return-CD and the **
162      *>      buffer will have been set to SPACES. **
163      *>                                     **
164      *>      At the conclusion of a successful SCB-Func-READ-BOOL, **
165      *>      the value of SCB-Offset-NUM will have been automati- **
166      *>      cally incremented by the byte-count size of "arg2". **
167      *>                                     **
168      *> SCB-Func-WRITE-BOOL **
169      *>                                     **
170      *>      This function invokes a standard CBL_WRITE_FILE against **
171      *>      the file specified in the control block (see **
172      *>      SCB-Filename-TXT). **
173      *>                                     **
174      *>      The buffer from which data will be written to the file **
175      *>      must be supplied as "arg2". The size of that buffer, **
176      *>      in bytes, will define the "byte-count" value supplied **
177      *>      CBL_WRITE_FILE subroutine. The buffer data will be **
178      *>      written to the file-offset position defined by the **
179      *>      SCB-Offset-NUM value. You may specify "arg2" either **
180      *>      as an actual alphanumeric data item or as an alpha- **
181      *>      numeric literal. **
182      *>                                     **
183      *>      If the file-offset value (SCB-Offset-NUM) is greater **
184      *>      than the size of the file, a "no more data" return code **
185      *>      will be passed back in SCB-Return-CD and the buffer **
186      *>      will have been set to SPACES. **
187      *>                                     **
188      *>      At the conclusion of a successful SCB-Func-WRITE-BOOL **
189      *>      operation, the value of SCB-Offset-NUM will have been **
190      *>      automatically incremented by the byte-count size of **
191      *>      "arg2". **
192      *>                                     **
193      *> SCB-Func-READ-Delim-BOOL **
194      *>                                     **
195      *>      SCB-Func-READ-Delim-BOOL bahaves like the SCB-FUNC- **
196      *>      READ function, with the following behavioral dif- **
=====

```

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```

=====
197      *>      ferences:                                **
198      *>                                           **
199      *>      1. When data is read from the file, only that data read **
200      *>      up to BUT NOT INCLUDING an end-of-line delimiter **
201      *>      sequence (either a LF or CRLF) will be retained in **
202      *>      the buffer - the remainder of the buffer from the **
203      *>      end-of-line sequence onward will be reset to SPACES. **
204      *>      The file-offset value (SCB-Offset-NUM) will be in- **
205      *>      cremented ONLY by the amount of data transferred up **
206      *>      to AND INCLUDING the end-of-line sequence. **
207      *>                                           **
208      *>      2. When data is read from the file and an end-of-line **
209      *>      delimiter sequence (either a LF or a CRLF) cannot be **
210      *>      found within the buffer, the assumption is made that **
211      *>      the record is too long to fit within the buffer. In **
212      *>      these instances, an SCB-Return-CD value of 02 will **
213      *>      be returned and the SCB-Offset-NUM value will be **
214      *>      incremented past the next end-of-line sequence in **
215      *>      the file (this will involve at least one additional **
216      *>      call to CBL_READ_FILE to locate that eol sequence, **
217      *>      but any additional such reads will be done internal- **
218      *>      ly to STREAMIO and will be entirely transparent to **
219      *>      the caller of STREAMIO. **
220      *>                                           **
221      *>      DO NOT USE the Streamio-READ-Delim function if the **
222      *>      possibility exists that linefeed (X"0A") or carriage- **
223      *>      return (X"0D") characters could exist as actual data **
224      *>      characters in the file. **
225      *>                                           **
226      *>      SCB-Func-WRITE-Delim-BOOL **
227      *>                                           **
228      *>      SCB-Func-WRITE-Delim-BOOL acts like the Streamio- **
229      *>      FUNC-WRITE function, with the following difference: **
230      *>                                           **
231      *>      After the specified data is written to the file, an **
232      *>      end-of-line sequence will also be written to the file. **
233      *>      The file-offset value (SCB-Value) will be incremented **
234      *>      by the byte-count size of the data PLUS the size of the **
235      *>      end-of-line sequence. One of two possible end-of-line **
236      *>      sequences must be specified using the value of SCB- **
237      *>      Delimter-Mode. **
238      *>                                           **
239      *>-----**
240      *>      SCB-Delimiter-Mode-CD **
241      *>-----**
242      *>                                           **
243      *>      This data item is needed only when issuing the Streamio- **
244      *>      FUNC-WRITE-Delim function. In those circumstances, this **
245      *>      item defines what end-of-line delimiter sequence is to be **
=====

```

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```

=====
246      *> written:                                **
247      *>                                          **
248      *> If SCB-Delim-Unix-BOOL is true, a linefeed character will **
249      *> be written.                             **
250      *>                                          **
251      *> If SCB-Delim-Windows-BOOL is true, a carriage-return and **
252      *> linefeed sequence will be written.       **
253      *>                                          **
254      *>-----**
255      *> SCB-Offset-NUM                           **
256      *>-----**
257      *>                                          **
258      *> This data item specifies the next relative byte number with- **
259      *> in the file where the next read or write will start.       **
260      *>                                          **
261      *> SCB-Offset-NUM is automatically set to 0 (the first byte) **
262      *> when the file is opened, and is automatically incremented as **
263      *> the file is read or written via STREAMIO.  **
264      *>                                          **
265      *> You may also manually set this value as desired before any **
266      *> call to STREAMIO.                             **
267      *>                                          **
268      *>-----**
269      *> SCB-Error-Routine-PTR                     **
270      *>-----**
271      *>                                          **
272      *> To specify a general error-handling routine for handling **
273      *> STREAMIO failures, Create the routine and define an entry- **
274      *> name for it via the ENTRY statement.  Then use the following **
275      *> to set that routine up as the error handler:                **
276      *>                                          **
277      *>     SET SCB-Error-Routine-PTR TO ENTRY "entry-name"         **
278      *>                                          **
279      *> To "turn off" the error-routine:                    **
280      *>                                          **
281      *>     SET SCB-Error-Routine-PTR TO NULL                     **
282      *>                                          **
283      *> If a fatal error occurs (any error not marked with a ">" in **
284      *> the SCB-Return-CD discussion), the error routine you spe- **
285      *> cified (if any) will be set up as an exit routine via the **
286      *> CBL_EXIT_PROC subroutine; the STREAMIO routine will then is- **
287      *> sue a STOP RUN to intentionally trigger your error routine. **
288      *> You will not be able to recover your program once your error **
289      *> routine triggers.  If you wish to be able to recover from **
290      *> fatal STREAMIO errors, you should NOT use the SCB-Error- **
291      *> Routine feature but instead you should explicitly test the **
292      *> SCB-Return-CD value after every call to STREAMIO.          **
293      *>                                          **
294      *> A default error routine is defined by the "STREAMIOError.cpy" **
=====

```

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```

=====
295     *> copybook.                                **
296     *>                                           **
297     *>-----**
298     *> SCB-Return-CD                             **
299     *>-----**
300     *>                                           **
301     *> The following are the possible SCB-Return-CD values. The **
302     *> ones marked with a ">" will NOT trigger an error-routine, if **
303     *> one is currently registered via SCB-Error-Routine-PTR.    **
304     *>                                           **
305     *> 12 I/O error writing to file                    **
306     *> 11 File does not exist                        **
307     *> 10 File already OPEN or already CLOSED        **
308     *> > 02 READ-Delim was truncated                 **
309     *> > 01 No more data is available from the current **
310     *>      SCB-Offset-NUM                          **
311     *> > 00 OK - the operation was successful        **
312     *> -1 Invalid SCB-Function-CD                   **
313     *> -2 Invalid SCB-Mode-CD                      **
314     *> -3 CBL_XXXXX_FILE routine rejected operation **
315     *> -4 Invalid delimiter mode specified (Not U/W) **
316     *>                                           **
317     *>-----**
318     *> SCB-Filename-TXT                             **
319     *>-----**
320     *>                                           **
321     *> This is the name of the file you wish to access.      **
322     *>                                           **
323     *> If you are planning on reading the file, the file MUST exist **
324     *> at the time the SCB-Func-OPEN-BOOL is executed.      **
325     *>                                           **
326     *> If you are planning on writing to the file, the file need **
327     *> exist when the SCB-Func-OPEN-BOOL is issued.        **
328     *>                                           **
329     *> In general, the contents of SCB-Filename-TXT should re- **
330     *> flect the complete path to the file as well as the name of **
331     *> the file itself, unless the file is contained in whatever **
332     *> directory is current at the time the SCB-Func-OPEN-BOOL is **
333     *> executed.                                           **
334     *>                                           **
335     *> The following special values may be used for        **
336     *> SCB-Filename-TXT:                                   **
337     *>                                           **
338     *> SPACES If the filename is SPACES, a filename will be created **
339     *>      automatically for you in whatever directory is de- **
340     *>      fined by the TEMP environment variable. If there IS **
341     *>      no TEMP variable defined, the "/tmp" folder will be **
342     *>      assumed. The filename will be STREAMIO-nnnnnnnn.dat **
343     *>      where "nnnnnnnn" is a random number.          **
=====

```

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=====
344      *>
345      *> .      If you specify only a dot (period) as the filename,
346      *>      the behavior will be the same as with a value of
347      *>      SPACES except there will be no ".dat" at the end of
348      *>      the generated filename.
349      *>
350      *> .ext  If you specify a filename extension prefixed with a
351      *>      dot (period), the behavior will be the same as if a
352      *>      value of SPACES were specified, except that the given
353      *>      extension will be used instead of ".dat". Note that
354      *>      if you are using a Unix/Cygwin implementation of
355      *>      OpenCOBOL and you'd like to specify a hidden file in
356      *>      the current directory as the SCB-Filename-TXT, you
357      *>      MUST code the filename as "./.xxxxx" to avoid having
358      *>      it treated as this special name.
359      *>
360      *>*****
361      ENVIRONMENT DIVISION.
362      CONFIGURATION SECTION.
363      REPOSITORY.
364          FUNCTION ALL INTRINSIC.
365      DATA DIVISION.
366      WORKING-STORAGE SECTION.
367          01 WS-Access-Mode-CD                PIC X(1) COMP-X.
368          01 WS-Arg-Length-NUM                PIC X(4) COMP-X.
369          01 WS-Buffer-TXT                    PIC X(256).
370          01 WS-Delim-Buffer-TXT              PIC X(2).
371          01 WS-Env-Temp-TXT                  PIC X(256).
372          01 WS-Slash-CHR                     PIC X(1).
373          01 WS-Tally-NUM                     USAGE BINARY-LONG.
374          01 WS-8-Digit-NUM                   PIC 9(8).
375          01 WS-256-Byte-TXT                  PIC X(256).
376      LINKAGE SECTION.
377          01 L-StreamIO-Control-Block-TXT.
378              COPY STREAMIOcb
379              REPLACING LEADING ==SCB== BY ==L-SCB==.
          05 L-SCB-Handle-NUM PIC X(4) COMP-X.
          05 L-SCB-Mode-CD PIC X(1).
          88 L-SCB-MODE-Input-BOOL VALUE 'I' 'i'.
          88 L-SCB-MODE-Output-BOOL VALUE 'O' 'o'.
          88 L-SCB-MODE-Both-BOOL VALUE 'B' 'b'.
          05 L-SCB-Function-CD PIC X(2).
          88 L-SCB-Func-CLOSE-BOOL VALUE 'C' ' ' 'c' '.
          88 L-SCB-Func-DELETE-BOOL VALUE 'D' ' ' 'd' '.
          88 L-SCB-Func-OPEN-BOOL VALUE 'O' ' ' 'o' '.
          88 L-SCB-Func-READ-BOOL VALUE 'R' ' ' 'r' '.
          88 L-SCB-Func-READ-Delim-BOOL VALUE 'RD' ' ' 'rd'
          'rD' 'Rd'.
          88 L-SCB-Func-WRITE-BOOL VALUE 'W' ' ' 'w' '.
=====

```

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```

=====
      88 L-SCB-Func-WRITE-Delim-BOOL VALUE 'WD' 'wd'
      'wd' 'Wd'.
      05 L-SCB-Delimiter-Mode-CD PIC X(1).
      88 L-SCB-DELIM-Unix-BOOL VALUE 'U' 'u'.
      88 L-SCB-DELIM-Windows-BOOL VALUE 'W' 'w'.
      05 L-SCB-Offset-NUM PIC X(8) COMP-X.
      05 L-SCB-Error-Routine-PTR USAGE PROGRAM-POINTER.
      05 L-SCB-Error-Routine-NUM REDEFINES L-SCB-Error-Routine-PTR
      USAGE BINARY-LONG.
      05 L-SCB-Return-CD USAGE BINARY-LONG.
      05 L-SCB-Filename-TXT PIC X(256).
380      01 L-Arg2-TXT                                PIC X ANY LENGTH.
381      PROCEDURE DIVISION USING L-StreamIO-Control-Block-TXT,
382      L-Arg2-TXT.
383      000-Main SECTION.
384      MOVE 00 TO L-SCB-Return-CD
385      EVALUATE TRUE
386      WHEN L-SCB-Func-CLOSE-BOOL
387      PERFORM 030-Validate-Handle-NonZero
388      PERFORM 200-CLOSE
389      WHEN L-SCB-Func-DELETE-BOOL
390      CALL "CBL_DELETE_FILE" USING L-SCB-Filename-TXT
391      WHEN L-SCB-Func-OPEN-BOOL
392      PERFORM 020-Validate-Handle-Zero
393      PERFORM 100-OPEN
394      WHEN L-SCB-Func-READ-BOOL
395      PERFORM 030-Validate-Handle-NonZero
396      PERFORM 400-READ
397      WHEN L-SCB-Func-READ-Delim-BOOL
398      PERFORM 030-Validate-Handle-NonZero
399      PERFORM 500-READ-Delim
400      WHEN L-SCB-Func-WRITE-BOOL
401      PERFORM 030-Validate-Handle-NonZero
402      PERFORM 300-WRITE
403      WHEN L-SCB-Func-WRITE-Delim-BOOL
404      EVALUATE TRUE
405      WHEN L-SCB-Delim-Unix-BOOL
406      PERFORM 030-Validate-Handle-NonZero
407      PERFORM 300-WRITE
408      MOVE 1 TO WS-Arg-Length-NUM
409      MOVE X"0A" TO WS-Delim-Buffer-TXT
410      WHEN L-SCB-Delim-Windows-BOOL
411      PERFORM 030-Validate-Handle-NonZero
412      PERFORM 300-WRITE
413      MOVE 2 TO WS-Arg-Length-NUM
414      MOVE X"0DOA" TO WS-Delim-Buffer-TXT
415      WHEN OTHER
416      MOVE -4 TO L-SCB-Return-CD
417      PERFORM 099-ERROR-Return
=====

```

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```

=====
418             END-EVALUATE
419             CALL "CBL_WRITE_FILE" USING L-SCB-Handle-NUM
420                                     L-SCB-Offset-NUM
421                                     WS-Arg-Length-NUM
422                                     0
423                                     WS-Delim-Buffer-TXT
424             PERFORM 040-Check-WRITE-SCB-Return-CD
425             ADD WS-Arg-Length-NUM TO L-SCB-Offset-NUM
426             WHEN OTHER
427                 MOVE -1 TO L-SCB-Return-CD
428             PERFORM 099-ERROR-Return
429             END-EVALUATE
430             GOBACK
431             .
432         020-Validate-Handle-Zero SECTION.
433             IF L-SCB-Handle-NUM NOT = ZERO
434                 MOVE 10 TO L-SCB-Return-CD
435                 PERFORM 099-ERROR-Return
436             END-IF
437             .
438         030-Validate-Handle-NonZero SECTION.
439             IF L-SCB-Handle-NUM = ZERO
440                 MOVE 10 TO L-SCB-Return-CD
441                 PERFORM 099-ERROR-Return
442             END-IF
443             .
444         040-Check-WRITE-SCB-Return-CD SECTION.
445             IF RETURN-CODE < 0
446                 MOVE -3 TO L-SCB-Return-CD
447                 PERFORM 099-ERROR-Return
448             END-IF
449             IF RETURN-CODE = 30
450                 MOVE 12 TO L-SCB-Return-CD
451                 PERFORM 099-ERROR-Return
452             END-IF
453             MOVE 00 TO L-SCB-Return-CD
454             .
455         050-Check-READ-SCB-Return-CD SECTION.
456             IF RETURN-CODE < 0
457                 MOVE -3 TO L-SCB-Return-CD
458                 PERFORM 099-ERROR-Return
459             END-IF
460             IF RETURN-CODE = 10
461                 MOVE 01 TO L-SCB-Return-CD
462                 GOBACK
463             END-IF
464             MOVE 00 TO L-SCB-Return-CD
465             .
466         060-Identify-TEMP SECTION.
=====

```

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```

=====
467      ACCEPT WS-Env-Temp-TXT FROM ENVIRONMENT "TEMP"
468      EVALUATE TRUE
469          WHEN WS-Env-Temp-TXT (1:1) = "/"
470              MOVE "/" TO WS-Slash-CHR
471          WHEN WS-Env-Temp-TXT (2:1) = ":"
472              MOVE ":" TO WS-Slash-CHR
473          WHEN OTHER
474              MOVE "/tmp" TO WS-Env-Temp-TXT
475              MOVE "/" TO WS-Slash-CHR
476      END-EVALUATE
477      .
478      099-ERROR-Return SECTION.
479      IF L-SCB-Error-Routine-NUM NOT = 0
480          CALL "CBL_EXIT_PROC" USING 0, L-SCB-Error-Routine-PTR
481      STOP RUN
482      END-IF
483      GOBACK
484      .
485      100-OPEN SECTION.
486      IF (L-SCB-Mode-Input-BOOL OR L-SCB-Mode-Both-BOOL)
487      AND (L-SCB-Filename-TXT = SPACES OR LOW-VALUES)
488          MOVE 11 TO L-SCB-Return-CD
489          PERFORM 099-ERROR-Return
490      END-IF
491      EVALUATE TRUE
492          WHEN L-SCB-Filename-TXT = SPACES OR LOW-VALUES
493              PERFORM 060-Identify-TEMP
494              MOVE SPACES TO L-SCB-Filename-TXT
495              COMPUTE
496                  WS-8-Digit-NUM =
497                      RANDOM(SECONDS-PAST-MIDNIGHT) * 100000000
498              END-COMPUTE
499              STRING
500                  TRIM(WS-Env-Temp-TXT,TRAILING)
501                  WS-Slash-CHR
502                  "STREAMIO-"
503                  WS-8-Digit-NUM
504                  ".dat"
505                  DELIMITED BY SIZE
506                  INTO L-SCB-Filename-TXT
507          WHEN L-SCB-Filename-TXT(1:1) = "."
508              PERFORM 060-Identify-TEMP
509              IF L-SCB-Filename-TXT(2:1) = SPACE
510                  MOVE SPACES TO WS-256-Byte-TXT
511              ELSE
512                  MOVE L-SCB-Filename-TXT TO WS-256-Byte-TXT
513              END-IF
514              MOVE SPACES TO L-SCB-Filename-TXT
515              COMPUTE WS-8-Digit-NUM =
=====

```

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```

=====
516          RANDOM(SECONDS-PAST-MIDNIGHT) * 100000000
517          STRING
518          TRIM(WS-Env-Temp-TXT,TRAILING)
519          WS-Slash-CHR
520          "STREAMIO-"
521          WS-8-Digit-NUM
522          TRIM(WS-256-Byte-TXT,TRAILING)
523          DELIMITED BY SIZE
524          INTO L-SCB-Filename-TXT
525      END-EVALUATE
526      EVALUATE TRUE
527          WHEN L-SCB-Mode-Input-BOOL
528              MOVE 1 TO WS-Access-Mode-CD
529          WHEN L-SCB-Mode-Output-BOOL
530              MOVE 2 TO WS-Access-Mode-CD
531          WHEN L-SCB-Mode-Both-BOOL
532              MOVE 3 TO WS-Access-Mode-CD
533          WHEN OTHER
534              MOVE -2 TO L-SCB-Return-CD
535              PERFORM 099-ERROR-Return
536      END-EVALUATE
537      CALL "CBL_OPEN_FILE" USING TRIM(L-SCB-Filename-TXT,TRAILING)
538                               WS-Access-Mode-CD
539                               0
540                               0
541                               L-SCB-Handle-NUM
542      IF RETURN-CODE = 35
543          MOVE 11 TO L-SCB-Return-CD
544          PERFORM 099-ERROR-Return
545      END-IF
546      IF RETURN-CODE < 0
547          MOVE -2 TO L-SCB-Return-CD
548          PERFORM 099-ERROR-Return
549      END-IF
550      MOVE 00 TO L-SCB-Return-CD
551      MOVE 0 TO L-SCB-Offset-NUM
552      .
553      200-CLOSE SECTION.
554      CALL "CBL_CLOSE_FILE" USING L-SCB-Handle-NUM
555      IF RETURN-CODE < 0
556          MOVE -2 TO L-SCB-Return-CD
557          PERFORM 099-ERROR-Return
558      END-IF
559      MOVE 00 TO L-SCB-Return-CD
560      MOVE 0 TO L-SCB-Handle-NUM
561      .
562      300-WRITE SECTION.
563      CALL "C$PARAMSIZE" USING 2
564      MOVE RETURN-CODE TO WS-Arg-Length-NUM
=====

```

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```

=====
565          CALL "CBL_WRITE_FILE" USING L-SCB-Handle-NUM
566                                     L-SCB-Offset-NUM
567                                     WS-Arg-Length-NUM
568                                     0
569                                     L-Arg2-TXT
570      PERFORM 040-Check-WRITE-SCB-Return-CD
571      ADD WS-Arg-Length-NUM TO L-SCB-Offset-NUM
572      .
573      400-READ SECTION.
574      CALL "C$PARAMSIZE" USING 2
575      MOVE RETURN-CODE TO WS-Arg-Length-NUM
576      MOVE SPACES TO L-Arg2-TXT(1:WS-Arg-Length-NUM)
577      CALL "CBL_READ_FILE" USING L-SCB-Handle-NUM
578                                     L-SCB-Offset-NUM
579                                     WS-Arg-Length-NUM
580                                     0
581                                     L-Arg2-TXT
582      PERFORM 050-Check-READ-SCB-Return-CD
583      ADD WS-Arg-Length-NUM TO L-SCB-Offset-NUM
584      .
585      500-READ-Delim SECTION.
586      CALL "C$PARAMSIZE" USING 2
587      MOVE RETURN-CODE TO WS-Arg-Length-NUM
588      MOVE SPACES TO L-Arg2-TXT(1:WS-Arg-Length-NUM)
589      CALL "CBL_READ_FILE" USING L-SCB-Handle-NUM
590                                     L-SCB-Offset-NUM
591                                     WS-Arg-Length-NUM
592                                     0
593                                     L-Arg2-TXT
594      PERFORM 050-Check-READ-SCB-Return-CD
595      MOVE 0 TO WS-Tally-NUM
596      INSPECT L-Arg2-TXT(1:WS-Arg-Length-NUM)
597             TALLYING WS-Tally-NUM FOR ALL X"0A"
598      IF WS-Tally-NUM = 0 >* No LF found - return truncated data and position past n
ext LF (if any)
599             IF L-Arg2-TXT(WS-Arg-Length-NUM:1) = X"0D"
600                 MOVE SPACE TO L-Arg2-TXT(WS-Arg-Length-NUM:1)
601             END-IF
602      ADD WS-Arg-Length-NUM TO L-SCB-Offset-NUM
603      MOVE 02 TO L-SCB-Return-CD
604      MOVE 256 TO WS-Arg-Length-NUM
605      PERFORM UNTIL 0 = 1
606             MOVE SPACES TO WS-Buffer-TXT
607             CALL "CBL_READ_FILE" USING L-SCB-Handle-NUM
608                                     L-SCB-Offset-NUM
609                                     WS-Arg-Length-NUM
610                                     0
611                                     WS-Buffer-TXT
612      IF RETURN-CODE < 0
=====

```

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```

=====
613             MOVE -3 TO L-SCB-Return-CD
614             PERFORM 099-ERROR-Return
615             END-IF
616             IF RETURN-CODE = 10
617                 GOBACK
618             END-IF
619             MOVE 0 TO WS-Tally-NUM
620             INSPECT WS-Buffer-TXT
621                 TALLYING WS-Tally-NUM FOR ALL X"OA"
622             IF WS-Tally-NUM = 0
623                 ADD 256 TO L-SCB-Offset-NUM
624             ELSE
625                 MOVE 0 TO WS-Tally-NUM
626                 INSPECT WS-Buffer-TXT
627                     TALLYING WS-Tally-NUM
628                     FOR CHARACTERS BEFORE INITIAL X"OA"
629                 ADD WS-Tally-NUM, 1 TO L-SCB-Offset-NUM
630                 GOBACK
631             END-IF
632             END-PERFORM
633             ELSE      *> There is (at least) one LF in the buffer
634                 MOVE 0 TO WS-Tally-NUM
635                 INSPECT L-Arg2-TXT(1:WS-Arg-Length-NUM)
636                     TALLYING WS-Tally-NUM
637                     FOR CHARACTERS BEFORE INITIAL X"OA"
638                 ADD WS-Tally-NUM, 1 TO L-SCB-Offset-NUM
639                 IF WS-Tally-NUM > 1
640                     IF L-Arg2-TXT(WS-Tally-NUM:1) = X"OD"
641                         COMPUTE WS-Arg-Length-NUM =
642                             WS-Arg-Length-NUM
643                             - WS-Tally-NUM
644                             + 1
645                     ELSE
646                         COMPUTE WS-Arg-Length-NUM =
647                             WS-Arg-Length-NUM
648                             - WS-Tally-NUM
649                         ADD 1 TO WS-Tally-NUM
650                     END-IF
651                 MOVE SPACES
652                     TO L-Arg2-TXT(WS-Tally-NUM:WS-Arg-Length-NUM)
653                 ELSE
654                     MOVE SPACES
655                     TO L-Arg2-TXT(1:WS-Arg-Length-NUM)
656                 END-IF
657             END-IF
658             .
=====

```

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PROGRAM-ID	Identifier/Register/Function	Defn	Where Defined	References	Page: 15	
STREAMIO	000-Main	383	PROCEDURE			
STREAMIO	020-Validate-Handle-Zero	432	PROCEDURE	392		
STREAMIO	030-Validate-Handle-NonZero	438	PROCEDURE	387	395	398
				401	406	411
STREAMIO	040-Check-WRITE-SCB-Return-CD	444	PROCEDURE	424	570	
STREAMIO	050-Check-READ-SCB-Return-CD	455	PROCEDURE	582	594	
STREAMIO	060-Identify-TEMP	466	PROCEDURE	493	508	
STREAMIO	099-ERROR-Return	478	PROCEDURE	417	428	435
				441	447	451
				458	489	535
				544	548	557
				614		
STREAMIO	100-OPEN	485	PROCEDURE	393		
STREAMIO	200-CLOSE	553	PROCEDURE	388		
STREAMIO	300-WRITE	562	PROCEDURE	402	407	412
STREAMIO	400-READ	573	PROCEDURE	396		
STREAMIO	500-READ-Delim	585	PROCEDURE	399		
STREAMIO	L-Arg2-TXT	380	LINKAGE	382	569C	576*
				581C	588*	593C
				599	600*	640
				652*	655*	
STREAMIO	L-SCB-DELIM-Unix-BOOL	379	[STREAMIOcb]	405		
STREAMIO	L-SCB-DELIM-Windows-BOOL	379	[STREAMIOcb]	410		
STREAMIO	L-SCB-Delimiter-Mode-CD	379	[STREAMIOcb]			
STREAMIO	L-SCB-Error-Routine-NUM	379	[STREAMIOcb]	479		
STREAMIO	L-SCB-Error-Routine-PTR	379	[STREAMIOcb]	379	480C	
STREAMIO	L-SCB-Filename-TXT	379	[STREAMIOcb]	390C	487	492
				494*	506*	507
				509	512	514*
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