

GnuCOBOL Sample Programs

For Version 2.3 rc? [00Dec2017]

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This manual documents GnuCOBOL 2.3 rc?, 00Dec2017 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
62                                     USAGE BINARY-LONG.
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-COLORSTST-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-INTEGER" 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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Page: 2

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.

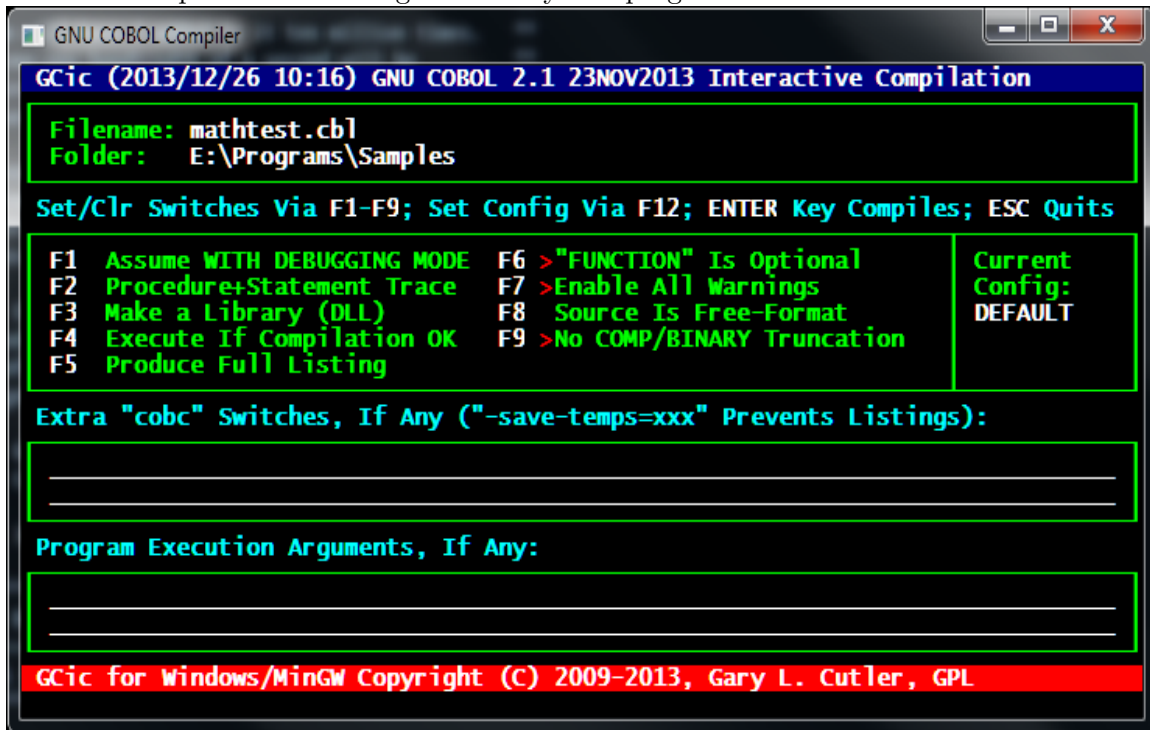
Cross-reference listings will show all user-defined data items and procedures as well as intrinsic function and special register references. In addition to showing the line numbers at which items were defined and referenced, those references that MODIFY the contents of the data item will have an asterisk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

GNUCOBOL 2.2 20JUL2017 Source Listing

2017/07/22

/home/vince/cobolsrc/Cobol-Tools/ocic/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     *>*****
34     *>*** Change the settings in the copy book const-set-1.cpy to reflect
35     *>      your system set up. This notes are also present there.
36     *>      This is to reduce the need to amend these every time a update
37     *>      for GCic occurs.
38     *>*****
39     *>
40     *>      copy "const-set-1.cpy".
41     *>
42     *> -----
43     *> END CONFIGURATION SETTINGS
=====

```

```
=====
GCic for UNIX/Linux Copyright (C) 2009-2017, Gary L. Cutler, GPL
Page: 1
```

GNUCOBOL 2.2 20JUL2017 Source Listing

2017/07/22

/home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl

Line Statement

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```

=====
45      IDENTIFICATION DIVISION.
46      PROGRAM-ID. GCic.
47      *>*****
48      *>      >NOTE<  >NOTE<  >NOTE<  >NOTE<  >NOTE<  >NOTE<      **
49      *>      **
50      *> If this program is compiled with '-fdebugging-line', you      **
51      *> will need to pipe SYSERR to a text file when executing GCic **
52      *> (by adding the text '> filename' to the end of the GCic      **
53      *> command). You may also need to press the ENTER key when      **
54      *> GCic is finished.      **
55      *>*****
56      *> This program provides a Textual User Interface (TUI) to the **
57      *> process of compiling and (optionally) executing a GNU COBOL **
58      *> program.      **
59      *>      **
60      *> This programs execution syntax is as follows:      **
61      *>      **
62      *> GCic <program-path-and-filename> [ <switch>... ]      **
63      *>      **
64      *> Once executed, a display screen will be presented showing      **
65      *> the compilation options that will be used. The user will      **
66      *> have the opportunity to change options, specify new ones      **
67      *> and specify any program execution arguments to be used if      **
68      *> you select the 'Execute' option. When you press the Enter      **
69      *> key the program will be compiled.      **
70      *>      **
71      *> The SCREEN SECTION contains an image of the screen.      **
72      *>      **
73      *> The '010-Parse-Args' section in the PROCEDURE DIVISION has      **
74      *> documentation on switches and their function.      **
75      *>*****
76      *>      **
77      *> AUTHOR:          GARY L. CUTLER      **
78      *>                  Copyright (C) 2009-2017, Gary L. Cutler, GPL      **
79      *>      **
80      *> DATE-WRITTEN: June 14, 2009      **
81      *>      **
82      *>*****
83      *>  DATE  CHANGE DESCRIPTION      **
84      *> =====      **
85      *> GC0609 Don't display compiler messages file if compilation      **
86      *> GLC   Is successful. Also don't display messages if the      **
87      *>        output file is busy (just put a message on the      **
88      *>        screen, leave the OC screen up & let the user fix      **
89      *>        the problem & resubmit.      **
90      *> GC0709 When 'EXECUTE' is selected, a 'FILE BUSY' error will      **
91      *> CLC   still cause the (old) executable to be launched.      **
92      *>        Also, the 'EXTRA SWITCHES' field is being ignored.      **
93      *>        Changed the title bar to lowlighted reverse video &      **
94      *>        the message area to highlighted reverse-video.      **
95      *> GC0809 Add a SPACE in front of command-line args when      **
96      *> GLC   executing users program. Add a SPACE after the      **

```

```
=====
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Page: 2
```

GNUCOBOL 2.2 20JUL2017 Source Listing

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/home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl

Line Statement

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```

=====
 97      *>      -ftraceall switch when building cobc command.      **
 98      *> GC0909 Convert to work on Cygwin/Linux as well as MinGW  **
 99      *> GC0310 Virtualized the key codes for S-F1 thru S-F7 as they **
100      *> GLC   differ depending upon whether PDCurses or NCurses is **
101      *>      being used.                                          **
102      *> GC0410 Introduced the cross-reference and source listing  **
103      *> GLC   features. Also fixed a bug in EXTRA switch proces- **
104      *>      sing where garbage will result if more than the      **
105      *>      EXTRA switch is specified.                          **
106      *> GC1010 Corrected several problems reported by Vince Coen: **
107      *> GLC   1) Listing/Xref wouldn't work if '-I' additional  **
108      *>      cobc switch specified.                                **
109      *>      2) Programs coded with lowercase reserved words did **
110      *>      not get parsed properly when generating listing      **
111      *>      and/or xref reports.                                  **
112      *>      3) Reliance on a TEMP environment variable caused   **
113      *>      non-recoverable errors when generating listing      **
114      *>      and/or xref reports in a session that lacks a      **
115      *>      TEMP variable.                                        **
116      *>      As a result of this change, GCic no longer runs a   **
117      *>      second 'cobc' when generating listing and/or xref    **
118      *>      reports. A '-save-temps' (without '=dir') specified **
119      *>      in the EXTRA options field will be ignored. A      **
120      *>      '-save-temps=dir' specified in the EXTRA options   **
121      *>      field will negate both the XREF and SOURCE opts,    **
122      *>      if specified.                                          **
123      *> GC0711 Tailored for 29APR2011 version of GNU COBOL 2.0    **
124      *> GC0712 Replaced all switches with configuration settings; **
125      *> GLC   Tailored for 11FEB2012 version of GNU COBOL 2.0;   **
126      *>      Reformatted screen layout to fit a 24x80 screen      **
127      *>      rather than a 25x81 screen and to accommodate shell  **
128      *>      environments having only F1-F12 (like 'terminal' in   **
129      *>      OSX); Fully tested under OSX (required a few altera-   **
130      *>      tions); Expanded both extra-options and runtime-      **
131      *>      arguments areas to TWO lines (152 chars total) each; **
132      *>      Added support for MF/IBM/BS2000 listing-control      **
133      *>      directives EJECT,SKIP1,SKIP2,SKIP3 (any of these in  **
134      *>      copybooks will be ignored)                              **
135      *> GC0313 Expand the source code record from 80 chars to 256 **
136      *> GLC   to facilitate looking for "LINKAGE SECTION" in a    **
137      *>      free-format file.                                        **
138      *> GC1113 Edited to support the change of "OpenCOBOL" to "GNU **
139      *> GLC   COBOL"                                                **
140      *> GC1213 Updated for 23NOV2013 version of GNU COBOL 2.1    **
141      *> GC0114 Introduce a "Press ENTER to Close" action after run- **
142      *> GLC   ning the compiled program in the compiler window (F4) **
143      *> VC0617 Remove the Blinking in meny screen as uncomfortable **
144      *> VBC   Update version printed to 2.2 30JUN2017.          **
145      *>      Move the system constant settings to a copy file     **
146      *>      const-set-1.cpy in case GCic is updated.            **
147      *>      Added SET ENVIRONMENT "COB_EXIT_WAIT" TO "0" to     **
148      *>      100-Initialization section.                            **
149      *> VC0717 Replaced compile param instrinsic=all with      **
=====

```

=====

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/home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl

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```

=====
150      *>  VBC   intrinstics=ALL. Changed mod detail inits for Gary  **
151      *>      from GCL to GLC.                                     **
152      *>      Update version printed to 2.2 20JUL2017.             **
153      *>      Should really get this from the compiler if avail?  **
154      *>*****
155      *>
156      ENVIRONMENT DIVISION.
157      CONFIGURATION SECTION.
158      REPOSITORY.
159          FUNCTION ALL INTRINSIC.
160      INPUT-OUTPUT SECTION.
161      FILE-CONTROL.
162 GC1010      SELECT F-Cobc-Output-FILE  ASSIGN TO WS-Listing-Filename-TXT
163                                     ORGANIZATION IS LINE SEQUENTIAL.
164
165          SELECT F-Source-Code-FILE  ASSIGN TO WS-File-Name-TXT
166                                     ORGANIZATION IS LINE SEQUENTIAL
167                                     FILE STATUS IS WS-FSM-Status-CD.
=====

```



```
=====
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/home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl

Line Statement

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```

=====
169      DATA DIVISION.
170      FILE SECTION.
171      FD  F-Cobc-Output-FILE.
172      01  F-Cobc-Output-REC          PIC X(256) .
173
174      FD  F-Source-Code-FILE.
175 GC0313 01  F-Source-Code-REC      PIC X(256) .
176
177      WORKING-STORAGE SECTION.
178      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.
      78 COB-SCR-F30 VALUE 1030.
      78 COB-SCR-F31 VALUE 1031.
      78 COB-SCR-F32 VALUE 1032.
      78 COB-SCR-F33 VALUE 1033.

```

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/home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl

Line Statement

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```

=====
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.
179
180 GC0712 01 WS-Compilation-Switches-TXT.
181 GC0712 05 WS-CS-Args-TXT VALUE SPACES.
182 GC0712 10 WS-CS-Arg-H1-TXT PIC X(76).
183 GC0712 10 WS-CS-Arg-H2-TXT PIC X(76).
184 GC0712 05 WS-CS-Filenames-TXT.
185 GC0712 10 VALUE 'BS2000' PIC X(9).
186 GC0712 10 VALUE 'COBOL85' PIC X(9).
187 GC0712 10 VALUE 'COBOL2002' PIC X(9).
188 GC0712 10 VALUE 'DEFAULT' PIC X(9).
189 GC0712 10 VALUE 'IBM' PIC X(9).

```

```
190 GC0712      10 VALUE 'MF'                      PIC X(9).
```

```
=====
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```

```
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```

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/home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl

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```

=====
191 GC0712      10 VALUE 'MVS'                      PIC X(9).
192 GC0712      05 WS-CS-FileNames-Table-TXT REDEFINES WS-CS-FileNames-TXT.
193 GC0712      10 WS-CS-Filename-TXT                OCCURS 7 TIMES
194 GC0712                      PIC X(9).
195 GC0712 >>IF F12 < 1
196 GC0712      05 WS-CS-Config-NUM      VALUE 4      PIC 9(1).
197 GC0712 >>ELIF F12 > 7
198 GC0712      05 WS-CS-Config-NUM      VALUE 4      PIC 9(1).
199 GC0712 >>ELSE
200 GC0712      05 WS-CS-Config-NUM      VALUE F12     PIC 9(1).
201 GC0712 >>END-IF
202 GC0712      05 WS-CS-Extra-TXT VALUE SPACES.
203 GC0712      10 WS-CS-Extra-H1-TXT          PIC X(76).
204 GC0712      10 WS-CS-Extra-H2-TXT          PIC X(76).
205 GC0712      05 WS-CS-Switch-Defaults-TXT.
206 GC0712      10 VALUE F1                      PIC 9(1). *> WS-CS-DEBUG-CHR
207 GC0712      10 VALUE F4                      PIC 9(1). *> WS-CS-EXECUTE-CHR
208 GC0712      10 VALUE F8                      PIC 9(1). *> WS-CS-FREE-CHR
209 GC0712      10 VALUE F3                      PIC 9(1). *> WS-CS-LIBRARY-CHR
210 GC0712      10 VALUE F5                      PIC 9(1). *> WS-CS-LISTING-CHR
211 GC0712      10 VALUE F6                      PIC 9(1). *> WS-CS-NOFUNC-CHR
212 GC0712      10 VALUE F9                      PIC 9(1). *> WS-CS-NOTRUNC-CHR
213 GC0712      10 VALUE F2                      PIC 9(1). *> WS-CS-TRACEALL-CHR
214 GC0712      10 VALUE F7                      PIC 9(1). *> WS-CS-WARNALL-CHR
215 GC0712      05 WS-CS-All-Switches-TXT REDEFINES
216 GC0712                      WS-CS-Switch-Defaults-TXT.
217 GC0712      10 WS-CS-DEBUG-CHR                PIC X(1).
218 GC0712      10 WS-CS-EXECUTE-CHR               PIC X(1).
219 GC0712      10 WS-CS-FREE-CHR                  PIC X(1).
220 GC0712      10 WS-CS-LIBRARY-CHR               PIC X(1).
221 GC0712      10 WS-CS-LISTING-CHR               PIC X(1).
222 GC0712      10 WS-CS-NOFUNC-CHR                PIC X(1).
223 GC0712      10 WS-CS-NOTRUNC-CHR               PIC X(1).
224 GC0712      10 WS-CS-TRACEALL-CHR              PIC X(1).
225 GC0712      10 WS-CS-WARNALL-CHR               PIC X(1).
226
227 GC0909 01   WS-Cmd-TXT                        PIC X(512).
228
229 GC0712 01   WS-Cmd-Args-TXT                    PIC X(256).
230
231 GC0712 01   WS-Cmd-End-Quote-CHR                PIC X(1).
232
233 GC0712 01   WS-Cmd-SUB                          USAGE BINARY-LONG.
234
235      01   WS-Cobc-Cmd-TXT                        PIC X(256).
236
237      01   WS-Config-Fn-TXT                       PIC X(12).
238
239 GC1113 01   WS-Delete-Fn-TXT                     PIC X(256).
240
241      01   WS-File-Name-TXT.
242      05   WS-FN-CHR                              OCCURS 256 TIMES

```

243

PIC X(1).

=====

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/home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl

Line Statement

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```

=====
244
245      01 WS-File-Status-Message-TXT.
246          05 VALUE 'Status Code: '          PIC X(13).
247          05 WS-FSM-Status-CD              PIC 9(2).
248          05 VALUE ', Meaning: '          PIC X(11).
249          05 WS-FSM-Msg-TXT                PIC X(25).
250
251 GC0909 01 WS-Horizontal-Line-TXT          PIC X(80).
252 GC0909
253      01 WS-I-SUB                          USAGE BINARY-LONG.
254
255      01 WS-J-SUB                          USAGE BINARY-LONG.
256
257 GC1213 01 WS-Listing-CD VALUE F5          PIC 9(1).
258
259 GC0712 01 WS-Listing-Filename-TXT         PIC X(256).
260
261 GC1213 01 WS-Listing-TXT VALUE SPACES     PIC X(27).
262
263      01 WS-OC-Compile-DT                  PIC XXXX/XX/XXBXX/XX.
264
265 GC0712 >>IF OS = 'CYGWIN'
266 GC0712 01 WS-OS-Dir-CHR                   VALUE '/'          PIC X(1).
267 GC0712 78 WS-OS-Exe-Ext-CONST             VALUE '.exe'.
268 GC0712 78 WS-OS-Lib-Ext-CONST             VALUE '.dll'.
269 GC0712 78 WS-OS-Lib-Type-CONST           VALUE 'DLL)'.
270 GC0712 01 WS-OS-Type-CD                   VALUE 2          PIC 9(1).
271 GC0712 >>ELIF OS = 'MINGW'
272 GC0712 01 WS-OS-Dir-CHR                   VALUE '\\'        PIC X(1).
273 GC0712 78 WS-OS-Exe-Ext-CONST             VALUE '.exe'.
274 GC0712 78 WS-OS-Lib-Ext-CONST             VALUE '.dll'.
275 GC0712 78 WS-OS-Lib-Type-CONST           VALUE 'DLL)'.
276 GC0712 01 WS-OS-Type-CD                   VALUE 5          PIC 9(1).
277 GC0712 >>ELIF OS = 'OSX'
278 GC0712 01 WS-OS-Dir-CHR                   VALUE '/'          PIC X(1).
279 GC0712 78 WS-OS-Exe-Ext-CONST             VALUE ' '.
280 GC0712 78 WS-OS-Lib-Ext-CONST             VALUE '.dylib'.
281 GC0712 78 WS-OS-Lib-Type-CONST           VALUE 'DYLIB)'.
282 GC0712 01 WS-OS-Type-CD                   VALUE 4          PIC 9(1).
283 GC0712 >>ELIF OS = 'UNIX'
284 GC0712 01 WS-OS-Dir-CHR                   VALUE '/'          PIC X(1).
285 GC0712 78 WS-OS-Exe-Ext-CONST             VALUE ' '.
286 GC0712 78 WS-OS-Lib-Ext-CONST             VALUE '.so'.
287 GC0712 78 WS-OS-Lib-Type-CONST           VALUE 'SO)'.
288 GC0712 01 WS-OS-Type-CD                   VALUE 3          PIC 9(1).
289 GC0712 >>ELIF OS = 'WINDOWS'
290 GC0712 01 WS-OS-Dir-CHR                   VALUE '\\'        PIC X(1).
291 GC0712 78 WS-OS-Exe-Ext-CONST             VALUE '.exe'.
292 GC0712 78 WS-OS-Lib-Ext-CONST             VALUE '.dll'.
293 GC0712 78 WS-OS-Lib-Type-CONST           VALUE 'DLL)'.
294 GC0712 01 WS-OS-Type-CD                   VALUE 1          PIC 9(1).
295 GC0712 >>END-IF

```



```
296 GC0909      88 WS-OS-Windows-BOOL VALUE 1, 5.
```

```
=====
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```

```
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```

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```

=====
297 GC0909      88 WS-OS-Cygwin-BOOL  VALUE 2.
298 GC0712      88 WS-OS-UNIX-BOOL   VALUE 3, 4.
299 GC0712      88 WS-OS-OSX-BOOL    VALUE 4.
300
301          01 WS-OS-Type-FILLER-TXT.
302              05 VALUE 'Windows'          PIC X(14).
303              05 VALUE 'Windows/Cygwin'    PIC X(14).
304              05 VALUE 'UNIX/Linux'        PIC X(14).
305              05 VALUE 'OSX'               PIC X(14).
306              05 VALUE 'Windows/MinGW'     PIC X(14).
307          01 WS-OS-Types-TXT REDEFINES WS-OS-Type-FILLER-TXT.
308              05 WS-OS-Type-TXT           OCCURS 5 TIMES
309                                      PIC X(14).
310
311          01 WS-Output-Msg-TXT             PIC X(80).
312
313          01 WS-Path-Delimiter-CHR         PIC X(1).
314
315          01 WS-Prog-Extension-TXT        PIC X(256).
316
317          01 WS-Prog-Folder-TXT           PIC X(256).
318
319 GC0712 01 WS-Prog-File-Name-TXT.
320 GC0712      05 WS-PFN-CHR                OCCURS 256 TIMES
321 GC0712                                      PIC X(1).
322
323 GC0712 01 WS-Pgm-Nm-TXT                 PIC X(31).
324
325          01 WS-Runtime-Switches-TXT.
326              05 WS-RS-Compile-OK-CHR     PIC X(1).
327              88 WS-RS-Compile-OK-BOOL    VALUE 'Y'.
328 GC0909      88 WS-RS-Compile-OK-Warn-BOOL VALUE 'W'.
329              88 WS-RS-Compile-Failed-BOOL VALUE 'N'.
330 GC0609      05 WS-RS-Complete-CHR        PIC X(1).
331 GC0609      88 WS-RS-Complete-BOOL       VALUE 'Y'.
332 GC0609      88 WS-RS-Not-Complete-BOOL   VALUE 'N'.
333 GC0712      05 WS-RS-Quote-CHR          PIC X(1).
334 GC0712      88 WS-RS-Double-Quote-Used-BOOL VALUE 'Y' FALSE 'N'.
335 GC0809      05 WS-RS-IDENT-DIV-CHR       PIC X(1).
336 GC0809      88 WS-RS-1st-Prog-Complete-BOOL VALUE 'Y'.
337 GC0809      88 WS-RS-More-To-1st-Prog-BOOL VALUE 'N'.
338              05 WS-RS-No-Switch-Chgs-CHR PIC X(1).
339              88 WS-RS-No-Switch-Changes-BOOL VALUE 'Y'.
340              88 WS-RS-Switch-Changes-BOOL VALUE 'N'.
341 GC0709      05 WS-RS-Output-File-Busy-CHR PIC X(1).
342 GC0709      88 WS-RS-Output-File-Busy-BOOL VALUE 'Y'.
343 GC0709      88 WS-RS-Output-File-Avail-BOOL VALUE 'N'.
344 GC0809      05 WS-RS-Source-Record-Type-CHR PIC X(1).
345 GC0809      88 WS-RS-Source-Rec-Linkage-BOOL VALUE 'L'.
346 GC0809      88 WS-RS-Source-Rec-Ident-BOOL VALUE 'I'.
347 GC0712      88 WS-RS-Source-Rec-Ignored-BOOL VALUE ' '.
348              05 WS-RS-Switch-Error-CHR   PIC X(1).

```

```
349          88 WS-RS-Switch-Is-Bad-BOOL          VALUE 'Y'.
```

```
=====
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```

```
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```

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```
=====
350          88 WS-RS-Switch-Is-Good-BOOL      VALUE 'N'.
351
352          01 WS-Tally-QTY                     USAGE BINARY-LONG.
```

=====

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```

=====
354     SCREEN SECTION.
355     *>
356     *> Here is the layout of the GCic screen.
357     *>
358     *> The sample screen below shows how the screen would look if the LINEDRAW
359     *> configuration setting is set to a value of 2
360     *>
361     *> The following sample screen layout shows how the screen looks with line-drawing
362     *> characters disabled.
363     *>
364     *>           1           2           3           4           5           6           7           8
365     *>12345678901234567890123456789012345678901234567890123456789012345678901234567890
366     *>=====
367 01 *> GCic (2011/07/11 08:52) - GNU COBOL V2.1 23NOV2013 Interactive Compilation
368 02 *>+-----+
369 03 *>| Folder:   E:\GNU COBOL\Samples                               |
370 04 *>| Filename: GCic.cbl                                           |
371 05 *>+-----+
372 06 *> Set/Clr Switches Via F1-F9; Set Config Via F12; ENTER Key Compiles; ESC Quits
373 07 *>+-----+
374 08 *>| F1  Assume WITH DEBUGGING MODE  F6  "FUNCTION" Is Optional      | Current  |
375 09 *>| F2  Procedure+Statement Trace    F7  Enable All Warnings        | Config:  |
376 10 *>| F3  Make A Library (DLL)         F8  Source Is Free-Format      | XXXXXXXX |
377 11 *>| F4  Execute If Compilation OK    F9  No COMP/BINARY Truncation  |          |
378 12 *>| F5  >Produce Listing (Landscape) |          |
379 13 *>+-----+
380 14 *> Extra "cobc" Switches, If Any ("-save-temps=xxx" Prevents Listings):
381 15 *>+-----+
382 16 *>| _____ |
383 17 *>| _____ |
384 18 *>+-----+
385 19 *> Program Execution Arguments, If Any:
386 20 *>+-----+
387 21 *>| _____ |
388 22 *>| _____ |
389 23 *>+-----+
390 24 *> GCic Copyright (C) 2009-2017, Gary L. Cutler, GPL
391     *>=====
392     *>12345678901234567890123456789012345678901234567890123456789012345678901234567890
393     *>           1           2           3           4           5           6           7           8
394     *>
395     *> If this program is run on Windows, it must run with codepage 437 activated to
396     *> display the line-drawing characters.  With a native Windows build or a
397     *> Windows/MinGW build, one could use the command 'chcp 437' to set that codepage
398     *> for display within a Windows console window (that should be the default though).
399     *> With a Windows/Cygwin build, set the environment variable CYGWIN to a value of
400     *> 'codepage:oem' (this cannot be done from within the program though - you will
401     *> have to use the 'Computer/Advanced System Settings/Environment Variables' (Vista
402     *> or Windows 7) function to define the variable.  XP Users: use 'My Computer/
403     *> Properties/Advanced/Environment Variables'.
404     *>

```

405 *> OSX users may use line drawing characters in this and any GNU COBOL program

=====

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```

=====
406      *> simply by setting their 'terminal' application's font to "Lucida Console".
407      *>
408      >>IF LINEDRAW IS EQUAL TO 0
409          78 LD-UL-Corner                VALUE ' '.
410          78 LD-LL-Corner                VALUE ' '.
411          78 LD-UR-Corner                VALUE ' '.
412          78 LD-LR-Corner                VALUE ' '.
413          78 LD-Upper-T                 VALUE ' '.
414          78 LD-Lower-T                 VALUE ' '.
415          78 LD-Horiz-Line              VALUE ' '.
416          78 LD-Vert-Line               VALUE ' '.
417      >>ELIF LINEDRAW IS EQUAL TO 1
418          78 LD-UL-Corner                VALUE X'DA'.
419          78 LD-LL-Corner                VALUE X'CO'.
420          78 LD-UR-Corner                VALUE X'BF'.
421          78 LD-LR-Corner                VALUE X'D9'.
422          78 LD-Upper-T                 VALUE X'C2'.
423          78 LD-Lower-T                 VALUE X'C1'.
424          78 LD-Horiz-Line              VALUE X'C4'.
425          78 LD-Vert-Line               VALUE X'B3'.
426      >>ELSE
427          78 LD-UL-Corner                VALUE '+'.
428          78 LD-LL-Corner                VALUE '+'.
429          78 LD-UR-Corner                VALUE '+'.
430          78 LD-LR-Corner                VALUE '+'.
431          78 LD-Upper-T                 VALUE '+'.
432          78 LD-Lower-T                 VALUE '+'.
433          78 LD-Horiz-Line              VALUE '-'.
434          78 LD-Vert-Line               VALUE '|'.
435      >>END-IF
436
437      01 S-Blank-SCR LINE 1 COLUMN 1 BLANK SCREEN.
438
439      01 S-Switches-SCR BACKGROUND-COLOR COB-COLOR-BLACK
440          FOREGROUND-COLOR COB-COLOR-WHITE AUTO.
441      *>
442      *> GENERAL SCREEN FRAMEWORK
443      *>
444          03 BACKGROUND-COLOR COB-COLOR-BLACK
445          FOREGROUND-COLOR COB-COLOR-GREEN HIGHLIGHT.
446 GC0712      05 LINE 02 COL 01                VALUE LD-UL-Corner.
447 GC0712      05                COL 02 PIC X(78) FROM WS-Horizontal-Line-TXT.
448                05                COL 80                VALUE LD-UR-Corner.
449
450 GC0712      05 LINE 03 COL 01                VALUE LD-Vert-Line.
451                05                COL 80                VALUE LD-Vert-Line.
452
453 GC0712      05 LINE 04 COL 01                VALUE LD-Vert-Line.
454                05                COL 80                VALUE LD-Vert-Line.
455
456 GC0712      05 LINE 05 COL 01                VALUE LD-LL-Corner.
457 GC0712      05                COL 02 PIC X(78) FROM WS-Horizontal-Line-TXT.

```


458 05 COL 80 VALUE LD-LR-Corner.

=====

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```

=====
459
460 GC0712      05 LINE 07 COL 01      VALUE LD-UL-Corner.
461 GC0712      05          COL 02 PIC X(65) FROM WS-Horizontal-Line-TXT.
462 GC0712      05          COL 67      VALUE LD-Upper-T.
463 GC0712      05          COL 68 PIC X(12) FROM WS-Horizontal-Line-TXT.
464            05          COL 80      VALUE LD-UR-Corner.
465
466 GC0712      05 LINE 08 COL 01      VALUE LD-Vert-Line.
467 GC0712      05          COL 67      VALUE LD-Vert-Line.
468            05          COL 80      VALUE LD-Vert-Line.
469
470 GC0712      05 LINE 09 COL 01      VALUE LD-Vert-Line.
471 GC0712      05          COL 67      VALUE LD-Vert-Line.
472            05          COL 80      VALUE LD-Vert-Line.
473
474 GC0712      05 LINE 10 COL 01      VALUE LD-Vert-Line.
475 GC0712      05          COL 67      VALUE LD-Vert-Line.
476            05          COL 80      VALUE LD-Vert-Line.
477
478 GC0712      05 LINE 11 COL 01      VALUE LD-Vert-Line.
479 GC0712      05          COL 67      VALUE LD-Vert-Line.
480            05          COL 80      VALUE LD-Vert-Line.
481
482 GC0712      05 LINE 12 COL 01      VALUE LD-Vert-Line.
483 GC0712      05          COL 67      VALUE LD-Vert-Line.
484            05          COL 80      VALUE LD-Vert-Line.
485
486 GC0712      05 LINE 13 COL 01      VALUE LD-LL-Corner.
487 GC0712      05          COL 02 PIC X(65) FROM WS-Horizontal-Line-TXT.
488 GC0712      05          COL 67      VALUE LD-Lower-T.
489 GC0712      05          COL 68 PIC X(12) FROM WS-Horizontal-Line-TXT.
490            05          COL 80      VALUE LD-LR-Corner.
491
492 GC0712      05 LINE 15 COL 01      VALUE LD-UL-Corner.
493 GC0712      05          COL 02 PIC X(78) FROM WS-Horizontal-Line-TXT.
494            05          COL 80      VALUE LD-UR-Corner.
495
496 GC0712      05 LINE 16 COL 01      VALUE LD-Vert-Line.
497            05          COL 80      VALUE LD-Vert-Line.
498
499 GC0712      05 LINE 17 COL 01      VALUE LD-Vert-Line.
500            05          COL 80      VALUE LD-Vert-Line.
501
502 GC0712      05 LINE 18 COL 01      VALUE LD-LL-Corner.
503 GC0712      05          COL 02 PIC X(78) FROM WS-Horizontal-Line-TXT.
504            05          COL 80      VALUE LD-LR-Corner.
505
506 GC0712      05 LINE 20 COL 01      VALUE LD-UL-Corner.
507 GC0712      05          COL 02 PIC X(78) FROM WS-Horizontal-Line-TXT.
508            05          COL 80      VALUE LD-UR-Corner.
509
510 GC0712      05 LINE 21 COL 01      VALUE LD-Vert-Line.

```

511 05 COL 80 VALUE LD-Vert-Line.

=====

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```

=====
512
513 GC0712      05 LINE 22 COL 01      VALUE LD-Vert-Line.
514              05              COL 80      VALUE LD-Vert-Line.
515
516 GC0712      05 LINE 23 COL 01      VALUE LD-LL-Corner.
517 GC0712      05              COL 02 PIC X(78) FROM WS-Horizontal-Line-TXT.
518              05              COL 80      VALUE LD-LR-Corner.
519      *>
520      *> TOP AND BOTTOM LINES
521      *>
522 GC0712      03 BACKGROUND-COLOR COB-COLOR-BLUE
523              FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
524 GC0410      05 LINE 01 COL 01 VALUE ' GCic ('.
525 GC0410      05              COL 08 PIC X(16) FROM WS-OC-Compile-DT.
526 GC1213      05              COL 24 VALUE ') GnuCOBOL 2.2 20JUL2017 ' &
527 GC0410              'Interactive Compilation' &
528 VC0617      03 BACKGROUND-COLOR COB-COLOR-RED
529 GC0712      FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
530 GC0712      05 LINE 24 COL 01 PIC X(80) FROM WS-Output-Msg-TXT.
531      *>
532      *> LABELS
533      *>
534              03 BACKGROUND-COLOR COB-COLOR-BLACK
535              FOREGROUND-COLOR COB-COLOR-CYAN HIGHLIGHT.
536 GC0712      05 LINE 06 COL 02 VALUE 'Set/Clr Switches Via F1-F9; ' &
537 GC0712              'Set Config Via F12; Enter Key ' &
538 GC0712              'Compiles; Esc Quits'.
539 GC0712      05 LINE 14 COL 02 VALUE 'Extra "cobc" Switches, If Any ' &
540 GC0712              '("-save-temps=xxx" Prevents ' &
541 GC0712              'Listings):'.
542 GC0712      05 LINE 19 COL 02 VALUE 'Program Execution Arguments, ' &
543 GC0712              'If Any:'.
544 GC0712      03 BACKGROUND-COLOR COB-COLOR-BLACK
545 GC0712      FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
546 GC0712      05 LINE 06 COL 23 VALUE 'F1'.
547 GC0712      05              COL 26 VALUE 'F9'.
548 GC0712      05              COL 45 VALUE 'F12'.
549 GC0712      05              COL 50 VALUE 'ENTER'.
550 GC0712      05              COL 70 VALUE 'ESC'.
551      *>
552      *> TOP SECTION BACKGROUND
553      *>
554              03 BACKGROUND-COLOR COB-COLOR-BLACK
555              FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
556 GC0712      05 LINE 03 COL 62 VALUE 'Enter'.
557 GC0712      05 LINE 04 COL 62 VALUE 'Esc'.
558
559              03 BACKGROUND-COLOR COB-COLOR-BLACK
560              FOREGROUND-COLOR COB-COLOR-GREEN HIGHLIGHT.
561 GC0712      05 LINE 04 COL 03 VALUE 'Folder: '.
562 GC0712      05 LINE 03 COL 03 VALUE 'Filename: '.
563

```

564 GC0712 05 LINE 03 COL 67 VALUE ': Compile '.

=====

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```

=====
565 GC0712      05 LINE 04 COL 65 VALUE ': Quit      '.
566             *>
567             *> TOP SECTION PROGRAM INFO
568             *>
569             03 BACKGROUND-COLOR COB-COLOR-BLACK
570             FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
571 GC0712      05 LINE 03 COL 13 PIC X(66) FROM WS-Prog-File-Name-TXT.
572 GC0712      05 LINE 04 COL 13 PIC X(66) FROM WS-Prog-Folder-TXT.
573             *>
574             *> MIDDLE LEFT SECTION F-KEYS
575             *>
576             03 BACKGROUND-COLOR COB-COLOR-BLACK
577             FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
578 GC0712      05 LINE 08 COL 03 VALUE 'F1'.
579 GC0712      05 LINE 09 COL 03 VALUE 'F2'.
580 GC0712      05 LINE 10 COL 03 VALUE 'F3'.
581 GC0712      05 LINE 11 COL 03 VALUE 'F4'.
582 GC0712      05 LINE 12 COL 03 VALUE 'F5'.
583
584 GC0712      05 LINE 08 COL 35 VALUE 'F6'.
585 GC0712      05 LINE 09 COL 35 VALUE 'F7'.
586 GC0712      05 LINE 10 COL 35 VALUE 'F8'.
587 GC0712      05 LINE 11 COL 35 VALUE 'F9'.
588             *>
589             *> MIDDLE LEFT SECTION SWITCHES
590             *>
591             03 BACKGROUND-COLOR COB-COLOR-BLACK
592             FOREGROUND-COLOR COB-COLOR-RED   HIGHLIGHT.
593 GC0712      05 LINE 08 COL 06 PIC X(1) FROM WS-CS-DEBUG-CHR.
594 GC0712      05 LINE 09 COL 06 PIC X(1) FROM WS-CS-TRACEALL-CHR.
595 GC0712      05 LINE 10 COL 06 PIC X(1) FROM WS-CS-LIBRARY-CHR.
596 GC0712      05 LINE 11 COL 06 PIC X(1) FROM WS-CS-EXECUTE-CHR.
597 GC0712      05 LINE 12 COL 06 PIC X(1) FROM WS-CS-LISTING-CHR.
598
599 GC0712      05 LINE 08 COL 38 PIC X(1) FROM WS-CS-NOFUNC-CHR.
600 GC0712      05 LINE 09 COL 38 PIC X(1) FROM WS-CS-WARNALL-CHR.
601 GC0712      05 LINE 10 COL 38 PIC X(1) FROM WS-CS-FREE-CHR.
602 GC0712      05 LINE 11 COL 38 PIC X(1) FROM WS-CS-NOTRUNC-CHR.
603             *>
604             *> MIDDLE LEFT SECTION BACKGROUND
605             *>
606             03 BACKGROUND-COLOR COB-COLOR-BLACK
607             FOREGROUND-COLOR COB-COLOR-GREEN HIGHLIGHT.
608 GC0712      05 LINE 08 COL 07 VALUE 'Assume WITH DEBUGGING MODE'.
609 GC0712      05 LINE 09 COL 07 VALUE 'Procedure+Statement Trace '.
610 GC0712      05 LINE 10 COL 07 VALUE 'Make a Library ('.
611 GC0712      05          COL 23 VALUE WS-OS-Lib-Type-CONST.
612 GC0712      05 LINE 11 COL 07 VALUE 'Execute If Compilation OK '.
613 GC1213      05 LINE 12 COL 07 FROM WS-Listing-TXT.
614
615 GC0712      05 LINE 08 COL 39 VALUE '"FUNCTION" Is Optional  '.
616 GC0712      05 LINE 09 COL 39 VALUE 'Enable All Warnings  '.

```

```
617 GC0712      05 LINE 10 COL 39 VALUE 'Source Is Free-Format      '.
```

```
=====
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```

```
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```

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```

=====
618 GC0712      05 LINE 11 COL 39 VALUE 'No COMP/BINARY Truncation '.
619          *>
620          *> MIDDLE RIGHT SECTION Text
621          *>
622          03 BACKGROUND-COLOR COB-COLOR-BLACK
623          FOREGROUND-COLOR COB-COLOR-GREEN HIGHLIGHT.
624 GC0712      05 LINE 08 COL 69 VALUE 'Current'.
625 GC0712      05 LINE 09 COL 69 VALUE 'Config:'.
626          *>
627          *> MIDDLE RIGHT SECTION CONFIG FILE
628          *>
629          03 BACKGROUND-COLOR COB-COLOR-BLACK
630          FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
631 GC0712      05 LINE 10 COL 69 PIC X(10)
632 GC0712      FROM WS-CS-Filename-TXT (WS-CS-Config-NUM).
633          *>
634          *> FREE-FORM OPTIONS FIELDS
635          *>
636          03 BACKGROUND-COLOR COB-COLOR-BLACK
637          FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
638 GC0712      05 LINE 16 COL 03 PIC X(76) USING WS-CS-Extra-H1-TXT.
639 GC0712      05 LINE 17 COL 03 PIC X(76) USING WS-CS-Extra-H2-TXT.
640 GC0712      05 LINE 21 COL 03 PIC X(76) USING WS-CS-Arg-H1-TXT.
641 GC0712      05 LINE 22 COL 03 PIC X(76) USING WS-CS-Arg-H2-TXT.

```


=====

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```

=====
643      PROCEDURE DIVISION.
644      *>*****
645      *> Legend to procedure names:                **
646      *>                                           **
647      *> 00x-xxx  All MAIN driver procedures      **
648      *> 0xx-xxx  All GLOBAL UTILITY procedures  **
649      *> 1xx-xxx  All INITIALIZATION procedures  **
650      *> 2xx-xxx  All CORE PROCESSING procedures **
651      *> 9xx-xxx  All TERMINATION procedures     **
652      *>*****
653      DECLARATIVES.
654      000-File-Error SECTION.
655          USE AFTER STANDARD ERROR PROCEDURE ON F-Source-Code-FILE.
656          COPY FileStat-Msgs
657              REPLACING STATUS BY WS-FSM-Status-CD
658              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.
659          MOVE SPACES TO WS-Output-Msg-TXT
660          IF WS-FSM-Status-CD = 35
661              DISPLAY

```

662 'File not found: ''

=====

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```

=====
663             TRIM(WS-File-Name-TXT,TRAILING)
664             ','
665         ELSE
666             DISPLAY
667             'Error accessing file: "'
668             TRIM(WS-File-Name-TXT,TRAILING)
669             '"'
670         END-IF
671         GOBACK
672         .
673     END DECLARATIVES.
674
675     000-Main SECTION.
676         PERFORM 100-Initialization
677 GC0609     SET WS-RS-Not-Complete-BOOL TO TRUE
678 GC0609     PERFORM UNTIL WS-RS-Complete-BOOL
679 GC0609         PERFORM 200-Let-User-Set-Switches
680 GC0609         PERFORM 210-Run-Compiler
681 GC0410         IF (WS-RS-Compile-OK-BOOL OR WS-RS-Compile-OK-Warn-BOOL)
682 GC0712         AND (WS-CS-LISTING-CHR > SPACE)
683 GC0712             DISPLAY S-Blank-SCR
684 GC0410             PERFORM 220-Make-Listing
685 GC0410         END-IF
686 GC0709         IF (WS-CS-EXECUTE-CHR NOT = SPACES)
687 GC0709         AND (WS-RS-Output-File-Avail-BOOL)
688 GC0609             PERFORM 230-Run-Program
689 GC0609         END-IF
690 GC0712         PERFORM 250-Autoload-Listing
691 GC0609     END-PERFORM
692         PERFORM 900-Terminate
693     * -- Control will NOT return
694     .

```

=====

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```

=====
696      *>*****
697      *> Perform all program-wide initialization operations      **
698      *>*****
699      100-Initialization SECTION.
700      *>*****
701      *> Make sure full screen-handling is in effect          **
702      *>*****
703          SET ENVIRONMENT 'COB_SCREEN_EXCEPTIONS' TO 'Y'
704          SET ENVIRONMENT 'COB_SCREEN_ESC'          TO 'Y'
705 VC0617    SET ENVIRONMENT "COB_EXIT_WAIT"          TO "O".
706      *>*****
707      *> Get GCic Compilation Date/Time                        **
708      *>*****
709          MOVE WHEN-COMPILED (1:12) TO WS-OC-Compile-DT
710          INSPECT WS-OC-Compile-DT
711              REPLACING ALL '/' BY ':'
712              AFTER INITIAL SPACE
713      *>*****
714      *> Convert WS-CS-All-Switches-TXT to Needed Alphanumeric Values**
715      *>*****
716          INSPECT WS-CS-All-Switches-TXT
717              REPLACING ALL '0' BY SPACE
718                  ALL '1' BY SELCHAR
719 GC1213    ALL '2' BY SELCHAR
720      *>*****
721      *> Process filename (the only command-line argument)    **
722      *>*****
723 GC0712    ACCEPT WS-Cmd-Args-TXT FROM COMMAND-LINE
724 GC0712    MOVE 1 TO WS-Cmd-SUB
725 GC0712    IF WS-Cmd-Args-TXT(WS-Cmd-SUB:1) = '"' OR '"'
726 GC0712    MOVE WS-Cmd-Args-TXT(WS-Cmd-SUB:1)
727 GC0712    TO WS-Cmd-End-Quote-CHR
728 GC0712    ADD 1 TO WS-Cmd-SUB
729 GC0712    UNSTRING WS-Cmd-Args-TXT
730 GC0712    DELIMITED BY WS-Cmd-End-Quote-CHR
731 GC0712    INTO WS-File-Name-TXT
732 GC0712    WITH POINTER WS-Cmd-SUB
733 GC0712    ELSE
734 GC0712    UNSTRING WS-Cmd-Args-TXT
735 GC0712    DELIMITED BY ALL SPACES
736 GC0712    INTO WS-File-Name-TXT
737 GC0712    WITH POINTER WS-Cmd-SUB
738 GC0712    END-IF
739          IF WS-File-Name-TXT = SPACES
740 GC0712    DISPLAY 'No program filename was specified'
741          PERFORM 900-Terminate
742      * ----- Control will NOT return
743      END-IF
744      *>*****
745      *> Determine if 'Make A Library' feature should be forced 'ON' **
746      *>*****

```

747 PERFORM 240-Find-LINKAGE-SECTION

=====

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```

=====
748      *>*****
749      *> Split 'WS-File-Name-TXT' into 'WS-Prog-Folder-TXT' and      **
750      *> 'WS-Prog-File-Name-TXT'                                     **
751      *>*****
752 GC0909      IF WS-OS-Cygwin-BOOL AND WS-File-Name-TXT (2:1) = ':'
753 GC0712          MOVE '\' TO WS-OS-Dir-CHR
754 GC0909      END-IF
755 GC0712      MOVE LENGTH(WS-File-Name-TXT) TO WS-I-SUB
756 GC0712      PERFORM UNTIL WS-I-SUB = 0
757 GC0712          OR WS-FN-CHR (WS-I-SUB) = WS-OS-Dir-CHR
758              SUBTRACT 1 FROM WS-I-SUB
759      END-PERFORM
760      IF WS-I-SUB = 0
761          MOVE SPACES      TO WS-Prog-Folder-TXT
762          MOVE WS-File-Name-TXT TO WS-Prog-File-Name-TXT
763      ELSE
764          MOVE '*' TO WS-FN-CHR (WS-I-SUB)
765          UNSTRING WS-File-Name-TXT DELIMITED BY '*'
766              INTO WS-Prog-Folder-TXT
767                  WS-Prog-File-Name-TXT
768 GC0712      MOVE WS-OS-Dir-CHR TO WS-FN-CHR (WS-I-SUB)
769      END-IF
770      IF WS-Prog-Folder-TXT = SPACES
771          ACCEPT WS-Prog-Folder-TXT FROM ENVIRONMENT 'CD'
772 GC0909      ELSE
773 GC0909          CALL 'CBL_CHANGE_DIR'
774 GC0909          USING TRIM(WS-Prog-Folder-TXT,TRAILING)
775      END-IF
776 GC0909      IF WS-OS-Cygwin-BOOL AND WS-File-Name-TXT (2:1) = ':'
777 GC0712          MOVE '/' TO WS-OS-Dir-CHR
778 GC0909      END-IF
779      *>*****
780      *> Split 'WS-Prog-File-Name-TXT' into 'WS-Pgm-Nm-TXT' &      **
781      *> 'WS-Prog-Extension-TXT'                                     **
782      *>*****
783 GC0712      MOVE LENGTH(WS-Prog-File-Name-TXT) TO WS-I-SUB
784 GC0712      PERFORM UNTIL WS-I-SUB = 0
785 GC0712          OR WS-PFN-CHR (WS-I-SUB) = '.'
786 GC0712          SUBTRACT 1 FROM WS-I-SUB
787 GC0712      END-PERFORM
788 GC0712      IF WS-I-SUB = 0
789 GC0712          MOVE WS-Prog-File-Name-TXT TO WS-Pgm-Nm-TXT
790 GC0712          MOVE SPACES      TO WS-Prog-Extension-TXT
791 GC0712      ELSE
792 GC0712          MOVE '*' TO WS-PFN-CHR (WS-I-SUB)
793 GC0712          UNSTRING WS-Prog-File-Name-TXT DELIMITED BY '*'
794 GC0712              INTO WS-Pgm-Nm-TXT
795 GC0712                  WS-Prog-Extension-TXT
796 GC0712          MOVE '.' TO WS-PFN-CHR (WS-I-SUB)
797 GC0712      END-IF
798      *>*****
799      *> Build initial Line 24 Message                                **

```


800 *>*****

=====

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```
=====
801 GC0909      MOVE ALL LD-Horiz-Line TO WS-Horizontal-Line-TXT.
802 GC0410      MOVE CONCATENATE(' GCic for '
803 GC0410                      TRIM(WS-OS-Type-TXT(WS-OS-Type-CD),Trailing)
804 GC1213                      ' Copyright (C) 2009-2017, Gary L. '
805 GC0410                      'Cutler, GPL')
806 GC0410      TO WS-Output-Msg-TXT.
807 GC0909
```

=====

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```

=====
809      *>*****
810      *> Show the user the current switch settings and allow them to **
811      *> be changed. **
812      *>*****
813      200-Let-User-Set-Switches SECTION.
814          SET WS-RS-Switch-Changes-BOOL TO TRUE
815          PERFORM UNTIL WS-RS-No-Switch-Changes-BOOL
816 GC1213      EVALUATE WS-Listing-CD
817 GC1213      WHEN 0
818 GC1213          MOVE 'Listing Off' TO WS-Listing-TXT
819 GC1213          MOVE SPACE TO WS-CS-LISTING-CHR
820 GC1213      WHEN 1
821 GC1213          MOVE 'Listing On (Landscape)' TO WS-Listing-TXT
822 GC1213          MOVE SELCHAR TO WS-CS-LISTING-CHR
823 GC1213      WHEN 2
824 GC1213          MOVE 'Listing On (Portrait)' TO WS-Listing-TXT
825 GC1213          MOVE SELCHAR TO WS-CS-LISTING-CHR
826 GC1213      END-EVALUATE
827      ACCEPT S-Switches-SCR
828      IF COB-CRT-STATUS > 0
829          EVALUATE COB-CRT-STATUS
830              WHEN COB-SCR-F1
831                  IF WS-CS-DEBUG-CHR = SPACE
832 GC0712      MOVE SELCHAR TO WS-CS-DEBUG-CHR
833                  ELSE
834                      MOVE ' ' TO WS-CS-DEBUG-CHR
835                  END-IF
836 GC0712      WHEN COB-SCR-F2
837 GC0712      IF WS-CS-TRACEALL-CHR = SPACE
838 GC0712      MOVE SELCHAR TO WS-CS-TRACEALL-CHR
839 GC0712      ELSE
840 GC0712      MOVE ' ' TO WS-CS-TRACEALL-CHR
841 GC0712      END-IF
842      WHEN COB-SCR-F3
843 GC0712      IF WS-CS-LIBRARY-CHR = SPACE
844 GC0712      MOVE SELCHAR TO WS-CS-LIBRARY-CHR
845      ELSE
846 GC0712      MOVE ' ' TO WS-CS-LIBRARY-CHR
847      END-IF
848      WHEN COB-SCR-F4
849      IF WS-CS-EXECUTE-CHR = SPACE
850 GC0712      MOVE SELCHAR TO WS-CS-EXECUTE-CHR
851      ELSE
852      MOVE ' ' TO WS-CS-EXECUTE-CHR
853      END-IF
854 GC0712      WHEN COB-SCR-F5
855 GC1213      ADD 1 TO WS-Listing-CD
856 GC1213      IF WS-Listing-CD > 2
857 GC1213      MOVE 0 TO WS-Listing-CD
858 GC1213      END-IF
859 GC0712      WHEN COB-SCR-F6

```

860 GC0712

IF WS-CS-NOFUNC-CHR = SPACE

=====

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```

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

```

=====

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```

=====
901      *>*****
902      *> Run the compiler using the switch settings we've prepared. **
903      *>*****
904      210-Run-Compiler SECTION.
905          MOVE SPACES TO WS-Cmd-TXT
906                      WS-Cobc-Cmd-TXT
907                      WS-Output-Msg-TXT
908          DISPLAY S-Switches-SCR
909          MOVE 1 TO WS-I-SUB
910 GC0712      MOVE LOWER-CASE(WS-CS-Filename-TXT (WS-CS-Config-NUM))
911 GC0712      TO WS-Config-Fn-TXT
912      *>*****
913      *> Build the 'cobc' command **
914      *>*****
915 GC0909      MOVE SPACES TO WS-Cobc-Cmd-TXT
916 GC0909      STRING 'cobc -v -std='
917 GC0909          TRIM(WS-Config-Fn-TXT,TRAILING)
918 GC0909          ' '
919 GC0909      INTO WS-Cobc-Cmd-TXT
920 GC0909      WITH POINTER WS-I-SUB
921      IF WS-CS-LIBRARY-CHR NOT = ' '
922          STRING '-m '
923              DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
924              WITH POINTER WS-I-SUB
925      ELSE
926          STRING '-x '
927              DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
928              WITH POINTER WS-I-SUB
929      END-IF
930      IF WS-CS-DEBUG-CHR NOT = ' '
931          STRING '-fdebugging-line '
932              DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
933              WITH POINTER WS-I-SUB
934      END-IF
935      IF WS-CS-NOTRUNC-CHR NOT = ' '
936          STRING '-fnotrunc '
937              DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
938              WITH POINTER WS-I-SUB
939      END-IF
940      IF WS-CS-TRACEALL-CHR NOT = ' '
941 GC0809      STRING '-ftraceall '
942              DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
943              WITH POINTER WS-I-SUB
944      END-IF
945 GC0712      IF WS-CS-NOFUNC-CHR NOT = ' '
946 VC0717      STRING '-fintrinsics=ALL '
947 GC0712      DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
948 GC0712      WITH POINTER WS-I-SUB
949 GC0712      END-IF
950 GC0712      IF WS-CS-WARNALL-CHR NOT = ' '
951 GC0712      STRING '-Wall '

```


952 GC0712

DELIMITED SIZE INTO WS-Cobc-Cmd-TXT

=====

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```

=====
953 GC0712          WITH POINTER WS-I-SUB
954 GC0712          END-IF
955 GC0712          IF WS-CS-FREE-CHR NOT = ' '
956 GC0712              STRING '-free '
957 GC0712              DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
958 GC0712              WITH POINTER WS-I-SUB
959 GC0712          ELSE
960 GC0712              STRING '-fixed '
961 GC0712              DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
962 GC0712              WITH POINTER WS-I-SUB
963 GC0712          END-IF
964
965 GC0712          MOVE 0 TO WS-Tally-QTY
966 GC0712          INSPECT WS-CS-Extra-TXT
967 GC0712              TALLYING WS-Tally-QTY FOR ALL '-save-temps'
968 GC0712          IF WS-CS-LISTING-CHR > SPACE
969 GC0712          AND WS-Tally-QTY > 0
970 GC0712          MOVE SPACE TO WS-CS-LISTING-CHR *> Can't generate listing if -save-temps u
sed
971 GC0712          END-IF
972 GC0712          IF WS-CS-LISTING-CHR > SPACE
973 GC1010              STRING '-save-temps '
974 GC1010              DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
975 GC1010              WITH POINTER WS-I-SUB
976 GC1010          END-IF
977
978 GC0709          IF WS-CS-Extra-TXT > SPACES
979 GC0709              STRING ' '
980 GC0709              TRIM(WS-CS-Extra-TXT,TRAILING)
981 GC0709              ' '
982 GC0709              DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
983 GC0709              WITH POINTER WS-I-SUB
984 GC0709          END-IF
985 GC0909          STRING TRIM(WS-Prog-File-Name-TXT,TRAILING)
986 GC0909              DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
987 GC0909              WITH POINTER WS-I-SUB
988          *>*****
989          *> Prepare the compilation listing file **
990          *>*****
991 GC1113          MOVE CONCATENATE(TRIM(WS-Pgm-Nm-TXT,Trailing),' .gclst')
992 GC0712              TO WS-Listing-Filename-TXT
993 GC0712          CALL 'CBL_DELETE_FILE' USING WS-Listing-Filename-TXT
994          *>*****
995          *> Now execute the 'cobc' command **
996          *>*****
997 GC0410          MOVE ' Compiling...' TO WS-Output-Msg-TXT
998 GC0410          DISPLAY S-Switches-SCR
999 GC0609          SET WS-RS-Output-File-Avail-BOOL TO TRUE
1000          MOVE SPACES TO WS-Cmd-TXT
1001          STRING TRIM(WS-Cobc-Cmd-TXT,TRAILING)
1002 GC0712              ' >' WS-Listing-Filename-TXT
1003 GC0712              ' 2>&1'

```

1004 DELIMITED SIZE

=====

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```

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

```

=====

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=====

```

1037      *>*****
1038      *> Generate a source + xref listing using 'LISTING' subroutine **
1039      *>*****
1040 GC0410 220-Make-Listing SECTION.
1041 GC0410      MOVE ' Generating listing...' TO WS-Output-Msg-TXT
1042 GC0410      DISPLAY S-Switches-SCR
1043 GC0410      MOVE 0 TO RETURN-CODE
1044      *>*****
1045      *> Create the listing **
1046      *>*****
1047 GC0410      MOVE SPACES TO WS-Output-Msg-TXT
1048 GC0410      CALL 'LISTING' USING WS-Listing-Filename-TXT
1049 GC0712      WS-File-Name-TXT
1050 GC0712      WS-OS-Type-CD
1051 GC1213      LPP
1052 GC1213      LPPP
1053 GC1213      WS-Listing-CD
1054 GC0410      ON EXCEPTION
1055 GC0410          MOVE ' LISTING module is not available'
1056 GC0410          TO WS-Output-Msg-TXT
1057 GC0410          MOVE 1 TO RETURN-CODE
1058 GC0410      END-CALL
1059 GC0410      IF RETURN-CODE = 0
1060 GC0712          MOVE ' Source+Xref listing generated '
1061 GC0712          TO WS-Output-Msg-TXT
1062 GC0410      END-IF
1063 GC0712      DISPLAY S-Switches-SCR
1064 GC0712      CALL 'C$SLEEP' USING 2
1065 GC0712      PERFORM 250-Autoload-Listing
1066 GC0410      .

```

=====

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```

=====
1068      *>*****
1069      *> Run the compiled program                      **
1070      *>*****
1071      230-Run-Program SECTION.
1072 GC0114      MOVE ' Preparing to run program ... press ENTER to close '
1073 GC0114      TO WS-Output-Msg-TXT
1074 GC0114      DISPLAY S-Switches-SCR
1075 GC0114      CALL 'C$SLEEP' USING 3
1076 GC0909      MOVE SPACES TO WS-Cmd-TXT
1077 GC0909      MOVE 1 TO WS-I-SUB
1078      *>*****
1079      *> If necessary, start with 'cobcrun' command      **
1080      *>*****
1081 GC0712      IF WS-CS-LIBRARY-CHR NOT = ' '
1082              STRING 'cobcrun ' DELIMITED SIZE
1083              INTO WS-Cmd-TXT
1084              WITH POINTER WS-I-SUB
1085      END-IF
1086      *>*****
1087      *> Add any necessary path prefix                    **
1088      *>*****
1089 GC0712      SET WS-RS-Double-Quote-Used-BOOL TO FALSE
1090      IF WS-Prog-Folder-TXT NOT = SPACES
1091 GC0909      IF WS-OS-Cygwin-BOOL AND WS-Prog-Folder-TXT (2:1) = ':'
1092 GC0909      STRING '/cygdrive/'
1093 GC0909      INTO WS-Cmd-TXT
1094 GC0909      WITH POINTER WS-I-SUB
1095 GC0909      STRING LOWER-CASE(WS-Prog-Folder-TXT (1:1))
1096 GC0909      INTO WS-Cmd-TXT
1097 GC0909      WITH POINTER WS-I-SUB
1098 GC0909      PERFORM
1099 GC0909      VARYING WS-J-SUB FROM 3 BY 1
1100 GC0909      UNTIL WS-J-SUB > LENGTH(TRIM(WS-Prog-Folder-TXT))
1101 GC0909      IF WS-Prog-Folder-TXT (WS-J-SUB:1) = '\ '
1102 GC0909      STRING '/'
1103 GC0909      INTO WS-Cmd-TXT
1104 GC0909      WITH POINTER WS-I-SUB
1105 GC0909      ELSE
1106 GC0909      STRING WS-Prog-Folder-TXT (WS-J-SUB:1)
1107 GC0909      INTO WS-Cmd-TXT
1108 GC0909      WITH POINTER WS-I-SUB
1109 GC0909      END-IF
1110 GC0909      END-PERFORM
1111 GC0909      ELSE
1112 GC0410      STRING ' ' TRIM(WS-Prog-Folder-TXT,TRAILING)
1113 GC0909      INTO WS-Cmd-TXT
1114 GC0909      WITH POINTER WS-I-SUB
1115 GC0712      SET WS-RS-Double-Quote-Used-BOOL TO TRUE
1116 GC0909      END-IF
1117 GC0712      STRING WS-OS-Dir-CHR
1118 GC0909      INTO WS-Cmd-TXT

```


1119 GC0909

WITH POINTER WS-I-SUB

=====

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```

=====
1120 GC0909      ELSE
1121 GC0909          IF WS-OS-Cygwin-BOOL OR WS-OS-UNIX-BOOL
1122 GC0909              STRING './'
1123 GC0909                  INTO WS-Cmd-TXT
1124 GC0909                  WITH POINTER WS-I-SUB
1125 GC0909          END-IF
1126      END-IF
1127      *>*****
1128      *> Insert program filename                                **
1129      *>*****
1130 GC0909      STRING TRIM(WS-Pgm-Nm-TXT,TRAILING)
1131 GC0909          INTO WS-Cmd-TXT
1132 GC0909          WITH POINTER WS-I-SUB
1133      *>*****
1134      *> Insert proper extension                                **
1135      *>*****
1136 GC0712      IF WS-CS-LIBRARY-CHR = ' '
1137 GC0712          IF WS-OS-Exe-Ext-CONST > ' '
1138 GC0712              STRING WS-OS-Exe-Ext-CONST DELIMITED SPACE
1139 GC0712                  INTO WS-Cmd-TXT
1140 GC0712                  WITH POINTER WS-I-SUB
1141 GC0712          END-IF
1142 GC0712      ELSE
1143 GC0712          IF WS-OS-Lib-Ext-CONST > ' '
1144 GC0712              STRING WS-OS-Lib-Ext-CONST DELIMITED SPACE
1145 GC0712                  INTO WS-Cmd-TXT
1146 GC0712                  WITH POINTER WS-I-SUB
1147 GC0712          END-IF
1148 GC0712      END-IF
1149 GC0712      IF WS-RS-Double-Quote-Used-BOOL
1150 GC0712          STRING ''' DELIMITED SIZE
1151 GC0712              INTO WS-Cmd-TXT
1152 GC0712              WITH POINTER WS-I-SUB
1153 GC0712      END-IF
1154      IF WS-CS-Args-TXT NOT = SPACES
1155 GC0809          STRING ' ' TRIM(WS-CS-Args-TXT,TRAILING)
1156                  INTO WS-Cmd-TXT
1157                  WITH POINTER WS-I-SUB
1158      END-IF
1159      *>*****
1160      *> Run the program                                        **
1161      *>*****
1162 GC0114      CALL X'E4'
1163      CALL 'SYSTEM' USING TRIM(WS-Cmd-TXT,TRAILING)
1164 GC0712      MOVE SPACES TO WS-Output-Msg-TXT
1165 GC0114      ACCEPT WS-Output-Msg-TXT(1:1) AT 0101
1166      PERFORM 900-Terminate
1167      * -- Control will NOT return
1168      .
=====

```

=====

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=====

```

1170      *>*****
1171      *> Determine if the program being compiled is a MAIN program  **
1172      *>*****
1173      240-Find-LINKAGE-SECTION SECTION.
1174      OPEN INPUT F-Source-Code-FILE
1175 GC0712  MOVE ' ' TO WS-CS-LIBRARY-CHR
1176      SET WS-RS-More-To-1st-Prog-BOOL TO TRUE
1177      PERFORM UNTIL WS-RS-1st-Prog-Complete-BOOL
1178          READ F-Source-Code-FILE AT END
1179          CLOSE F-Source-Code-FILE
1180          EXIT SECTION
1181      END-READ
1182 GC0712  CALL 'CHECKSRC'
1183 GC0712  USING BY CONTENT F-Source-Code-REC
1184 GC0712  BY REFERENCE WS-RS-Source-Record-Type-CHR
1185      IF WS-RS-Source-Rec-Ident-BOOL
1186          SET WS-RS-1st-Prog-Complete-BOOL TO TRUE
1187      END-IF
1188      END-PERFORM
1189 GC0712  SET WS-RS-Source-Rec-Ignored-BOOL TO TRUE
1190      PERFORM UNTIL WS-RS-Source-Rec-Linkage-BOOL
1191          OR WS-RS-Source-Rec-Ident-BOOL
1192          READ F-Source-Code-FILE AT END
1193          CLOSE F-Source-Code-FILE
1194          EXIT SECTION
1195      END-READ
1196 GC0712  CALL 'CHECKSRC'
1197 GC0712  USING BY CONTENT F-Source-Code-REC
1198 GC0712  BY REFERENCE WS-RS-Source-Record-Type-CHR
1199      END-PERFORM
1200      CLOSE F-Source-Code-FILE
1201      IF WS-RS-Source-Rec-Linkage-BOOL
1202 GC0712  MOVE SELCHAR TO WS-CS-LIBRARY-CHR
1203      END-IF
1204      .

```

=====

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```

=====
1206 GC0712*>*****
1207 GC0712*> Attempt to open the listing file as a command. This will - **
1208 GC1113*> if the user has associated filetype/extension 'gclst' with **
1209 GC0712*> an application - invoke the appropriate application to **
1210 GC0712*> allow the user to view the listing. **
1211 GC0712*>*****
1212 GC0712 250-Autoload-Listing SECTION.
1213 GC0712 EVALUATE TRUE
1214 GC0712 WHEN WS-OS-Windows-BOOL OR WS-OS-Cygwin-BOOL
1215 GC0712 MOVE SPACES TO WS-Cmd-TXT
1216 GC0712 STRING
1217 GC0712 'cmd /c '
1218 GC0712 TRIM(WS-Listing-Filename-TXT,TRAILING)
1219 GC0712 DELIMITED SIZE INTO WS-Cmd-TXT
1220 GC0712 CALL 'SYSTEM' USING TRIM(WS-Cmd-TXT,TRAILING)
1221 GC0712 WHEN WS-OS-OSX-BOOL
1222 GC0712 MOVE SPACES TO WS-Cmd-TXT
1223 GC0712 STRING
1224 GC0712 'open -t '
1225 GC0712 TRIM(WS-Listing-Filename-TXT,TRAILING)
1226 GC0712 DELIMITED SIZE INTO WS-Cmd-TXT
1227 GC0712 CALL 'SYSTEM' USING TRIM(WS-Cmd-TXT,TRAILING)
1228 GC0712 END-EVALUATE
1229 GC0712*>*****
1230 GC0712*> ** Since we had to do our own '-save-temps' when we **
1231 GC0712*> ** compiled (in order to generate the cross-reference **
1232 GC0712*> ** listing) we now need to clean up after ourselves. **
1233 GC0712*>*****
1234 GC1112 DISPLAY S-Blank-SCR
1235 GC0712 IF WS-OS-Windows-BOOL
1236 GC0712 MOVE CONCATENATE('del ',TRIM(WS-Pgm-Nm-TXT,TRAILING))
1237 GC0712 TO WS-Cmd-TXT
1238 GC0712 ELSE
1239 GC0712 MOVE CONCATENATE('rm ',TRIM(WS-Pgm-Nm-TXT,TRAILING))
1240 GC0712 TO WS-Cmd-TXT
1241 GC0712 END-IF
1242 GC0712 CALL 'SYSTEM'
1243 GC0712 USING CONCATENATE(TRIM(WS-Cmd-TXT,TRAILING),'.c')
1244 GC0712 CALL 'SYSTEM'
1245 GC0712 USING CONCATENATE(TRIM(WS-Cmd-TXT,TRAILING),'.c.h')
1246 GC0712 CALL 'SYSTEM'
1247 GC0712 USING CONCATENATE(TRIM(WS-Cmd-TXT,TRAILING),'.c.l*.h')
1248 GC0712 CALL 'SYSTEM'
1249 GC0712 USING CONCATENATE(TRIM(WS-Cmd-TXT,TRAILING),'.i')
1250 GC0712 CALL 'SYSTEM'
1251 GC0712 USING CONCATENATE(TRIM(WS-Cmd-TXT,TRAILING),'.o')
1252
1253 GC0712 .

```

=====

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=====

```

1255      *>*****
1256      *> Display a message and halt the program          **
1257      *>*****
1258      900-Terminate SECTION.
1259 GC0909      IF WS-Output-Msg-TXT > SPACES
1260 GC0909          DISPLAY S-Switches-SCR
1261 GC0909          CALL 'C$SLEEP' USING 2
1262 GC0909      END-IF
1263          DISPLAY S-Blank-SCR
1264          STOP RUN
1265          .
1266
1267      END PROGRAM GCic.

```


=====

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```

=====
1269 IDENTIFICATION DIVISION.
1270 PROGRAM-ID. CHECKSRC.
1271 *>*****
1272 *> This subprogram will scan a line of source code it is given **
1273 *> looking for 'LINKAGE SECTION' or 'IDENTIFICATION DIVISION'. **
1274 *> **
1275 *> ****NOTE**** ****NOTE**** ****NOTE**** ****NOTE**** **
1276 *> **
1277 *> These two strings must be found IN THEIR ENTIRETY within **
1278 *> the 1st 80 columns of program source records, and cannot **
1279 *> follow either a '*>' sequence OR a '*' in col 7. **
1280 *>*****
1281 *> DATE CHANGE DESCRIPTION **
1282 *> ===== **
1283 *> GC0809 Initial coding. **
1284 *>*****
1285 ENVIRONMENT DIVISION.
1286 CONFIGURATION SECTION.
1287 REPOSITORY.
1288 FUNCTION ALL INTRINSIC.
1289 DATA DIVISION.
1290 WORKING-STORAGE SECTION.
1291 01 WS-Compressed-Src-TXT.
1292     05 WS-CS-CHR OCCURS 80 TIMES
1293     PIC X(1).
1294
1295 01 WS-Runtime-Switches-TXT.
1296     05 WS-RS-Found-SPACE-CHR PIC X(1).
1297     88 WS-RS-Skipping-SPACE-BOOL VALUE 'Y'.
1298     88 WS-RS-Not-Skipping-SPACE-BOOL VALUE 'N'.
1299
1300 01 WS-I-SUB USAGE BINARY-CHAR.
1301
1302 01 WS-J-SUB USAGE BINARY-CHAR.
1303 LINKAGE SECTION.
1304 01 L-Argument-1-TXT.
1305     02 L-A1-CHR OCCURS 80 TIMES
1306     PIC X(1).
1307
1308 01 L-Argument-2-CHR PIC X(1).
1309     88 L-A2-LINKAGE-SECTION-BOOL VALUE 'L'.
1310     88 L-A2-IDENT-DIVISION-BOOL VALUE 'I'.
1311     88 L-A2-Nothing-Special-BOOL VALUE ' '.

```

=====

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```

=====
1313 GC0712 PROCEDURE DIVISION USING BY VALUE      L-Argument-1-TXT
1314 GC0712                                     BY REFERENCE L-Argument-2-CHR.
1315         000-Main SECTION.
1316             SET L-A2-Nothing-Special-BOOL TO TRUE
1317             IF L-A1-CHR (7) = '*'
1318                 GOBACK
1319             END-IF
1320             .
1321         *>
1322         *> Compress multiple consecutive spaces
1323         *>
1324             SET WS-RS-Not-Skipping-SPACE-BOOL TO TRUE
1325             MOVE 0 TO WS-J-SUB
1326             MOVE SPACES TO WS-Compressed-Src-TXT
1327             PERFORM VARYING WS-I-SUB FROM 1 BY 1
1328                 UNTIL WS-I-SUB > 80
1329                 IF L-A1-CHR (WS-I-SUB) = SPACE
1330                     IF WS-RS-Not-Skipping-SPACE-BOOL
1331                         ADD 1 TO WS-J-SUB
1332                         MOVE UPPER-CASE(L-A1-CHR (WS-I-SUB))
1333                             TO WS-CS-CHR (WS-J-SUB)
1334                         SET WS-RS-Skipping-SPACE-BOOL TO TRUE
1335                     END-IF
1336                 ELSE
1337                     SET WS-RS-Not-Skipping-SPACE-BOOL TO TRUE
1338                     ADD 1 TO WS-J-SUB
1339                     MOVE L-A1-CHR (WS-I-SUB) TO WS-CS-CHR (WS-J-SUB)
1340                 END-IF
1341             END-PERFORM
1342         *>
1343         *> Scan the compressed source line
1344         *>
1345             PERFORM VARYING WS-I-SUB FROM 1 BY 1
1346                 UNTIL WS-I-SUB > 66
1347             EVALUATE TRUE
1348                 WHEN WS-CS-CHR (WS-I-SUB) = '*'
1349                     IF WS-Compressed-Src-TXT (WS-I-SUB : 2) = '*>'
1350                         GOBACK
1351                     END-IF
1352                 WHEN (WS-CS-CHR (WS-I-SUB) = 'L') AND (WS-I-SUB < 66)
1353                     IF WS-Compressed-Src-TXT (WS-I-SUB : 15)
1354                         = 'LINKAGE SECTION'
1355                         SET L-A2-LINKAGE-SECTION-BOOL TO TRUE
1356                         GOBACK
1357                     END-IF
1358                 WHEN (WS-CS-CHR (WS-I-SUB) = 'I') AND (WS-I-SUB < 58)
1359                     IF WS-Compressed-Src-TXT (WS-I-SUB : 23)
1360                         = 'IDENTIFICATION DIVISION'
1361                         SET L-A2-IDENT-DIVISION-BOOL TO TRUE
1362                         GOBACK
1363                     END-IF

```

1364 END-EVALUATE

=====

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```

=====
1365      END-PERFORM
1366      *>
1367      *> If we get to here, we never found anything!
1368      *>
1369 +      GOBACK
1370      .
1371      END PROGRAM CHECKSRC.
1372
1373      IDENTIFICATION DIVISION.
1374      PROGRAM-ID. LISTING.
1375      *>*****
1376      *> This subprogram generates a cross-reference listing of an **
1377      *> GNU COBOL program. **
1378      *>*****
1379      *> **
1380      *> AUTHOR:      GARY L. CUTLER **
1381      *>      Copyright (C) 2010, Gary L. Cutler, GPL **
1382      *> **
1383      *> DATE-WRITTEN: April 1, 2010 **
1384      *> **
1385      *>*****
1386      *>  DATE  CHANGE DESCRIPTION **
1387      *> ===== **
1388      *> GC0410 Initial coding **
1389      *> GC0711 Updates to accommodate the 12MAR2010 version of OC **
1390      *> GC0710 Handle duplicate data names (i.e. 'CORRESPONDING' or **
1391      *> qualified items) better; ignore 'END PROGRAM' recs **
1392      *> so program name doesn't appear in listing. **
1393      *> GC0313 Fix problem where the first procedure name defined **
1394      *> in the PROCEDURE DIVISION lacks a "Defined" line **
1395      *> number. **
1396      *> GC1213 Updated for 23NOV2013 version of GNU COBOL 2.1; Stop **
1397      *> showing functions as if they were identifiers in the **
1398      *> xref listing; Flag all CALL argument references with **
1399      *> a "C" rather than "*" because they aren't necessari- **
1400      *> ly altered; Fixed assorted formatting bugs; DOWN- **
1401      *> WARD COMPATIBLE WITH GNU COBOL 2.0 SYNTAX **
1402      *> GC0314 Fix problem where 1st char of 1st token on a line is **
1403      *> lost if >>SOURCE MODE IS FREE is in effect and the **
1404      *> 1st character is non-blank. **
1405      *>*****
1406      ENVIRONMENT DIVISION.
1407      CONFIGURATION SECTION.
1408      REPOSITORY.
1409      FUNCTION ALL INTRINSIC.
1410      INPUT-OUTPUT SECTION.
1411      FILE-CONTROL.
1412      SELECT F-Expanded-Src-FILE ASSIGN TO WS-Expanded-Src-Fn-TXT
1413      ORGANIZATION IS LINE SEQUENTIAL.
1414 GC0712  SELECT F-Listing-FILE  ASSIGN TO L-Listing-Fn-TXT
1415      ORGANIZATION IS LINE SEQUENTIAL.
1416      SELECT F-Original-Src-FILE ASSIGN TO L-Src-Fn-TXT

```

1417

ORGANIZATION IS LINE SEQUENTIAL.

=====

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```

=====
1418          SELECT F-Sort-Work-FILE      ASSIGN TO DISK.
1419          DATA DIVISION.
1420          FILE SECTION.
1421          FD  F-Expanded-Src-FILE.
1422          01  F-Expanded-Src-REC.
1423              05 F-ES-1-CHR                      PIC X.
1424              05 F-ES-2-256-TXT-256              PIC X(256).
1425 GC0712 01  F-Expanded-Src2-REC.
1426 GC0712      05 F-ES-1-7-TXT                    PIC X(7).
1427 GC0712      05 F-ES-8-256-TXT                  PIC X(249).
1428
1429 GC0712 FD  F-Listing-FILE.
1430 GC1213 01  F-Listing-96-REC                      PIC X(96).
1431 GC1213 01  F-Listing-135-REC                     PIC X(135).
1432          01  F-Listing-REC                       PIC X(135).
1433
1434          FD  F-Original-Src-FILE.
1435          01  F-Original-Src-REC.
1436 GC0410      05 F-OS-1-128-TXT.
1437 GC0410          10 FILLER                          PIC X(6).
1438 GC0410          10 F-OS-7-CHR                       PIC X(1).
1439 GC0712          10 F-OS-8-72-TXT                     PIC X(65).
1440 GC0712          10 FILLER                          PIC X(56).
1441              05 F-OS-129-256-TXT                    PIC X(128).
1442
1443          SD  F-Sort-Work-FILE.
1444          01  F-Sort-Work-REC.
1445              05 F-SW-Prog-ID-TXT                    PIC X(15).
1446              05 F-SW-Token-Uc-TXT                   PIC X(32).
1447              05 F-SW-Token-TXT                      PIC X(32).
1448              05 F-SW-Section-TXT                    PIC X(15).
1449              05 F-SW-Def-Line-NUM                   PIC 9(6).
1450              05 F-SW-Reference-TXT.
1451                  10 F-SW-Ref-Line-NUM               PIC 9(6).
1452                  10 F-SW-Ref-Flag-CHR               PIC X(1).
1453
1454          WORKING-STORAGE SECTION.
1455 GC1213 01  WS-Copyright-TXT                        PIC X(86).
1456
1457          01  WS-Curr-CHR                             PIC X(1).
1458              88 WS-Curr-Char-Is-Punct-BOOL          VALUE '=' , '(' , ')' ,
1459                  '*' , '/' , '&' ,
1460                  ';' , ',' , '<' ,
1461                  '>' , ':' .
1462              88 WS-Curr-Char-Is-Quote-BOOL          VALUE '"' , "'" .
1463              88 WS-Curr-Char-Is-X-BOOL              VALUE 'x' , 'X' .
1464              88 WS-Curr-Char-Is-Z-BOOL              VALUE 'z' , 'Z' .
1465
1466          01  WS-Curr-Division-TXT                    PIC X(1).
1467 GC1010      88 WS-CD-In-IDENT-DIV-BOOL              VALUE 'i' , 'I' , '?' .
1468 GC1010      88 WS-CD-In-ENV-DIV-BOOL                VALUE 'e' , 'E' .
1469 GC1010      88 WS-CD-In-DATA-DIV-BOOL                VALUE 'd' , 'D' .

```



```
1470 GC1010      88 WS-CD-In-PROC-DIV-BOOL          VALUE 'p', 'P'.
```

```
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```

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```

=====
1471
1472      01  WS-Curr-Line-NUM                      PIC 9(6) .
1473
1474      01  WS-Curr-Prog-ID-TXT.
1475          05  FILLER                          PIC X(12) .
1476          05  WS-CPI-13-15-TXT                 PIC X(3) .
1477 GC0712  05  WS-CPI-16-CHR                     PIC X(1) .
1478
1479      01  WS-Curr-Section-TXT.
1480          05  WS-CS-1-CHR                       PIC X(1) .
1481          05  WS-CS-2-14-TXT.
1482              10  FILLER                      PIC X(10) .
1483              10  WS-CS-11-14-TXT              PIC X(3) .
1484          05  WS-CS-15-CHR                     PIC X(1) .
1485
1486      01  WS-Curr-Verb-TXT                      PIC X(12) .
1487
1488      01  WS-Delim-TXT                          PIC X(2) .
1489
1490      01  WS-Dummy-TXT                          PIC X(1) .
1491
1492      01  WS-Expanded-Src-Fn-TXT                PIC X(256) .
1493
1494      01  WS-Filename-TXT                      PIC X(256) .
1495
1496 GC1213  01  WS-Flags-TXT.
1497 GC1213  05  WS-Suppress-FF-CHR                PIC X(1) .
1498
1499 GC1213  01  WS-Formatted-DT                  PIC 9999/99/99 .
1500
1501      01  WS-Group-Indicators-TXT.
1502          05  WS-GI-Prog-ID-TXT                 PIC X(15) .
1503          05  WS-GI-Token-TXT                   PIC X(32) .
1504
1505      01  WS-Held-Reference-TXT                 PIC X(100) .
1506
1507      01  WS-I-SUB                             USAGE BINARY-LONG .
1508
1509      01  WS-J-SUB                             USAGE BINARY-LONG .
1510
1511      01  WS-Lines-Left-NUM                     USAGE BINARY-LONG .
1512
1513      01  WS-Lines-Per-Page-NUM                 USAGE BINARY-LONG .
1514
1515      01  WS-Lines-Per-Page-Env-TXT             PIC X(256) .
1516
1517 GC1010  01  WS-Main-Module-Name-TXT           PIC X(256) .
1518
1519      01  WS-Next-CHR                           PIC X(1) .
1520          88  WS-Next-Char-Is-Quote-BOOL       VALUE '"', '"'.
1521
1522      01  WS-OS-Type-FILLER-TXT.

```

```
1523          05 VALUE 'Windows'          PIC X(14).
```

```
=====
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```

```
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```

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```

=====
1524      05 VALUE 'Windows/Cygwin'          PIC X(14).
1525      05 VALUE 'UNIX/Linux'            PIC X(14).
1526      05 VALUE 'OSX'                    PIC X(14).
1527      05 VALUE 'Windows/MinGW'          PIC X(14).
1528      01 WS-OS-Types-TXT REDEFINES WS-OS-Type-FILLER-TXT.
1529      05 WS-OS-Type-TXT                  PIC X(14)
1530                                         OCCURS 5 TIMES .
1531
1532 GC0712 01 WS-Page-NUM                    USAGE BINARY-LONG.
1533
1534 GC0712 01 WS-Page-No-TXT.
1535 GC0712      05 WS-PN-Literal-TXT        PIC X(6).
1536 GC0712      05 WS-PN-Page-NUM          PIC Z(3)9.
1537
1538 GC1213 01 WS-Program-Path-TXT          PIC X(135).
1539
1540      01 WS-Reserved-Words-TXT.
1541      05 VALUE '          ' PIC X(33).
1542 GC1213      05 VALUE 'FABS          ' PIC X(33).
1543      05 VALUE 'VACCEPT          ' PIC X(33).
1544      05 VALUE ' ACCESS          ' PIC X(33).
1545 GC1213      05 VALUE 'FACOS          ' PIC X(33).
1546      05 VALUE ' ACTIVE-CLASS          ' PIC X(33). UNIMPLEMENTED
1547      05 VALUE 'VADD          ' PIC X(33).
1548      05 VALUE ' ADDRESS          ' PIC X(33).
1549      05 VALUE ' ADVANCING          ' PIC X(33).
1550      05 VALUE 'KAFTER          ' PIC X(33).
1551      05 VALUE ' ALIGNED          ' PIC X(33). UNIMPLEMENTED
1552      05 VALUE ' ALL          ' PIC X(33).
1553      05 VALUE 'VALLOCATE          ' PIC X(33).
1554      05 VALUE ' ALPHABET          ' PIC X(33).
1555      05 VALUE ' ALPHABETIC          ' PIC X(33).
1556      05 VALUE ' ALPHABETIC-LOWER          ' PIC X(33).
1557      05 VALUE ' ALPHABETIC-UPPER          ' PIC X(33).
1558      05 VALUE ' ALPHANUMERIC          ' PIC X(33).
1559      05 VALUE ' ALPHANUMERIC-EDITED          ' PIC X(33).
1560      05 VALUE ' ALSO          ' PIC X(33).
1561      05 VALUE 'VALTER          ' PIC X(33).
1562      05 VALUE ' ALTERNATE          ' PIC X(33).
1563      05 VALUE ' AND          ' PIC X(33).
1564 GC1213      05 VALUE 'FANNUITY          ' PIC X(33).
1565      05 VALUE ' ANY          ' PIC X(33).
1566      05 VALUE ' ANYCASE          ' PIC X(33). UNIMPLEMENTED
1567      05 VALUE ' ARE          ' PIC X(33).
1568      05 VALUE ' AREA          ' PIC X(33).
1569      05 VALUE ' AREAS          ' PIC X(33).
1570      05 VALUE ' ARGUMENT-NUMBER          ' PIC X(33).
1571      05 VALUE ' ARGUMENT-VALUE          ' PIC X(33).
1572      05 VALUE ' ARITHMETIC          ' PIC X(33). UNIMPLEMENTED
1573      05 VALUE ' AS          ' PIC X(33).
1574      05 VALUE ' ASCENDING          ' PIC X(33).
1575      05 VALUE ' ASCII          ' PIC X(33).

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1576 GC1213      05 VALUE 'FASIN' PIC X(33).
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=====
1577      05 VALUE ' ASSIGN                ' PIC X(33).
1578      05 VALUE ' AT                    ' PIC X(33).
1579 GC1213 05 VALUE 'FATAN                 ' PIC X(33).
1580 GC0711 05 VALUE ' ATTRIBUTE            ' PIC X(33).
1581      05 VALUE ' AUTHOR                 ' PIC X(33).      OBSOLETE
1582      05 VALUE ' AUTO                   ' PIC X(33).
1583      05 VALUE ' AUTO-SKIP               ' PIC X(33).
1584      05 VALUE ' AUTOMATIC               ' PIC X(33).
1585      05 VALUE ' AUTOTERMINATE           ' PIC X(33).
1586      05 VALUE ' AWAY-FROM-ZERO          ' PIC X(33).
1587      05 VALUE ' B-AND                   ' PIC X(33).      UNIMPLEMENTED
1588      05 VALUE ' B-NOT                   ' PIC X(33).      UNIMPLEMENTED
1589      05 VALUE ' B-OR                    ' PIC X(33).      UNIMPLEMENTED
1590      05 VALUE ' B-XOR                   ' PIC X(33).      UNIMPLEMENTED
1591      05 VALUE ' BACKGROUND-COLOR        ' PIC X(33).
1592      05 VALUE ' BACKGROUND-COLOUR       ' PIC X(33).
1593      05 VALUE ' BASED                   ' PIC X(33).
1594      05 VALUE ' BEEP                    ' PIC X(33).
1595      05 VALUE ' BEFORE                  ' PIC X(33).
1596      05 VALUE ' BELL                    ' PIC X(33).
1597      05 VALUE ' BINARY                  ' PIC X(33).
1598      05 VALUE ' BINARY-C-LONG            ' PIC X(33).
1599      05 VALUE ' BINARY-CHAR             ' PIC X(33).
1600      05 VALUE ' BINARY-DOUBLE           ' PIC X(33).
1601      05 VALUE ' BINARY-INT              ' PIC X(33).
1602      05 VALUE ' BINARY-LONG             ' PIC X(33).
1603      05 VALUE ' BINARY-LONG-LONG       ' PIC X(33).
1604      05 VALUE ' BINARY-SHORT            ' PIC X(33).
1605      05 VALUE ' BIT                     ' PIC X(33).      UNIMPLEMENTED
1606      05 VALUE ' BLANK                   ' PIC X(33).
1607      05 VALUE ' BLINK                   ' PIC X(33).
1608      05 VALUE ' BLOCK                    ' PIC X(33).
1609      05 VALUE ' BOOLEAN                  ' PIC X(33).      UNIMPLEMENTED
1610 GC1213 05 VALUE 'FBOOLEAN-OF-INTEGER    ' PIC X(33).      UNIMPLEMENTED
1611      05 VALUE ' BOTTOM                    ' PIC X(33).
1612      05 VALUE ' YBY                     ' PIC X(33).
1613 GC1213 05 VALUE 'FBYTE-LENGTH          ' PIC X(33).
1614      05 VALUE 'MC01                     ' PIC X(33).
1615      05 VALUE 'MC02                     ' PIC X(33).
1616      05 VALUE 'MC03                     ' PIC X(33).
1617      05 VALUE 'MC04                     ' PIC X(33).
1618      05 VALUE 'MC05                     ' PIC X(33).
1619      05 VALUE 'MC06                     ' PIC X(33).
1620      05 VALUE 'MC07                     ' PIC X(33).
1621      05 VALUE 'MC08                     ' PIC X(33).
1622      05 VALUE 'MC09                     ' PIC X(33).
1623      05 VALUE 'MC10                     ' PIC X(33).
1624      05 VALUE 'MC11                     ' PIC X(33).
1625      05 VALUE 'MC12                     ' PIC X(33).
1626      05 VALUE 'VCALL                    ' PIC X(33).
1627      05 VALUE 'MCALL-CONVENTION         ' PIC X(33).
1628      05 VALUE 'VCANCEL                  ' PIC X(33).
=====

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1629 05 VALUE ' CAPACITY ' PIC X(33). UNIMPLEMENTED

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1630          05 VALUE ' CD                      ' PIC X(33).      OBSOLETE
1631          05 VALUE ' CENTER                  ' PIC X(33).      UNIMPLEMENTED
1632          05 VALUE ' CF                      ' PIC X(33).
1633          05 VALUE ' CH                      ' PIC X(33).
1634          05 VALUE ' CHAIN                   ' PIC X(33).      UNIMPLEMENTED
1635          05 VALUE ' CHAINING                 ' PIC X(33).
1636 GC1213    05 VALUE ' FCHAR                   ' PIC X(33).
1637 GC1213    05 VALUE ' FCHAR-NATIONAL          ' PIC X(33).      UNIMPLEMENTED
1638          05 VALUE ' CHARACTER                ' PIC X(33).
1639          05 VALUE ' CHARACTERS               ' PIC X(33).
1640          05 VALUE ' CLASS                    ' PIC X(33).
1641          05 VALUE ' CLASS-ID                 ' PIC X(33).      UNIMPLEMENTED
1642 GC0711     05 VALUE ' CLASSIFICATION          ' PIC X(33).
1643          05 VALUE ' VCLOSE                   ' PIC X(33).
1644 GC1213    05 VALUE ' FCOB-CRT-STATUS          ' PIC X(33).
1645          05 VALUE ' CODE                     ' PIC X(33).
1646          05 VALUE ' CODE-SET                 ' PIC X(33).
1647          05 VALUE ' COL                      ' PIC X(33).
1648          05 VALUE ' COLLATING                ' PIC X(33).
1649          05 VALUE ' COLS                     ' PIC X(33).
1650          05 VALUE ' COLUMN                   ' PIC X(33).
1651          05 VALUE ' COLUMNS                  ' PIC X(33).
1652 GC1213    05 VALUE ' FCOMBINED-DATETIME       ' PIC X(33).
1653          05 VALUE ' COMMA                    ' PIC X(33).
1654          05 VALUE ' COMMAND-LINE              ' PIC X(33).
1655          05 VALUE ' VCOMMIT                  ' PIC X(33).
1656          05 VALUE ' COMMON                   ' PIC X(33).
1657          05 VALUE ' COMMUNICATION            ' PIC X(33).      OBSOLETE
1658          05 VALUE ' COMP                     ' PIC X(33).
1659          05 VALUE ' COMP-1                   ' PIC X(33).
1660          05 VALUE ' COMP-2                   ' PIC X(33).
1661          05 VALUE ' COMP-3                   ' PIC X(33).
1662          05 VALUE ' COMP-4                   ' PIC X(33).
1663          05 VALUE ' COMP-5                   ' PIC X(33).
1664          05 VALUE ' COMP-6                   ' PIC X(33).
1665          05 VALUE ' COMP-X                   ' PIC X(33).
1666          05 VALUE ' COMPUTATIONAL             ' PIC X(33).
1667          05 VALUE ' COMPUTATIONAL-1          ' PIC X(33).
1668          05 VALUE ' COMPUTATIONAL-2          ' PIC X(33).
1669          05 VALUE ' COMPUTATIONAL-3          ' PIC X(33).
1670          05 VALUE ' COMPUTATIONAL-4          ' PIC X(33).
1671          05 VALUE ' COMPUTATIONAL-5          ' PIC X(33).
1672          05 VALUE ' COMPUTATIONAL-X          ' PIC X(33).
1673          05 VALUE ' VCOMPUTE                 ' PIC X(33).
1674 GC1213    05 VALUE ' FCONCATENATE            ' PIC X(33).
1675 GC0712     05 VALUE ' CONDITION               ' PIC X(33).
1676          05 VALUE ' KCONFIGURATION           ' PIC X(33).
1677          05 VALUE ' MCONSOLE                 ' PIC X(33).
1678          05 VALUE ' CONSTANT                 ' PIC X(33).
1679          05 VALUE ' CONTAINS                 ' PIC X(33).
1680 GC0712     05 VALUE ' ACONTENT               ' PIC X(33).
1681          05 VALUE ' VCONTINUE                ' PIC X(33).
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1682          05 VALUE ' CONTROL          ' PIC X(33).
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=====
1683          05 VALUE ' CONTROLS          ' PIC X(33).
1684 GC0711    05 VALUE ' CONVERSION        ' PIC X(33).
1685          05 VALUE 'KCONVERTING         ' PIC X(33).
1686          05 VALUE ' COPY                ' PIC X(33).
1687          05 VALUE ' CORR                ' PIC X(33).
1688          05 VALUE ' CORRESPONDING       ' PIC X(33).
1689 GC1213     05 VALUE 'FCOS               ' PIC X(33).
1690          05 VALUE 'KCOUNT              ' PIC X(33).
1691          05 VALUE ' CRT                  ' PIC X(33).
1692          05 VALUE ' CRT-UNDER            ' PIC X(33).
1693          05 VALUE 'MCSP                  ' PIC X(33).
1694          05 VALUE ' CURRENCY             ' PIC X(33).
1695 GC1213     05 VALUE 'FCURRENCY-SYMBOL    ' PIC X(33).
1696 GC1213     05 VALUE 'FCURRENT-DATE      ' PIC X(33).
1697          05 VALUE ' CURSOR              ' PIC X(33).
1698          05 VALUE ' CYCLE                ' PIC X(33).
1699          05 VALUE 'KDATA                 ' PIC X(33).
1700          05 VALUE ' DATA-POINTER        ' PIC X(33).
1701          05 VALUE ' DATE                 ' PIC X(33).
1702          05 VALUE ' DATE-COMPILED        ' PIC X(33).
1703          05 VALUE ' DATE-MODIFIED        ' PIC X(33).
1704 GC1213     05 VALUE 'FDATE-OF-INTEGER    ' PIC X(33).
1705 GC1213     05 VALUE 'FDATE-TO-YYYYMMDD  ' PIC X(33).
1706          05 VALUE ' DATE-WRITTEN        ' PIC X(33).
1707          05 VALUE ' DAY                   ' PIC X(33).
1708 GC1213     05 VALUE 'FDAY-OF-INTEGER     ' PIC X(33).
1709          05 VALUE ' DAY-OF-WEEK          ' PIC X(33).
1710 GC1213     05 VALUE 'IDAY-TO-YYYYDDD     ' PIC X(33).
1711          05 VALUE ' DE                   ' PIC X(33).
1712 GC0712     05 VALUE 'IDEBUG-CONTENTS     ' PIC X(33).
1713 GC0712     05 VALUE 'IDEBUG-ITEM        ' PIC X(33).
1714 GC0712     05 VALUE 'IDEBUG-LINE        ' PIC X(33).
1715 GC0712     05 VALUE 'IDEBUG-NAME        ' PIC X(33).
1716 GC0712     05 VALUE 'IDEBUG-SUB-1       ' PIC X(33).
1717 GC0712     05 VALUE 'IDEBUG-SUB-2       ' PIC X(33).
1718 GC0712     05 VALUE 'IDEBUG-SUB-3       ' PIC X(33).
1719          05 VALUE ' DEBUGGING            ' PIC X(33).
1720          05 VALUE ' DECIMAL-POINT        ' PIC X(33).
1721          05 VALUE ' DECLARATIVES        ' PIC X(33).
1722          05 VALUE ' DEFAULT              ' PIC X(33).
1723          05 VALUE 'VDELETE               ' PIC X(33).
1724          05 VALUE ' DELIMITED            ' PIC X(33).
1725          05 VALUE 'KDELIMITER           ' PIC X(33).
1726          05 VALUE ' DEPENDING            ' PIC X(33).
1727          05 VALUE ' DESCENDING           ' PIC X(33).
1728          05 VALUE ' DESTINATION          ' PIC X(33).
1729          05 VALUE ' DETAIL               ' PIC X(33).
1730 GC0711     05 VALUE ' DISC                ' PIC X(33).
1731          05 VALUE ' DISK                 ' PIC X(33).
1732          05 VALUE 'VDISPLAY              ' PIC X(33).
1733 GC1213     05 VALUE 'FDISPLAY-OF         ' PIC X(33).
1734          05 VALUE 'VDIVIDE              ' PIC X(33).
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UNIMPLEMENTED

OBSOLETE

OBSOLETE

OBSOLETE

UNIMPLEMENTED

UNIMPLEMENTED

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1735          05 VALUE 'KDIVISION'          ' PIC X(33).
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=====
1736          05 VALUE 'KDOWN                ' PIC X(33).
1737          05 VALUE ' DUPLICATES          ' PIC X(33).
1738          05 VALUE ' DYNAMIC              ' PIC X(33).
1739 GC1213    05 VALUE 'FE                  ' PIC X(33).
1740          05 VALUE ' EBCDIC                ' PIC X(33).
1741 GC0712    05 VALUE ' EC                  ' PIC X(33).
1742          05 VALUE ' EGI                  ' PIC X(33).      OBSOLETE
1743          05 VALUE 'VELSE                 ' PIC X(33).
1744          05 VALUE ' EMI                   ' PIC X(33).      OBSOLETE
1745          05 VALUE ' EMPTY-CHECK          ' PIC X(33).
1746          05 VALUE 'VENABLE               ' PIC X(33).      OBSOLETE
1747 GC0710    05 VALUE 'KEND                ' PIC X(33).
1748          05 VALUE ' END-ACCEPT            ' PIC X(33).
1749          05 VALUE ' END-ADD               ' PIC X(33).
1750          05 VALUE ' END-CALL              ' PIC X(33).
1751          05 VALUE ' END-CHAIN             ' PIC X(33).      UNIMPLEMENTED
1752          05 VALUE ' END-COMPUTE           ' PIC X(33).
1753          05 VALUE ' END-DELETE            ' PIC X(33).
1754          05 VALUE ' END-DISPLAY          ' PIC X(33).
1755          05 VALUE ' END-DIVIDE            ' PIC X(33).
1756          05 VALUE ' END-EVALUATE          ' PIC X(33).
1757          05 VALUE ' END-IF                ' PIC X(33).
1758          05 VALUE ' END-MULTIPLY          ' PIC X(33).
1759          05 VALUE ' END-OF-PAGE           ' PIC X(33).
1760          05 VALUE ' END-PERFORM           ' PIC X(33).
1761          05 VALUE ' END-READ              ' PIC X(33).
1762          05 VALUE ' END-RECEIVE           ' PIC X(33).      OBSOLETE
1763          05 VALUE ' END-RETURN            ' PIC X(33).
1764          05 VALUE ' END-REWRITE           ' PIC X(33).
1765          05 VALUE ' END-SEARCH            ' PIC X(33).
1766          05 VALUE ' END-START             ' PIC X(33).
1767          05 VALUE ' END-STRING            ' PIC X(33).
1768          05 VALUE ' END-SUBTRACT          ' PIC X(33).
1769          05 VALUE ' END-UNSTRING          ' PIC X(33).
1770          05 VALUE ' END-WRITE             ' PIC X(33).
1771          05 VALUE ' VENTRY                ' PIC X(33).
1772          05 VALUE ' ENTRY-CONVENTION      ' PIC X(33).      UNIMPLEMENTED
1773          05 VALUE ' KENVIRONMENT          ' PIC X(33).
1774          05 VALUE ' ENVIRONMENT-NAME      ' PIC X(33).
1775          05 VALUE ' ENVIRONMENT-VALUE    ' PIC X(33).
1776          05 VALUE ' EO                   ' PIC X(33).      UNIMPLEMENTED
1777          05 VALUE ' EOL                   ' PIC X(33).
1778          05 VALUE ' EOP                   ' PIC X(33).
1779          05 VALUE ' EOS                   ' PIC X(33).
1780          05 VALUE ' EQUAL                 ' PIC X(33).
1781          05 VALUE ' KEQUALS               ' PIC X(33).
1782          05 VALUE ' ERASE                 ' PIC X(33).
1783          05 VALUE ' ERROR                 ' PIC X(33).
1784          05 VALUE ' ESCAPE                 ' PIC X(33).
1785          05 VALUE ' ESI                   ' PIC X(33).      OBSOLETE
1786          05 VALUE ' VEVALUATE             ' PIC X(33).
1787          05 VALUE ' EXCEPTION             ' PIC X(33).
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1788 GC1213      05 VALUE 'FEXCEPTION-FILE'          ' PIC X(33).
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1789	GC1213	05 VALUE 'FEXCEPTION-FILE-N	' PIC X(33).	UNIMPLEMENTED
1790	GC1213	05 VALUE 'FEXCEPTION-LOCATION	' PIC X(33).	
1791	GC1213	05 VALUE 'FEXCEPTION-LOCATION-N	' PIC X(33).	UNIMPLEMENTED
1792		05 VALUE ' EXCEPTION-OBJECT	' PIC X(33).	UNIMPLEMENTED
1793	GC1213	05 VALUE 'FEXCEPTION-STATEMENT	' PIC X(33).	
1794	GC1213	05 VALUE 'FEXCEPTION-STATUS	' PIC X(33).	
1795		05 VALUE ' EXCLUSIVE	' PIC X(33).	
1796		05 VALUE 'VEXIT	' PIC X(33).	
1797	GC1213	05 VALUE 'FEXP	' PIC X(33).	
1798	GC1213	05 VALUE 'FEXP10	' PIC X(33).	
1799		05 VALUE ' EXPANDS	' PIC X(33).	UNIMPLEMENTED
1800		05 VALUE ' EXTEND	' PIC X(33).	
1801		05 VALUE ' EXTERNAL	' PIC X(33).	
1802	GC1213	05 VALUE 'FFACTORIAL	' PIC X(33).	
1803		05 VALUE ' FACTORY	' PIC X(33).	UNIMPLEMENTED
1804		05 VALUE ' FALSE	' PIC X(33).	
1805		05 VALUE 'KFD	' PIC X(33).	
1806		05 VALUE 'KFILE	' PIC X(33).	
1807		05 VALUE ' FILE-CONTROL	' PIC X(33).	
1808		05 VALUE ' FILE-ID	' PIC X(33).	
1809	GC1113	05 VALUE ' FILLER	' PIC X(33).	
1810		05 VALUE ' FINAL	' PIC X(33).	
1811		05 VALUE ' FIRST	' PIC X(33).	
1812	GC0712	05 VALUE ' FLOAT-BINARY-128	' PIC X(33).	UNIMPLEMENTED
1813	GC0712	05 VALUE ' FLOAT-BINARY-32	' PIC X(33).	UNIMPLEMENTED
1814	GC0712	05 VALUE ' FLOAT-BINARY-64	' PIC X(33).	UNIMPLEMENTED
1815		05 VALUE ' FLOAT-DECIMAL-16	' PIC X(33).	
1816		05 VALUE ' FLOAT-DECIMAL-34	' PIC X(33).	
1817		05 VALUE ' FLOAT-EXTENDED	' PIC X(33).	UNIMPLEMENTED
1818	GC0712	05 VALUE ' FLOAT-INFINITY	' PIC X(33).	UNIMPLEMENTED
1819		05 VALUE ' FLOAT-LONG	' PIC X(33).	
1820	GC0712	05 VALUE ' FLOAT-NOT-A-NUMBER	' PIC X(33).	UNIMPLEMENTED
1821		05 VALUE ' FLOAT-SHORT	' PIC X(33).	
1822		05 VALUE ' FOOTING	' PIC X(33).	
1823		05 VALUE ' FOR	' PIC X(33).	
1824		05 VALUE ' FOREGROUND-COLOR	' PIC X(33).	
1825		05 VALUE ' FOREGROUND-COLOUR	' PIC X(33).	
1826	GC0711	05 VALUE ' FOREVER	' PIC X(33).	
1827		05 VALUE ' FORMAT	' PIC X(33).	UNIMPLEMENTED
1828	GC1213	05 VALUE 'FFORMATTED-CURRENT-DATE	' PIC X(33).	UNIMPLEMENTED
1829	GC1213	05 VALUE 'FFORMATTED-DATE	' PIC X(33).	UNIMPLEMENTED
1830	GC1213	05 VALUE 'FFORMATTED-DATETIME	' PIC X(33).	UNIMPLEMENTED
1831	GC1213	05 VALUE 'FFORMATTED-TIME	' PIC X(33).	UNIMPLEMENTED
1832		05 VALUE 'MFORMFEED	' PIC X(33).	
1833	GC1213	05 VALUE 'FFRACTION-PART	' PIC X(33).	
1834		05 VALUE 'VFREE	' PIC X(33).	
1835		05 VALUE ' FROM	' PIC X(33).	
1836		05 VALUE ' FULL	' PIC X(33).	
1837		05 VALUE ' FUNCTION	' PIC X(33).	
1838	GC0712	05 VALUE 'KFUNCTION-ID	' PIC X(33).	
1839		05 VALUE ' FUNCTION-POINTER	' PIC X(33).	UNIMPLEMENTED
1840		05 VALUE 'VGENERATE	' PIC X(33).	

1841 05 VALUE ' GET ' PIC X(33). UNIMPLEMENTED

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1842      05 VALUE 'KGIVING'                ' PIC X(33).
1843      05 VALUE ' GLOBAL'                 ' PIC X(33).
1844      05 VALUE 'VGO'                     ' PIC X(33).
1845      05 VALUE 'VGOBACK'                 ' PIC X(33).
1846      05 VALUE ' GREATER'                ' PIC X(33).
1847      05 VALUE ' GROUP'                  ' PIC X(33).
1848      05 VALUE ' GROUP-USAGE'             ' PIC X(33).      UNIMPLEMENTED
1849      05 VALUE ' HEADING'                ' PIC X(33).
1850      05 VALUE ' HIGH-VALUE'              ' PIC X(33).
1851      05 VALUE ' HIGH-VALUES'            ' PIC X(33).
1852 GC1213 05 VALUE 'FHIGHEST-ALGEBRAIC'    ' PIC X(33).
1853      05 VALUE ' HIGHLIGHT'              ' PIC X(33).
1854      05 VALUE ' I-O'                    ' PIC X(33).
1855      05 VALUE ' I-O-CONTROL'             ' PIC X(33).
1856      05 VALUE 'KID'                     ' PIC X(33).
1857      05 VALUE 'KIDENTIFICATION'          ' PIC X(33).
1858      05 VALUE 'VIF'                      ' PIC X(33).
1859      05 VALUE ' IGNORE'                  ' PIC X(33).
1860      05 VALUE ' IGNORING'                ' PIC X(33).
1861      05 VALUE ' IMPLEMENTS'              ' PIC X(33).      UNIMPLEMENTED
1862      05 VALUE ' IN'                     ' PIC X(33).
1863      05 VALUE ' INDEX'                   ' PIC X(33).
1864      05 VALUE 'KINDEXED'                 ' PIC X(33).
1865      05 VALUE ' INDICATE'                ' PIC X(33).
1866      05 VALUE ' INDIRECT'                ' PIC X(33).      UNIMPLEMENTED
1867      05 VALUE ' INHERITS'                ' PIC X(33).      UNIMPLEMENTED
1868      05 VALUE ' INITIAL'                 ' PIC X(33).
1869      05 VALUE 'VINITIALISE'              ' PIC X(33).
1870      05 VALUE ' INITIALISED'            ' PIC X(33).
1871      05 VALUE 'VINITIALIZE'              ' PIC X(33).
1872      05 VALUE ' INITIALIZED'             ' PIC X(33).
1873      05 VALUE 'VINITIATE'               ' PIC X(33).
1874      05 VALUE ' INPUT'                   ' PIC X(33).
1875      05 VALUE 'KINPUT-OUTPUT'            ' PIC X(33).
1876      05 VALUE 'VINSPECT'                ' PIC X(33).
1877      05 VALUE ' INSTALLATION'            ' PIC X(33).      OBSOLETE
1878 GC1213 05 VALUE 'FINTEGER'              ' PIC X(33).
1879 GC1213 05 VALUE 'FINTEGER-OF-BOOLEAN'    ' PIC X(33).      UNIMPLEMENTED
1880 GC1213 05 VALUE 'FINTEGER-OF-DATE'      ' PIC X(33).
1881 GC1213 05 VALUE 'FINTEGER-OF-DAY'        ' PIC X(33).
1882 GC1213 05 VALUE 'FINTEGER-OF-FORMATTED-DATE' ' PIC X(33).      UNIMPLEMENTED
1883 GC1213 05 VALUE 'FINTEGER-PART'         ' PIC X(33).
1884      05 VALUE ' INTERFACE'               ' PIC X(33).      UNIMPLEMENTED
1885      05 VALUE ' INTERFACE-ID'            ' PIC X(33).      UNIMPLEMENTED
1886      05 VALUE ' INTERMEDIATE'            ' PIC X(33).      UNIMPLEMENTED
1887      05 VALUE 'KINTO'                    ' PIC X(33).
1888      05 VALUE ' INTRINSIC'               ' PIC X(33).
1889      05 VALUE ' INVALID'                 ' PIC X(33).
1890      05 VALUE ' INVOKE'                  ' PIC X(33).      UNIMPLEMENTED
1891      05 VALUE ' IS'                      ' PIC X(33).
1892      05 VALUE ' JUST'                    ' PIC X(33).
1893      05 VALUE ' JUSTIFIED'               ' PIC X(33).
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1894 05 VALUE ' KEPT ' PIC X(33) .

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=====
1895          05 VALUE ' KEY                                ' PIC X(33).
1896          05 VALUE ' KEYBOARD                          ' PIC X(33).
1897          05 VALUE ' LABEL                              ' PIC X(33).
1898          05 VALUE ' LAST                                ' PIC X(33).
1899          05 VALUE ' LC_ALL                              ' PIC X(33).      UNIMPLEMENTED
1900          05 VALUE ' LC_COLLATE                          ' PIC X(33).      UNIMPLEMENTED
1901          05 VALUE ' LC_CTYPE                            ' PIC X(33).      UNIMPLEMENTED
1902          05 VALUE ' LC_MESSAGES                        ' PIC X(33).      UNIMPLEMENTED
1903          05 VALUE ' LC_MONETARY                        ' PIC X(33).      UNIMPLEMENTED
1904          05 VALUE ' LC_NUMERIC                          ' PIC X(33).      UNIMPLEMENTED
1905          05 VALUE ' LC_TIME                             ' PIC X(33).      UNIMPLEMENTED
1906          05 VALUE ' LEADING                             ' PIC X(33).
1907          05 VALUE ' LEFT                                ' PIC X(33).
1908          05 VALUE ' LEFT-JUSTIFY                        ' PIC X(33).      UNIMPLEMENTED
1909          05 VALUE ' LEFTLINE                            ' PIC X(33).
1910 GC1213     05 VALUE ' FLENGTH                            ' PIC X(33).
1911 GC1213     05 VALUE ' FLENGTH-AN                        ' PIC X(33).
1912          05 VALUE ' LENGTH-CHECK                       ' PIC X(33).
1913          05 VALUE ' LESS                                ' PIC X(33).
1914          05 VALUE ' LIMIT                               ' PIC X(33).
1915          05 VALUE ' LIMITS                              ' PIC X(33).
1916          05 VALUE ' LINAGE                              ' PIC X(33).
1917          05 VALUE ' ILINAGE-COUNTER                     ' PIC X(33).
1918          05 VALUE ' LINE                                ' PIC X(33).
1919 GC1213     05 VALUE ' ILINE-COUNTER                      ' PIC X(33).
1920          05 VALUE ' LINES                                ' PIC X(33).
1921          05 VALUE ' KLINKAGE                             ' PIC X(33).
1922          05 VALUE ' KLOCAL-STORAGE                      ' PIC X(33).
1923          05 VALUE ' LOCALE                              ' PIC X(33).
1924 GC1213     05 VALUE ' FLOCALE-COMPARE                   ' PIC X(33).
1925 GC1213     05 VALUE ' FLOCALE-DATE                     ' PIC X(33).
1926 GC1213     05 VALUE ' FLOCALE-TIME                     ' PIC X(33).
1927 GC1213     05 VALUE ' FLOCALE-TIME-FROM-SECONDS        ' PIC X(33).
1928          05 VALUE ' LOCK                                ' PIC X(33).
1929 GC1213     05 VALUE ' FLOG                              ' PIC X(33).
1930 GC1213     05 VALUE ' FLOG10                           ' PIC X(33).
1931          05 VALUE ' LOW-VALUE                           ' PIC X(33).
1932          05 VALUE ' LOW-VALUES                          ' PIC X(33).
1933          05 VALUE ' LOWER                               ' PIC X(33).
1934 GC1213     05 VALUE ' FLOWER-CASE                       ' PIC X(33).
1935 GC1213     05 VALUE ' FLOWEST-ALGEBRAIC                 ' PIC X(33).
1936          05 VALUE ' LOWLIGHT                            ' PIC X(33).
1937          05 VALUE ' MANUAL                              ' PIC X(33).
1938 GC1213     05 VALUE ' FMAX                              ' PIC X(33).
1939 GC1213     05 VALUE ' FMEAN                             ' PIC X(33).
1940 GC1213     05 VALUE ' FMEDIAN                           ' PIC X(33).
1941          05 VALUE ' MEMORY                              ' PIC X(33).
1942          05 VALUE ' VMERGE                              ' PIC X(33).
1943          05 VALUE ' MESSAGE                             ' PIC X(33).      OBSOLETE
1944          05 VALUE ' METHOD                              ' PIC X(33).      UNIMPLEMENTED
1945          05 VALUE ' METHOD-ID                            ' PIC X(33).      UNIMPLEMENTED
1946 GC1213     05 VALUE ' FMIDRANGE                        ' PIC X(33).
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1947 GC1213      05 VALUE 'FMIN'                               ' PIC X(33).
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1948          05 VALUE ' MINUS                ' PIC X(33).
1949 GC1213    05 VALUE 'FMOD                  ' PIC X(33).
1950          05 VALUE ' MODE                  ' PIC X(33).
1951 GC1213    05 VALUE 'FMODULE-CALLER-ID      ' PIC X(33).
1952 GC1213    05 VALUE 'FMODULE-DATE          ' PIC X(33).
1953 GC1213    05 VALUE 'FMODULE-FORMATTED-DATE ' PIC X(33).
1954 GC1213    05 VALUE 'FMODULE-ID            ' PIC X(33).
1955 GC1213    05 VALUE 'FMODULE-PATH          ' PIC X(33).
1956 GC1213    05 VALUE 'FMODULE-SOURCE        ' PIC X(33).
1957 GC1213    05 VALUE 'FMODULE-TIME          ' PIC X(33).
1958 GC1213    05 VALUE 'FMONETARY-DECIMAL-POINT ' PIC X(33).
1959 GC1213    05 VALUE 'FMONETARY-THOUSANDS-SEPARATOR ' PIC X(33).
1960          05 VALUE 'VMOVE                  ' PIC X(33).
1961          05 VALUE ' MULTIPLE                ' PIC X(33).
1962          05 VALUE 'VMULTIPLY               ' PIC X(33).
1963 GC0711     05 VALUE ' NAME                  ' PIC X(33).
1964          05 VALUE ' NATIONAL                ' PIC X(33).
1965          05 VALUE ' NATIONAL-EDITED        ' PIC X(33).
1966 GC1213    05 VALUE 'FNATIONAL-OF           ' PIC X(33).      UNIMPLEMENTED
1967          05 VALUE ' NATIVE                 ' PIC X(33).
1968          05 VALUE ' NEAREST-AWAY-FROM-ZERO  ' PIC X(33).
1969          05 VALUE ' NEAREST-EVEN           ' PIC X(33).
1970          05 VALUE ' NEAREST-TOWARD-ZERO    ' PIC X(33).
1971          05 VALUE ' NEGATIVE               ' PIC X(33).
1972          05 VALUE ' NESTED                 ' PIC X(33).      UNIMPLEMENTED
1973          05 VALUE 'VNEXT                   ' PIC X(33).
1974          05 VALUE ' NO                     ' PIC X(33).
1975          05 VALUE ' NO-ECHO                ' PIC X(33).
1976          05 VALUE ' NONE                   ' PIC X(33).      UNIMPLEMENTED
1977          05 VALUE ' NORMAL                 ' PIC X(33).
1978          05 VALUE ' NOT                    ' PIC X(33).
1979          05 VALUE ' NULL                   ' PIC X(33).
1980          05 VALUE ' NULLS                  ' PIC X(33).
1981          05 VALUE ' NUMBER                 ' PIC X(33).
1982          05 VALUE 'INUMBER-OF-CALL-PARAMETERS ' PIC X(33).
1983          05 VALUE ' NUMBERS                ' PIC X(33).
1984          05 VALUE ' NUMERIC                ' PIC X(33).
1985 GC1213    05 VALUE 'FNUMERIC-DECIMAL-POINT ' PIC X(33).
1986          05 VALUE ' NUMERIC-EDITED        ' PIC X(33).
1987 GC1213    05 VALUE 'FNUMERIC-THOUSANDS-SEPARATOR ' PIC X(33).
1988 GC1213    05 VALUE 'FNUMVAL                ' PIC X(33).
1989 GC1213    05 VALUE 'FNUMVAL-C              ' PIC X(33).
1990 GC1213    05 VALUE 'FNUMVAL-F             ' PIC X(33).
1991          05 VALUE ' OBJECT                 ' PIC X(33).      UNIMPLEMENTED
1992          05 VALUE ' OBJECT-COMPUTER        ' PIC X(33).
1993          05 VALUE ' OBJECT-REFERENCE       ' PIC X(33).      UNIMPLEMENTED
1994          05 VALUE ' OCCURS                 ' PIC X(33).
1995          05 VALUE ' OF                     ' PIC X(33).
1996          05 VALUE ' OFF                    ' PIC X(33).
1997          05 VALUE ' OMITTED                ' PIC X(33).
1998          05 VALUE ' ON                     ' PIC X(33).
1999          05 VALUE ' ONLY                   ' PIC X(33).
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2000          05 VALUE 'VOPEN'          ' PIC X(33).
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2001          05 VALUE ' OPTIONAL          ' PIC X(33).
2002          05 VALUE ' OPTIONS           ' PIC X(33).      UNIMPLEMENTED
2003          05 VALUE ' OR                ' PIC X(33).
2004 GC1213    05 VALUE ' FORD              ' PIC X(33).
2005 GC1213    05 VALUE ' FORD-MAX          ' PIC X(33).
2006 GC1213    05 VALUE ' FORD-MIN         ' PIC X(33).
2007          05 VALUE ' ORDER             ' PIC X(33).
2008          05 VALUE ' ORGANISATION       ' PIC X(33).
2009          05 VALUE ' ORGANIZATION      ' PIC X(33).
2010          05 VALUE ' OTHER              ' PIC X(33).
2011          05 VALUE ' OUTPUT            ' PIC X(33).
2012          05 VALUE ' OVERFLOW          ' PIC X(33).
2013          05 VALUE ' OVERLINE          ' PIC X(33).
2014          05 VALUE ' OVERRIDE          ' PIC X(33).
2015          05 VALUE ' PACKED-DECIMAL    ' PIC X(33).
2016          05 VALUE ' PADDING           ' PIC X(33).
2017          05 VALUE ' PAGE              ' PIC X(33).
2018 GC1213    05 VALUE ' IPAGE-COUNTER     ' PIC X(33).
2019          05 VALUE ' PARAGRAPH         ' PIC X(33).
2020          05 VALUE ' VPERFORM           ' PIC X(33).
2021          05 VALUE ' PF                 ' PIC X(33).
2022          05 VALUE ' PH                 ' PIC X(33).
2023 GC1213    05 VALUE ' FPI              ' PIC X(33).
2024          05 VALUE ' KPIC              ' PIC X(33).
2025          05 VALUE ' KPICTURE          ' PIC X(33).
2026          05 VALUE ' PLUS              ' PIC X(33).
2027          05 VALUE ' KPOINTER          ' PIC X(33).
2028          05 VALUE ' POSITION            ' PIC X(33).
2029          05 VALUE ' POSITIVE           ' PIC X(33).
2030          05 VALUE ' PREFIXED          ' PIC X(33).      UNIMPLEMENTED
2031          05 VALUE ' PRESENT            ' PIC X(33).
2032 GC1213    05 VALUE ' FPRESENT-VALUE    ' PIC X(33).
2033          05 VALUE ' PREVIOUS           ' PIC X(33).
2034          05 VALUE ' MPRINTER          ' PIC X(33).
2035          05 VALUE ' PRINTING           ' PIC X(33).
2036          05 VALUE ' KPROCEDURE         ' PIC X(33).
2037          05 VALUE ' PROCEDURE-POINTER  ' PIC X(33).
2038          05 VALUE ' PROCEDURES        ' PIC X(33).
2039          05 VALUE ' PROCEED            ' PIC X(33).
2040          05 VALUE ' PROGRAM            ' PIC X(33).
2041          05 VALUE ' KPROGRAM-ID        ' PIC X(33).
2042          05 VALUE ' PROGRAM-POINTER    ' PIC X(33).
2043          05 VALUE ' PROHIBITED         ' PIC X(33).
2044          05 VALUE ' PROMPT             ' PIC X(33).
2045          05 VALUE ' PROPERTY           ' PIC X(33).      UNIMPLEMENTED
2046          05 VALUE ' PROTOTYPE          ' PIC X(33).      UNIMPLEMENTED
2047          05 VALUE ' PURGE              ' PIC X(33).      OBSOLETE
2048          05 VALUE ' QUEUE              ' PIC X(33).      OBSOLETE
2049          05 VALUE ' QUOTE              ' PIC X(33).
2050          05 VALUE ' QUOTES             ' PIC X(33).
2051          05 VALUE ' RAISE              ' PIC X(33).      UNIMPLEMENTED
2052          05 VALUE ' RAISING            ' PIC X(33).      UNIMPLEMENTED
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2053 GC1213      05 VALUE 'FRANDOM'                ' PIC X(33).
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2054	GC1213	05 VALUE 'FRANGE	' PIC X(33).
2055	GC1213	05 VALUE 'KRD	' PIC X(33).
2056		05 VALUE 'VREAD	' PIC X(33).
2057		05 VALUE 'VREADY	' PIC X(33).
2058		05 VALUE 'VRECEIVE	' PIC X(33). OBSOLETE
2059		05 VALUE ' RECORD	' PIC X(33).
2060		05 VALUE ' RECORDING	' PIC X(33).
2061		05 VALUE ' RECORDS	' PIC X(33).
2062		05 VALUE ' RECURSIVE	' PIC X(33).
2063		05 VALUE 'KREDEFINES	' PIC X(33).
2064		05 VALUE ' REEL	' PIC X(33).
2065	GC0712	05 VALUE 'AREREFERENCE	' PIC X(33).
2066		05 VALUE ' REFERENCES	' PIC X(33).
2067		05 VALUE ' RELATION	' PIC X(33). UNIMPLEMENTED
2068		05 VALUE ' RELATIVE	' PIC X(33).
2069		05 VALUE 'VRELEASE	' PIC X(33).
2070	GC1213	05 VALUE 'FREM	' PIC X(33).
2071		05 VALUE ' REMAINDER	' PIC X(33).
2072		05 VALUE ' REMARKS	' PIC X(33). OBSOLETE
2073		05 VALUE ' REMOVAL	' PIC X(33).
2074		05 VALUE 'KRENAMES	' PIC X(33).
2075		05 VALUE ' REPLACE	' PIC X(33).
2076		05 VALUE 'KREPLACING	' PIC X(33).
2077		05 VALUE 'KREPORT	' PIC X(33).
2078		05 VALUE ' REPORTING	' PIC X(33).
2079		05 VALUE ' REPORTS	' PIC X(33).
2080		05 VALUE ' REPOSITORY	' PIC X(33).
2081		05 VALUE ' REQUIRED	' PIC X(33).
2082		05 VALUE ' RESERVE	' PIC X(33).
2083		05 VALUE 'VRESET	' PIC X(33).
2084		05 VALUE ' RESUME	' PIC X(33). UNIMPLEMENTED
2085		05 VALUE ' RETRY	' PIC X(33). UNIMPLEMENTED
2086		05 VALUE 'VRETURN	' PIC X(33).
2087		05 VALUE 'IRETURN-CODE	' PIC X(33).
2088		05 VALUE 'KRETURNING	' PIC X(33).
2089	GC1213	05 VALUE 'FREVERSE	' PIC X(33).
2090		05 VALUE ' REVERSE-VIDEO	' PIC X(33).
2091		05 VALUE ' REVERSED	' PIC X(33).
2092		05 VALUE ' REWIND	' PIC X(33).
2093		05 VALUE 'VREWRITE	' PIC X(33).
2094		05 VALUE ' RF	' PIC X(33).
2095		05 VALUE ' RH	' PIC X(33).
2096		05 VALUE ' RIGHT	' PIC X(33).
2097		05 VALUE ' RIGHT-JUSTIFY	' PIC X(33). UNIMPLEMENTED
2098		05 VALUE 'VROLLBACK	' PIC X(33).
2099		05 VALUE ' ROUNDED	' PIC X(33).
2100		05 VALUE ' ROUNDING	' PIC X(33). UNIMPLEMENTED
2101		05 VALUE ' RUN	' PIC X(33).
2102		05 VALUE ' SAME	' PIC X(33).
2103		05 VALUE 'KSCREEN	' PIC X(33).
2104		05 VALUE ' SCROLL	' PIC X(33).
2105		05 VALUE 'KSD	' PIC X(33).


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2106          05 VALUE 'VSEARCH' PIC X(33).
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2107          05 VALUE ' SECONDS          ' PIC X(33).      UNIMPLEMENTED
2108 GC1213    05 VALUE 'FSECONDS-FROM-FORMATTED-TIME ' PIC X(33).
2109 GC1213    05 VALUE 'FSECONDS-PAST-MIDNIGHT      ' PIC X(33).
2110          05 VALUE 'KSECTION          ' PIC X(33).
2111          05 VALUE ' SECURE            ' PIC X(33).
2112          05 VALUE ' SECURITY           ' PIC X(33).      OBSOLETE
2113          05 VALUE ' SEGMENT           ' PIC X(33).      OBSOLETE
2114          05 VALUE ' SEGMENT-LIMIT      ' PIC X(33).
2115          05 VALUE ' SELECT            ' PIC X(33).
2116          05 VALUE ' SELF              ' PIC X(33).      UNIMPLEMENTED
2117          05 VALUE 'VSEND              ' PIC X(33).      OBSOLETE
2118          05 VALUE ' SENTENCE           ' PIC X(33).
2119          05 VALUE ' SEPARATE           ' PIC X(33).
2120          05 VALUE ' SEQUENCE           ' PIC X(33).
2121          05 VALUE ' SEQUENTIAL         ' PIC X(33).
2122          05 VALUE 'VSET               ' PIC X(33).
2123          05 VALUE ' SHARING            ' PIC X(33).
2124 GC1213    05 VALUE 'FSIGN             ' PIC X(33).
2125          05 VALUE ' SIGNED             ' PIC X(33).
2126          05 VALUE ' SIGNED-INT         ' PIC X(33).
2127          05 VALUE ' SIGNED-LONG        ' PIC X(33).
2128          05 VALUE ' SIGNED-SHORT       ' PIC X(33).
2129 GC1213    05 VALUE 'FSIN             ' PIC X(33).
2130          05 VALUE ' SIZE               ' PIC X(33).
2131          05 VALUE 'VSORT              ' PIC X(33).
2132          05 VALUE ' SORT-MERGE         ' PIC X(33).
2133          05 VALUE ' ISORT-RETURN       ' PIC X(33).
2134          05 VALUE ' SOURCE             ' PIC X(33).
2135          05 VALUE ' SOURCE-COMPUTER    ' PIC X(33).
2136          05 VALUE ' SOURCES            ' PIC X(33).      UNIMPLEMENTED
2137          05 VALUE ' SPACE             ' PIC X(33).
2138          05 VALUE ' SPACE-FILL        ' PIC X(33).      UNIMPLEMENTED
2139          05 VALUE ' SPACES            ' PIC X(33).
2140          05 VALUE ' SPECIAL-NAMES     ' PIC X(33).
2141 GC1213    05 VALUE 'FSQRT            ' PIC X(33).
2142          05 VALUE ' STANDARD          ' PIC X(33).
2143          05 VALUE ' STANDARD-1        ' PIC X(33).
2144          05 VALUE ' STANDARD-2        ' PIC X(33).
2145          05 VALUE ' STANDARD-BINARY   ' PIC X(33).      UNIMPLEMENTED
2146 GC1213    05 VALUE 'FSTANDARD-COMPARE ' PIC X(33).      UNIMPLEMENTED
2147          05 VALUE ' STANDARD-DECIMAL   ' PIC X(33).      UNIMPLEMENTED
2148 GC1213    05 VALUE 'FSTANDARD-DEVIATION ' PIC X(33).
2149          05 VALUE 'VSTART            ' PIC X(33).
2150          05 VALUE ' STATEMENT          ' PIC X(33).      UNIMPLEMENTED
2151          05 VALUE ' STATIC            ' PIC X(33).
2152          05 VALUE ' STATUS            ' PIC X(33).
2153          05 VALUE ' STDCALL           ' PIC X(33).
2154          05 VALUE 'MSTDERR            ' PIC X(33).
2155          05 VALUE 'MSTDIN             ' PIC X(33).
2156          05 VALUE 'MSTDOUT           ' PIC X(33).
2157          05 VALUE ' STEP              ' PIC X(33).
2158          05 VALUE 'VSTOP             ' PIC X(33).
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2159 GC1213      05 VALUE 'FSTORED-CHAR-LENGTH' PIC X(33).
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2160          05 VALUE 'VSTRING'                ' PIC X(33).
2161          05 VALUE ' STRONG'                 ' PIC X(33).      UNIMPLEMENTED
2162          05 VALUE ' SUB-QUEUE-1'            ' PIC X(33).      OBSOLETE
2163          05 VALUE ' SUB-QUEUE-2'            ' PIC X(33).      OBSOLETE
2164          05 VALUE ' SUB-QUEUE-3'            ' PIC X(33).      OBSOLETE
2165 GC1213    05 VALUE 'FSUBSTITUTE'             ' PIC X(33).
2166 GC1213    05 VALUE 'FSUBSTITUTE-CASE'        ' PIC X(33).
2167          05 VALUE 'VSUBTRACT'               ' PIC X(33).
2168 GC1213    05 VALUE 'FSUM'                   ' PIC X(33).
2169          05 VALUE ' SUPER'                   ' PIC X(33).      UNIMPLEMENTED
2170          05 VALUE 'VSUPPRESS'               ' PIC X(33).
2171          05 VALUE 'MSW0'                    ' PIC X(33).
2172          05 VALUE 'MSW1'                    ' PIC X(33).
2173          05 VALUE 'MSW10'                   ' PIC X(33).
2174          05 VALUE 'MSW11'                  ' PIC X(33).
2175          05 VALUE 'MSW12'                  ' PIC X(33).
2176          05 VALUE 'MSW13'                  ' PIC X(33).
2177          05 VALUE 'MSW14'                  ' PIC X(33).
2178          05 VALUE 'MSW15'                  ' PIC X(33).
2179          05 VALUE 'MSW2'                    ' PIC X(33).
2180          05 VALUE 'MSW3'                    ' PIC X(33).
2181          05 VALUE 'MSW4'                    ' PIC X(33).
2182          05 VALUE 'MSW5'                    ' PIC X(33).
2183          05 VALUE 'MSW6'                    ' PIC X(33).
2184          05 VALUE 'MSW7'                    ' PIC X(33).
2185          05 VALUE 'MSW8'                    ' PIC X(33).
2186          05 VALUE 'MSW9'                    ' PIC X(33).
2187          05 VALUE 'MSWITCH-0'              ' PIC X(33).
2188          05 VALUE 'MSWITCH-1'              ' PIC X(33).
2189          05 VALUE 'MSWITCH-10'             ' PIC X(33).
2190          05 VALUE 'MSWITCH-11'             ' PIC X(33).
2191          05 VALUE 'MSWITCH-12'             ' PIC X(33).
2192          05 VALUE 'MSWITCH-13'             ' PIC X(33).
2193          05 VALUE 'MSWITCH-14'             ' PIC X(33).
2194          05 VALUE 'MSWITCH-15'             ' PIC X(33).
2195          05 VALUE 'MSWITCH-2'              ' PIC X(33).
2196          05 VALUE 'MSWITCH-3'              ' PIC X(33).
2197          05 VALUE 'MSWITCH-4'              ' PIC X(33).
2198          05 VALUE 'MSWITCH-5'              ' PIC X(33).
2199          05 VALUE 'MSWITCH-6'              ' PIC X(33).
2200          05 VALUE 'MSWITCH-7'              ' PIC X(33).
2201          05 VALUE 'MSWITCH-8'              ' PIC X(33).
2202          05 VALUE 'MSWITCH-9'              ' PIC X(33).
2203          05 VALUE ' SYMBOL'                 ' PIC X(33).      UNIMPLEMENTED
2204          05 VALUE ' SYMBOLIC'               ' PIC X(33).
2205          05 VALUE ' SYNC'                   ' PIC X(33).
2206          05 VALUE ' SYNCHRONISED'           ' PIC X(33).
2207          05 VALUE ' SYNCHRONIZED'           ' PIC X(33).
2208          05 VALUE 'MSYSERR'                 ' PIC X(33).
2209          05 VALUE 'MSYSIN'                  ' PIC X(33).
2210          05 VALUE 'MSYSIPT'                 ' PIC X(33).
2211          05 VALUE 'MSYSLIST'               ' PIC X(33).
=====

```

```
2212          05 VALUE 'MSYSLST' PIC X(33).
```

```
=====
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```

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```

=====
2213          05 VALUE 'MSYSOUT'                ' PIC X(33).
2214          05 VALUE ' SYSTEM-DEFAULT'        ' PIC X(33).
2215          05 VALUE ' TABLE'                ' PIC X(33).      UNIMPLEMENTED
2216          05 VALUE 'KTALLYING'              ' PIC X(33).
2217 GC1213    05 VALUE 'FTAN'                   ' PIC X(33).
2218          05 VALUE ' TAPE'                   ' PIC X(33).
2219          05 VALUE ' TERMINAL'               ' PIC X(33).      OBSOLETE
2220          05 VALUE 'VTERMINATE'              ' PIC X(33).
2221          05 VALUE ' TEST'                   ' PIC X(33).
2222 GC1213    05 VALUE 'FTEST-DATE-YYYYMMDD'    ' PIC X(33).
2223 GC1213    05 VALUE 'FTEST-DAY-YYYYDDD'      ' PIC X(33).
2224 GC1213    05 VALUE 'FTEST-FORMATTED-DATETIME' ' PIC X(33).      UNIMPLEMENTED
2225 GC1213    05 VALUE 'FTEST-NUMVAL'          ' PIC X(33).
2226 GC1213    05 VALUE 'FTEST-NUMVAL-C'        ' PIC X(33).
2227 GC1213    05 VALUE 'FTEST-NUMVAL-F'        ' PIC X(33).
2228          05 VALUE ' TEXT'                  ' PIC X(33).      OBSOLETE
2229          05 VALUE ' THAN'                   ' PIC X(33).
2230          05 VALUE ' THEN'                   ' PIC X(33).
2231          05 VALUE ' THROUGH'                ' PIC X(33).
2232          05 VALUE ' THRU'                   ' PIC X(33).
2233          05 VALUE ' TIME'                   ' PIC X(33).
2234 GC0711    05 VALUE ' TIME-OUT'              ' PIC X(33).
2235 GC0711    05 VALUE ' TIMEOUT'              ' PIC X(33).
2236          05 VALUE ' TIMES'                  ' PIC X(33).
2237          05 VALUE 'KTO'                     ' PIC X(33).
2238          05 VALUE ' TOP'                    ' PIC X(33).
2239          05 VALUE ' TOWARD-GREATER'          ' PIC X(33).
2240          05 VALUE ' TOWARD-LESSER'           ' PIC X(33).
2241          05 VALUE ' TRAILING'               ' PIC X(33).
2242          05 VALUE ' TRAILING-SIGN'          ' PIC X(33).      UNIMPLEMENTED
2243          05 VALUE 'VTRANSFORM'              ' PIC X(33).
2244 GC1213    05 VALUE 'FTRIM'                  ' PIC X(33).
2245          05 VALUE ' TRUE'                   ' PIC X(33).
2246          05 VALUE ' TRUNCATION'             ' PIC X(33).
2247          05 VALUE ' TYPE'                   ' PIC X(33).
2248          05 VALUE ' TYPEDEF'                ' PIC X(33).      UNIMPLEMENTED
2249          05 VALUE ' UCS-4'                  ' PIC X(33).      UNIMPLEMENTED
2250          05 VALUE ' UNDERLINE'              ' PIC X(33).
2251          05 VALUE ' UNIT'                   ' PIC X(33).
2252          05 VALUE ' UNIVERSAL'              ' PIC X(33).      UNIMPLEMENTED
2253          05 VALUE 'VUNLOCK'                 ' PIC X(33).
2254          05 VALUE ' UNSIGNED'               ' PIC X(33).
2255          05 VALUE ' UNSIGNED-INT'           ' PIC X(33).
2256          05 VALUE ' UNSIGNED-LONG'          ' PIC X(33).
2257          05 VALUE ' UNSIGNED-SHORT'         ' PIC X(33).
2258          05 VALUE 'VUNSTRING'              ' PIC X(33).
2259          05 VALUE ' UNTIL'                  ' PIC X(33).
2260          05 VALUE 'KUP'                     ' PIC X(33).
2261          05 VALUE ' UPDATE'                 ' PIC X(33).
2262          05 VALUE ' UPON'                   ' PIC X(33).
2263          05 VALUE ' UPPER'                  ' PIC X(33).
2264 GC1213    05 VALUE 'FUPPER-CASE'           ' PIC X(33).
=====

```

```
2265          05 VALUE ' USAGE          ' PIC X(33).
```

```
=====
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```

=====
2266          05 VALUE 'VUSE                ' PIC X(33).
2267 GC0711    05 VALUE ' USER              ' PIC X(33).
2268          05 VALUE ' USER-DEFAULT        ' PIC X(33).
2269          05 VALUE 'KUSING                ' PIC X(33).
2270          05 VALUE ' UTF-16                ' PIC X(33).      UNIMPLEMENTED
2271          05 VALUE ' UTF-8                 ' PIC X(33).      UNIMPLEMENTED
2272          05 VALUE ' VAL-STATUS             ' PIC X(33).      UNIMPLEMENTED
2273          05 VALUE ' VALID                  ' PIC X(33).      UNIMPLEMENTED
2274          05 VALUE ' VALIDATE                ' PIC X(33).      UNIMPLEMENTED
2275          05 VALUE ' VALIDATE-STATUS        ' PIC X(33).      UNIMPLEMENTED
2276 GC0712    05 VALUE 'AVALUE               ' PIC X(33).
2277          05 VALUE ' VALUES               ' PIC X(33).
2278 GC1213     05 VALUE 'FVARIANCE            ' PIC X(33).
2279          05 VALUE 'KVARYING                ' PIC X(33).
2280          05 VALUE ' VDISABLE                ' PIC X(33).      UNIMPLEMENTED
2281          05 VALUE ' WAIT                   ' PIC X(33).
2282          05 VALUE 'VWHEN                   ' PIC X(33).
2283 GC1213     05 VALUE 'FWHEN-COMPILED        ' PIC X(33).
2284          05 VALUE ' WITH                   ' PIC X(33).
2285          05 VALUE ' WORDS                   ' PIC X(33).
2286          05 VALUE 'KWORKING-STORAGE         ' PIC X(33).
2287          05 VALUE 'VWRITE                   ' PIC X(33).
2288 GC1213     05 VALUE 'FYEAR-T0-YYYY         ' PIC X(33).
2289          05 VALUE ' YYYYDDD                ' PIC X(33).
2290          05 VALUE ' YYYYMMDD               ' PIC X(33).
2291          05 VALUE ' ZERO                    ' PIC X(33).
2292          05 VALUE ' ZERO-FILL               ' PIC X(33).      UNIMPLEMENTED
2293          05 VALUE ' ZEROES                  ' PIC X(33).
2294          05 VALUE ' ZEROS                   ' PIC X(33).
2295          01 WS-Reserved-Word-Table-TXT REDEFINES WS-Reserved-Words-TXT.
2296 GC1113     05 WS-Reserved-Word-TXT OCCURS 754 TIMES
2297                                     ASCENDING KEY
2298                                     WS-RW-Word-TXT
2299                                     INDEXED WS-RW-IDX.
2300          10 WS-RW-Type-CD                   PIC X(1).
2301          10 WS-RW-Word-TXT                   PIC X(32).
2302
2303          01 WS-Runtime-Switches.
2304 GC0710     05 WS-RS-Duplicate-CHR             PIC X(1).
2305          05 WS-RS-In-Which-Pgm-CHR           PIC X(1).
2306          88 WS-RS-In-Main-Module-BOOL        VALUE 'M'.
2307          88 WS-RS-In-Copybook-BOOL           VALUE 'C'.
2308          05 WS-RS-Last-Token-Ended-Sent-CHR  PIC X(1).
2309          05 WS-RS-Processing-PICTURE-CHR     PIC X(1).
2310          05 WS-RS-Token-Ended-Sentence-CHR   PIC X(1).
2311 GC0710     05 WS-RS-Verb-Has-Been-Found-CHR  PIC X(1).
2312
2313          01 WS-Saved-Section-TXT              PIC X(15).
2314
2315 GC1213 01 WS-Src-Dashes-TXT.
2316 GC0712    05 VALUE '===== ' PIC X(7).
2317 GC0712    05 VALUE ALL '=' PIC X(128).
=====

```


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```

=====
2319      01  WS-Src-Detail-Line-TXT.
2320          05  WS-SDL-Line-NUM          PIC ZZZZZ9.
2321          05  FILLER                    PIC X(1).
2322          05  WS-SDL-Statement-TXT      PIC X(256).
2323
2324 GC1213 01  WS-Src-Hold-TXT            PIC X(256).
2325
2326      01  WS-Src-Line-NUM              PIC 9(6).
2327
2328 GC1213 01  WS-Src-Lines-NUM           USAGE BINARY-LONG.
2329
2330      01  WS-Src-SUB                    USAGE BINARY-LONG.
2331
2332      01  WS-Tally-QTY                  USAGE BINARY-LONG.
2333
2334      01  WS-Temp-10-Chars-TXT          PIC X(10).
2335
2336      01  WS-Temp-32-Chars-1-TXT        PIC X(32).
2337
2338 GC0711 01  WS-Temp-32-Chars-2-TXT      PIC X(32).
2339
2340 GC0711 01  WS-Temp-32-Chars-3-TXT      PIC X(32).
2341
2342 GC0712 01  WS-Temp-65-Chars-TXT        PIC X(65).
2343
2344      01  WS-Temp-256-Chars-TXT          PIC X(256).
2345
2346      01  WS-Today-DT                   PIC 9(8).
2347
2348      01  WS-Token-Curr-TXT              PIC X(32).
2349
2350      01  WS-Token-Curr-Uc-TXT           PIC X(32).
2351
2352      01  WS-Token-Prev-TXT              PIC X(32).
2353
2354      01  WS-Token-Search-TXT            PIC X(32).
2355
2356      01  WS-Token-Type-CD               PIC X(1).
2357 GC0712      88  WS-TT-Token-Is-Argtype-BOOL  VALUE 'A'.
2358      88  WS-TT-Token-Is-EOF-BOOL          VALUE HIGH-VALUES.
2359 GC1213      88  WS-TT-Token-Is-Function-BOOL VALUE 'F'.
2360      88  WS-TT-Token-Is-Identifier-BOOL   VALUE 'I'.
2361 GC0712      88  WS-TT-Token-Is-Keyword-BOOL VALUE 'K', 'V', 'A'.
2362      88  WS-TT-Token-Is-Lit-Alpha-BOOL   VALUE 'L'.
2363      88  WS-TT-Token-Is-Lit-Number-BOOL   VALUE 'N'.
2364      88  WS-TT-Token-Is-Verb-BOOL        VALUE 'V'.
2365 GC1213      88  WS-TT-Token-Is-Reserved-Wd-BOOL VALUE ' ', 'F'.
2366
2367      01  WS-Usernames-QTY                USAGE BINARY-LONG.
2368
2369      01  WS-Version-TXT                  PIC X(23).
2370
=====

```

2371 01 WS-Xref-Detail-Line-TXT.

=====

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```

=====
2372      05 WS-XDL-Prog-ID-TXT          PIC X(15).
2373      05 FILLER                      PIC X(1).
2374      05 WS-XDL-Token-TXT            PIC X(32).
2375      05 FILLER                      PIC X(1).
2376      05 WS-XDL-Def-Line-NUM        PIC ZZZZZ9.
2377      05 FILLER                      PIC X(1).
2378      05 WS-XDL-Section-TXT          PIC X(15).
2379      05 FILLER                      PIC X(1).
2380      05 WS-XDL-Reference-TXT        OCCURS 8 TIMES.
2381          10 WS-XDL-Ref-Line-NUM     PIC ZZZZZ9.
2382          10 WS-XDL-Ref-Flag-CHR      PIC X(1).
2383          10 FILLER                   PIC X(1).
2384
2385 GC1213 01 WS-Xref-Lines-Per-Rec-NUM PIC 9(1).
2386
2387      LINKAGE SECTION.
2388 GC0712 01 L-Listing-Fn-TXT          PIC X(256).
2389
2390      01 L-Src-Fn-TXT                 PIC X(256).
2391
2392 GC0712 01 L-OS-Type-CD               PIC 9(1).
2393
2394 GC1213 01 L-LPP-NUM                  USAGE BINARY-LONG.
2395
2396 GC1213 01 L-LPP-Port-NUM             USAGE BINARY-LONG.
2397
2398 GC1213 01 L-Listing-CD               PIC 9(1).
=====

```

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=====

```

2400 GC0712 PROCEDURE DIVISION USING L-Listing-Fn-TXT
2401 GC0712                                L-Src-Fn-TXT
2402 GC0712                                L-OS-Type-CD
2403 GC1213                                L-LPP-NUM
2404 GC1213                                L-LPP-Port-NUM
2405 GC1213                                L-Listing-CD.
2406      000-Main SECTION.
2407      PERFORM 100-Initialization
2408 GC0712      OPEN OUTPUT F-Listing-FILE
2409 GC0712      PERFORM 500-Produce-Source-Listing
2410 GC0712      SORT F-Sort-Work-FILE
2411 GC0712          ASCENDING KEY    F-SW-Prog-ID-TXT
2412 GC0712          F-SW-Token-Uc-TXT
2413 GC0712          F-SW-Ref-Line-NUM
2414 GC0712      INPUT PROCEDURE 300-Tokenize-Source
2415 GC0712      OUTPUT PROCEDURE 400-Produce-Xref-Listing
2416 GC0712      CLOSE F-Listing-FILE
2417      GOBACK
2418      .

```

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```

=====
2420      *>*****
2421      *> Perform all program-wide initialization operations      **
2422      *>*****
2423      100-Initialization SECTION.
2424 GC1213      MOVE 0 TO WS-Page-NUM
2425 GC1213      MOVE 'N' TO WS-Suppress-FF-CHR
2426 GC1213      MOVE SPACES TO WS-Copyright-TXT
2427 GC1213      STRING 'GCic for '                DELIMITED SIZE
2428 GC1213              WS-OS-Type-TXT(L-OS-Type-CD) DELIMITED SPACE
2429 GC1213              ' Copyright (C) 2009-2017, Gary L. Cutler, GPL'
2430 GC1213              DELIMITED SIZE
2431 GC1213      INTO WS-Copyright-TXT
2432 GC1213      MOVE 'GNUCOBOL 2.2 20JUL2017' TO WS-Version-TXT
2433      MOVE TRIM(L-Src-Fn-TXT,Leading) TO L-Src-Fn-TXT
2434 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
2435 GC1010              UNTIL L-Src-Fn-TXT(WS-I-SUB:1) = '/' OR '\',
2436 GC1010              OR WS-I-SUB = 0
2437 GC1010      END-PERFORM
2438 GC1010      IF WS-I-SUB = 0
2439 GC1010          MOVE UPPER-CASE(L-Src-Fn-TXT) TO WS-Main-Module-Name-TXT *> No directory d
    elimiter, whole thing is filename
2440 GC1010      ELSE
2441 GC1010          ADD 1 TO WS-I-SUB
2442 GC1010          MOVE UPPER-CASE(L-Src-Fn-TXT(WS-I-SUB:))
2443 GC1010              TO WS-Main-Module-Name-TXT *> Extract filename
2444 GC1010      END-IF
2445 GC1213      IF L-Listing-CD = 1 *> LANDSCAPE
2446 GC1213          MOVE 8 TO WS-Xref-Lines-Per-Rec-NUM
2447 GC1213          ACCEPT WS-Lines-Per-Page-Env-TXT
2448 GC1213              FROM ENVIRONMENT 'GCXREF_LINES'
2449 GC1213      ELSE *> PORTRAIT
2450 GC1213          MOVE 3 TO WS-Xref-Lines-Per-Rec-NUM
2451 GC1213          ACCEPT WS-Lines-Per-Page-Env-TXT
2452 GC1213              FROM ENVIRONMENT 'GCXREF_LINES_PORT'
2453 GC1213      END-IF
2454      INSPECT L-Src-Fn-TXT REPLACING ALL '\', BY '/'
2455      MOVE L-Src-Fn-TXT TO WS-Program-Path-TXT
2456      CALL 'C$JUSTIFY' USING WS-Program-Path-TXT, 'Right'
2457      MOVE LENGTH(TRIM(L-Src-Fn-TXT,Trailing)) TO WS-I-SUB
2458      MOVE 0 TO WS-J-SUB
2459      PERFORM UNTIL L-Src-Fn-TXT(WS-I-SUB:1) = '/'
2460          OR WS-I-SUB = 0
2461          SUBTRACT 1 FROM WS-I-SUB
2462          ADD      1 TO      WS-J-SUB
2463      END-PERFORM
2464      UNSTRING L-Src-Fn-TXT((WS-I-SUB + 1):WS-J-SUB)
2465          DELIMITED BY ' '
2466          INTO WS-Filename-TXT
2467          WS-Dummy-TXT
2468 GC1010      STRING

```



```
2469 GC1010          TRIM(WS-Filename-TXT,Trailing)
```

```
=====
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```

=====
2470 GC1010      '.i'
2471 GC1010      DELIMITED SIZE
2472 GC1010      INTO WS-Expanded-Src-Fn-TXT
2473 GC1010      CALL 'CBL_CHECK_FILE_EXIST' USING WS-Expanded-Src-Fn-TXT
2474 GC1010      WS-Temp-256-Chars-TXT
2475 GC1010      IF RETURN-CODE NOT = 0
2476 GC1010      GOBACK
2477 GC1010      END-IF
2478      IF WS-Lines-Per-Page-Env-TXT NOT = SPACES
2479      MOVE NUMVAL(WS-Lines-Per-Page-Env-TXT)
2480      TO WS-Lines-Per-Page-NUM
2481      ELSE
2482 GC1213      IF L-LISTING-CD = 1 *> LANDSCAPE
2483 GC1213      MOVE L-LPP-NUM TO WS-Lines-Per-Page-NUM
2484 GC1213      ELSE      *> PORTRAIT
2485 GC1213      MOVE L-LPP-Port-NUM TO WS-Lines-Per-Page-NUM
2486 GC1213      END-IF
2487      END-IF
2488 GC1213      SUBTRACT 3 FROM WS-Lines-Per-Page-NUM *> FOR PAGE FOOTER
2489      ACCEPT WS-Today-DT FROM DATE YYYYMMDD
2490 GC1213      MOVE WS-Today-DT TO WS-Formatted-DT
2491      MOVE '?????????????...' TO WS-Curr-Prog-ID-TXT
2492      MOVE SPACES      TO WS-Curr-Verb-TXT
2493      WS-Held-Reference-TXT
2494      .
=====

```

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```

=====
2496      300-Tokenize-Source SECTION.
2497      OPEN INPUT F-Expanded-Src-FILE
2498      MOVE SPACES TO F-Expanded-Src-REC
2499      MOVE 256 TO WS-Src-SUB
2500      MOVE 0 TO WS-Usernames-QTY
2501      WS-Curr-Line-NUM
2502      MOVE '' TO WS-Curr-Division-TXT
2503 GC0710  MOVE 'N' TO WS-RS-Verb-Has-Been-Found-CHR
2504      PERFORM FOREVER
2505          PERFORM 310-Get-Token
2506          IF WS-TT-Token-Is-EOF-BOOL
2507              EXIT PERFORM
2508          END-IF
2509          MOVE UPPER-CASE(WS-Token-Curr-TXT)
2510              TO WS-Token-Curr-Uc-TXT
2511 GC1010  IF WS-TT-Token-Is-Keyword-BOOL
2512 GC1010  OR WS-TT-Token-Is-Reserved-Wd-BOOL
2513 GC1010  MOVE WS-Token-Curr-Uc-TXT TO WS-Token-Curr-TXT
2514 GC1010  END-IF
2515      IF WS-TT-Token-Is-Verb-BOOL
2516          MOVE WS-Token-Curr-Uc-TXT TO WS-Curr-Verb-TXT
2517          WS-Token-Prev-TXT
2518          IF WS-Held-Reference-TXT NOT = SPACES
2519              MOVE WS-Held-Reference-TXT TO F-Sort-Work-REC
2520              MOVE SPACES TO WS-Held-Reference-TXT
2521              RELEASE F-Sort-Work-REC
2522          END-IF
2523      END-IF
2524      EVALUATE TRUE
2525      WHEN WS-CD-In-IDENT-DIV-BOOL
2526          PERFORM 320-IDENTIFICATION-DIVISION
2527      WHEN WS-CD-In-ENV-DIV-BOOL
2528          PERFORM 330-ENVIRONMENT-DIVISION
2529      WHEN WS-CD-In-DATA-DIV-BOOL
2530          PERFORM 340-DATA-DIVISION
2531      WHEN WS-CD-In-PROC-DIV-BOOL
2532          PERFORM 350-PROCEDURE-DIVISION
2533      END-EVALUATE
2534      IF WS-TT-Token-Is-Keyword-BOOL
2535          MOVE WS-Token-Curr-Uc-TXT TO WS-Token-Prev-TXT
2536      END-IF
2537      IF WS-RS-Token-Ended-Sentence-CHR = 'Y'
2538      AND WS-Curr-Division-TXT NOT = 'I'
2539          MOVE SPACES TO WS-Token-Prev-TXT
2540          WS-Curr-Verb-TXT
2541      END-IF
2542
2543      END-PERFORM
2544      CLOSE F-Expanded-Src-FILE
2545      .
=====

```

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```

=====
2547      310-Get-Token SECTION.
2548      *>-- Position to 1st non-blank character
2549          MOVE WS-RS-Token-Ended-Sentence-CHR
2550              TO WS-RS-Last-Token-Ended-Sent-CHR
2551          MOVE 'N' TO WS-RS-Token-Ended-Sentence-CHR
2552          PERFORM UNTIL F-Expanded-Src-REC(WS-Src-SUB : 1) NOT = SPACE
2553              IF WS-Src-SUB > 255
2554                  READ F-Expanded-Src-FILE AT END
2555                  IF WS-Held-Reference-TXT NOT = SPACES
2556                      MOVE WS-Held-Reference-TXT TO F-Sort-Work-REC
2557                      MOVE SPACES TO WS-Held-Reference-TXT
2558                      RELEASE F-Sort-Work-REC
2559                  END-IF
2560                  SET WS-TT-Token-Is-EOF-BOOL TO TRUE
2561                  MOVE 0 TO WS-Curr-Line-NUM
2562                  EXIT SECTION
2563          END-READ
2564 GC0712      IF F-ES-1-7-TXT NOT = '#DEFLIT'
2565 GC0712          IF F-ES-1-CHR = '#'
2566 GC0712              PERFORM 311-Control-Record
2567 GC0712          ELSE
2568 GC0712              PERFORM 312-Expanded-Src-Record
2569 GC0712          END-IF
2570 GC0712      END-IF
2571          ELSE
2572              ADD 1 TO WS-Src-SUB
2573          END-IF
2574      END-PERFORM
2575      *>-- Extract token string
2576      MOVE F-Expanded-Src-REC(WS-Src-SUB : 1)
2577          TO WS-Curr-CHR
2578      MOVE F-Expanded-Src-REC(WS-Src-SUB + 1: 1)
2579          TO WS-Next-CHR
2580      IF WS-Curr-CHR = ','
2581          ADD 1 TO WS-Src-SUB
2582          MOVE WS-Curr-CHR TO WS-Token-Curr-TXT
2583          MOVE SPACE TO WS-Token-Type-CD
2584          MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
2585          EXIT SECTION
2586      END-IF
2587      IF WS-Curr-Char-Is-Punct-BOOL
2588          AND WS-Curr-CHR = '='
2589          AND WS-Curr-Division-TXT = 'P'
2590              ADD 1 TO WS-Src-SUB
2591              MOVE 'EQUALS' TO WS-Token-Curr-TXT
2592              MOVE 'K' TO WS-Token-Type-CD
2593              EXIT SECTION
2594      END-IF
2595      IF WS-Curr-Char-Is-Punct-BOOL *> So subscripts don't get flagged w/ '*'
2596          AND WS-Curr-CHR = '('
2597          AND WS-Curr-Division-TXT = 'P'

```

2598 MOVE SPACES TO WS-Token-Prev-TXT

=====

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```

=====
2599      END-IF
2600      IF WS-Curr-Char-Is-Punct-BOOL
2601          ADD 1 TO WS-Src-SUB
2602          MOVE WS-Curr-CHR TO WS-Token-Curr-TXT
2603          MOVE SPACE TO WS-Token-Type-CD
2604          EXIT SECTION
2605      END-IF
2606      IF WS-Curr-Char-Is-Quote-BOOL
2607          ADD 1 TO WS-Src-SUB
2608          UNSTRING F-Expanded-Src-REC
2609              DELIMITED BY WS-Curr-CHR
2610              INTO WS-Token-Curr-TXT
2611              WITH POINTER WS-Src-SUB
2612          IF F-Expanded-Src-REC(WS-Src-SUB : 1) = '.'
2613              MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
2614              ADD 1 TO WS-Src-SUB
2615          END-IF
2616          SET WS-TT-Token-Is-Lit-Alpha-BOOL TO TRUE
2617          EXIT SECTION
2618      END-IF
2619      IF WS-Curr-Char-Is-X-BOOL AND WS-Next-Char-Is-Quote-BOOL
2620          ADD 2 TO WS-Src-SUB
2621          UNSTRING F-Expanded-Src-REC
2622              DELIMITED BY WS-Next-CHR
2623              INTO WS-Token-Curr-TXT
2624              WITH POINTER WS-Src-SUB
2625          IF F-Expanded-Src-REC(WS-Src-SUB : 1) = '.'
2626              MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
2627              ADD 1 TO WS-Src-SUB
2628          END-IF
2629          SET WS-TT-Token-Is-Lit-Number-BOOL TO TRUE
2630          EXIT SECTION
2631      END-IF
2632      IF WS-Curr-Char-Is-Z-BOOL AND WS-Next-Char-Is-Quote-BOOL
2633          ADD 2 TO WS-Src-SUB
2634          UNSTRING F-Expanded-Src-REC
2635              DELIMITED BY WS-Next-CHR
2636              INTO WS-Token-Curr-TXT
2637              WITH POINTER WS-Src-SUB
2638          IF F-Expanded-Src-REC(WS-Src-SUB : 1) = '.'
2639              MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
2640              ADD 1 TO WS-Src-SUB
2641          END-IF
2642          SET WS-TT-Token-Is-Lit-Alpha-BOOL TO TRUE
2643          EXIT SECTION
2644      END-IF
2645      IF WS-RS-Processing-PICTURE-CHR = 'Y'
2646          UNSTRING F-Expanded-Src-REC
2647              DELIMITED BY ' ' OR ' '
2648              INTO WS-Token-Curr-TXT
2649              DELIMITER IN WS-Delim-TXT
2650              WITH POINTER WS-Src-SUB

```



```
2651          IF WS-Delim-TXT = ' . '
```

```
=====
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```

```
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```

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```

=====
2652             MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
2653             ADD 1 TO WS-Src-SUB
2654         END-IF
2655         IF UPPER-CASE(WS-Token-Curr-TXT) = 'IS'
2656             MOVE SPACE TO WS-Token-Type-CD
2657             EXIT SECTION
2658         ELSE
2659             MOVE 'N' TO WS-RS-Processing-PICTURE-CHR
2660             MOVE SPACE TO WS-Token-Type-CD
2661             EXIT SECTION
2662         END-IF
2663     END-IF
2664     UNSTRING F-Expanded-Src-REC
2665         DELIMITED BY ' . ' OR ' ' OR '=' OR '(' OR ')' OR '*'
2666             OR '/' OR '&' OR ';' OR ',' OR '<'
2667             OR '>' OR ':'
2668         INTO WS-Token-Curr-TXT
2669         DELIMITER IN WS-Delim-TXT
2670         WITH POINTER WS-Src-SUB
2671     IF WS-Delim-TXT = ' . '
2672         MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
2673     END-IF
2674     IF WS-Delim-TXT NOT = ' . ' AND ' '
2675         SUBTRACT 1 FROM WS-Src-SUB
2676     END-IF
2677     *>--- Classify Token
2678     MOVE UPPER-CASE(WS-Token-Curr-TXT) TO WS-Token-Search-TXT
2679     IF WS-Token-Search-TXT = 'EQUAL' OR 'EQUALS'
2680         MOVE 'EQUALS' TO WS-Token-Curr-TXT
2681         MOVE 'K' TO WS-Token-Type-CD
2682     EXIT SECTION
2683     END-IF
2684     SEARCH ALL WS-Reserved-Word-TXT
2685         WHEN WS-RW-Word-TXT (WS-RW-IDX) = WS-Token-Search-TXT
2686             MOVE WS-RW-Type-CD (WS-RW-IDX) TO WS-Token-Type-CD
2687 GC0710         IF WS-TT-Token-Is-Verb-BOOL
2688 GC0710             MOVE 'Y' TO WS-RS-Verb-Has-Been-Found-CHR
2689 GC0710         END-IF
2690         EXIT SECTION
2691     END-SEARCH
2692     *>--- Not a reserved word, must be a user name
2693     SET WS-TT-Token-Is-Identifier-BOOL TO TRUE
2694     PERFORM 313-Check-For-Numeric-Token
2695     IF WS-TT-Token-Is-Lit-Number-BOOL
2696         IF (WS-RS-Last-Token-Ended-Sent-CHR = 'Y')
2697             AND (WS-Curr-Division-TXT = 'D')
2698             MOVE 'LEVEL #' TO WS-Token-Curr-TXT
2699             MOVE 'K' TO WS-Token-Type-CD
2700         EXIT SECTION
2701     ELSE
2702         EXIT SECTION
2703     END-IF
=====

```

2704 END-IF

=====

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```
=====
2705      .
```

=====

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=====

```

2707      311-Control-Record SECTION.
2708      UNSTRING F-ES-2-256-TXT-256
2709          DELIMITED BY ','
2710      INTO WS-Temp-10-Chars-TXT
2711          WS-Temp-256-Chars-TXT
2712          WS-Dummy-TXT
2713      INSPECT WS-Temp-10-Chars-TXT REPLACING ALL ',' BY SPACE
2714 GC0712  IF WS-Temp-10-Chars-TXT(1:4) = 'line'
2715 GC0712      MOVE SPACES TO WS-Temp-10-Chars-TXT(1:4)
2716 GC0712  END-IF
2717      COMPUTE WS-I-SUB = NUMVAL(WS-Temp-10-Chars-TXT) - 1
2718 GC1010  IF UPPER-CASE(TRIM(WS-Temp-256-Chars-TXT,Trailing)) =
2719 GC1010      TRIM(WS-Main-Module-Name-TXT)
2720          MOVE WS-I-SUB TO WS-Curr-Line-NUM
2721          SET WS-RS-In-Main-Module-BOOL TO TRUE
2722          IF WS-Saved-Section-TXT NOT = SPACES
2723              MOVE WS-Saved-Section-TXT TO WS-Curr-Section-TXT
2724          END-IF
2725      ELSE
2726          SET WS-RS-In-Copybook-BOOL TO TRUE
2727          IF WS-Saved-Section-TXT = SPACES
2728              MOVE WS-Curr-Section-TXT TO WS-Saved-Section-TXT
2729          END-IF
2730          MOVE LENGTH(TRIM(WS-Temp-256-Chars-TXT,Trailing))
2731              TO WS-I-SUB
2732          MOVE 0 TO WS-J-SUB
2733          PERFORM UNTIL WS-Temp-256-Chars-TXT(WS-I-SUB:1) = '/'
2734              OR WS-I-SUB = 0
2735              SUBTRACT 1 FROM WS-I-SUB
2736              ADD 1 TO WS-J-SUB
2737          END-PERFORM
2738          UNSTRING WS-Temp-256-Chars-TXT((WS-I-SUB + 1):WS-J-SUB)
2739              DELIMITED BY ','
2740          INTO WS-Filename-TXT
2741              WS-Dummy-TXT
2742          MOVE '[' TO WS-CS-1-CHR
2743          MOVE WS-Filename-TXT TO WS-CS-2-14-TXT
2744          IF WS-CS-11-14-TXT NOT = SPACES
2745              MOVE '...' TO WS-CS-11-14-TXT
2746          END-IF
2747          MOVE ']' TO WS-CS-15-CHR
2748      END-IF
2749      MOVE SPACES TO F-Expanded-Src-REC *> Force another READ
2750      MOVE 256 TO WS-Src-SUB
2751      .

```

=====

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```
2753      312-Expanded-Src-Record SECTION.
2754 GC0314      IF F-Expanded-Src-REC(1:1) = SPACE
2755 GC0314          MOVE 2 TO WS-Src-SUB
2756 GC0314      ELSE
2757 GC0314          MOVE 1 TO WS-Src-SUB
2758 GC0314      END-IF
2759      IF WS-RS-In-Main-Module-BOOL
2760          ADD 1 To WS-Curr-Line-NUM
2761      END-IF
2762      .
```


=====

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```

=====
2764          313-Check-For-Numeric-Token SECTION.
2765          MOVE WS-Token-Curr-TXT TO WS-Temp-32-Chars-1-TXT
2766          INSPECT WS-Temp-32-Chars-1-TXT
2767 GC0711          CONVERTING '0123456789' TO SPACES
2768 GC0711          IF WS-Temp-32-Chars-1-TXT = SPACES                *> Simple Unsigned Int
                        eger
2769          SET WS-TT-Token-Is-Lit-Number-BOOL TO TRUE
2770          EXIT SECTION
2771          END-IF
2772 GC0711          MOVE SPACES TO WS-Temp-32-Chars-2-TXT
2773 GC0711          WS-Temp-32-Chars-3-TXT
2774 GC0711          WS-Dummy-TXT
2775 GC0711          UNSTRING WS-Temp-32-Chars-1-TXT
2776 GC0711          DELIMITED BY 'e' OR 'E'
2777 GC0711          INTO WS-Temp-32-Chars-2-TXT
2778 GC0711          WS-Temp-32-Chars-3-TXT
2779 GC0711          WS-Dummy-TXT
2780 GC0711          IF WS-Dummy-TXT NOT = SPACES                    *> More than one 'E' - Not Num
                        eric
2781 GC0711          EXIT SECTION
2782 GC0711          END-IF
2783 GC0711          IF WS-Temp-32-Chars-2-TXT(1:1) = '+' OR '-'
2784 GC0711          MOVE SPACE TO WS-Temp-32-Chars-2-TXT(1:1)
2785 GC0711          END-IF
2786 GC0711          IF WS-Temp-32-Chars-3-TXT(1:1) = '+' OR '-'
2787 GC0711          MOVE SPACE TO WS-Temp-32-Chars-3-TXT(1:1)
2788 GC0711          END-IF
2789          MOVE 0 TO WS-Tally-QTY
2790 GC0711          INSPECT WS-Temp-32-Chars-2-TXT
2791          TALLYING WS-Tally-QTY FOR ALL '.'
2792          IF WS-Tally-QTY = 1
2793 GC0711          INSPECT WS-Temp-32-Chars-2-TXT REPLACING ALL '.' BY SPACE
2794          END-IF
2795 GC0711          INSPECT WS-Temp-32-Chars-3-TXT
2796 GC0711          TALLYING WS-Tally-QTY FOR ALL '.'
2797 GC0711          IF WS-Tally-QTY = 1
2798 GC0711          INSPECT WS-Temp-32-Chars-3-TXT REPLACING ALL '.' BY SPACE
2799 GC0711          END-IF
2800 GC0711          IF WS-Temp-32-Chars-2-TXT = SPACES AND WS-Temp-32-Chars-3-TXT = SPACES
2801          SET WS-TT-Token-Is-Lit-Number-BOOL TO TRUE
2802          EXIT SECTION
2803          END-IF
2804          .

```

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```

2806      320-IDENTIFICATION-DIVISION SECTION.
2807 GC0712      IF WS-TT-Token-Is-Argtype-BOOL
2808 GC0712          SET WS-TT-Token-Is-Reserved-Wd-BOOL TO TRUE
2809 GC0712      END-IF
2810 GC0710      MOVE 'N' TO WS-RS-Verb-Has-Been-Found-CHR
2811              IF WS-TT-Token-Is-Keyword-BOOL
2812                  AND WS-Token-Curr-TXT = 'DIVISION'
2813                      MOVE WS-Token-Prev-TXT TO WS-Curr-Division-TXT
2814                      EXIT SECTION
2815      END-IF
2816 GC0712      IF WS-Token-Prev-TXT = 'PROGRAM-ID' OR 'FUNCTION-ID'
2817                  MOVE SPACES TO WS-Token-Prev-TXT
2818                  MOVE WS-Token-Curr-TXT TO WS-Curr-Prog-ID-TXT
2819 GC0712      IF WS-CPI-16-CHR NOT = SPACES
2820                  MOVE '...' TO WS-CPI-13-15-TXT
2821      END-IF
2822      EXIT SECTION
2823      END-IF
2824      .

```

=====

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```

=====
2826      330-ENVIRONMENT-DIVISION SECTION.
2827 GC0712      IF WS-TT-Token-Is-Argtype-BOOL
2828 GC0712          SET WS-TT-Token-Is-Reserved-Wd-BOOL TO TRUE
2829 GC0712      END-IF
2830      IF WS-TT-Token-Is-Keyword-BOOL
2831      AND WS-Token-Curr-TXT = 'DIVISION'
2832          MOVE WS-Token-Prev-TXT TO WS-Curr-Division-TXT
2833      EXIT SECTION
2834      END-IF
2835      IF WS-TT-Token-Is-Keyword-BOOL
2836      AND WS-Token-Curr-TXT = 'SECTION'
2837          MOVE WS-Token-Prev-TXT TO WS-Curr-Section-TXT
2838      EXIT SECTION
2839      END-IF
2840      IF WS-TT-Token-Is-Identifier-BOOL
2841 GC0712          IF WS-Token-Prev-TXT = 'FUNCTION'
2842 GC0712              PERFORM 360-Release-Def
2843 GC0712          ELSE
2844 GC0712              PERFORM 361-Release-Ref
2845 GC0712          END-IF
2846      END-IF
2847 GC1213      IF WS-TT-Token-Is-Function-BOOL
2848 GC1213          PERFORM 361-Release-Ref
2849 GC1213      END-IF
2850      .

```

=====

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```

2852      340-DATA-DIVISION SECTION.
2853 GC0712      IF WS-TT-Token-Is-Argtype-BOOL
2854 GC0712          SET WS-TT-Token-Is-Reserved-Wd-BOOL TO TRUE
2855 GC0712      END-IF
2856          IF WS-TT-Token-Is-Keyword-BOOL
2857      AND WS-Token-Curr-TXT = 'DIVISION'
2858          MOVE WS-Token-Prev-TXT TO WS-Curr-Division-TXT
2859          EXIT SECTION
2860      END-IF
2861          IF WS-TT-Token-Is-Keyword-BOOL
2862      AND WS-Token-Curr-TXT = 'SECTION'
2863          MOVE WS-Token-Prev-TXT TO WS-Curr-Section-TXT
2864          EXIT SECTION
2865      END-IF
2866          IF (WS-Token-Curr-TXT = 'PIC' OR 'PICTURE')
2867      AND (WS-TT-Token-Is-Keyword-BOOL)
2868          MOVE 'Y' TO WS-RS-Processing-PICTURE-CHR
2869          EXIT SECTION
2870      END-IF
2871 GC0710      IF WS-TT-Token-Is-Reserved-Wd-BOOL
2872 GC0710      AND WS-Token-Prev-TXT = 'LEVEL #'
2873 GC0710          MOVE SPACES TO WS-Token-Prev-TXT
2874 GC0710          EXIT SECTION
2875 GC0710      END-IF
2876          IF WS-TT-Token-Is-Identifier-BOOL
2877      EVALUATE WS-Token-Prev-TXT
2878          WHEN 'FD'
2879              PERFORM 360-Release-Def
2880              MOVE SPACES TO WS-Token-Prev-TXT
2881 GC1213          WHEN 'RD'
2882 GC1213              PERFORM 360-Release-Def
2883 GC1213              MOVE SPACES TO WS-Token-Prev-TXT
2884          WHEN 'SD'
2885              PERFORM 360-Release-Def
2886              MOVE SPACES TO WS-Token-Prev-TXT
2887          WHEN 'LEVEL #'
2888              PERFORM 360-Release-Def
2889              MOVE SPACES TO WS-Token-Prev-TXT
2890          WHEN 'INDEXED'
2891              PERFORM 360-Release-Def
2892              MOVE SPACES TO WS-Token-Prev-TXT
2893          WHEN 'USING'
2894              PERFORM 362-Release-Upd
2895              MOVE SPACES TO WS-Token-Prev-TXT
2896          WHEN 'INTO'
2897              PERFORM 362-Release-Upd
2898              MOVE SPACES TO WS-Token-Prev-TXT
2899          WHEN OTHER
2900 GC1213              IF WS-Token-Curr-TXT NOT = 'SUM'
2901 GC1213                  PERFORM 361-Release-Ref
2902 GC1213          END-IF

```


2903 END-EVALUATE

=====

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```
=====
2904          EXIT SECTION
2905          END-IF
2906          .
```

=====

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```

=====
2908          350-PROCEDURE-DIVISION SECTION.
2909          IF WS-Curr-Section-TXT NOT = 'PROCEDURE'
2910             MOVE 'PROCEDURE' TO WS-Curr-Section-TXT
2911          END-IF
2912 GC0710     IF WS-Token-Curr-Uc-TXT = 'PROGRAM'
2913 GC0710     AND WS-Token-Prev-TXT = 'END'
2914 GC0710     MOVE '?' TO WS-Curr-Division-TXT
2915 GC0710     EXIT SECTION
2916 GC0710     END-IF
2917          IF WS-TT-Token-Is-Keyword-BOOL
2918          AND WS-Token-Curr-TXT = 'DIVISION'
2919             MOVE WS-Token-Prev-TXT TO WS-Curr-Division-TXT
2920          EXIT SECTION
2921          END-IF
2922 GC0313     IF WS-TT-Token-Is-Identifier-BOOL
2923 GC0313     AND WS-Token-Prev-TXT = SPACES
2924 GC0313     AND WS-Curr-Verb-TXT = SPACES
2925 GC0313*>  ----- Definition of a Paragraph or Section
2926 GC0313     PERFORM 360-Release-Def
2927 GC0313     MOVE SPACES TO WS-Token-Prev-TXT
2928 GC0313     EXIT SECTION
2929 GC0313     END-IF
2930          IF NOT WS-TT-Token-Is-Identifier-BOOL
2931          EXIT SECTION
2932          END-IF
2933          EVALUATE WS-Curr-Verb-TXT
2934          WHEN 'ACCEPT'
2935             PERFORM 351-ACCEPT
2936          WHEN 'ADD'
2937             PERFORM 351-ADD
2938          WHEN 'ALLOCATE'
2939             PERFORM 351-ALLOCATE
2940          WHEN 'CALL'
2941             PERFORM 351-CALL
2942          WHEN 'COMPUTE'
2943             PERFORM 351-COMPUTE
2944          WHEN 'DIVIDE'
2945             PERFORM 351-DIVIDE
2946          WHEN 'FREE'
2947             PERFORM 351-FREE
2948 GC1213     WHEN 'GENERATE'
2949 GC1213     PERFORM 351-GENERATE
2950          WHEN 'INITIALIZE'
2951             PERFORM 351-INITIALIZE
2952 GC1213     WHEN 'INITIATE'
2953 GC1213     PERFORM 351-GENERATE
2954          WHEN 'INSPECT'
2955             PERFORM 351-INSPECT
2956          WHEN 'MOVE'
2957             PERFORM 351-MOVE
2958          WHEN 'MULTIPLY'

```

2959 PERFORM 351-MULTIPLY

=====

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```

=====
2960          WHEN 'PERFORM'
2961              PERFORM 351-PERFORM
2962          WHEN 'SET'
2963              PERFORM 351-SET
2964          WHEN 'STRING'
2965              PERFORM 351-STRING
2966          WHEN 'SUBTRACT'
2967              PERFORM 351-SUBTRACT
2968 GC1213     WHEN 'TERMINATE'
2969 GC1213     PERFORM 351-GENERATE
2970          WHEN 'TRANSFORM'
2971              PERFORM 351-TRANSFORM
2972          WHEN 'UNSTRING'
2973              PERFORM 351-UNSTRING
2974          WHEN OTHER
2975              PERFORM 361-Release-Ref
2976          END-EVALUATE
2977          .
=====

```

=====

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```

=====
2979      351-ACCEPT SECTION.
2980      EVALUATE WS-Token-Prev-TXT
2981      WHEN 'ACCEPT'
2982          PERFORM 362-Release-Upd
2983      MOVE SPACES TO WS-Token-Prev-TXT
2984      WHEN OTHER
2985          PERFORM 361-Release-Ref
2986      END-EVALUATE
2987      .
2988
2989      351-ADD SECTION.
2990      EVALUATE WS-Token-Prev-TXT
2991      WHEN 'GIVING'
2992          PERFORM 362-Release-Upd
2993      WHEN 'TO'
2994          PERFORM 362-Release-Upd
2995      WHEN OTHER
2996          PERFORM 361-Release-Ref
2997      END-EVALUATE
2998      .
2999
3000      351-ALLOCATE SECTION.
3001      EVALUATE WS-Token-Prev-TXT
3002      WHEN 'ALLOCATE'
3003          PERFORM 362-Release-Upd
3004      MOVE SPACES TO WS-Token-Prev-TXT
3005      WHEN 'RETURNING'
3006          PERFORM 362-Release-Upd
3007      WHEN OTHER
3008          PERFORM 361-Release-Ref
3009      END-EVALUATE
3010      .
3011
3012      351-CALL SECTION.
3013      EVALUATE WS-Token-Prev-TXT
3014      WHEN 'RETURNING'
3015          PERFORM 362-Release-Upd
3016      WHEN 'GIVING'
3017          PERFORM 362-Release-Upd
3018      WHEN OTHER
3019 GC1213      PERFORM 365-Release-Arg
3020      END-EVALUATE
3021      .
3022
3023      351-COMPUTE SECTION.
3024      EVALUATE WS-Token-Prev-TXT
3025      WHEN 'COMPUTE'
3026          PERFORM 362-Release-Upd
3027      WHEN OTHER
3028          PERFORM 361-Release-Ref
3029      END-EVALUATE

```


3030 .

=====

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```

=====
3031
3032      351-DIVIDE SECTION.
3033      EVALUATE WS-Token-Prev-TXT
3034      WHEN 'INTO'
3035          PERFORM 363-Set-Upd
3036      MOVE F-Sort-Work-REC TO WS-Held-Reference-TXT
3037      WHEN 'GIVING'
3038          IF WS-Held-Reference-TXT NOT = SPACES
3039              MOVE WS-Held-Reference-TXT To F-Sort-Work-REC
3040              MOVE SPACES          To WS-Held-Reference-TXT
3041                                  F-SW-Ref-Flag-CHR
3042          RELEASE F-Sort-Work-REC
3043      END-IF
3044      PERFORM 362-Release-Upd
3045      WHEN 'REMAINDER'
3046          PERFORM 362-Release-Upd
3047      WHEN OTHER
3048          PERFORM 361-Release-Ref
3049      END-EVALUATE
3050      .
3051
3052      351-FREE SECTION.
3053      PERFORM 362-Release-Upd
3054      .
3055
3056 GC1213 351-GENERATE SECTION.
3057 GC1213      PERFORM 362-Release-Upd
3058 GC1213      .
3059
3060      351-INITIALIZE SECTION.
3061      EVALUATE WS-Token-Prev-TXT
3062      WHEN 'INITIALIZE'
3063          PERFORM 362-Release-Upd
3064      WHEN 'REPLACING'
3065          PERFORM 361-Release-Ref
3066      END-EVALUATE
3067      .
3068
3069 GC1213 351-INITIATE SECTION.
3070 GC1213      PERFORM 362-Release-Upd
3071 GC1213      .
3072
3073      351-INSPECT SECTION.
3074      EVALUATE WS-Token-Prev-TXT
3075      WHEN 'INSPECT'
3076          PERFORM 364-Set-Ref
3077      MOVE SPACES TO WS-Held-Reference-TXT
3078      MOVE SPACES TO WS-Token-Prev-TXT
3079      WHEN 'TALLYING'
3080          PERFORM 362-Release-Upd
3081      MOVE SPACES TO WS-Token-Prev-TXT
3082      WHEN 'REPLACING'

```

3083 IF WS-Held-Reference-TXT NOT = SPACES

=====

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```

=====
3084             MOVE WS-Held-Reference-TXT TO F-Sort-Work-REC
3085             MOVE SPACES                TO WS-Held-Reference-TXT
3086             MOVE '*'                    TO F-SW-Ref-Flag-CHR
3087             RELEASE F-Sort-Work-REC
3088             END-IF
3089             MOVE SPACES TO WS-Token-Prev-TXT
3090             WHEN 'CONVERTING'
3091             IF WS-Held-Reference-TXT NOT = SPACES
3092             MOVE WS-Held-Reference-TXT TO F-Sort-Work-REC
3093             MOVE SPACES                TO WS-Held-Reference-TXT
3094             MOVE '*'                    TO F-SW-Ref-Flag-CHR
3095             RELEASE F-Sort-Work-REC
3096             END-IF
3097             MOVE SPACES TO WS-Token-Prev-TXT
3098             WHEN OTHER
3099             PERFORM 361-Release-Ref
3100             END-EVALUATE
3101             .
3102
3103             351-MOVE SECTION.
3104             EVALUATE WS-Token-Prev-TXT
3105             WHEN 'TO'
3106             PERFORM 362-Release-Upd
3107             WHEN OTHER
3108             PERFORM 361-Release-Ref
3109             END-EVALUATE
3110             .
3111
3112             351-MULTIPLY SECTION.
3113             EVALUATE WS-Token-Prev-TXT
3114             WHEN 'BY'
3115             PERFORM 363-Set-Upd
3116             MOVE F-Sort-Work-REC TO WS-Held-Reference-TXT
3117             WHEN 'GIVING'
3118             MOVE WS-Held-Reference-TXT TO F-Sort-Work-REC
3119             MOVE SPACES                TO WS-Held-Reference-TXT
3120                                     F-SW-Ref-Flag-CHR
3121             RELEASE F-Sort-Work-REC
3122             PERFORM 362-Release-Upd
3123             WHEN OTHER
3124             PERFORM 361-Release-Ref
3125             END-EVALUATE
3126             .
3127
3128             351-PERFORM SECTION.
3129             EVALUATE WS-Token-Prev-TXT
3130             WHEN 'VARYING'
3131             PERFORM 362-Release-Upd
3132             MOVE SPACES TO WS-Token-Prev-TXT
3133             WHEN 'AFTER'
3134             PERFORM 362-Release-Upd
3135             MOVE SPACES TO WS-Token-Prev-TXT

```

3136 WHEN OTHER

=====

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=====
3137          PERFORM 361-Release-Ref
3138          END-EVALUATE
3139          .
3140
3141      351-SET SECTION.
3142          EVALUATE WS-Token-Prev-TXT
3143          WHEN 'SET'
3144              PERFORM 362-Release-Upd
3145          WHEN OTHER
3146              PERFORM 361-Release-Ref
3147          END-EVALUATE
3148          .
3149
3150      351-STRING SECTION.
3151          EVALUATE WS-Token-Prev-TXT
3152          WHEN 'INTO'
3153              PERFORM 362-Release-Upd
3154          WHEN 'POINTER'
3155              PERFORM 362-Release-Upd
3156          WHEN OTHER
3157              PERFORM 361-Release-Ref
3158          END-EVALUATE
3159          .
3160
3161      351-SUBTRACT SECTION.
3162          EVALUATE WS-Token-Prev-TXT
3163          WHEN 'GIVING'
3164              PERFORM 362-Release-Upd
3165          WHEN 'FROM'
3166              PERFORM 362-Release-Upd
3167          WHEN OTHER
3168              PERFORM 361-Release-Ref
3169          END-EVALUATE
3170          .
3171
3172 GC1213 351-TERMINATE SECTION.
3173 GC1213      PERFORM 362-Release-Upd
3174 GC1213      .
3175
3176      351-TRANSFORM SECTION.
3177          EVALUATE WS-Token-Prev-TXT
3178          WHEN 'TRANSFORM'
3179              PERFORM 362-Release-Upd
3180              MOVE SPACES TO WS-Token-Prev-TXT
3181          WHEN OTHER
3182              PERFORM 361-Release-Ref
3183          END-EVALUATE
3184          .
3185
3186      351-UNSTRING SECTION.
3187          EVALUATE WS-Token-Prev-TXT
3188          WHEN 'INTO'

```

3189 PERFORM 362-Release-Upd

=====

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```

=====
3190      WHEN 'DELIMITER'
3191          PERFORM 362-Release-Upd
3192      WHEN 'COUNT'
3193          PERFORM 362-Release-Upd
3194      WHEN 'POINTER'
3195          PERFORM 362-Release-Upd
3196      WHEN 'TALLYING'
3197          PERFORM 362-Release-Upd
3198      WHEN OTHER
3199          PERFORM 361-Release-Ref
3200      END-EVALUATE
3201      .
3202
3203      360-Release-Def SECTION.
3204          MOVE SPACES              TO F-Sort-Work-REC
3205          MOVE WS-Curr-Prog-ID-TXT TO F-SW-Prog-ID-TXT
3206          MOVE WS-Token-Curr-Uc-TXT TO F-SW-Token-Uc-TXT
3207          MOVE WS-Token-Curr-TXT   TO F-SW-Token-TXT
3208          MOVE WS-Curr-Section-TXT TO F-SW-Section-TXT
3209          MOVE WS-Curr-Line-NUM    TO F-SW-Def-Line-NUM
3210          MOVE 0                  TO F-SW-Ref-Line-NUM
3211          RELEASE F-Sort-Work-REC
3212      .
3213
3214      361-Release-Ref SECTION.
3215          PERFORM 364-Set-Ref
3216          RELEASE F-Sort-Work-REC
3217      .
3218
3219      362-Release-Upd SECTION.
3220          PERFORM 363-Set-Upd
3221          RELEASE F-Sort-Work-REC
3222      .
3223
3224      363-Set-Upd SECTION.
3225          MOVE SPACES              TO F-Sort-Work-REC
3226          MOVE WS-Curr-Prog-ID-TXT TO F-SW-Prog-ID-TXT
3227          MOVE WS-Token-Curr-Uc-TXT TO F-SW-Token-Uc-TXT
3228          MOVE WS-Token-Curr-TXT   TO F-SW-Token-TXT
3229          MOVE WS-Curr-Section-TXT TO F-SW-Section-TXT
3230          MOVE WS-Curr-Line-NUM    TO F-SW-Ref-Line-NUM
3231          MOVE '*'                 TO F-SW-Ref-Flag-CHR
3232      .
3233
3234      364-Set-Ref SECTION.
3235          MOVE SPACES              TO F-Sort-Work-REC
3236          MOVE WS-Curr-Prog-ID-TXT TO F-SW-Prog-ID-TXT
3237          MOVE WS-Token-Curr-Uc-TXT TO F-SW-Token-Uc-TXT
3238          MOVE WS-Token-Curr-TXT   TO F-SW-Token-TXT
3239          MOVE WS-Curr-Section-TXT TO F-SW-Section-TXT
3240          MOVE WS-Curr-Line-NUM    TO F-SW-Ref-Line-NUM
3241      .

```


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=====

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```

=====
3243 GC1213 365-Release-Arg SECTION.
3244 GC1213      PERFORM 366-Set-Arg
3245 GC1213      RELEASE F-Sort-Work-REC
3246 GC1213      .
3247
3248 GC1213 366-Set-Arg SECTION.
3249 GC1213      MOVE SPACES              TO F-Sort-Work-REC
3250 GC1213      MOVE WS-Curr-Prog-ID-TXT  TO F-SW-Prog-ID-TXT
3251 GC1213      MOVE WS-Token-Curr-Uc-TXT  TO F-SW-Token-Uc-TXT
3252 GC1213      MOVE WS-Token-Curr-TXT     TO F-SW-Token-TXT
3253 GC1213      MOVE WS-Curr-Section-TXT   TO F-SW-Section-TXT
3254 GC1213      MOVE WS-Curr-Line-NUM      TO F-SW-Ref-Line-NUM
3255 GC1213      MOVE 'C'                  TO F-SW-Ref-Flag-CHR
3256 GC1213      .
3257

```

=====

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=====
3259      400-Produce-Xref-Listing SECTION.
3260      MOVE SPACES          TO WS-Xref-Detail-Line-TXT
3261      WS-Group-Indicators-TXT
3262      MOVE 0                TO WS-I-SUB
3263      WS-Lines-Left-NUM
3264 GC0710  MOVE 'N'          TO WS-RS-Duplicate-CHR
3265      PERFORM FOREVER
3266      RETURN F-Sort-Work-FILE AT END
3267 GC1213      IF WS-Xref-Detail-Line-TXT NOT = SPACES
3268 GC1213      PERFORM 410-Generate-Report-Line
3269 GC1213      END-IF
3270 GC1213      MOVE SPACES TO WS-Xref-Detail-Line-TXT
3271 GC1213      PERFORM 410-Generate-Report-Line
3272 GC1213      UNTIL WS-Lines-Left-NUM = 0
3273 GC1213      MOVE 'Y' TO WS-Suppress-FF-CHR
3274 GC1213      PERFORM 420-Generate-Xref-Footer
3275      EXIT PERFORM
3276      END-RETURN
3277      IF F-SW-Prog-ID-TXT NOT = WS-GI-Prog-ID-TXT
3278      OR F-SW-Token-Uc-TXT NOT = WS-GI-Token-TXT
3279 GC0710      MOVE 'N' TO WS-RS-Duplicate-CHR
3280      IF WS-Xref-Detail-Line-TXT NOT = SPACES
3281      PERFORM 410-Generate-Report-Line
3282      END-IF
3283      IF F-SW-Prog-ID-TXT NOT = WS-GI-Prog-ID-TXT
3284 GC1213      MOVE SPACES TO WS-Xref-Detail-Line-TXT
3285 GC1213      PERFORM 410-Generate-Report-Line
3286 GC1213      UNTIL WS-Lines-Left-NUM = 0
3287      END-IF
3288      MOVE F-SW-Prog-ID-TXT TO WS-GI-Prog-ID-TXT
3289      MOVE F-SW-Token-Uc-TXT TO WS-GI-Token-TXT
3290      END-IF
3291 GC0710      IF F-SW-Token-Uc-TXT = WS-GI-Token-TXT
3292 GC0710      AND F-SW-Def-Line-NUM NOT = SPACES
3293 GC0710      AND WS-Xref-Detail-Line-TXT NOT = SPACES
3294 GC0710      MOVE 'Y' TO WS-RS-Duplicate-CHR
3295 GC0710      PERFORM 410-Generate-Report-Line
3296 GC0710      MOVE 0 TO WS-I-SUB
3297 GC0710      MOVE F-SW-Prog-ID-TXT TO WS-XDL-Prog-ID-TXT
3298 GC0710      MOVE ' (Duplicate Definition)' TO WS-XDL-Token-TXT
3299 GC0710      MOVE F-SW-Section-TXT TO WS-XDL-Section-TXT
3300 GC0710      MOVE F-SW-Def-Line-NUM TO WS-XDL-Def-Line-NUM
3301 GC0710      EXIT PERFORM CYCLE
3302 GC0710      END-IF
3303 GC0710      IF F-SW-Token-Uc-TXT = WS-GI-Token-TXT
3304 GC0710      AND F-SW-Def-Line-NUM = SPACES
3305 GC0710      AND WS-RS-Duplicate-CHR = 'Y'
3306 GC0710      MOVE 'N' TO WS-RS-Duplicate-CHR
3307 GC0710      PERFORM 410-Generate-Report-Line
3308 GC0710      MOVE 0 TO WS-I-SUB
3309 GC0710      MOVE F-SW-Prog-ID-TXT TO WS-XDL-Prog-ID-TXT

```

```
3310 GC0710          MOVE ' (Duplicate References)' TO WS-XDL-Token-TXT
```

```
=====
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```

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```

=====
3311 GC0710      END-IF
3312             IF WS-Xref-Detail-Line-TXT = SPACES
3313                 MOVE F-SW-Prog-ID-TXT TO WS-XDL-Prog-ID-TXT
3314                 MOVE F-SW-Token-TXT TO WS-XDL-Token-TXT
3315                 MOVE F-SW-Section-TXT TO WS-XDL-Section-TXT
3316                 IF F-SW-Def-Line-NUM NOT = SPACES
3317                     MOVE F-SW-Def-Line-NUM TO WS-XDL-Def-Line-NUM
3318                 END-IF
3319             END-IF
3320             IF F-SW-Reference-TXT > '000000'
3321                 ADD 1 TO WS-I-SUB
3322                 IF WS-I-SUB > WS-Xref-Lines-Per-Rec-NUM
3323                     PERFORM 410-Generate-Report-Line
3324                     MOVE 1 TO WS-I-SUB
3325                 END-IF
3326                 MOVE F-SW-Ref-Line-NUM
3327                     TO WS-XDL-Ref-Line-NUM (WS-I-SUB)
3328                 MOVE F-SW-Ref-Flag-CHR
3329                     TO WS-XDL-Ref-Flag-CHR (WS-I-SUB)
3330             END-IF
3331         END-PERFORM
3332     IF WS-Xref-Detail-Line-TXT NOT = SPACES
3333         PERFORM 410-Generate-Report-Line
3334     END-IF
3335     .

```

=====

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```

=====
3337      410-Generate-Report-Line SECTION.
3338      IF WS-Lines-Left-NUM < 1
3339 GC1213      PERFORM 420-Generate-Xref-Footer
3340 GC1213      ADD 1 TO WS-Page-NUM
3341 GC1213      MOVE 'Page:' TO WS-PN-Literal-TXT
3342 GC1213      MOVE WS-Page-NUM TO WS-PN-Page-NUM
3343 GC1213      CALL 'C$JUSTIFY' USING WS-PN-Page-NUM, 'Left'
3344 GC1213      CALL 'C$JUSTIFY' USING WS-Page-No-TXT, 'Right'
3345 GC1213      IF L-Listing-CD = 1 *> LANDSCAPE
3346 GC1213          MOVE WS-Version-TXT
3347 GC1213              TO F-Listing-135-REC
3348 GC1213          MOVE 'Cross-Reference Listing'
3349 GC1213              TO F-Listing-135-REC(25:23)
3350 GC1213          MOVE WS-Formatted-DT
3351 GC1213              TO F-Listing-135-REC(126:10)
3352 GC1213          WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #1
3353 GC1213          MOVE WS-Program-Path-TXT
3354 GC1213              TO F-Listing-135-REC
3355 GC1213          WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #2
3356 GC1213          MOVE 'PROGRAM-ID Identifier/Register/Function' &
3357 GC1213              ' Defn Where Defined References'
3358 GC1213              TO F-Listing-135-REC
3359 GC1213          MOVE WS-Page-No-TXT
3360 GC1213              TO F-Listing-135-REC(126:10)
3361 GC1213          WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #3
3362 GC1213          MOVE ALL '=' TO F-Listing-135-REC
3363 GC1213          MOVE SPACE TO F-Listing-135-REC(16:1)
3364 GC1213              F-Listing-135-REC(49:1)
3365 GC1213              F-Listing-135-REC(56:1)
3366 GC1213              F-Listing-135-REC(72:1)
3367 GC1213          WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #4
3368 GC1213      ELSE *> PORTRAIT
3369 GC1213          MOVE WS-Version-TXT
3370 GC1213              TO F-Listing-96-REC
3371 GC1213          MOVE 'Cross-Reference Listing'
3372 GC1213              TO F-Listing-96-REC(25:23)
3373 GC1213          MOVE WS-Formatted-DT
3374 GC1213              TO F-Listing-96-REC(87:10)
3375 GC1213          WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #1
3376 GC1213          MOVE WS-Program-Path-TXT(40:96)
3377 GC1213              TO F-Listing-96-REC
3378 GC1213          WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #2
3379 GC1213          MOVE 'PROGRAM-ID Identifier/Register/Function' &
3380 GC1213              ' Defn Where Defined References'
3381 GC1213              TO F-Listing-96-REC
3382 GC1213          MOVE WS-Page-No-TXT
3383 GC1213              TO F-Listing-96-REC(87:10)
3384 GC1213          WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #3
3385 GC1213          MOVE ALL '=' TO F-Listing-96-REC
3386 GC1213          MOVE SPACE TO F-Listing-96-REC(16:1)
3387 GC1213              F-Listing-96-REC(49:1)

```


3388 GC1213

F-Listing-96-REC(56:1)

=====

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```

=====
3389 GC1213          F-Listing-96-REC(72:1)
3390 GC1213          WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #4
3391 GC1213          END-IF
3392 GC1213          COMPUTE WS-Lines-Left-NUM = WS-Lines-Per-Page-NUM - 4
3393          END-IF
3394 GC1213          IF L-Listing-CD = 1 *> LANDSCAPE
3395 GC1213          WRITE F-Listing-135-REC FROM WS-Xref-Detail-Line-TXT
3396 GC1213          BEFORE 1
3397 GC1213          ELSE          *> PORTRAIT
3398 GC1213          WRITE F-Listing-96-REC FROM WS-Xref-Detail-Line-TXT
3399 GC1213          BEFORE 1
3400 GC1213          END-IF
3401          MOVE SPACES TO WS-Xref-Detail-Line-TXT
3402          MOVE 0 TO WS-I-SUB
3403          SUBTRACT 1 FROM WS-Lines-Left-NUM
3404          .
3405 GC1213 420-Generate-Xref-Footer SECTION.
3406 GC1213          IF L-Listing-CD = 1 *> LANDSCAPE
3407 GC1213          WRITE F-Listing-135-REC FROM SPACES BEFORE 1 *> Footer Line #1
3408 GC1213          MOVE ALL '='
3409 GC1213          TO F-Listing-135-REC
3410 GC1213          WRITE F-Listing-135-REC BEFORE 1 *> Footer Line #2
3411 GC1213          MOVE WS-Copyright-TXT
3412 GC1213          TO F-Listing-135-REC
3413 GC1213          MOVE WS-Page-No-TXT
3414 GC1213          TO F-Listing-135-REC(126:10)
3415 GC1213          IF WS-Suppress-FF-CHR = 'Y'
3416 GC1213          WRITE F-Listing-135-REC BEFORE 1 *> Footer Line #3
3417 GC1213          ELSE
3418 GC1213          WRITE F-Listing-135-REC BEFORE PAGE *> Footer Line #3
3419 GC1213          WRITE F-Listing-135-REC FROM SPACES BEFORE 1 *> Spaces After FF Charac
3420 GC1213          ter
3421 GC1213          END-IF
3422 GC1213          ELSE          *> PORTRAIT
3423 GC1213          WRITE F-Listing-96-REC FROM SPACES BEFORE 1 *> Footer Line #1
3424 GC1213          MOVE ALL '='
3425 GC1213          TO F-Listing-96-REC
3426 GC1213          WRITE F-Listing-96-REC BEFORE 1 *> Footer Line #2
3427 GC1213          MOVE WS-Copyright-TXT
3428 GC1213          TO F-Listing-96-REC
3429 GC1213          MOVE WS-Page-No-TXT
3430 GC1213          TO F-Listing-96-REC(87:10)
3431 GC1213          IF WS-Suppress-FF-CHR = 'Y'
3432 GC1213          WRITE F-Listing-96-REC BEFORE 1 *> Footer Line #3
3433 GC1213          ELSE
3434 GC1213          WRITE F-Listing-96-REC BEFORE PAGE *> Footer Line #3
3435 GC1213          WRITE F-Listing-96-REC FROM SPACES BEFORE 1 *> Spaces After FF Charact
3436 GC1213          er
3437 GC1213          END-IF
3438 GC1213          END-IF
3439 GC1213          .
=====

```

=====

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=====

```

3439      500-Produce-Source-Listing SECTION.
3440      OPEN INPUT F-Original-Src-FILE
3441              F-Expanded-Src-FILE
3442      MOVE 0 TO WS-Src-Line-NUM
3443      PERFORM FOREVER
3444              READ F-Expanded-Src-FILE AT END
3445 GC1213      MOVE SPACES TO WS-Src-Detail-Line-TXT
3446 GC1213      PERFORM 530-Generate-Source-Line
3447 GC1213      UNTIL WS-Lines-Left-NUM = 0
3448      EXIT PERFORM
3449      END-READ
3450 GC0712      IF F-ES-1-7-TXT NOT = '#DEFLIT'
3451 GC0712      IF F-ES-1-CHR = '#'
3452 GC0712      PERFORM 510-Control-Record
3453 GC0712      ELSE
3454 GC0712      PERFORM 520-Expanded-Src-Record
3455 GC0712      END-IF
3456 GC0712      END-IF
3457      END-PERFORM
3458      CLOSE F-Original-Src-FILE
3459      F-Expanded-Src-FILE
3460      .

```

=====

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```

3462      510-Control-Record SECTION.
3463      UNSTRING F-ES-2-256-TXT-256
3464          DELIMITED BY ','
3465          INTO WS-Temp-10-Chars-TXT
3466          WS-Temp-256-Chars-TXT
3467          WS-Dummy-TXT
3468 GC1010      IF UPPER-CASE(TRIM(WS-Temp-256-Chars-TXT,Trailing)) =
3469 GC1010      TRIM(WS-Main-Module-Name-TXT) *> Main Pgm
3470          SET WS-RS-In-Main-Module-BOOL TO TRUE
3471          IF WS-Src-Line-NUM > 0
3472              READ F-Expanded-Src-FILE END-READ
3473          END-IF
3474      ELSE *> COPY
3475          SET WS-RS-In-Copybook-BOOL TO TRUE
3476      END-IF
3477      .

```

=====

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```

=====
3479          520-Expanded-Src-Record SECTION.
3480          IF WS-RS-In-Main-Module-BOOL
3481              ADD 1 To WS-Curr-Line-NUM
3482 GC0712      READ F-Original-Src-FILE AT END CONTINUE END-READ
3483              ADD 1 TO WS-Src-Line-NUM
3484              MOVE SPACES TO WS-Src-Detail-Line-TXT
3485              MOVE WS-Src-Line-NUM TO WS-SDL-Line-NUM
3486 GC1213      MOVE F-Original-Src-REC TO WS-SDL-Statement-TXT
3487 GC0712      MOVE LOWER-CASE(TRIM(F-OS-8-72-TXT,LEADING))
3488              TO WS-Temp-65-Chars-TXT
3489 GC0712      INSPECT WS-Temp-65-Chars-TXT REPLACING ALL '.' BY SPACE
3490 GC0712      EVALUATE TRUE
3491 GC0712          WHEN F-OS-7-CHR = '/'
3492 GC1213              MOVE SPACES TO WS-Src-Detail-Line-TXT
3493 GC1213              PERFORM 530-Generate-Source-Line
3494 GC1213                  UNTIL WS-Lines-Left-NUM = 0
3495 GC0712          WHEN WS-Temp-65-Chars-TXT = "eject"
3496 GC1213              MOVE SPACES TO WS-Src-Detail-Line-TXT
3497 GC1213              PERFORM 530-Generate-Source-Line
3498 GC1213                  UNTIL WS-Lines-Left-NUM = 0
3499 GC0712              EXIT SECTION
3500 GC0712          WHEN WS-Temp-65-Chars-TXT = "skip1"
3501 GC0712              MOVE SPACES TO WS-Src-Detail-Line-TXT
3502 GC0712              PERFORM 530-Generate-Source-Line
3503 GC0712              EXIT SECTION
3504 GC0712          WHEN WS-Temp-65-Chars-TXT = "skip2"
3505 GC0712              MOVE SPACES TO WS-Src-Detail-Line-TXT
3506 GC0712              PERFORM 530-Generate-Source-Line 2 TIMES
3507 GC0712              EXIT SECTION
3508 GC0712          WHEN WS-Temp-65-Chars-TXT = "skip3"
3509 GC0712              MOVE SPACES TO WS-Src-Detail-Line-TXT
3510 GC0712              PERFORM 530-Generate-Source-Line 3 TIMES
3511 GC0712              EXIT SECTION
3512 GC0712      END-EVALUATE
3513      PERFORM 530-Generate-Source-Line
3514      ELSE
3515          IF F-Expanded-Src-REC NOT = SPACES
3516              MOVE SPACES TO WS-Src-Detail-Line-TXT
3517 GC1213      MOVE F-Expanded-Src-REC
3518              TO WS-SDL-Statement-TXT
3519 GC0712      MOVE LOWER-CASE(TRIM(F-OS-8-72-TXT,LEADING))
3520 GC0712      TO WS-Temp-65-Chars-TXT
3521 GC0712      INSPECT WS-Temp-65-Chars-TXT
3522 GC0712      REPLACING ALL '.' BY SPACE
3523 GC0712      EVALUATE TRUE
3524 GC0712          WHEN WS-Temp-65-Chars-TXT = "eject"
3525 GC0712              MOVE 0 TO WS-Lines-Left-NUM
3526 GC0712              EXIT SECTION
3527 GC0712          WHEN WS-Temp-65-Chars-TXT = "skip1"
3528 GC0712              MOVE SPACES TO WS-Src-Detail-Line-TXT
3529 GC0712              PERFORM 530-Generate-Source-Line

```


3530 GC0712

EXIT SECTION

=====

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```

=====
3531 GC0712          WHEN WS-Temp-65-Chars-TXT = "skip2"
3532 GC0712          MOVE SPACES TO WS-Src-Detail-Line-TXT
3533 GC0712          PERFORM 530-Generate-Source-Line 2 TIMES
3534 GC0712          EXIT SECTION
3535 GC0712          WHEN WS-Temp-65-Chars-TXT = "skip3"
3536 GC0712          MOVE SPACES TO WS-Src-Detail-Line-TXT
3537 GC0712          PERFORM 530-Generate-Source-Line 3 TIMES
3538 GC0712          EXIT SECTION
3539 GC0712          END-EVALUATE
3540                  PERFORM 530-Generate-Source-Line
3541                  END-IF
3542          END-IF
3543          .

```

=====

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```

=====
3545          530-Generate-Source-Line SECTION.
3546 GC1213      MOVE 1 TO WS-Src-Lines-NUM
3547 GC1213      IF L-Listing-CD = 1 *> LANDSCAPE
3548 GC1213          IF WS-SDL-Statement-TXT(129:128) > SPACES
3549 GC1213              ADD 1 TO WS-Src-Lines-NUM
3550 GC1213          END-IF
3551 GC1213      ELSE
3552 GC1213          IF WS-SDL-Statement-TXT(90:167) > SPACES
3553 GC1213              ADD 1 TO WS-Src-Lines-NUM
3554 GC1213          IF WS-SDL-Statement-TXT(179:78) > SPACES
3555 GC1213              ADD 1 TO WS-Src-Lines-NUM
3556 GC1213          END-IF
3557 GC1213      END-IF
3558 GC1213      END-IF
3559 GC1213      IF WS-Lines-Left-NUM < WS-Src-Lines-NUM
3560 GC1213          IF WS-Page-Num > 0 *> Don't print footer before page 1
3561 GC1213              IF L-Listing-CD = 1 *> LANDSCAPE
3562 GC1213                  IF WS-Src-Lines-NUM = 2
3563 GC1213                      WRITE F-Listing-135-REC FROM SPACES BEFORE 1 *> Blank Line
3564 GC1213                  END-IF
3565 GC1213                  WRITE F-Listing-135-REC FROM SPACES BEFORE 1 *> Footer Line #1
3566 GC1213                  MOVE ALL '='
3567 GC1213                      TO F-Listing-135-REC
3568 GC1213                  WRITE F-Listing-135-REC BEFORE 1 *> Footer Line #2
3569 GC1213                  MOVE WS-Copyright-TXT
3570 GC1213                      TO F-Listing-135-REC
3571 GC1213                  MOVE WS-Page-No-TXT
3572 GC1213                      TO F-Listing-135-REC(126:10)
3573 GC1213                  WRITE F-Listing-135-REC BEFORE PAGE *> Footer Line #3
3574 GC1213                  WRITE F-Listing-135-REC FROM SPACES BEFORE 1 *> Spaces After FF Ch
aracter
3575 GC1213              ELSE
3576 GC1213                  EVALUATE WS-Src-Lines-NUM
3577 GC1213                      WHEN 1 *> Need no extra blank lines
3578 GC1213                          CONTINUE
3579 GC1213                      WHEN 2 *> Need 1 extra blank line
3580 GC1213                          WRITE F-Listing-96-REC FROM SPACES BEFORE 1
3581 GC1213                      WHEN 3 *> Need 2 extra blank lines
3582 GC1213                          WRITE F-Listing-96-REC FROM SPACES BEFORE 1
3583 GC1213                          WRITE F-Listing-96-REC FROM SPACES BEFORE 1
3584 GC1213                      END-EVALUATE
3585 GC1213                  WRITE F-Listing-96-REC FROM SPACES BEFORE 1 *> Footer Line #1
3586 GC1213                  MOVE ALL '='
3587 GC1213                      TO F-Listing-96-REC
3588 GC1213                  WRITE F-Listing-96-REC BEFORE 1 *> Footer Line #2
3589 GC1213                  MOVE WS-Copyright-TXT
3590 GC1213                      TO F-Listing-96-REC
3591 GC1213                  MOVE WS-Page-No-TXT
3592 GC1213                      TO F-Listing-96-REC(87:10)
3593 GC1213                  WRITE F-Listing-96-REC BEFORE PAGE *> Footer Line #3
3594 GC1213                  WRITE F-Listing-96-REC FROM SPACES BEFORE 1 *> Spaces After FF Cha
=====

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```

=====
3595 GC1213          END-IF
3596 GC1213          END-IF
3597 GC1213          ADD 1              TO WS-Page-NUM
3598 GC1213          MOVE 'Page:'      TO WS-PN-Literal-TXT
3599 GC1213          MOVE WS-Page-NUM TO WS-PN-Page-NUM
3600 GC1213          CALL 'C$JUSTIFY' USING WS-PN-Page-NUM, 'Left'
3601 GC1213          CALL 'C$JUSTIFY' USING WS-Page-No-TXT, 'Right'
3602 GC1213          IF L-Listing-CD = 1 *> LANDSCAPE
3603 GC1213              MOVE WS-Version-TXT
3604 GC1213                  TO F-Listing-135-REC
3605 GC1213              MOVE 'Source Listing'
3606 GC1213                  TO F-Listing-135-REC(25:14)
3607 GC1213              MOVE WS-Formatted-DT
3608 GC1213                  TO F-Listing-135-REC(126:10)
3609 GC1213              WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #1
3610 GC1213              MOVE WS-Program-Path-TXT
3611 GC1213                  TO F-Listing-135-REC
3612 GC1213              WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #2
3613 GC1213              MOVE 'Line Statement'
3614 GC1213                  TO F-Listing-135-REC
3615 GC1213              MOVE WS-Page-No-TXT
3616 GC1213                  TO F-Listing-135-REC(126:10)
3617 GC1213              WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #3
3618 GC1213              MOVE WS-Src-Dashes-TXT
3619 GC1213                  TO F-Listing-135-REC
3620 GC1213              WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #4
3621 GC1213          ELSE
3622 GC1213              MOVE WS-Version-TXT
3623 GC1213                  TO F-Listing-96-REC
3624 GC1213              MOVE 'Source Listing'
3625 GC1213                  TO F-Listing-96-REC(25:14)
3626 GC1213              MOVE WS-Formatted-DT
3627 GC1213                  TO F-Listing-96-REC(87:10)
3628 GC1213              WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #1
3629 GC1213              MOVE WS-Program-Path-TXT(40:96)
3630 GC1213                  TO F-Listing-96-REC
3631 GC1213              WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #2
3632 GC1213              MOVE 'Line Statement'
3633 GC1213                  TO F-Listing-96-REC
3634 GC1213              MOVE WS-Page-No-TXT
3635 GC1213                  TO F-Listing-96-REC(87:10)
3636 GC1213              WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #3
3637 GC1213              MOVE WS-Src-Dashes-TXT
3638 GC1213                  TO F-Listing-96-REC
3639 GC1213              WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #4
3640 GC1213          END-IF
3641 GC1213          COMPUTE WS-Lines-Left-NUM = WS-Lines-Per-Page-NUM - 4
3642 GC1213          END-IF
3643 GC1213          IF L-Listing-CD = 1 *> LANDSCAPE
3644 GC1213              EVALUATE WS-Src-Lines-NUM
3645 GC1213              WHEN 1
3646 GC1213                  MOVE WS-Src-Detail-Line-TXT TO F-Listing-135-REC

```

3647 GC1213 WRITE F-Listing-96-REC BEFORE 1

=====

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```

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

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			/home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl			
PROGRAM-ID	Identifier/Register/Function	Defn	Where Defined	References	Page: 89	
=====	=====	=====	=====	=====	=====	
CHECKSRC	000-Main	1315	PROCEDURE			
CHECKSRC	L-A1-CHR	1305	LINKAGE		1329	1332
				1339		
CHECKSRC	L-A2-IDENT-DIVISION-BOOL	1310	LINKAGE	1361*		
CHECKSRC	L-A2-LINKAGE-SECTION-BOOL	1309	LINKAGE	1355*		
CHECKSRC	L-A2-Nothing-Special-BOOL	1311	LINKAGE	1316*		
CHECKSRC	L-Argument-1-TXT	1304	LINKAGE	1313		
CHECKSRC	L-Argument-2-CHR	1308	LINKAGE	1314		
CHECKSRC	WS-Compressed-Src-TXT	1291	WORKING-STORAGE	1326*	1349	1353
				1359		
CHECKSRC	WS-CS-CHR	1292	WORKING-STORAGE	1333*	1339*	1348
				1352	1358	
CHECKSRC	WS-I-SUB	1300	WORKING-STORAGE	1327*	1328	1329
				1332	1339	1345*
				1346	1348	1349
				1352	1352	1353
				1358	1358	1359
CHECKSRC	WS-J-SUB	1302	WORKING-STORAGE	1325*	1331*	1333
				1338*	1339	
CHECKSRC	WS-RS-Found-SPACE-CHR	1296	WORKING-STORAGE			
CHECKSRC	WS-RS-Not-Skipping-SPACE-BOOL	1298	WORKING-STORAGE	1324*	1330	1337*
CHECKSRC	WS-RS-Skipping-SPACE-BOOL	1297	WORKING-STORAGE	1334*		
CHECKSRC	WS-Runtime-Switches-TXT	1295	WORKING-STORAGE			

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PROGRAM-ID	Identifier/Register/Function	Defn	Where Defined	References	Page: 90	
GCic	000-File-Error	654	PROCEDURE			
GCic	000-Main	675	PROCEDURE			
GCic	100-Initialization	699	PROCEDURE	676		
GCic	200-Let-User-Set-Switches	813	PROCEDURE	679		
GCic	210-Run-Compiler	904	PROCEDURE	680		
GCic	220-Make-Listing	1040	PROCEDURE	684		
GCic	230-Run-Program	1071	PROCEDURE	688		
GCic	240-Find-LINKAGE-SECTION	1173	PROCEDURE	747		
GCic	250-Autoload-Listing	1212	PROCEDURE	690	1031	1065
GCic	900-Terminate	1258	PROCEDURE	692	741	884
				1032	1166	
GCic	COB-COLOR-BLACK	178	[screenio]	439	444	534
				544	554	559
				569	576	591
				606	622	629
				636		
GCic	COB-COLOR-BLUE	178	[screenio]	522		
GCic	COB-COLOR-CYAN	178	[screenio]	535		
GCic	COB-COLOR-GREEN	178	[screenio]	445	560	607
				623		
GCic	COB-COLOR-MAGENTA	178	[screenio]			
GCic	COB-COLOR-RED	178	[screenio]	528	592	
GCic	COB-COLOR-WHITE	178	[screenio]	440	523	529
				545	555	570
				577	630	637
GCic	COB-COLOR-YELLOW	178	[screenio]			
GCic	COB-SCR-ESC	178	[screenio]	883		
GCic	COB-SCR-F1	178	[screenio]	830		
GCic	COB-SCR-F10	178	[screenio]			
GCic	COB-SCR-F11	178	[screenio]			
GCic	COB-SCR-F12	178	[screenio]	886		
GCic	COB-SCR-F13	178	[screenio]			
GCic	COB-SCR-F14	178	[screenio]			
GCic	COB-SCR-F15	178	[screenio]			
GCic	COB-SCR-F16	178	[screenio]			
GCic	COB-SCR-F17	178	[screenio]			
GCic	COB-SCR-F18	178	[screenio]			
GCic	COB-SCR-F19	178	[screenio]			
GCic	COB-SCR-F2	178	[screenio]	836		
GCic	COB-SCR-F20	178	[screenio]			
GCic	COB-SCR-F21	178	[screenio]			
GCic	COB-SCR-F22	178	[screenio]			
GCic	COB-SCR-F23	178	[screenio]			
GCic	COB-SCR-F24	178	[screenio]			
GCic	COB-SCR-F25	178	[screenio]			
GCic	COB-SCR-F26	178	[screenio]			
GCic	COB-SCR-F27	178	[screenio]			
GCic	COB-SCR-F28	178	[screenio]			
GCic	COB-SCR-F29	178	[screenio]			
GCic	COB-SCR-F3	178	[screenio]	842		
GCic	COB-SCR-F30	178	[screenio]			
GCic	COB-SCR-F31	178	[screenio]			

GCic COB-SCR-F32 178 [screenio]

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GCic	COB-SCR-F33	178	[screenio]		
GCic	COB-SCR-F34	178	[screenio]		
GCic	COB-SCR-F35	178	[screenio]		
GCic	COB-SCR-F36	178	[screenio]		
GCic	COB-SCR-F37	178	[screenio]		
GCic	COB-SCR-F38	178	[screenio]		
GCic	COB-SCR-F39	178	[screenio]		
GCic	COB-SCR-F4	178	[screenio]	848	
GCic	COB-SCR-F40	178	[screenio]		
GCic	COB-SCR-F41	178	[screenio]		
GCic	COB-SCR-F42	178	[screenio]		
GCic	COB-SCR-F43	178	[screenio]		
GCic	COB-SCR-F44	178	[screenio]		
GCic	COB-SCR-F45	178	[screenio]		
GCic	COB-SCR-F46	178	[screenio]		
GCic	COB-SCR-F47	178	[screenio]		
GCic	COB-SCR-F48	178	[screenio]		
GCic	COB-SCR-F49	178	[screenio]		
GCic	COB-SCR-F5	178	[screenio]	854	
GCic	COB-SCR-F50	178	[screenio]		
GCic	COB-SCR-F51	178	[screenio]		
GCic	COB-SCR-F52	178	[screenio]		
GCic	COB-SCR-F53	178	[screenio]		
GCic	COB-SCR-F54	178	[screenio]		
GCic	COB-SCR-F55	178	[screenio]		
GCic	COB-SCR-F56	178	[screenio]		
GCic	COB-SCR-F57	178	[screenio]		
GCic	COB-SCR-F58	178	[screenio]		
GCic	COB-SCR-F59	178	[screenio]		
GCic	COB-SCR-F6	178	[screenio]	859	
GCic	COB-SCR-F60	178	[screenio]		
GCic	COB-SCR-F61	178	[screenio]		
GCic	COB-SCR-F62	178	[screenio]		
GCic	COB-SCR-F63	178	[screenio]		
GCic	COB-SCR-F64	178	[screenio]		
GCic	COB-SCR-F7	178	[screenio]	865	
GCic	COB-SCR-F8	178	[screenio]	871	
GCic	COB-SCR-F9	178	[screenio]	877	
GCic	COB-SCR-FATAL	178	[screenio]		
GCic	COB-SCR-KEY-DOWN	178	[screenio]		
GCic	COB-SCR-KEY-UP	178	[screenio]		
GCic	COB-SCR-MAX-FIELD	178	[screenio]		
GCic	COB-SCR-NO-FIELD	178	[screenio]		
GCic	COB-SCR-OK	178	[screenio]		
GCic	COB-SCR-PAGE_DOWN	178	[screenio]		
GCic	COB-SCR-PAGE_UP	178	[screenio]		
GCic	COB-SCR-PRINT	178	[screenio]		
GCic	COB-SCR-TIME-OUT	178	[screenio]		
GCic	F-Cobc-Output-FILE	171	FILE	162 1008 1026	
GCic	F-Cobc-Output-REC	172	FILE	1009 1014* 1015	
				1023* 1024	
GCic	F-Source-Code-FILE	174	FILE	165 655 1174	

1178 1179 1192

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```

=====
GCic      F-Source-Code-REC      175 FILE      1193 1200
GCic      F1                     WORKING-STORAGE 1183C 1197C
GCic      F12                    WORKING-STORAGE 206
GCic      F2                     WORKING-STORAGE 200
GCic      F3                     WORKING-STORAGE 213
GCic      F4                     WORKING-STORAGE 209
GCic      F5                     WORKING-STORAGE 207
GCic      F6                     WORKING-STORAGE 210 257
GCic      F7                     WORKING-STORAGE 211
GCic      F8                     WORKING-STORAGE 214
GCic      F9                     WORKING-STORAGE 208
GCic      F9                     WORKING-STORAGE 212
GCic      LD-Horiz-Line          433 SCREEN      801
GCic      LD-LL-Corner           428 SCREEN      456 486 502
                                           516
GCic      LD-Lower-T             432 SCREEN      488
GCic      LD-LR-Corner           430 SCREEN      458 490 504
                                           518
GCic      LD-UL-Corner           427 SCREEN      446 460 492
                                           506
GCic      LD-Upper-T             431 SCREEN      462
GCic      LD-UR-Corner           429 SCREEN      448 464 494
                                           508
GCic      LD-Vert-Line           434 SCREEN      450 451 453
                                           454 466 467
                                           468 470 471
                                           472 474 475
                                           476 478 479
                                           480 482 483
                                           484 496 497
                                           499 500 510
                                           511 513 514
GCic      LPP                    PROCEDURE      1051C
GCic      LPPP                   PROCEDURE      1052C
GCic      RETURN-CODE            PROCEDURE      1010 1043* 1057*
                                           1059
GCic      S-Blank-SCR            437 SCREEN      683 1234 1263
GCic      S-Switches-SCR         439 SCREEN      827* 908 998
                                           1027 1042 1063
                                           1074 1260
GCic      SELCHAR                PROCEDURE      719 822 825
                                           832 838 844
                                           850 861 867
                                           873 879 1202
GCic      WS-Cmd-Args-TXT        229 WORKING-STORAGE 723* 725 726
                                           729 734
GCic      WS-Cmd-End-Quote-CHR   231 WORKING-STORAGE 727* 730
GCic      WS-Cmd-SUB             233 WORKING-STORAGE 724* 725 726
                                           728* 732* 737*
GCic      WS-Cmd-TXT             227 WORKING-STORAGE 905* 1000* 1005*
                                           1007C 1076* 1083*
                                           1093* 1096* 1103*
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1107* 1113* 1118*

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=====	=====	=====	=====	=====	
			1123* 1131* 1139*		
			1145* 1151* 1156*		
			1163C 1215* 1219*		
			1220C 1222* 1226*		
			1227C 1237* 1240*		
			1243C 1245C 1247C		
			1249C 1251C		
GCic	WS-Cobc-Cmd-TXT	235 WORKING-STORAGE	906* 915* 919*		
			923* 927* 932*		
			937* 942* 947*		
			952* 957* 961*		
			974* 982* 986*		
			1001		
GCic	WS-Compilation-Switches-TXT	180 WORKING-STORAGE			
GCic	WS-Config-Fn-TXT	237 WORKING-STORAGE	911* 917		
GCic	WS-CS-All-Switches-TXT	215 WORKING-STORAGE			
GCic	WS-CS-Arg-H1-TXT	182 WORKING-STORAGE	640*		
GCic	WS-CS-Arg-H2-TXT	183 WORKING-STORAGE	641*		
GCic	WS-CS-Args-TXT	181 WORKING-STORAGE	1154 1155		
GCic	WS-CS-Config-NUM	200 WORKING-STORAGE	632 887* 888		
			889* 910		
GCic	WS-CS-DEBUG-CHR	217 WORKING-STORAGE	593 831 832*		
			834* 930		
GCic	WS-CS-EXECUTE-CHR	218 WORKING-STORAGE	596 686 849		
			850* 852*		
GCic	WS-CS-Extra-H1-TXT	203 WORKING-STORAGE	638*		
GCic	WS-CS-Extra-H2-TXT	204 WORKING-STORAGE	639*		
GCic	WS-CS-Extra-TXT	202 WORKING-STORAGE	978 980		
GCic	WS-CS-Filename-TXT	193 WORKING-STORAGE	632 910		
GCic	WS-CS-Filenames-Table-TXT	192 WORKING-STORAGE			
GCic	WS-CS-Filenames-TXT	184 WORKING-STORAGE	192		
GCic	WS-CS-FREE-CHR	219 WORKING-STORAGE	601 872 873*		
			875* 955		
GCic	WS-CS-LIBRARY-CHR	220 WORKING-STORAGE	595 843 844*		
			846* 921 1081		
			1136 1175* 1202*		
GCic	WS-CS-LISTING-CHR	221 WORKING-STORAGE	597 682 819*		
			822* 825* 968		
			970* 972		
GCic	WS-CS-NOFUNC-CHR	222 WORKING-STORAGE	599 860 861*		
			863* 945		
GCic	WS-CS-NOTRUNC-CHR	223 WORKING-STORAGE	602 878 879*		
			881* 935		
GCic	WS-CS-Switch-Defaults-TXT	205 WORKING-STORAGE	216		
GCic	WS-CS-TRACEALL-CHR	224 WORKING-STORAGE	594 837 838*		
			840* 940		
GCic	WS-CS-WARNALL-CHR	225 WORKING-STORAGE	600 866 867*		
			869* 950		
GCic	WS-Delete-Fn-TXT	239 WORKING-STORAGE			
GCic	WS-File-Name-TXT	241 WORKING-STORAGE	165 663 668		
			731* 736* 739		
			752 755 762		

765 776 1049C

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GCic	WS-File-Status-Message-TXT	245	WORKING-STORAGE			
GCic	WS-FN-CHR	242	WORKING-STORAGE	757	764*	768*
GCic	WS-FSM-Msg-TXT	249	WORKING-STORAGE	658*	658*	658*
				658*	658*	658*
				658*	658*	658*
				658*	658*	658*
				658*	658*	658*
				658*	658*	658*
				658*	658*	658*
				658*	658*	658*
				658*	658*	658*
GCic	WS-FSM-Status-CD	247	WORKING-STORAGE	167	658	660
GCic	WS-Horizontal-Line-TXT	251	WORKING-STORAGE	447	457	461
				463	487	489
				493	503	507
				517	801*	
GCic	WS-I-SUB	253	WORKING-STORAGE	755*	756	757
				758	760	764
				768	783*	784
				785	786	788
				792	796	909*
				920*	924*	928*
				933*	938*	943*
				948*	953*	958*
				962*	975*	983*
				987*	1077*	1084*
				1094*	1097*	1104*
				1108*	1114*	1119*
				1124*	1132*	1140*
				1146*	1152*	1157*
GCic	WS-J-SUB	255	WORKING-STORAGE	1099*	1100	1101
				1106		
GCic	WS-Listing-CD	257	WORKING-STORAGE	816	855*	856
				857*	1053C	
GCic	WS-Listing-Filename-TXT	259	WORKING-STORAGE	162	992*	993C
				1002	1020	1048C
				1218	1225	
GCic	WS-Listing-TXT	261	WORKING-STORAGE	613	818*	821*
				824*		
GCic	WS-OC-Compile-DT	263	WORKING-STORAGE	525	709*	
GCic	WS-OS-Cygwin-BOOL	297	WORKING-STORAGE	752	776	1091
				1121	1214	
GCic	WS-OS-Dir-CHR	284	WORKING-STORAGE	753*	757	768
				777*	1117	
GCic	WS-OS-Exe-Ext-CONST	285	WORKING-STORAGE	1137	1138	
GCic	WS-OS-Lib-Ext-CONST	286	WORKING-STORAGE	1143	1144	
GCic	WS-OS-Lib-Type-CONST	287	WORKING-STORAGE	611		
GCic	WS-OS-OSX-BOOL	299	WORKING-STORAGE	1221		
GCic	WS-OS-Type-CD	288	WORKING-STORAGE	803	1050C	
GCic	WS-OS-Type-FILLER-TXT	301	WORKING-STORAGE	307		
GCic	WS-OS-Type-TXT	308	WORKING-STORAGE	803		

GCic

WS-OS-Types-TXT

307 WORKING-STORAGE

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GCic	WS-OS-UNIX-BOOL	298	WORKING-STORAGE	1121			
GCic	WS-OS-Windows-BOOL	296	WORKING-STORAGE	1214	1235		
GCic	WS-Output-Msg-TXT	311	WORKING-STORAGE	530	659*	806*	
				893*	907*	997*	
				1012*	1013	1021*	
				1029*	1041*	1047*	
				1056*	1061*	1073*	
				1164*	1165*	1259	
GCic	WS-Path-Delimiter-CHR	313	WORKING-STORAGE				
GCic	WS-PFN-CHR	320	WORKING-STORAGE	785	792*	796*	
GCic	WS-Pgm-Nm-TXT	323	WORKING-STORAGE	789*	794*	991	
				1130	1236	1239	
GCic	WS-Prog-Extension-TXT	315	WORKING-STORAGE	790*	795*		
GCic	WS-Prog-File-Name-TXT	319	WORKING-STORAGE	571	762*	767*	
				783	789	793	
				985			
GCic	WS-Prog-Folder-TXT	317	WORKING-STORAGE	572	761*	766*	
				770	771*	774C	
				1090	1091	1095	
				1100	1101	1106	
				1112			
GCic	WS-RS-1st-Prog-Complete-BOOL	336	WORKING-STORAGE	1177	1186*		
GCic	WS-RS-Compile-Failed-BOOL	329	WORKING-STORAGE	1018*	1030		
GCic	WS-RS-Compile-OK-BOOL	327	WORKING-STORAGE	681	1011*		
GCic	WS-RS-Compile-OK-CHR	326	WORKING-STORAGE				
GCic	WS-RS-Compile-OK-Warn-BOOL	328	WORKING-STORAGE	681			
GCic	WS-RS-Complete-BOOL	331	WORKING-STORAGE	678	1016*		
GCic	WS-RS-Complete-CHR	330	WORKING-STORAGE				
GCic	WS-RS-Double-Quote-Used-BOOL	334	WORKING-STORAGE	1089*	1115*	1149	
GCic	WS-RS-IDENT-DIV-CHR	335	WORKING-STORAGE				
GCic	WS-RS-More-To-1st-Prog-BOOL	337	WORKING-STORAGE	1176*			
GCic	WS-RS-No-Switch-Changes-BOOL	339	WORKING-STORAGE	815	896*		
GCic	WS-RS-No-Switch-Chgs-CHR	338	WORKING-STORAGE				
GCic	WS-RS-Not-Complete-BOOL	332	WORKING-STORAGE	677*			
GCic	WS-RS-Output-File-Avail-BOOL	343	WORKING-STORAGE	687	999*		
GCic	WS-RS-Output-File-Busy-BOOL	342	WORKING-STORAGE				
GCic	WS-RS-Output-File-Busy-CHR	341	WORKING-STORAGE				
GCic	WS-RS-Quote-CHR	333	WORKING-STORAGE				
GCic	WS-RS-Source-Rec-Ident-BOOL	346	WORKING-STORAGE	1185	1191		
GCic	WS-RS-Source-Rec-Ignored-BOOL	347	WORKING-STORAGE	1189*			
GCic	WS-RS-Source-Rec-Linkage-BOOL	345	WORKING-STORAGE	1190	1201		
GCic	WS-RS-Source-Record-Type-CHR	344	WORKING-STORAGE	1184C	1198C		
GCic	WS-RS-Switch-Changes-BOOL	340	WORKING-STORAGE	814*			
GCic	WS-RS-Switch-Error-CHR	348	WORKING-STORAGE				
GCic	WS-RS-Switch-Is-Bad-BOOL	349	WORKING-STORAGE				
GCic	WS-RS-Switch-Is-Good-BOOL	350	WORKING-STORAGE				
GCic	WS-Runtime-Switches-TXT	325	WORKING-STORAGE				
GCic	WS-Tally-QTY	352	WORKING-STORAGE	965*	967*	969	

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LISTING	000-Main	2406	PROCEDURE		
LISTING	100-Initialization	2423	PROCEDURE	2407	
LISTING	300-Tokenize-Source	2496	PROCEDURE	2414	
LISTING	310-Get-Token	2547	PROCEDURE	2505	
LISTING	311-Control-Record	2707	PROCEDURE	2566	
LISTING	312-Expanded-Src-Record	2753	PROCEDURE	2568	
LISTING	313-Check-For-Numeric-Token	2764	PROCEDURE	2694	
LISTING	320-IDENTIFICATION-DIVISION	2806	PROCEDURE	2526	
LISTING	330-ENVIRONMENT-DIVISION	2826	PROCEDURE	2528	
LISTING	340-DATA-DIVISION	2852	PROCEDURE	2530	
LISTING	350-PROCEDURE-DIVISION	2908	PROCEDURE	2532	
LISTING	351-ACCEPT	2979	PROCEDURE	2935	
LISTING	351-ADD	2989	PROCEDURE	2937	
LISTING	351-ALLOCATE	3000	PROCEDURE	2939	
LISTING	351-CALL	3012	PROCEDURE	2941	
LISTING	351-COMPUTE	3023	PROCEDURE	2943	
LISTING	351-DIVIDE	3032	PROCEDURE	2945	
LISTING	351-FREE	3052	PROCEDURE	2947	
LISTING	351-GENERATE	3056	PROCEDURE	2949	2953 2969
LISTING	351-INITIALIZE	3060	PROCEDURE	2951	
LISTING	351-INITIATE	3069	PROCEDURE		
LISTING	351-INSPECT	3073	PROCEDURE	2955	
LISTING	351-MOVE	3103	PROCEDURE	2957	
LISTING	351-MULTIPLY	3112	PROCEDURE	2959	
LISTING	351-PERFORM	3128	PROCEDURE	2961	
LISTING	351-SET	3141	PROCEDURE	2963	
LISTING	351-STRING	3150	PROCEDURE	2965	
LISTING	351-SUBTRACT	3161	PROCEDURE	2967	
LISTING	351-TERMINATE	3172	PROCEDURE		
LISTING	351-TRANSFORM	3176	PROCEDURE	2971	
LISTING	351-UNSTRING	3186	PROCEDURE	2973	
LISTING	360-Release-Def	3203	PROCEDURE	2842	2879 2882
				2885	2888 2891
				2926	
LISTING	361-Release-Ref	3214	PROCEDURE	2844	2848 2901
				2975	2985 2996
				3008	3028 3048
				3065	3099 3108
				3124	3137 3146
				3157	3168 3182
				3199	
LISTING	362-Release-Upd	3219	PROCEDURE	2894	2897 2982
				2992	2994 3003
				3006	3015 3017
				3026	3044 3046
				3053	3057 3063
				3070	3080 3106
				3122	3131 3134
				3144	3153 3155
				3164	3166 3173
				3179	3189 3191
				3193	3195 3197

LISTING 363-Set-Upd 3224 PROCEDURE 3035 3115 3220

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LISTING	364-Set-Ref	3234	PROCEDURE	3076 3215	
LISTING	365-Release-Arg	3243	PROCEDURE	3019	
LISTING	366-Set-Arg	3248	PROCEDURE	3244	
LISTING	400-Produce-Xref-Listing	3259	PROCEDURE	2415	
LISTING	410-Generate-Report-Line	3337	PROCEDURE	3268 3271 3281	
				3285 3295 3307	
				3323 3333	
LISTING	420-Generate-Xref-Footer	3405	PROCEDURE	3274 3339	
LISTING	500-Produce-Source-Listing	3439	PROCEDURE	2409	
LISTING	510-Control-Record	3462	PROCEDURE	3452	
LISTING	520-Expanded-Src-Record	3479	PROCEDURE	3454	
LISTING	530-Generate-Source-Line	3545	PROCEDURE	3446 3493 3497	
				3502 3506 3510	
				3513 3529 3533	
				3537 3540	
LISTING	F-ES-1-7-TXT	1426	FILE	2564 3450	
LISTING	F-ES-1-CHR	1423	FILE	2565 3451	
LISTING	F-ES-2-256-TXT-256	1424	FILE	2708 3463	
LISTING	F-ES-8-256-TXT	1427	FILE		
LISTING	F-Expanded-Src-FILE	1421	FILE	1412 2497 2544	
				2554 3441 3444	
				3459 3472	
LISTING	F-Expanded-Src-REC	1422	FILE	2498* 2552 2576	
				2578 2608 2612	
				2621 2625 2634	
				2638 2646 2664	
				2749* 2754 3515	
				3517	
LISTING	F-Expanded-Src2-REC	1425	FILE		
LISTING	F-Listing-135-REC	1431	FILE	3347* 3349* 3351*	
				3352 3354* 3355	
				3358* 3360* 3361	
				3362* 3363* 3364	
				3365 3366 3367	
				3395 3407 3409*	
				3410 3412* 3414*	
				3416 3418 3419	
				3563 3565 3567*	
				3568 3570* 3572*	
				3573 3574 3604*	
				3606* 3608* 3609	
				3611* 3612 3614*	
				3616* 3617 3619*	
				3620 3646* 3651*	
				3652 3655* 3656	
LISTING	F-Listing-96-REC	1430	FILE	3370* 3372* 3374*	
				3375 3377* 3378	
				3381* 3383* 3384	
				3385* 3386* 3387	
				3388 3389 3390	
				3398 3422 3424*	
				3425 3427* 3429*	

3431 3433 3434

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				3580	3582 3583
				3585	3587* 3588
				3590*	3592* 3593
				3594	3623* 3625*
				3627*	3628 3630*
				3631	3633* 3635*
				3636	3638* 3639
				3647	3662 3667
				3671	3676 3680
				3684	
LISTING	F-Listing-FILE	1429	FILE	1414	2408 2416
LISTING	F-Listing-REC	1432	FILE		
LISTING	F-Original-Src-FILE	1434	FILE	1416	3440 3458
				3482	
				3486	
LISTING	F-Original-Src-REC	1435	FILE		
LISTING	F-OS-1-128-TXT	1436	FILE		
LISTING	F-OS-129-256-TXT	1441	FILE		
LISTING	F-OS-7-CHR	1438	FILE	3491	
LISTING	F-OS-8-72-TXT	1439	FILE	3487	3519
LISTING	F-Sort-Work-FILE	1443	FILE	1418	2410 3266
LISTING	F-Sort-Work-REC	1444	FILE	2519*	2521 2556*
				2558	3036 3039*
				3042	3084* 3087
				3092*	3095 3116
				3118*	3121 3204*
				3211	3216 3221
				3225*	3235* 3245
				3249*	
LISTING	F-SW-Def-Line-NUM	1449	FILE	3209*	3292 3300
				3304	3316 3317
LISTING	F-SW-Prog-ID-TXT	1445	FILE	2411	3205* 3226*
				3236*	3250* 3277
				3283	3288 3297
				3309	3313
LISTING	F-SW-Ref-Flag-CHR	1452	FILE	3041*	3086* 3094*
				3120*	3231* 3255*
				3328	
LISTING	F-SW-Ref-Line-NUM	1451	FILE	2413	3210* 3230*
				3240*	3254* 3326
LISTING	F-SW-Reference-TXT	1450	FILE	3320	
LISTING	F-SW-Section-TXT	1448	FILE	3208*	3229* 3239*
				3253*	3299 3315
LISTING	F-SW-Token-TXT	1447	FILE	3207*	3228* 3238*
				3252*	3314
LISTING	F-SW-Token-Uc-TXT	1446	FILE	2412	3206* 3227*
				3237*	3251* 3278
				3289	3291 3303
LISTING	L-Listing-CD	2398	LINKAGE	2405	2445 2482
				3345	3394 3406
				3547	3561 3602
				3643	
LISTING	L-Listing-Fn-TXT	2388	LINKAGE	1414	2400

LISTING	L-LPP-NUM	2394 LINKAGE	2403	2483
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LISTING	L-LPP-Port-NUM	2396	LINKAGE	2404 2485	
LISTING	L-OS-Type-CD	2392	LINKAGE	2402 2428	
LISTING	L-Src-Fn-TXT	2390	LINKAGE	1416 2401 2433	
				2433* 2434 2435	
				2439 2442 2455	
				2457 2459 2464	
LISTING	RETURN-CODE		PROCEDURE	2475	
LISTING	WS-CD-In-DATA-DIV-BOOL	1469	WORKING-STORAGE	2529	
LISTING	WS-CD-In-ENV-DIV-BOOL	1468	WORKING-STORAGE	2527	
LISTING	WS-CD-In-IDENT-DIV-BOOL	1467	WORKING-STORAGE	2525	
LISTING	WS-CD-In-PROC-DIV-BOOL	1470	WORKING-STORAGE	2531	
LISTING	WS-Copyright-TXT	1455	WORKING-STORAGE	2426* 2431* 3411	
				3426 3569 3589	
LISTING	WS-CPI-13-15-TXT	1476	WORKING-STORAGE	2820*	
LISTING	WS-CPI-16-CHR	1477	WORKING-STORAGE	2819	
LISTING	WS-CS-1-CHR	1480	WORKING-STORAGE	2742*	
LISTING	WS-CS-11-14-TXT	1483	WORKING-STORAGE	2744 2745*	
LISTING	WS-CS-15-CHR	1484	WORKING-STORAGE	2747*	
LISTING	WS-CS-2-14-TXT	1481	WORKING-STORAGE	2743*	
LISTING	WS-Curr-Char-Is-Punct-BOOL	1458	WORKING-STORAGE	2587 2595 2600	
LISTING	WS-Curr-Char-Is-Quote-BOOL	1462	WORKING-STORAGE	2606	
LISTING	WS-Curr-Char-Is-X-BOOL	1463	WORKING-STORAGE	2619	
LISTING	WS-Curr-Char-Is-Z-BOOL	1464	WORKING-STORAGE	2632	
LISTING	WS-Curr-CHR	1457	WORKING-STORAGE	2577* 2580 2582	
				2588 2596 2602	
				2609	
LISTING	WS-Curr-Division-TXT	1466	WORKING-STORAGE	2502* 2538 2589	
				2597 2697 2813*	
				2832* 2858* 2914*	
				2919*	
LISTING	WS-Curr-Line-NUM	1472	WORKING-STORAGE	2501* 2561* 2720*	
				2760* 3209 3230	
				3240 3254 3481*	
LISTING	WS-Curr-Prog-ID-TXT	1474	WORKING-STORAGE	2491* 2818* 3205	
				3226 3236 3250	
LISTING	WS-Curr-Section-TXT	1479	WORKING-STORAGE	2723* 2728 2837*	
				2863* 2909 2910*	
				3208 3229 3239	
				3253	
LISTING	WS-Curr-Verb-TXT	1486	WORKING-STORAGE	2492* 2516* 2540*	
				2924 2933	
LISTING	WS-Delim-TXT	1488	WORKING-STORAGE	2649* 2651 2669*	
				2671 2674	
LISTING	WS-Dummy-TXT	1490	WORKING-STORAGE	2467* 2712* 2741*	
				2774* 2779* 2780	
				3467*	
LISTING	WS-Expanded-Src-Fn-TXT	1492	WORKING-STORAGE	1412 2472* 2473C	
LISTING	WS-Filename-TXT	1494	WORKING-STORAGE	2466* 2469 2740*	
				2743	
LISTING	WS-Flags-TXT	1496	WORKING-STORAGE		
LISTING	WS-Formatted-DT	1499	WORKING-STORAGE	2490* 3350 3373	
				3607 3626	

```
LISTING          WS-GI-Prog-ID-TXT          1502 WORKING-STORAGE  3277    3283    3288*
=====
GCic for UNIX/Linux Copyright (C) 2009-2017, Gary L. Cutler, GPL                      Page: 99
```

GNUCOBOL 2.2 20JUL2017 Cross-Reference Listing			2017/07/22			
			/home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl			
PROGRAM-ID	Identifier/Register/Function	Defn	Where Defined	References	Page: 100	
=====	=====	=====	=====	=====	=====	
LISTING	WS-GI-Token-TXT	1503	WORKING-STORAGE	3278 3303 3261*	3289*	3291
LISTING	WS-Group-Indicators-TXT	1501	WORKING-STORAGE	2493*		
LISTING	WS-Held-Reference-TXT	1505	WORKING-STORAGE	2438* 2520* 2557* 3039 3083 3091 3116*	2518 2555 3036* 3040* 3084 3092 3118	2519 2556 3038 3077* 3085* 3093* 3119*
LISTING	WS-I-SUB	1507	WORKING-STORAGE	2434* 2438 2457* 2461 2720 2734 3262* 3321* 3327	2435 2441* 2459 2464 2731* 2735 3296* 3322 3329	2436 2442 2460 2717* 2733 2738 3308* 3324* 3402*
LISTING	WS-J-SUB	1509	WORKING-STORAGE	2458* 2732*	2462* 2736*	2464 2738
LISTING	WS-Lines-Left-NUM	1511	WORKING-STORAGE	3263* 3338 3447 3525* 3648 3673	3272 3392* 3494 3559 3657 3686	3286 3403 3498 3641* 3664
LISTING	WS-Lines-Per-Page-Env-TXT	1515	WORKING-STORAGE	2447* 2479	2451*	2478
LISTING	WS-Lines-Per-Page-NUM	1513	WORKING-STORAGE	2480* 2488	2483* 3392	2485* 3641
LISTING	WS-Main-Module-Name-TXT	1517	WORKING-STORAGE	2439* 3469	2443*	2719
LISTING	WS-Next-Char-Is-Quote-BOOL	1520	WORKING-STORAGE	2619	2632	
LISTING	WS-Next-CHR	1519	WORKING-STORAGE	2579*	2622	2635
LISTING	WS-OS-Type-FILLER-TXT	1522	WORKING-STORAGE	1528		
LISTING	WS-OS-Type-TXT	1529	WORKING-STORAGE	2428		
LISTING	WS-OS-Types-TXT	1528	WORKING-STORAGE			
LISTING	WS-Page-No-TXT	1534	WORKING-STORAGE	3344C 3413 3591 3634	3359 3428 3601C	3382 3571 3615
LISTING	WS-Page-NUM	1532	WORKING-STORAGE	2424* 3560	3340* 3597*	3342 3599
LISTING	WS-PN-Literal-TXT	1535	WORKING-STORAGE	3341*	3598*	
LISTING	WS-PN-Page-NUM	1536	WORKING-STORAGE	3342* 3600C	3343C	3599*
LISTING	WS-Program-Path-TXT	1538	WORKING-STORAGE	2455* 3376	2456C 3610	3353 3629
LISTING	WS-Reserved-Word-Table-TXT	2295	WORKING-STORAGE			
LISTING	WS-Reserved-Word-TXT	2296	WORKING-STORAGE	2684		
LISTING	WS-Reserved-Words-TXT	1540	WORKING-STORAGE	2295		


```
LISTING          WS-RS-Duplicate-CHR          2304 WORKING-STORAGE  3264*   3279*   3294*
=====
GCic for UNIX/Linux Copyright (C) 2009-2017, Gary L. Cutler, GPL          Page: 100
```

GNUCOBOL 2.2 20JUL2017 Cross-Reference Listing			2017/07/22		
			/home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl		
PROGRAM-ID	Identifier/Register/Function	Defn	Where Defined	References	Page: 101
=====	=====	=====	=====	=====	=====
				3305 3306*	
LISTING	WS-RS-In-Copybook-BOOL	2307	WORKING-STORAGE	2726*	3475*
LISTING	WS-RS-In-Main-Module-BOOL	2306	WORKING-STORAGE	2721*	2759 3470*
				3480	
LISTING	WS-RS-In-Which-Pgm-CHR	2305	WORKING-STORAGE		
LISTING	WS-RS-Last-Token-Ended-Sent-CHR	2308	WORKING-STORAGE	2550*	2696
LISTING	WS-RS-Processing-PICTURE-CHR	2309	WORKING-STORAGE	2645	2659* 2868*
LISTING	WS-RS-Token-Ended-Sentence-CHR	2310	WORKING-STORAGE	2537	2549 2551*
				2584*	2613* 2626*
				2639*	2652* 2672*
LISTING	WS-RS-Verb-Has-Been-Found-CHR	2311	WORKING-STORAGE	2503*	2688* 2810*
LISTING	WS-Runtime-Switches	2303	WORKING-STORAGE		
LISTING	WS-RW-IDX	2299	WORKING-STORAGE	2685	2686
LISTING	WS-RW-Type-CD	2300	WORKING-STORAGE	2686	
LISTING	WS-RW-Word-TXT	2301	WORKING-STORAGE	2298	2685
LISTING	WS-Saved-Section-TXT	2313	WORKING-STORAGE	2722	2723 2727
				2728*	
LISTING	WS-SDL-Line-NUM	2320	WORKING-STORAGE	3485*	
LISTING	WS-SDL-Statement-TXT	2322	WORKING-STORAGE	3486*	3518* 3548
				3552	3554 3650
				3654*	3666 3670*
				3675	3679* 3683*
LISTING	WS-Src-Dashes-TXT	2315	WORKING-STORAGE	3618	3637
LISTING	WS-Src-Detail-Line-TXT	2319	WORKING-STORAGE	3445*	3484* 3492*
				3496*	3501* 3505*
				3509*	3516* 3528*
				3532*	3536* 3646
				3651	3653* 3655
				3662	3667 3669*
				3671	3676 3678*
				3680	3682* 3684
				3689*	
LISTING	WS-Src-Hold-TXT	2324	WORKING-STORAGE	3650*	3654 3666*
				3670	3675* 3679
				3683	
LISTING	WS-Src-Line-NUM	2326	WORKING-STORAGE	3442*	3471 3483*
				3485	
LISTING	WS-Src-Lines-NUM	2328	WORKING-STORAGE	3546*	3549* 3553*
				3555*	3559 3562
				3576	3644 3660
LISTING	WS-Src-SUB	2330	WORKING-STORAGE	2499*	2552 2553
				2572*	2576 2578
				2581*	2590* 2601*
				2607*	2611* 2612
				2614*	2620* 2624*
				2625	2627* 2633*
				2637*	2638 2640*
				2650*	2653* 2670*
				2675	2750* 2755*
				2757*	
LISTING	WS-Suppress-FF-CHR	1497	WORKING-STORAGE	2425*	3273* 3415
				3430	

LISTING WS-Tally-QTY 2332 WORKING-STORAGE 2789* 2791* 2792

=====

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GNUCOBOL 2.2 20JUL2017 Cross-Reference Listing				2017/07/22		
				/home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl		
PROGRAM-ID	Identifier/Register/Function	Defn	Where Defined	References	Page: 102	
=====	=====	=====	=====	=====	=====	
LISTING	WS-Temp-10-Chars-TXT	2334	WORKING-STORAGE	2796* 2797 2710* 2714 2715* 2717 3465*		
LISTING	WS-Temp-256-Chars-TXT	2344	WORKING-STORAGE	2474C 2711* 2718 2730 2733 2738 3466* 3468		
LISTING	WS-Temp-32-Chars-1-TXT	2336	WORKING-STORAGE	2765* 2768 2775		
LISTING	WS-Temp-32-Chars-2-TXT	2338	WORKING-STORAGE	2772* 2777* 2783 2784* 2800		
LISTING	WS-Temp-32-Chars-3-TXT	2340	WORKING-STORAGE	2773* 2778* 2786 2787* 2800		
LISTING	WS-Temp-65-Chars-TXT	2342	WORKING-STORAGE	3488* 3495 3500 3504 3508 3520* 3524 3527 3531 3535		
LISTING	WS-Today-DT	2346	WORKING-STORAGE	2489* 2490		
LISTING	WS-Token-Curr-TXT	2348	WORKING-STORAGE	2509 2513* 2582* 2591* 2602* 2610* 2623* 2636* 2648* 2655 2668* 2678 2680* 2698* 2765 2812 2818 2831 2836 2857 2862 2866 2900 2918 3207 3228 3238 3252		
LISTING	WS-Token-Curr-Uc-TXT	2350	WORKING-STORAGE	2510* 2513 2516 2535 2912 3206 3227 3237 3251		
LISTING	WS-Token-Prev-TXT	2352	WORKING-STORAGE	2517* 2535* 2539* 2598* 2813 2816 2817* 2832 2837 2841 2858 2863 2872 2873* 2877 2880* 2883* 2886* 2889* 2892* 2895* 2898* 2913 2919 2923 2927* 2980 2983* 2990 3001 3004* 3013 3024 3033 3061 3074 3078* 3081* 3089* 3097* 3104 3113 3129 3132* 3135* 3142 3151 3162 3177 3180* 3187		
LISTING	WS-Token-Search-TXT	2354	WORKING-STORAGE	2678* 2679 2685		
LISTING	WS-Token-Type-CD	2356	WORKING-STORAGE	2583* 2592* 2603* 2656* 2660* 2681* 2686* 2699*		
LISTING	WS-TT-Token-Is-Argtype-BOOL	2357	WORKING-STORAGE	2807 2827 2853		
LISTING	WS-TT-Token-Is-EOF-BOOL	2358	WORKING-STORAGE	2506 2560*		

LISTING WS-TT-Token-Is-Function-BOOL 2359 WORKING-STORAGE 2847

=====

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GNUCOBOL 2.2 20JUL2017 Cross-Reference Listing				2017/07/22		
				/home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl		
PROGRAM-ID	Identifier/Register/Function	Defn	Where Defined	References	Page: 103	
=====	=====	=====	=====	=====	=====	
LISTING	WS-TT-Token-Is-Identifier-BOOL	2360	WORKING-STORAGE	2693*	2840	2876
				2922	2930	
LISTING	WS-TT-Token-Is-Keyword-BOOL	2361	WORKING-STORAGE	2511	2534	2811
				2830	2835	2856
				2861	2867	2917
LISTING	WS-TT-Token-Is-Lit-Alpha-BOOL	2362	WORKING-STORAGE	2616*	2642*	
LISTING	WS-TT-Token-Is-Lit-Number-BOOL	2363	WORKING-STORAGE	2629*	2695	2769*
				2801*		
LISTING	WS-TT-Token-Is-Reserved-Wd-BOOL	2365	WORKING-STORAGE	2512	2808*	2828*
				2854*	2871	
LISTING	WS-TT-Token-Is-Verb-BOOL	2364	WORKING-STORAGE	2515	2687	
LISTING	WS-Usernames-QTY	2367	WORKING-STORAGE	2500*		
LISTING	WS-Version-TXT	2369	WORKING-STORAGE	2432*	3346	3369
				3603	3622	
LISTING	WS-XDL-Def-Line-NUM	2376	WORKING-STORAGE	3300*	3317*	
LISTING	WS-XDL-Prog-ID-TXT	2372	WORKING-STORAGE	3297*	3309*	3313*
LISTING	WS-XDL-Ref-Flag-CHR	2382	WORKING-STORAGE	3329*		
LISTING	WS-XDL-Ref-Line-NUM	2381	WORKING-STORAGE	3327*		
LISTING	WS-XDL-Reference-TXT	2380	WORKING-STORAGE			
LISTING	WS-XDL-Section-TXT	2378	WORKING-STORAGE	3299*	3315*	
LISTING	WS-XDL-Token-TXT	2374	WORKING-STORAGE	3298*	3310*	3314*
LISTING	WS-Xref-Detail-Line-TXT	2371	WORKING-STORAGE	3260*	3267	3270*
				3280	3284*	3293
				3312	3332	3395
				3398	3401*	
LISTING	WS-Xref-Lines-Per-Rec-NUM	2385	WORKING-STORAGE	2446*	2450*	3322

=====

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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

2014/03/27

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

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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GNU COBOL 2.1 23NOV2013 Source Listing

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

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

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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GNU COBOL 2.1 23NOV2013 Source Listing

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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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STREAMIO	L-SCB-Error-Routine-NUM	379	[STREAMIOcb]	479		
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STREAMIO	L-SCB-Func-CLOSE-BOOL	379	[STREAMIOcb]	386		
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STREAMIO	L-SCB-MODE-Both-BOOL	379	[STREAMIOcb]	486	531	
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