

GnuCOBOL Sample Programs

For Version 3.0 rc2 [06Dec2018]

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This manual documents GnuCOBOL 3.0 rc2, 06Dec2018 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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Line Statement

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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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Line Statement

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```

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

```

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```

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

```

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

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

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

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

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

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=====
442 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
443 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
444 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
445 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
446 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
447 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
448 05 LINE + 1.
449 10 COL 52 BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
450 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
451 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
452 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
453 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
454 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
455 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
456 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
457 05 LINE + 1.
458 10 COL 52 BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
459 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
460 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
461 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
462 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
463 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
464 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
465 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
466 05 LINE + 1.
467 10 COL 52 BACKGROUND-COLOR 5 FOREGROUND-COLOR 0 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
468 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 1 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
469 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 2 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
470 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 3 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
471 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 4 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
472 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 5 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
473 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 6 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
474 10 COL + 1 BACKGROUND-COLOR 5 FOREGROUND-COLOR 7 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
475 05 LINE + 1.
476 10 COL 52 BACKGROUND-COLOR 6 FOREGROUND-COLOR 0 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
477 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 1 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
478 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 2 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
479 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 3 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
480 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 4 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
481 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 5 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
482 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 6 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
483 10 COL + 1 BACKGROUND-COLOR 6 FOREGROUND-COLOR 7 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
484 05 LINE + 1.
485 10 COL 52 BACKGROUND-COLOR 7 FOREGROUND-COLOR 0 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
486 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 1 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
487 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 2 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
488 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 3 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
489 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 4 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
490 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 5 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
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=====
491 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 6 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
492 10 COL + 1 BACKGROUND-COLOR 7 FOREGROUND-COLOR 7 HIGHLIGHT REVERSE-VIDEO VALUE 'X'.
493 *> #7
494 05 LINE 17.
495 10 COL 02 BACKGROUND-COLOR 0 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
496 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
497 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
498 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
499 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
500 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
501 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
502 10 COL + 1 BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
503 05 LINE + 1.
504 10 COL 02 BACKGROUND-COLOR 1 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
505 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
506 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
507 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
508 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
509 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
510 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
511 10 COL + 1 BACKGROUND-COLOR 1 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
512 05 LINE + 1.
513 10 COL 02 BACKGROUND-COLOR 2 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
514 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
515 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
516 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
517 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
518 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
519 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
520 10 COL + 1 BACKGROUND-COLOR 2 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
521 05 LINE + 1.
522 10 COL 02 BACKGROUND-COLOR 3 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
523 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
524 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
525 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
526 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
527 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
528 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
529 10 COL + 1 BACKGROUND-COLOR 3 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
530 05 LINE + 1.
531 10 COL 02 BACKGROUND-COLOR 4 FOREGROUND-COLOR 0 LOWLIGHT BLINK VALUE 'X'.
532 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 1 LOWLIGHT BLINK VALUE 'X'.
533 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 2 LOWLIGHT BLINK VALUE 'X'.
534 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 3 LOWLIGHT BLINK VALUE 'X'.
535 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 4 LOWLIGHT BLINK VALUE 'X'.
536 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 5 LOWLIGHT BLINK VALUE 'X'.
537 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 6 LOWLIGHT BLINK VALUE 'X'.
538 10 COL + 1 BACKGROUND-COLOR 4 FOREGROUND-COLOR 7 LOWLIGHT BLINK VALUE 'X'.
539 05 LINE + 1.
=====

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

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

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

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

```

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```

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

```

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

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```

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

```

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```

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

```

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

```

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

```

4. DAY-FROM-DATE

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

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

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

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

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

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

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```

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

```

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```

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

```

GCic for OSX Copyright (C) 2009-2014, Gary L. Cutler, GPL

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 – 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 3.0 24DEC2017 Source Listing

2017/12/24

/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) 2009-2018, Gary L. Cutler, GPL Page: 1

GNUCOBOL 3.0 24DEC2017 Source Listing

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/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 **

```

=====

| | |
|--|---------|
| GCic for UNIX/Linux Copyright (C) 2009-2018, Gary L. Cutler, GPL | Page: 2 |
|--|---------|

GNUCOBOL 3.0 24DEC2017 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      **
=====

```

=====

| | |
|--|---------|
| GCic for UNIX/Linux Copyright (C) 2009-2018, Gary L. Cutler, GPL | Page: 3 |
|--|---------|

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

Line Statement

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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      *> VC1217 Update compiler version to v3.0 24DEC2017.         **
155      *>      and copyright to 2018 (in 3 places).                 **
156      *>*****
157      *>
158      ENVIRONMENT DIVISION.
159      CONFIGURATION SECTION.
160      REPOSITORY.
161          FUNCTION ALL INTRINSIC.
162      INPUT-OUTPUT SECTION.
163      FILE-CONTROL.
164 GC1010      SELECT F-Cobc-Output-FILE  ASSIGN TO WS-Listing-Filename-TXT
165                                         ORGANIZATION IS LINE SEQUENTIAL.
166
167          SELECT F-Source-Code-FILE  ASSIGN TO WS-File-Name-TXT
168                                         ORGANIZATION IS LINE SEQUENTIAL
169                                         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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```

=====
171      DATA DIVISION.
172      FILE SECTION.
173      FD  F-Cobc-Output-FILE.
174      01  F-Cobc-Output-REC                PIC X(256) .
175
176      FD  F-Source-Code-FILE.
177 GC0313 01  F-Source-Code-REC                PIC X(256) .
178
179      WORKING-STORAGE SECTION.
180      >>source free
181      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.

```

=====

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

Line Statement

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```

=====
78 COB-SCR-F33 VALUE 1033.
78 COB-SCR-F34 VALUE 1034.
78 COB-SCR-F35 VALUE 1035.
78 COB-SCR-F36 VALUE 1036.
78 COB-SCR-F37 VALUE 1037.
78 COB-SCR-F38 VALUE 1038.
78 COB-SCR-F39 VALUE 1039.
78 COB-SCR-F40 VALUE 1040.
78 COB-SCR-F41 VALUE 1041.
78 COB-SCR-F42 VALUE 1042.
78 COB-SCR-F43 VALUE 1043.
78 COB-SCR-F44 VALUE 1044.
78 COB-SCR-F45 VALUE 1045.
78 COB-SCR-F46 VALUE 1046.
78 COB-SCR-F47 VALUE 1047.
78 COB-SCR-F48 VALUE 1048.
78 COB-SCR-F49 VALUE 1049.
78 COB-SCR-F50 VALUE 1050.
78 COB-SCR-F51 VALUE 1051.
78 COB-SCR-F52 VALUE 1052.
78 COB-SCR-F53 VALUE 1053.
78 COB-SCR-F54 VALUE 1054.
78 COB-SCR-F55 VALUE 1055.
78 COB-SCR-F56 VALUE 1056.
78 COB-SCR-F57 VALUE 1057.
78 COB-SCR-F58 VALUE 1058.
78 COB-SCR-F59 VALUE 1059.
78 COB-SCR-F60 VALUE 1060.
78 COB-SCR-F61 VALUE 1061.
78 COB-SCR-F62 VALUE 1062.
78 COB-SCR-F63 VALUE 1063.
78 COB-SCR-F64 VALUE 1064.
78 COB-SCR-PAGE-UP VALUE 2001.
78 Cob-Scr-Page_Up value 2001.
78 COB-SCR-PAGE-DOWN VALUE 2002.
78 Cob-Scr-Page_Down value 2002.
78 COB-SCR-KEY-UP VALUE 2003.
78 COB-SCR-KEY_UP VALUE 2003.
78 COB-SCR-KEY-DOWN VALUE 2004.
78 COB-SCR-KEY_DOWN VALUE 2004.
78 COB-SCR-ESC VALUE 2005.
78 COB-SCR-PRINT VALUE 2006.
78 COB-SCR-TAB VALUE 2007.
78 COB-SCR-BACK-TAB VALUE 2008.
78 COB-SCR-KEY-LEFT VALUE 2009.
78 COB-SCR-KEY-RIGHT VALUE 2010.
78 COB-SCR-INSERT VALUE 2011.
78 COB-SCR-DELETE VALUE 2012.
78 COB-SCR-BACKSPACE VALUE 2013.
78 COB-SCR-KEY-HOME VALUE 2014.
78 COB-SCR-KEY-END VALUE 2015.
78 COB-SCR-NO-FIELD VALUE 8000.
78 COB-SCR-TIME-OUT VALUE 8001.

```

=====
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2017/12/24

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

Line Statement

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```

=====
      78 COB-SCR-FATAL VALUE 9000.
      78 COB-SCR-MAX-FIELD VALUE 9001.
182      >>source fixed
183 GC0712 01  WS-Compilation-Switches-TXT.
184 GC0712      05 WS-CS-Args-TXT VALUE SPACES.
185 GC0712      10 WS-CS-Arg-H1-TXT          PIC X(76).
186 GC0712      10 WS-CS-Arg-H2-TXT          PIC X(76).
187 GC0712      05 WS-CS-Filenames-TXT.
188 GC0712      10 VALUE 'BS2000'            PIC X(9).
189 GC0712      10 VALUE 'COBOL85'           PIC X(9).
190 GC0712      10 VALUE 'COBOL2002'         PIC X(9).
191 GC0712      10 VALUE 'DEFAULT'           PIC X(9).
192 GC0712      10 VALUE 'IBM'                PIC X(9).
193 GC0712      10 VALUE 'MF'                 PIC X(9).
194 GC0712      10 VALUE 'MVS'                PIC X(9).
195 GC0712      05 WS-CS-Filenames-Table-TXT REDEFINES WS-CS-Filenames-TXT.
196 GC0712      10 WS-CS-Filename-TXT        OCCURS 7 TIMES
197 GC0712                                     PIC X(9).
198 GC0712 >>IF F12 < 1
199 GC0712      05 WS-CS-Config-NUM          VALUE 4          PIC 9(1).
200 GC0712 >>ELIF F12 > 7
201 GC0712      05 WS-CS-Config-NUM          VALUE 4          PIC 9(1).
202 GC0712 >>ELSE
203 GC0712      05 WS-CS-Config-NUM          VALUE F12        PIC 9(1).
204 GC0712 >>END-IF
205 GC0712      05 WS-CS-Extra-TXT VALUE SPACES.
206 GC0712      10 WS-CS-Extra-H1-TXT        PIC X(76).
207 GC0712      10 WS-CS-Extra-H2-TXT        PIC X(76).
208 GC0712      05 WS-CS-Switch-Defaults-TXT.
209 GC0712      10 VALUE F1                    PIC 9(1). *> WS-CS-DEBUG-CHR
210 GC0712      10 VALUE F4                    PIC 9(1). *> WS-CS-EXECUTE-CHR
211 GC0712      10 VALUE F8                    PIC 9(1). *> WS-CS-FREE-CHR
212 GC0712      10 VALUE F3                    PIC 9(1). *> WS-CS-LIBRARY-CHR
213 GC0712      10 VALUE F5                    PIC 9(1). *> WS-CS-LISTING-CHR
214 GC0712      10 VALUE F6                    PIC 9(1). *> WS-CS-NOFUNC-CHR
215 GC0712      10 VALUE F9                    PIC 9(1). *> WS-CS-NOTRUNC-CHR
216 GC0712      10 VALUE F2                    PIC 9(1). *> WS-CS-TRACEALL-CHR
217 GC0712      10 VALUE F7                    PIC 9(1). *> WS-CS-WARNALL-CHR
218 GC0712      05 WS-CS-All-Switches-TXT REDEFINES
219 GC0712                                     WS-CS-Switch-Defaults-TXT.
220 GC0712      10 WS-CS-DEBUG-CHR            PIC X(1).
221 GC0712      10 WS-CS-EXECUTE-CHR          PIC X(1).
222 GC0712      10 WS-CS-FREE-CHR             PIC X(1).
223 GC0712      10 WS-CS-LIBRARY-CHR          PIC X(1).
224 GC0712      10 WS-CS-LISTING-CHR          PIC X(1).
225 GC0712      10 WS-CS-NOFUNC-CHR           PIC X(1).
226 GC0712      10 WS-CS-NOTRUNC-CHR          PIC X(1).
227 GC0712      10 WS-CS-TRACEALL-CHR         PIC X(1).
228 GC0712      10 WS-CS-WARNALL-CHR          PIC X(1).
229
230 GC0909 01  WS-Cmd-TXT                      PIC X(512).
231
232 GC0712 01  WS-Cmd-Args-TXT                  PIC X(256).

```

```
=====
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```

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```

=====
233
234 GC0712 01  WS-Cmd-End-Quote-CHR          PIC X(1).
235
236 GC0712 01  WS-Cmd-SUB                     USAGE BINARY-LONG.
237
238         01  WS-Cobc-Cmd-TXT                PIC X(256).
239
240         01  WS-Config-Fn-TXT                PIC X(12).
241
242 GC1113 01  WS-Delete-Fn-TXT                PIC X(256).
243
244         01  WS-File-Name-TXT.
245             05 WS-FN-CHR                     OCCURS 256 TIMES
246             PIC X(1).
247
248         01  WS-File-Status-Message-TXT.
249             05 VALUE 'Status Code: '          PIC X(13).
250             05 WS-FSM-Status-CD                PIC 9(2).
251             05 VALUE ', Meaning: '            PIC X(11).
252             05 WS-FSM-Msg-TXT                  PIC X(25).
253
254 GC0909 01  WS-Horizontal-Line-TXT          PIC X(80).
255 GC0909
256         01  WS-I-SUB                        USAGE BINARY-LONG.
257
258         01  WS-J-SUB                        USAGE BINARY-LONG.
259
260 GC1213 01  WS-Listing-CD VALUE F5           PIC 9(1).
261
262 GC0712 01  WS-Listing-Filename-TXT          PIC X(256).
263
264 GC1213 01  WS-Listing-TXT VALUE SPACES      PIC X(27).
265
266         01  WS-OC-Compile-DT                PIC XXXX/XX/XXBXX/XX.
267
268 GC0712 >>IF OS = 'CYGWIN'
269 GC0712 01  WS-OS-Dir-CHR                     VALUE '/'          PIC X(1).
270 GC0712 78  WS-OS-Exe-Ext-CONST                VALUE '.exe'.
271 GC0712 78  WS-OS-Lib-Ext-CONST                VALUE '.dll'.
272 GC0712 78  WS-OS-Lib-Type-CONST              VALUE 'DLL)'.
273 GC0712 01  WS-OS-Type-CD                      VALUE 2          PIC 9(1).
274 GC0712 >>ELIF OS = 'MINGW'
275 GC0712 01  WS-OS-Dir-CHR                     VALUE '\\'         PIC X(1).
276 GC0712 78  WS-OS-Exe-Ext-CONST                VALUE '.exe'.
277 GC0712 78  WS-OS-Lib-Ext-CONST                VALUE '.dll'.
278 GC0712 78  WS-OS-Lib-Type-CONST              VALUE 'DLL)'.
279 GC0712 01  WS-OS-Type-CD                      VALUE 5          PIC 9(1).
280 GC0712 >>ELIF OS = 'OSX'
281 GC0712 01  WS-OS-Dir-CHR                     VALUE '/'          PIC X(1).
282 GC0712 78  WS-OS-Exe-Ext-CONST                VALUE '.'.
283 GC0712 78  WS-OS-Lib-Ext-CONST                VALUE '.dylib'.
284 GC0712 78  WS-OS-Lib-Type-CONST              VALUE 'DYLIB)'.
285 GC0712 01  WS-OS-Type-CD                      VALUE 4          PIC 9(1).

```


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```

=====
286 GC0712 >>ELIF OS = 'UNIX'
287 GC0712 01 WS-OS-Dir-CHR VALUE '/' PIC X(1).
288 GC0712 78 WS-OS-Exe-Ext-CONST VALUE ' '.
289 GC0712 78 WS-OS-Lib-Ext-CONST VALUE '.so'.
290 GC0712 78 WS-OS-Lib-Type-CONST VALUE 'SO)'.
291 GC0712 01 WS-OS-Type-CD VALUE 3 PIC 9(1).
292 GC0712 >>ELIF OS = 'WINDOWS'
293 GC0712 01 WS-OS-Dir-CHR VALUE '\\' PIC X(1).
294 GC0712 78 WS-OS-Exe-Ext-CONST VALUE '.exe'.
295 GC0712 78 WS-OS-Lib-Ext-CONST VALUE '.dll'.
296 GC0712 78 WS-OS-Lib-Type-CONST VALUE 'DLL)'.
297 GC0712 01 WS-OS-Type-CD VALUE 1 PIC 9(1).
298 GC0712 >>END-IF
299 GC0909 88 WS-OS-Windows-BOOL VALUE 1, 5.
300 GC0909 88 WS-OS-Cygwin-BOOL VALUE 2.
301 GC0712 88 WS-OS-UNIX-BOOL VALUE 3, 4.
302 GC0712 88 WS-OS-OSX-BOOL VALUE 4.
303
304 01 WS-OS-Type-FILLER-TXT.
305 05 VALUE 'Windows' PIC X(14).
306 05 VALUE 'Windows/Cygwin' PIC X(14).
307 05 VALUE 'UNIX/Linux' PIC X(14).
308 05 VALUE 'OSX' PIC X(14).
309 05 VALUE 'Windows/MinGW' PIC X(14).
310 01 WS-OS-Types-TXT REDEFINES WS-OS-Type-FILLER-TXT.
311 05 WS-OS-Type-TXT OCCURS 5 TIMES
312 PIC X(14).
313
314 01 WS-Output-Msg-TXT PIC X(80).
315
316 01 WS-Path-Delimiter-CHR PIC X(1).
317
318 01 WS-Prog-Extension-TXT PIC X(256).
319
320 01 WS-Prog-Folder-TXT PIC X(256).
321
322 GC0712 01 WS-Prog-File-Name-TXT.
323 GC0712 05 WS-PFN-CHR OCCURS 256 TIMES
324 GC0712 PIC X(1).
325
326 GC0712 01 WS-Pgm-Nm-TXT PIC X(31).
327
328 01 WS-Runtime-Switches-TXT.
329 05 WS-RS-Compile-OK-CHR PIC X(1).
330 88 WS-RS-Compile-OK-BOOL VALUE 'Y'.
331 GC0909 88 WS-RS-Compile-OK-Warn-BOOL VALUE 'W'.
332 88 WS-RS-Compile-Failed-BOOL VALUE 'N'.
333 GC0609 05 WS-RS-Complete-CHR PIC X(1).
334 GC0609 88 WS-RS-Complete-BOOL VALUE 'Y'.
335 GC0609 88 WS-RS-Not-Complete-BOOL VALUE 'N'.
336 GC0712 05 WS-RS-Quote-CHR PIC X(1).
337 GC0712 88 WS-RS-Double-Quote-Used-BOOL VALUE 'Y' FALSE 'N'.
338 GC0809 05 WS-RS-IDENT-DIV-CHR PIC X(1).

```

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```

=====
339 GC0809      88 WS-RS-1st-Prog-Complete-BOOL  VALUE 'Y'.
340 GC0809      88 WS-RS-More-To-1st-Prog-BOOL   VALUE 'N'.
341              05 WS-RS-No-Switch-Chgs-CHR      PIC X(1).
342              88 WS-RS-No-Switch-Changes-BOOL   VALUE 'Y'.
343              88 WS-RS-Switch-Changes-BOOL      VALUE 'N'.
344 GC0709      05 WS-RS-Output-File-Busy-CHR      PIC X(1).
345 GC0709      88 WS-RS-Output-File-Busy-BOOL     VALUE 'Y'.
346 GC0709      88 WS-RS-Output-File-Avail-BOOL    VALUE 'N'.
347 GC0809      05 WS-RS-Source-Record-Type-CHR    PIC X(1).
348 GC0809      88 WS-RS-Source-Rec-Linkage-BOOL   VALUE 'L'.
349 GC0809      88 WS-RS-Source-Rec-Ident-BOOL     VALUE 'I'.
350 GC0712      88 WS-RS-Source-Rec-Ignored-BOOL    VALUE ' '.
351              05 WS-RS-Switch-Error-CHR         PIC X(1).
352              88 WS-RS-Switch-Is-Bad-BOOL        VALUE 'Y'.
353              88 WS-RS-Switch-Is-Good-BOOL       VALUE 'N'.
354
355              01 WS-Tally-QTY                    USAGE BINARY-LONG.
=====

```

```
=====
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```

=====
357     SCREEN SECTION.
358     *>
359     *> Here is the layout of the GCic screen.
360     *>
361     *> The sample screen below shows how the screen would look if the LINEDRAW
362     *> configuration setting is set to a value of 2
363     *>
364     *> The following sample screen layout shows how the screen looks with line-drawing
365     *> characters disabled.
366     *>
367     *>          1          2          3          4          5          6          7          8
368     *>1234567890123456789012345678901234567890123456789012345678901234567890
369     *>=====
370 01 *> GCic (2017/12/24 08:52) - GNU COBOL V3.0 24DEC2017 Interactive Compilation
371 02 *>+-----+
372 03 *>| Folder:   E:\GNU COBOL\Samples                                     |
373 04 *>| Filename: GCic.cbl                                              |
374 05 *>+-----+
375 06 *> Set/Clr Switches Via F1-F9; Set Config Via F12; ENTER Key Compiles; ESC Quits
376 07 *>+-----+
377 08 *>| F1  Assume WITH DEBUGGING MODE  F6  "FUNCTION" Is Optional      | Current  |
378 09 *>| F2  Procedure+Statement Trace   F7  Enable All Warnings         | Config:  |
379 10 *>| F3  Make A Library (DLL)        F8  Source Is Free-Format       | XXXXXXXX |
380 11 *>| F4  Execute If Compilation OK   F9  No COMP/BINARY Truncation    |          |
381 12 *>| F5  >Produce Listing (Landscape)                                     |          |
382 13 *>+-----+
383 14 *> Extra "cobc" Switches, If Any ("-save-temps=xxx" Prevents Listings):
384 15 *>+-----+
385 16 *>| ----- |
386 17 *>| ----- |
387 18 *>+-----+
388 19 *> Program Execution Arguments, If Any:
389 20 *>+-----+
390 21 *>| ----- |
391 22 *>| ----- |
392 23 *>+-----+
393 24 *> GCic Copyright (C) 2009-2018, Gary L. Cutler, GPL
394     *>=====
395     *>1234567890123456789012345678901234567890123456789012345678901234567890
396     *>          1          2          3          4          5          6          7          8
397     *>
398     *> If this program is run on Windows, it must run with codepage 437 activated to
399     *> display the line-drawing characters.  With a native Windows build or a
400     *> Windows/MinGW build, one could use the command 'chcp 437' to set that codepage
401     *> for display within a Windows console window (that should be the default though).
402     *> With a Windows/Cygwin build, set the environment variable CYGWIN to a value of
403     *> 'codepage:oem' (this cannot be done from within the program though - you will
404     *> have to use the 'Computer/Advanced System Settings/Environment Variables' (Vista
405     *> or Windows 7) function to define the variable.  XP Users: use 'My Computer/
406     *> Properties/Advanced/Environment Variables'.
407     *>
408     *> OSX users may use line drawing characters in this and any GNU COBOL program

```

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```

=====
409      *> simply by setting their 'terminal' application's font to "Lucida Console".
410      *>
411      >>IF LINEDRAW IS EQUAL TO 0
412          78 LD-UL-Corner                VALUE ' '.
413          78 LD-LL-Corner                VALUE ' '.
414          78 LD-UR-Corner                VALUE ' '.
415          78 LD-LR-Corner                VALUE ' '.
416          78 LD-Upper-T                  VALUE ' '.
417          78 LD-Lower-T                  VALUE ' '.
418          78 LD-Horiz-Line               VALUE ' '.
419          78 LD-Vert-Line                VALUE ' '.
420      >>ELIF LINEDRAW IS EQUAL TO 1
421          78 LD-UL-Corner                VALUE X'DA'.
422          78 LD-LL-Corner                VALUE X'CO'.
423          78 LD-UR-Corner                VALUE X'BF'.
424          78 LD-LR-Corner                VALUE X'D9'.
425          78 LD-Upper-T                  VALUE X'C2'.
426          78 LD-Lower-T                  VALUE X'C1'.
427          78 LD-Horiz-Line               VALUE X'C4'.
428          78 LD-Vert-Line                VALUE X'B3'.
429      >>ELSE
430          78 LD-UL-Corner                VALUE '+'.
431          78 LD-LL-Corner                VALUE '+'.
432          78 LD-UR-Corner                VALUE '+'.
433          78 LD-LR-Corner                VALUE '+'.
434          78 LD-Upper-T                  VALUE '+'.
435          78 LD-Lower-T                  VALUE '+'.
436          78 LD-Horiz-Line               VALUE '-'.
437          78 LD-Vert-Line                VALUE '|'.
438      >>END-IF
439
440      01 S-Blank-SCR LINE 1 COLUMN 1 BLANK SCREEN.
441
442      01 S-Switches-SCR BACKGROUND-COLOR COB-COLOR-BLACK
443          FOREGROUND-COLOR COB-COLOR-WHITE AUTO.
444      *>
445      *> GENERAL SCREEN FRAMEWORK
446      *>
447          03 BACKGROUND-COLOR COB-COLOR-BLACK
448          FOREGROUND-COLOR COB-COLOR-GREEN HIGHLIGHT.
449      GC0712      05 LINE 02 COL 01                VALUE LD-UL-Corner.
450      GC0712      05                COL 02 PIC X(78) FROM WS-Horizontal-Line-TXT.
451                05                COL 80                VALUE LD-UR-Corner.
452
453      GC0712      05 LINE 03 COL 01                VALUE LD-Vert-Line.
454                05                COL 80                VALUE LD-Vert-Line.
455
456      GC0712      05 LINE 04 COL 01                VALUE LD-Vert-Line.
457                05                COL 80                VALUE LD-Vert-Line.
458
459      GC0712      05 LINE 05 COL 01                VALUE LD-LL-Corner.
460      GC0712      05                COL 02 PIC X(78) FROM WS-Horizontal-Line-TXT.
461                05                COL 80                VALUE LD-LR-Corner.

```



```
=====
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```

=====
462
463 GC0712      05 LINE 07 COL 01      VALUE LD-UL-Corner.
464 GC0712      05          COL 02 PIC X(65) FROM WS-Horizontal-Line-TXT.
465 GC0712      05          COL 67      VALUE LD-Upper-T.
466 GC0712      05          COL 68 PIC X(12) FROM WS-Horizontal-Line-TXT.
467            05          COL 80      VALUE LD-UR-Corner.
468
469 GC0712      05 LINE 08 COL 01      VALUE LD-Vert-Line.
470 GC0712      05          COL 67      VALUE LD-Vert-Line.
471            05          COL 80      VALUE LD-Vert-Line.
472
473 GC0712      05 LINE 09 COL 01      VALUE LD-Vert-Line.
474 GC0712      05          COL 67      VALUE LD-Vert-Line.
475            05          COL 80      VALUE LD-Vert-Line.
476
477 GC0712      05 LINE 10 COL 01      VALUE LD-Vert-Line.
478 GC0712      05          COL 67      VALUE LD-Vert-Line.
479            05          COL 80      VALUE LD-Vert-Line.
480
481 GC0712      05 LINE 11 COL 01      VALUE LD-Vert-Line.
482 GC0712      05          COL 67      VALUE LD-Vert-Line.
483            05          COL 80      VALUE LD-Vert-Line.
484
485 GC0712      05 LINE 12 COL 01      VALUE LD-Vert-Line.
486 GC0712      05          COL 67      VALUE LD-Vert-Line.
487            05          COL 80      VALUE LD-Vert-Line.
488
489 GC0712      05 LINE 13 COL 01      VALUE LD-LL-Corner.
490 GC0712      05          COL 02 PIC X(65) FROM WS-Horizontal-Line-TXT.
491 GC0712      05          COL 67      VALUE LD-Lower-T.
492 GC0712      05          COL 68 PIC X(12) FROM WS-Horizontal-Line-TXT.
493            05          COL 80      VALUE LD-LR-Corner.
494
495 GC0712      05 LINE 15 COL 01      VALUE LD-UL-Corner.
496 GC0712      05          COL 02 PIC X(78) FROM WS-Horizontal-Line-TXT.
497            05          COL 80      VALUE LD-UR-Corner.
498
499 GC0712      05 LINE 16 COL 01      VALUE LD-Vert-Line.
500            05          COL 80      VALUE LD-Vert-Line.
501
502 GC0712      05 LINE 17 COL 01      VALUE LD-Vert-Line.
503            05          COL 80      VALUE LD-Vert-Line.
504
505 GC0712      05 LINE 18 COL 01      VALUE LD-LL-Corner.
506 GC0712      05          COL 02 PIC X(78) FROM WS-Horizontal-Line-TXT.
507            05          COL 80      VALUE LD-LR-Corner.
508
509 GC0712      05 LINE 20 COL 01      VALUE LD-UL-Corner.
510 GC0712      05          COL 02 PIC X(78) FROM WS-Horizontal-Line-TXT.
511            05          COL 80      VALUE LD-UR-Corner.
512
513 GC0712      05 LINE 21 COL 01      VALUE LD-Vert-Line.
514            05          COL 80      VALUE LD-Vert-Line.

```

```

=====
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@end smallformat
@page
@smallformat
@verbatim
GNUCOBOL 3.0 24DEC2017  Source Listing                                              2017/12/24
                                              /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line   Statement                                                                    Page: 14
=====
515
516 GC0712      05 LINE 22 COL 01          VALUE LD-Vert-Line.
517             05          COL 80          VALUE LD-Vert-Line.
518
519 GC0712      05 LINE 23 COL 01          VALUE LD-LL-Corner.
520 GC0712      05          COL 02 PIC X(78) FROM WS-Horizontal-Line-TXT.
521             05          COL 80          VALUE LD-LR-Corner.
522             *>
523             *> TOP AND BOTTOM LINES
524             *>
525 GC0712      03 BACKGROUND-COLOR COB-COLOR-BLUE
526             FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
527 GC0410      05 LINE 01 COL 01 VALUE ' GCic ('.
528 GC0410      05          COL 08 PIC X(16) FROM WS-OC-Compile-DT.
529 GC1213      05          COL 24 VALUE ') GNUCOBOL 3.0 24DEC2017 ' &
530 GC0410              'Interactive Compilation ' &
531 VC0617      03 BACKGROUND-COLOR COB-COLOR-RED
532 GC0712      FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
533 GC0712      05 LINE 24 COL 01 PIC X(80) FROM WS-Output-Msg-TXT.
534             *>
535             *> LABELS
536             *>
537             03 BACKGROUND-COLOR COB-COLOR-BLACK
538             FOREGROUND-COLOR COB-COLOR-CYAN HIGHLIGHT.
539 GC0712      05 LINE 06 COL 02 VALUE 'Set/Clr Switches Via F1-F9; ' &
540 GC0712              'Set Config Via F12; Enter Key ' &
541 GC0712              'Compiles; Esc Quits'.
542 GC0712      05 LINE 14 COL 02 VALUE 'Extra "cobc" Switches, If Any ' &
543 GC0712              '("-save-temps=xxx" Prevents ' &
544 GC0712              'Listings):'.
545 GC0712      05 LINE 19 COL 02 VALUE 'Program Execution Arguments, ' &
546 GC0712              'If Any:'.
547 GC0712      03 BACKGROUND-COLOR COB-COLOR-BLACK
548 GC0712      FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
549 GC0712      05 LINE 06 COL 23 VALUE 'F1'.
550 GC0712      05          COL 26 VALUE 'F9'.
551 GC0712      05          COL 45 VALUE 'F12'.
552 GC0712      05          COL 50 VALUE 'ENTER'.
553 GC0712      05          COL 70 VALUE 'ESC'.
554             *>
555             *> TOP SECTION BACKGROUND
556             *>
557             03 BACKGROUND-COLOR COB-COLOR-BLACK
558             FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
559 GC0712      05 LINE 03 COL 62 VALUE 'Enter'.
560 GC0712      05 LINE 04 COL 62 VALUE 'Esc'.

```

```
561
562      03 BACKGROUND-COLOR COB-COLOR-BLACK
563      FOREGROUND-COLOR COB-COLOR-GREEN HIGHLIGHT.
564 GC0712      05 LINE 04 COL 03 VALUE 'Folder:  '.
565 GC0712      05 LINE 03 COL 03 VALUE 'Filename: '.
566
567 GC0712      05 LINE 03 COL 67 VALUE ': Compile  '.
```

=====

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```

=====
568 GC0712      05 LINE 04 COL 65 VALUE ':  Quit      '.
569          *>
570          *> TOP SECTION PROGRAM INFO
571          *>
572          03 BACKGROUND-COLOR COB-COLOR-BLACK
573             FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
574 GC0712      05 LINE 03 COL 13 PIC X(66) FROM WS-Prog-File-Name-TXT.
575 GC0712      05 LINE 04 COL 13 PIC X(66) FROM WS-Prog-Folder-TXT.
576          *>
577          *> MIDDLE LEFT SECTION F-KEYS
578          *>
579          03 BACKGROUND-COLOR COB-COLOR-BLACK
580             FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
581 GC0712      05 LINE 08 COL 03 VALUE 'F1'.
582 GC0712      05 LINE 09 COL 03 VALUE 'F2'.
583 GC0712      05 LINE 10 COL 03 VALUE 'F3'.
584 GC0712      05 LINE 11 COL 03 VALUE 'F4'.
585 GC0712      05 LINE 12 COL 03 VALUE 'F5'.
586
587 GC0712      05 LINE 08 COL 35 VALUE 'F6'.
588 GC0712      05 LINE 09 COL 35 VALUE 'F7'.
589 GC0712      05 LINE 10 COL 35 VALUE 'F8'.
590 GC0712      05 LINE 11 COL 35 VALUE 'F9'.
591          *>
592          *> MIDDLE LEFT SECTION SWITCHES
593          *>
594          03 BACKGROUND-COLOR COB-COLOR-BLACK
595             FOREGROUND-COLOR COB-COLOR-RED HIGHLIGHT.
596 GC0712      05 LINE 08 COL 06 PIC X(1) FROM WS-CS-DEBUG-CHR.
597 GC0712      05 LINE 09 COL 06 PIC X(1) FROM WS-CS-TRACEALL-CHR.
598 GC0712      05 LINE 10 COL 06 PIC X(1) FROM WS-CS-LIBRARY-CHR.
599 GC0712      05 LINE 11 COL 06 PIC X(1) FROM WS-CS-EXECUTE-CHR.
600 GC0712      05 LINE 12 COL 06 PIC X(1) FROM WS-CS-LISTING-CHR.
601
602 GC0712      05 LINE 08 COL 38 PIC X(1) FROM WS-CS-NOFUNC-CHR.
603 GC0712      05 LINE 09 COL 38 PIC X(1) FROM WS-CS-WARNALL-CHR.
604 GC0712      05 LINE 10 COL 38 PIC X(1) FROM WS-CS-FREE-CHR.
605 GC0712      05 LINE 11 COL 38 PIC X(1) FROM WS-CS-NOTRUNC-CHR.
606          *>
607          *> MIDDLE LEFT SECTION BACKGROUND
608          *>
609          03 BACKGROUND-COLOR COB-COLOR-BLACK
610             FOREGROUND-COLOR COB-COLOR-GREEN HIGHLIGHT.
611 GC0712      05 LINE 08 COL 07 VALUE 'Assume WITH DEBUGGING MODE'.
612 GC0712      05 LINE 09 COL 07 VALUE 'Procedure+Statement Trace '.
613 GC0712      05 LINE 10 COL 07 VALUE 'Make a Library ('.
614 GC0712      05          COL 23 VALUE WS-OS-Lib-Type-CONST.
615 GC0712      05 LINE 11 COL 07 VALUE 'Execute If Compilation OK '.
616 GC1213      05 LINE 12 COL 07 FROM WS-Listing-TXT.
617
618 GC0712      05 LINE 08 COL 39 VALUE '"FUNCTION" Is Optional      '.
619 GC0712      05 LINE 09 COL 39 VALUE 'Enable All Warnings      '.
620 GC0712      05 LINE 10 COL 39 VALUE 'Source Is Free-Format      '.
=====

```

```
=====
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```

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```

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

```

```
=====
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```


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```

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

662          MOVE SPACES TO WS-Output-Msg-TXT
663          IF WS-FSM-Status-CD = 35
664              DISPLAY
665              'File not found: "'

```

```
=====
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```

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

```

=====

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```

=====
699      *>*****
700      *> Perform all program-wide initialization operations      **
701      *>*****
702      100-Initialization SECTION.
703      *>*****
704      *> Make sure full screen-handling is in effect          **
705      *>*****
706          SET ENVIRONMENT 'COB_SCREEN_EXCEPTIONS' TO 'Y'
707          SET ENVIRONMENT 'COB_SCREEN_ESC'          TO 'Y'
708 VC0617  SET ENVIRONMENT "COB_EXIT_WAIT"          TO "O".
709      *>*****
710      *> Get GCic Compilation Date/Time                        **
711      *>*****
712          MOVE WHEN-COMPILED (1:12) TO WS-OC-Compile-DT
713          INSPECT WS-OC-Compile-DT
714              REPLACING ALL '/' BY ':'
715              AFTER INITIAL SPACE
716      *>*****
717      *> Convert WS-CS-All-Switches-TXT to Needed Alphanumeric Values**
718      *>*****
719          INSPECT WS-CS-All-Switches-TXT
720              REPLACING ALL '0' BY SPACE
721              ALL '1' BY SELCHAR
722 GC1213  ALL '2' BY SELCHAR
723      *>*****
724      *> Process filename (the only command-line argument)    **
725      *>*****
726 GC0712  ACCEPT WS-Cmd-Args-TXT FROM COMMAND-LINE
727 GC0712  MOVE 1 TO WS-Cmd-SUB
728 GC0712  IF WS-Cmd-Args-TXT(WS-Cmd-SUB:1) = '"' OR '"'
729 GC0712  MOVE WS-Cmd-Args-TXT(WS-Cmd-SUB:1)
730 GC0712  TO WS-Cmd-End-Quote-CHR
731 GC0712  ADD 1 TO WS-Cmd-SUB
732 GC0712  UNSTRING WS-Cmd-Args-TXT
733 GC0712  DELIMITED BY WS-Cmd-End-Quote-CHR
734 GC0712  INTO WS-File-Name-TXT
735 GC0712  WITH POINTER WS-Cmd-SUB
736 GC0712  ELSE
737 GC0712  UNSTRING WS-Cmd-Args-TXT
738 GC0712  DELIMITED BY ALL SPACES
739 GC0712  INTO WS-File-Name-TXT
740 GC0712  WITH POINTER WS-Cmd-SUB
741 GC0712  END-IF
742      IF WS-File-Name-TXT = SPACES
743 GC0712  DISPLAY 'No program filename was specified'
744      PERFORM 900-Terminate
745      * ----- Control will NOT return
746      END-IF
747      *>*****
748      *> Determine if 'Make A Library' feature should be forced 'ON' **
749      *>*****
750      PERFORM 240-Find-LINKAGE-SECTION

```

```
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```

=====
751      *>*****
752      *> Split 'WS-File-Name-TXT' into 'WS-Prog-Folder-TXT' and      **
753      *> 'WS-Prog-File-Name-TXT'                                     **
754      *>*****
755 GC0909      IF WS-OS-Cygwin-BOOL AND WS-File-Name-TXT (2:1) = ':'
756 GC0712          MOVE '\' TO WS-OS-Dir-CHR
757 GC0909      END-IF
758 GC0712      MOVE LENGTH(WS-File-Name-TXT) TO WS-I-SUB
759 GC0712      PERFORM UNTIL WS-I-SUB = 0
760 GC0712          OR WS-FN-CHR (WS-I-SUB) = WS-OS-Dir-CHR
761              SUBTRACT 1 FROM WS-I-SUB
762      END-PERFORM
763      IF WS-I-SUB = 0
764          MOVE SPACES TO WS-Prog-Folder-TXT
765          MOVE WS-File-Name-TXT TO WS-Prog-File-Name-TXT
766      ELSE
767          MOVE '*' TO WS-FN-CHR (WS-I-SUB)
768          UNSTRING WS-File-Name-TXT DELIMITED BY '*'
769              INTO WS-Prog-Folder-TXT
770                  WS-Prog-File-Name-TXT
771 GC0712      MOVE WS-OS-Dir-CHR TO WS-FN-CHR (WS-I-SUB)
772      END-IF
773      IF WS-Prog-Folder-TXT = SPACES
774          ACCEPT WS-Prog-Folder-TXT FROM ENVIRONMENT 'CD'
775 GC0909      ELSE
776 GC0909          CALL 'CBL_CHANGE_DIR'
777 GC0909          USING TRIM(WS-Prog-Folder-TXT,TRAILING)
778      END-IF
779 GC0909      IF WS-OS-Cygwin-BOOL AND WS-File-Name-TXT (2:1) = ':'
780 GC0712          MOVE '/' TO WS-OS-Dir-CHR
781 GC0909      END-IF
782      *>*****
783      *> Split 'WS-Prog-File-Name-TXT' into 'WS-Pgm-Nm-TXT' &      **
784      *> 'WS-Prog-Extension-TXT'                                     **
785      *>*****
786 GC0712      MOVE LENGTH(WS-Prog-File-Name-TXT) TO WS-I-SUB
787 GC0712      PERFORM UNTIL WS-I-SUB = 0
788 GC0712          OR WS-PFN-CHR (WS-I-SUB) = '.'
789 GC0712          SUBTRACT 1 FROM WS-I-SUB
790 GC0712      END-PERFORM
791 GC0712      IF WS-I-SUB = 0
792 GC0712          MOVE WS-Prog-File-Name-TXT TO WS-Pgm-Nm-TXT
793 GC0712          MOVE SPACES TO WS-Prog-Extension-TXT
794 GC0712      ELSE
795 GC0712          MOVE '*' TO WS-PFN-CHR (WS-I-SUB)
796 GC0712          UNSTRING WS-Prog-File-Name-TXT DELIMITED BY '*'
797 GC0712              INTO WS-Pgm-Nm-TXT
798 GC0712                  WS-Prog-Extension-TXT
799 GC0712          MOVE '.' TO WS-PFN-CHR (WS-I-SUB)
800 GC0712      END-IF
801      *>*****
802      *> Build initial Line 24 Message                                **
803      *>*****

```

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```
=====
804 GC0909      MOVE ALL LD-Horiz-Line TO WS-Horizontal-Line-TXT.
805 GC0410      MOVE CONCATENATE(' GCic for '
806 GC0410                                TRIM(WS-OS-Type-TXT(WS-OS-Type-CD),Trailing)
807 GC1213                                ' Copyright (C) 2009-2018, Gary L. '
808 GC0410                                'Cutler, GPL')
809 GC0410      TO WS-Output-Msg-TXT.
810 GC0909
```

=====

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```

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

```

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

```

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```

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

```

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```

=====
956 GC0712      WITH POINTER WS-I-SUB
957 GC0712      END-IF
958 GC0712      IF WS-CS-FREE-CHR NOT = ' '
959 GC0712          STRING '-free '
960 GC0712          DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
961 GC0712          WITH POINTER WS-I-SUB
962 GC0712      ELSE
963 GC0712          STRING '-fixed '
964 GC0712          DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
965 GC0712          WITH POINTER WS-I-SUB
966 GC0712      END-IF
967
968 GC0712      MOVE 0 TO WS-Tally-QTY
969 GC0712      INSPECT WS-CS-Extra-TXT
970 GC0712          TALLYING WS-Tally-QTY FOR ALL '-save-temps'
971 GC0712      IF WS-CS-LISTING-CHR > SPACE
972 GC0712      AND WS-Tally-QTY > 0
973 GC0712          MOVE SPACE TO WS-CS-LISTING-CHR *> Can't generate listing if -save-temps u
sed
974 GC0712      END-IF
975 GC0712      IF WS-CS-LISTING-CHR > SPACE
976 GC1010          STRING '-save-temps '
977 GC1010          DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
978 GC1010          WITH POINTER WS-I-SUB
979 GC1010      END-IF
980
981 GC0709      IF WS-CS-Extra-TXT > SPACES
982 GC0709          STRING ' '
983 GC0709          TRIM(WS-CS-Extra-TXT,TRAILING)
984 GC0709          ' '
985 GC0709          DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
986 GC0709          WITH POINTER WS-I-SUB
987 GC0709      END-IF
988 GC0909      STRING TRIM(WS-Prog-File-Name-TXT,TRAILING)
989 GC0909          DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
990 GC0909          WITH POINTER WS-I-SUB
991      *>*****
992      *> Prepare the compilation listing file **
993      *>*****
994 GC1113      MOVE CONCATENATE(TRIM(WS-Pgm-Nm-TXT,Trailing),'.gclst')
995 GC0712          TO WS-Listing-Filename-TXT
996 GC0712      CALL 'CBL_DELETE_FILE' USING WS-Listing-Filename-TXT
997      *>*****
998      *> Now execute the 'cobc' command **
999      *>*****
1000 GC0410      MOVE ' Compiling...' TO WS-Output-Msg-TXT
1001 GC0410      DISPLAY S-Switches-SCR
1002 GC0609      SET WS-RS-Output-File-Avail-BOOL TO TRUE
1003      MOVE SPACES TO WS-Cmd-TXT
1004      STRING TRIM(WS-Cobc-Cmd-TXT,TRAILING)
1005 GC0712          ' >' WS-Listing-Filename-TXT
1006 GC0712          ' 2>&1'
1007      DELIMITED SIZE

```

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```

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

```

```
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```

=====
1040      *>*****
1041      *> Generate a source + xref listing using 'LISTING' subroutine **
1042      *>*****
1043 GC0410 220-Make-Listing SECTION.
1044 GC0410      MOVE ' Generating listing...' TO WS-Output-Msg-TXT
1045 GC0410      DISPLAY S-Switches-SCR
1046 GC0410      MOVE 0 TO RETURN-CODE
1047      *>*****
1048      *> Create the listing **
1049      *>*****
1050 GC0410      MOVE SPACES TO WS-Output-Msg-TXT
1051 GC0410      CALL 'LISTING' USING WS-Listing-Filename-TXT
1052 GC0712                      WS-File-Name-TXT
1053 GC0712                      WS-OS-Type-CD
1054 GC1213                      LPP
1055 GC1213                      LPPP
1056 GC1213                      WS-Listing-CD
1057 GC0410      ON EXCEPTION
1058 GC0410          MOVE ' LISTING module is not available'
1059 GC0410              TO WS-Output-Msg-TXT
1060 GC0410          MOVE 1 TO RETURN-CODE
1061 GC0410      END-CALL
1062 GC0410      IF RETURN-CODE = 0
1063 GC0712          MOVE ' Source+Xref listing generated '
1064 GC0712              TO WS-Output-Msg-TXT
1065 GC0410      END-IF
1066 GC0712      DISPLAY S-Switches-SCR
1067 GC0712      CALL 'C$SLEEP' USING 2
1068 GC0712      PERFORM 250-Autoload-Listing
1069 GC0410      .

```

```
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```

=====
1071      *>*****
1072      *> Run the compiled program                                **
1073      *>*****
1074      230-Run-Program SECTION.
1075 GC0114      MOVE ' Preparing to run program ... press ENTER to close '
1076 GC0114      TO WS-Output-Msg-TXT
1077 GC0114      DISPLAY S-Switches-SCR
1078 GC0114      CALL 'C$SLEEP' USING 3
1079 GC0909      MOVE SPACES TO WS-Cmd-TXT
1080 GC0909      MOVE 1 TO WS-I-SUB
1081      *>*****
1082      *> If necessary, start with 'cobcrun' command                **
1083      *>*****
1084 GC0712      IF WS-CS-LIBRARY-CHR NOT = ' '
1085              STRING 'cobcrun ' DELIMITED SIZE
1086              INTO WS-Cmd-TXT
1087              WITH POINTER WS-I-SUB
1088      END-IF
1089      *>*****
1090      *> Add any necessary path prefix                                **
1091      *>*****
1092 GC0712      SET WS-RS-Double-Quote-Used-BOOL TO FALSE
1093      IF WS-Prog-Folder-TXT NOT = SPACES
1094 GC0909      IF WS-OS-Cygwin-BOOL AND WS-Prog-Folder-TXT (2:1) = ':'
1095 GC0909      STRING '/cygdrive/'
1096 GC0909      INTO WS-Cmd-TXT
1097 GC0909      WITH POINTER WS-I-SUB
1098 GC0909      STRING LOWER-CASE(WS-Prog-Folder-TXT (1:1))
1099 GC0909      INTO WS-Cmd-TXT
1100 GC0909      WITH POINTER WS-I-SUB
1101 GC0909      PERFORM
1102 GC0909      VARYING WS-J-SUB FROM 3 BY 1
1103 GC0909      UNTIL WS-J-SUB > LENGTH(TRIM(WS-Prog-Folder-TXT))
1104 GC0909      IF WS-Prog-Folder-TXT (WS-J-SUB:1) = '\
1105 GC0909      STRING '/'
1106 GC0909      INTO WS-Cmd-TXT
1107 GC0909      WITH POINTER WS-I-SUB
1108 GC0909      ELSE
1109 GC0909      STRING WS-Prog-Folder-TXT (WS-J-SUB:1)
1110 GC0909      INTO WS-Cmd-TXT
1111 GC0909      WITH POINTER WS-I-SUB
1112 GC0909      END-IF
1113 GC0909      END-PERFORM
1114 GC0909      ELSE
1115 GC0410      STRING '' TRIM(WS-Prog-Folder-TXT,TRAILING)
1116 GC0909      INTO WS-Cmd-TXT
1117 GC0909      WITH POINTER WS-I-SUB
1118 GC0712      SET WS-RS-Double-Quote-Used-BOOL TO TRUE
1119 GC0909      END-IF
1120 GC0712      STRING WS-OS-Dir-CHR
1121 GC0909      INTO WS-Cmd-TXT
1122 GC0909      WITH POINTER WS-I-SUB

```

```
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=====
1123 GC0909      ELSE
1124 GC0909          IF WS-OS-Cygwin-BOOL OR WS-OS-UNIX-BOOL
1125 GC0909              STRING './'
1126 GC0909                  INTO WS-Cmd-TXT
1127 GC0909                  WITH POINTER WS-I-SUB
1128 GC0909          END-IF
1129      END-IF
1130      *>*****
1131      *> Insert program filename                                **
1132      *>*****
1133 GC0909          STRING TRIM(WS-Pgm-Nm-TXT,TRAILING)
1134 GC0909              INTO WS-Cmd-TXT
1135 GC0909              WITH POINTER WS-I-SUB
1136      *>*****
1137      *> Insert proper extension                                **
1138      *>*****
1139 GC0712          IF WS-CS-LIBRARY-CHR = ' '
1140 GC0712              IF WS-OS-Exe-Ext-CONST > ' '
1141 GC0712                  STRING WS-OS-Exe-Ext-CONST DELIMITED SPACE
1142 GC0712                      INTO WS-Cmd-TXT
1143 GC0712                      WITH POINTER WS-I-SUB
1144 GC0712              END-IF
1145 GC0712          ELSE
1146 GC0712              IF WS-OS-Lib-Ext-CONST > ' '
1147 GC0712                  STRING WS-OS-Lib-Ext-CONST DELIMITED SPACE
1148 GC0712                      INTO WS-Cmd-TXT
1149 GC0712                      WITH POINTER WS-I-SUB
1150 GC0712              END-IF
1151 GC0712          END-IF
1152 GC0712          IF WS-RS-Double-Quote-Used-BOOL
1153 GC0712              STRING ''' DELIMITED SIZE
1154 GC0712                  INTO WS-Cmd-TXT
1155 GC0712                  WITH POINTER WS-I-SUB
1156 GC0712          END-IF
1157          IF WS-CS-Args-TXT NOT = SPACES
1158 GC0809          STRING ' ' TRIM(WS-CS-Args-TXT,TRAILING)
1159                  INTO WS-Cmd-TXT
1160                  WITH POINTER WS-I-SUB
1161          END-IF
1162      *>*****
1163      *> Run the program                                        **
1164      *>*****
1165 GC0114          CALL X'E4'
1166          CALL 'SYSTEM' USING TRIM(WS-Cmd-TXT,TRAILING)
1167 GC0712          MOVE SPACES TO WS-Output-Msg-TXT
1168 GC0114          ACCEPT WS-Output-Msg-TXT(1:1) AT 0101
1169          PERFORM 900-Terminate
1170      * -- Control will NOT return
1171      .
=====

```

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```

=====
1173      *>*****
1174      *> Determine if the program being compiled is a MAIN program  **
1175      *>*****
1176      240-Find-LINKAGE-SECTION SECTION.
1177          OPEN INPUT F-Source-Code-FILE
1178 GC0712      MOVE ' ' TO WS-CS-LIBRARY-CHR
1179          SET WS-RS-More-To-1st-Prog-BOOL TO TRUE
1180          PERFORM UNTIL WS-RS-1st-Prog-Complete-BOOL
1181              READ F-Source-Code-FILE AT END
1182              CLOSE F-Source-Code-FILE
1183              EXIT SECTION
1184          END-READ
1185 GC0712      CALL 'CHECKSRC'
1186 GC0712          USING BY CONTENT F-Source-Code-REC
1187 GC0712          BY REFERENCE WS-RS-Source-Record-Type-CHR
1188          IF WS-RS-Source-Rec-Ident-BOOL
1189              SET WS-RS-1st-Prog-Complete-BOOL TO TRUE
1190          END-IF
1191      END-PERFORM
1192 GC0712      SET WS-RS-Source-Rec-Ignored-BOOL TO TRUE
1193      PERFORM UNTIL WS-RS-Source-Rec-Linkage-BOOL
1194          OR WS-RS-Source-Rec-Ident-BOOL
1195          READ F-Source-Code-FILE AT END
1196          CLOSE F-Source-Code-FILE
1197          EXIT SECTION
1198      END-READ
1199 GC0712      CALL 'CHECKSRC'
1200 GC0712          USING BY CONTENT F-Source-Code-REC
1201 GC0712          BY REFERENCE WS-RS-Source-Record-Type-CHR
1202      END-PERFORM
1203      CLOSE F-Source-Code-FILE
1204      IF WS-RS-Source-Rec-Linkage-BOOL
1205 GC0712          MOVE SELCHAR TO WS-CS-LIBRARY-CHR
1206      END-IF
1207      .

```

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```

1209 GC0712*>*****
1210 GC0712*> Attempt to open the listing file as a command. This will - **
1211 GC1113*> if the user has associated filetype/extension 'gclst' with **
1212 GC0712*> an application - invoke the appropriate application to **
1213 GC0712*> allow the user to view the listing. **
1214 GC0712*>*****
1215 GC0712 250-Autoload-Listing SECTION.
1216 GC0712 EVALUATE TRUE
1217 GC0712 WHEN WS-OS-Windows-BOOL OR WS-OS-Cygwin-BOOL
1218 GC0712 MOVE SPACES TO WS-Cmd-TXT
1219 GC0712 STRING
1220 GC0712 'cmd /c '
1221 GC0712 TRIM(WS-Listing-Filename-TXT,TRAILING)
1222 GC0712 DELIMITED SIZE INTO WS-Cmd-TXT
1223 GC0712 CALL 'SYSTEM' USING TRIM(WS-Cmd-TXT,TRAILING)
1224 GC0712 WHEN WS-OS-OSX-BOOL
1225 GC0712 MOVE SPACES TO WS-Cmd-TXT
1226 GC0712 STRING
1227 GC0712 'open -t '
1228 GC0712 TRIM(WS-Listing-Filename-TXT,TRAILING)
1229 GC0712 DELIMITED SIZE INTO WS-Cmd-TXT
1230 GC0712 CALL 'SYSTEM' USING TRIM(WS-Cmd-TXT,TRAILING)
1231 GC0712 END-EVALUATE
1232 GC0712*> *****
1233 GC0712*> ** Since we had to do our own '-save-temps' when we **
1234 GC0712*> ** compiled (in order to generate the cross-reference **
1235 GC0712*> ** listing) we now need to clean up after ourselves. **
1236 GC0712*> *****
1237 GC1112 DISPLAY S-Blank-SCR
1238 GC0712 IF WS-OS-Windows-BOOL
1239 GC0712 MOVE CONCATENATE('del ',TRIM(WS-Pgm-Nm-TXT,TRAILING))
1240 GC0712 TO WS-Cmd-TXT
1241 GC0712 ELSE
1242 GC0712 MOVE CONCATENATE('rm ',TRIM(WS-Pgm-Nm-TXT,TRAILING))
1243 GC0712 TO WS-Cmd-TXT
1244 GC0712 END-IF
1245 GC0712 CALL 'SYSTEM'
1246 GC0712 USING CONCATENATE(TRIM(WS-Cmd-TXT,TRAILING),'.c')
1247 GC0712 CALL 'SYSTEM'
1248 GC0712 USING CONCATENATE(TRIM(WS-Cmd-TXT,TRAILING),'.c.h')
1249 GC0712 CALL 'SYSTEM'
1250 GC0712 USING CONCATENATE(TRIM(WS-Cmd-TXT,TRAILING),'.c.l*.h')
1251 GC0712 CALL 'SYSTEM'
1252 GC0712 USING CONCATENATE(TRIM(WS-Cmd-TXT,TRAILING),'.i')
1253 GC0712 CALL 'SYSTEM'
1254 GC0712 USING CONCATENATE(TRIM(WS-Cmd-TXT,TRAILING),'.o')
1255
1256 GC0712 .

```

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```
=====
1258      *>*****
1259      *> Display a message and halt the program      **
1260      *>*****
1261      900-Terminate SECTION.
1262 GC0909      IF WS-Output-Msg-TXT > SPACES
1263 GC0909          DISPLAY S-Switches-SCR
1264 GC0909          CALL 'C$SLEEP' USING 2
1265 GC0909      END-IF
1266          DISPLAY S-Blank-SCR
1267          STOP RUN
1268          .
1269
1270      END PROGRAM GCic.
```

```
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1272 IDENTIFICATION DIVISION.
1273 PROGRAM-ID. CHECKSRC.
1274 *>*****
1275 *> This subprogram will scan a line of source code it is given **
1276 *> looking for 'LINKAGE SECTION' or 'IDENTIFICATION DIVISION'. **
1277 *> **
1278 *> ****NOTE**** ****NOTE**** ****NOTE**** ****NOTE**** **
1279 *> **
1280 *> These two strings must be found IN THEIR ENTIRETY within **
1281 *> the 1st 80 columns of program source records, and cannot **
1282 *> follow either a '*>' sequence OR a '*' in col 7. **
1283 *>*****
1284 *> DATE CHANGE DESCRIPTION **
1285 *> ===== **
1286 *> GC0809 Initial coding. **
1287 *>*****
1288 ENVIRONMENT DIVISION.
1289 CONFIGURATION SECTION.
1290 REPOSITORY.
1291 FUNCTION ALL INTRINSIC.
1292 DATA DIVISION.
1293 WORKING-STORAGE SECTION.
1294 01 WS-Compressed-Src-TXT.
1295     05 WS-CS-CHR OCCURS 80 TIMES
1296     PIC X(1).
1297
1298 01 WS-Runtime-Switches-TXT.
1299     05 WS-RS-Found-SPACE-CHR PIC X(1).
1300     88 WS-RS-Skipping-SPACE-BOOL VALUE 'Y'.
1301     88 WS-RS-Not-Skipping-SPACE-BOOL VALUE 'N'.
1302
1303 01 WS-I-SUB USAGE BINARY-CHAR.
1304
1305 01 WS-J-SUB USAGE BINARY-CHAR.
1306 LINKAGE SECTION.
1307 01 L-Argument-1-TXT.
1308     02 L-A1-CHR OCCURS 80 TIMES
1309     PIC X(1).
1310
1311 01 L-Argument-2-CHR PIC X(1).
1312     88 L-A2-LINKAGE-SECTION-BOOL VALUE 'L'.
1313     88 L-A2-IDENT-DIVISION-BOOL VALUE 'I'.
1314     88 L-A2-Nothing-Special-BOOL VALUE ' '.

```

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```

=====
1316 GC0712 PROCEDURE DIVISION USING BY VALUE      L-Argument-1-TXT
1317 GC0712                                     BY REFERENCE L-Argument-2-CHR.
1318      000-Main SECTION.
1319          SET L-A2-Nothing-Special-BOOL TO TRUE
1320          IF L-A1-CHR (7) = '*'
1321              GOBACK
1322          END-IF
1323      .
1324      *>
1325      *> Compress multiple consecutive spaces
1326      *>
1327          SET WS-RS-Not-Skipping-SPACE-BOOL TO TRUE
1328          MOVE 0 TO WS-J-SUB
1329          MOVE SPACES TO WS-Compressed-Src-TXT
1330          PERFORM VARYING WS-I-SUB FROM 1 BY 1
1331              UNTIL WS-I-SUB > 80
1332              IF L-A1-CHR (WS-I-SUB) = SPACE
1333                  IF WS-RS-Not-Skipping-SPACE-BOOL
1334                      ADD 1 TO WS-J-SUB
1335                      MOVE UPPER-CASE(L-A1-CHR (WS-I-SUB))
1336                      TO WS-CS-CHR (WS-J-SUB)
1337                      SET WS-RS-Skipping-SPACE-BOOL TO TRUE
1338                  END-IF
1339              ELSE
1340                  SET WS-RS-Not-Skipping-SPACE-BOOL TO TRUE
1341                  ADD 1 TO WS-J-SUB
1342                  MOVE L-A1-CHR (WS-I-SUB) TO WS-CS-CHR (WS-J-SUB)
1343              END-IF
1344          END-PERFORM
1345      *>
1346      *> Scan the compressed source line
1347      *>
1348          PERFORM VARYING WS-I-SUB FROM 1 BY 1
1349              UNTIL WS-I-SUB > 66
1350          EVALUATE TRUE
1351              WHEN WS-CS-CHR (WS-I-SUB) = '*'
1352                  IF WS-Compressed-Src-TXT (WS-I-SUB : 2) = '*>'
1353                      GOBACK
1354                  END-IF
1355              WHEN (WS-CS-CHR (WS-I-SUB) = 'L') AND (WS-I-SUB < 66)
1356                  IF WS-Compressed-Src-TXT (WS-I-SUB : 15)
1357                      = 'LINKAGE SECTION'
1358                      SET L-A2-LINKAGE-SECTION-BOOL TO TRUE
1359                      GOBACK
1360                  END-IF
1361              WHEN (WS-CS-CHR (WS-I-SUB) = 'I') AND (WS-I-SUB < 58)
1362                  IF WS-Compressed-Src-TXT (WS-I-SUB : 23)
1363                      = 'IDENTIFICATION DIVISION'
1364                      SET L-A2-IDENT-DIVISION-BOOL TO TRUE
1365                      GOBACK
1366                  END-IF
1367          END-EVALUATE

```

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```

=====
1368             END-PERFORM
1369         *>
1370         *> If we get to here, we never found anything!
1371         *>
1372 +             GOBACK
1373         .
1374         END PROGRAM CHECKSRC.
1375
1376         IDENTIFICATION DIVISION.
1377         PROGRAM-ID. LISTING.
1378         *>*****
1379         *> This subprogram generates a cross-reference listing of an **
1380         *> GNU COBOL program. **
1381         *>*****
1382         *> **
1383         *> AUTHOR:          GARY L. CUTLER **
1384         *>                Copyright (C) 2010, Gary L. Cutler, GPL **
1385         *> **
1386         *> DATE-WRITTEN: April 1, 2010 **
1387         *> **
1388         *>*****
1389         *>  DATE  CHANGE DESCRIPTION **
1390         *> ===== **
1391         *> GC0410 Initial coding **
1392         *> GC0711 Updates to accommodate the 12MAR2010 version of OC **
1393         *> GC0710 Handle duplicate data names (i.e. 'CORRESPONDING' or **
1394         *>        qualified items) better; ignore 'END PROGRAM' recs **
1395         *>        so program name doesn't appear in listing. **
1396         *> GC0313 Fix problem where the first procedure name defined **
1397         *>        in the PROCEDURE DIVISION lacks a "Defined" line **
1398         *>        number. **
1399         *> GC1213 Updated for 23NOV2013 version of GNU COBOL 2.1; Stop **
1400         *>        showing functions as if they were identifiers in the **
1401         *>        xref listing; Flag all CALL argument references with **
1402         *>        a "C" rather than "*" because they aren't necessari- **
1403         *>        ly altered; Fixed assorted formatting bugs; DOWN- **
1404         *>        WARD COMPATIBLE WITH GNU COBOL 2.0 SYNTAX **
1405         *> GC0314 Fix problem where 1st char of 1st token on a line is **
1406         *>        lost if >>SOURCE MODE IS FREE is in effect and the **
1407         *>        1st character is non-blank. **
1408         *> VC1217 Updated compiler version & date to v3.0 & 24DEC2017. **
1409         *>*****
1410         ENVIRONMENT DIVISION.
1411         CONFIGURATION SECTION.
1412         REPOSITORY.
1413             FUNCTION ALL INTRINSIC.
1414         INPUT-OUTPUT SECTION.
1415         FILE-CONTROL.
1416             SELECT F-Expanded-Src-FILE ASSIGN TO WS-Expanded-Src-Fn-TXT
1417             ORGANIZATION IS LINE SEQUENTIAL.
1418 GC0712     SELECT F-Listing-FILE      ASSIGN TO L-Listing-Fn-TXT
1419             ORGANIZATION IS LINE SEQUENTIAL.
1420             SELECT F-Original-Src-FILE ASSIGN TO L-Src-Fn-TXT

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=====
1421                                ORGANIZATION IS LINE SEQUENTIAL.
1422                                ASSIGN TO DISK.
1423                                SELECT F-Sort-Work-FILE
1424                                DATA DIVISION.
1425                                FILE SECTION.
1426                                FD F-Expanded-Src-FILE.
1427                                01 F-Expanded-Src-REC.
1428                                    05 F-ES-1-CHR                      PIC X.
1429                                    05 F-ES-2-256-TXT-256          PIC X(256).
1430 GC0712 01 F-Expanded-Src2-REC.
1431 GC0712    05 F-ES-1-7-TXT                      PIC X(7).
1432 GC0712    05 F-ES-8-256-TXT                      PIC X(249).
1433
1434 GC0712 FD F-Listing-FILE.
1435 GC1213 01 F-Listing-96-REC                      PIC X(96).
1436 GC1213 01 F-Listing-135-REC                     PIC X(135).
1437 GC1213 01 F-Listing-REC                         PIC X(135).
1438
1439 FD F-Original-Src-FILE.
1440 01 F-Original-Src-REC.
1441 GC0410    05 F-OS-1-128-TXT.
1442 GC0410    10 FILLER                             PIC X(6).
1443 GC0410    10 F-OS-7-CHR                          PIC X(1).
1444 GC0712    10 F-OS-8-72-TXT                       PIC X(65).
1445 GC0712    10 FILLER                             PIC X(56).
1446    05 F-OS-129-256-TXT                          PIC X(128).
1447
1448 SD F-Sort-Work-FILE.
1449 01 F-Sort-Work-REC.
1450    05 F-SW-Prog-ID-TXT                          PIC X(15).
1451    05 F-SW-Token-Uc-TXT                         PIC X(32).
1452    05 F-SW-Token-TXT                           PIC X(32).
1453    05 F-SW-Section-TXT                         PIC X(15).
1454    05 F-SW-Def-Line-NUM                        PIC 9(6).
1455    10 F-SW-Ref-Line-NUM                       PIC 9(6).
1456    10 F-SW-Ref-Flag-CHR                      PIC X(1).
1457
1458 WORKING-STORAGE SECTION.
1459 GC1213 01 WS-Copyright-TXT                     PIC X(86).
1460
1461    01 WS-Curr-CHR                               PIC X(1).
1462    88 WS-Curr-Char-Is-Punct-BOOL                VALUE '=' , '(' , ')' ,
1463    88 WS-Curr-Char-Is-Quote-BOOL                VALUE '*' , '/' , '&' ,
1464    88 WS-Curr-Char-Is-X-BOOL                    VALUE ';' , ',' , '<' ,
1465    88 WS-Curr-Char-Is-Z-BOOL                    VALUE '>' , ':' .
1466    88 WS-Curr-Char-Is-X-BOOL                    VALUE '"' , "'" .
1467    88 WS-Curr-Char-Is-X-BOOL                    VALUE 'x' , 'X' .
1468    88 WS-Curr-Char-Is-Z-BOOL                    VALUE 'z' , 'Z' .
1469
1470    01 WS-Curr-Division-TXT                      PIC X(1).
1471 GC1010    88 WS-CD-In-IDENT-DIV-BOOL            VALUE 'i' , 'I' , 'I' .
1472 GC1010    88 WS-CD-In-ENV-DIV-BOOL              VALUE 'e' , 'E' .
1473 GC1010    88 WS-CD-In-DATA-DIV-BOOL             VALUE 'd' , 'D' .
=====

```

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```

=====
1474 GC1010      88 WS-CD-In-PROC-DIV-BOOL      VALUE 'p', 'P'.
1475
1476              01 WS-Curr-Line-NUM            PIC 9(6).
1477
1478              01 WS-Curr-Prog-ID-TXT.
1479                  05 FILLER                    PIC X(12).
1480                  05 WS-CPI-13-15-TXT          PIC X(3).
1481 GC0712        05 WS-CPI-16-CHR              PIC X(1).
1482
1483              01 WS-Curr-Section-TXT.
1484                  05 WS-CS-1-CHR                PIC X(1).
1485                  05 WS-CS-2-14-TXT.
1486                      10 FILLER                PIC X(10).
1487                      10 WS-CS-11-14-TXT        PIC X(3).
1488                  05 WS-CS-15-CHR              PIC X(1).
1489
1490              01 WS-Curr-Verb-TXT              PIC X(12).
1491
1492              01 WS-Delim-TXT                  PIC X(2).
1493
1494              01 WS-Dummy-TXT                  PIC X(1).
1495
1496              01 WS-Expanded-Src-Fn-TXT        PIC X(256).
1497
1498              01 WS-Filename-TXT                PIC X(256).
1499
1500 GC1213 01 WS-Flags-TXT.
1501 GC1213      05 WS-Suppress-FF-CHR            PIC X(1).
1502
1503 GC1213 01 WS-Formatted-DT                    PIC 9999/99/99.
1504
1505              01 WS-Group-Indicators-TXT.
1506                  05 WS-GI-Prog-ID-TXT          PIC X(15).
1507                  05 WS-GI-Token-TXT            PIC X(32).
1508
1509              01 WS-Held-Reference-TXT          PIC X(100).
1510
1511              01 WS-I-SUB                       USAGE BINARY-LONG.
1512
1513              01 WS-J-SUB                       USAGE BINARY-LONG.
1514
1515              01 WS-Lines-Left-NUM              USAGE BINARY-LONG.
1516
1517              01 WS-Lines-Per-Page-NUM          USAGE BINARY-LONG.
1518
1519              01 WS-Lines-Per-Page-Env-TXT      PIC X(256).
1520
1521 GC1010 01 WS-Main-Module-Name-TXT            PIC X(256).
1522
1523              01 WS-Next-CHR                    PIC X(1).
1524                  88 WS-Next-Char-Is-Quote-BOOL VALUE '"', '"'.
1525
1526              01 WS-OS-Type-FILLER-TXT.

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=====
1527      05 VALUE 'Windows' PIC X(14).
1528      05 VALUE 'Windows/Cygwin' PIC X(14).
1529      05 VALUE 'UNIX/Linux' PIC X(14).
1530      05 VALUE 'OSX' PIC X(14).
1531      05 VALUE 'Windows/MinGW' PIC X(14).
1532      01 WS-OS-Types-TXT REDEFINES WS-OS-Type-FILLER-TXT.
1533      05 WS-OS-Type-TXT PIC X(14)
1534      OCCURS 5 TIMES .
1535
1536 GC0712 01 WS-Page-NUM USAGE BINARY-LONG.
1537
1538 GC0712 01 WS-Page-No-TXT.
1539 GC0712      05 WS-PN-Literal-TXT PIC X(6).
1540 GC0712      05 WS-PN-Page-NUM PIC Z(3)9.
1541
1542 GC1213 01 WS-Program-Path-TXT PIC X(135).
1543
1544      01 WS-Reserved-Words-TXT.
1545      05 VALUE ' ' PIC X(33).
1546 GC1213      05 VALUE 'FABS' PIC X(33).
1547      05 VALUE 'VACCEPT' PIC X(33).
1548      05 VALUE ' ACCESS' PIC X(33).
1549 GC1213      05 VALUE 'FACOS' PIC X(33).
1550      05 VALUE ' ACTIVE-CLASS' PIC X(33). UNIMPLEMENTED
1551      05 VALUE 'VADD' PIC X(33).
1552      05 VALUE ' ADDRESS' PIC X(33).
1553      05 VALUE ' ADVANCING' PIC X(33).
1554      05 VALUE 'KAFTER' PIC X(33).
1555      05 VALUE ' ALIGNED' PIC X(33). UNIMPLEMENTED
1556      05 VALUE ' ALL' PIC X(33).
1557      05 VALUE 'VALLOCATE' PIC X(33).
1558      05 VALUE ' ALPHABET' PIC X(33).
1559      05 VALUE ' ALPHABETIC' PIC X(33).
1560      05 VALUE ' ALPHABETIC-LOWER' PIC X(33).
1561      05 VALUE ' ALPHABETIC-UPPER' PIC X(33).
1562      05 VALUE ' ALPHANUMERIC' PIC X(33).
1563      05 VALUE ' ALPHANUMERIC-EDITED' PIC X(33).
1564      05 VALUE ' ALSO' PIC X(33).
1565      05 VALUE 'VALTER' PIC X(33).
1566      05 VALUE ' ALTERNATE' PIC X(33).
1567      05 VALUE ' AND' PIC X(33).
1568 GC1213      05 VALUE 'FANNUITY' PIC X(33).
1569      05 VALUE ' ANY' PIC X(33).
1570      05 VALUE ' ANYCASE' PIC X(33). UNIMPLEMENTED
1571      05 VALUE ' ARE' PIC X(33).
1572      05 VALUE ' AREA' PIC X(33).
1573      05 VALUE ' AREAS' PIC X(33).
1574      05 VALUE ' ARGUMENT-NUMBER' PIC X(33).
1575      05 VALUE ' ARGUMENT-VALUE' PIC X(33).
1576      05 VALUE ' ARITHMETIC' PIC X(33). UNIMPLEMENTED
1577      05 VALUE ' AS' PIC X(33).
1578      05 VALUE ' ASCENDING' PIC X(33).
1579      05 VALUE ' ASCII' PIC X(33).
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=====
1580 GC1213      05 VALUE 'FASIN                ' PIC X(33).
1581              05 VALUE ' ASSIGN              ' PIC X(33).
1582              05 VALUE ' AT                  ' PIC X(33).
1583 GC1213      05 VALUE 'FATAN                ' PIC X(33).
1584 GC0711      05 VALUE ' ATTRIBUTE            ' PIC X(33).
1585              05 VALUE ' AUTHOR              ' PIC X(33).      OBSOLETE
1586              05 VALUE ' AUTO                ' PIC X(33).
1587              05 VALUE ' AUTO-SKIP           ' PIC X(33).
1588              05 VALUE ' AUTOMATIC            ' PIC X(33).
1589              05 VALUE ' AUTOTERMINATE        ' PIC X(33).
1590              05 VALUE ' AWAY-FROM-ZERO       ' PIC X(33).
1591              05 VALUE ' B-AND                ' PIC X(33).      UNIMPLEMENTED
1592              05 VALUE ' B-NOT               ' PIC X(33).      UNIMPLEMENTED
1593              05 VALUE ' B-OR                ' PIC X(33).      UNIMPLEMENTED
1594              05 VALUE ' B-XOR               ' PIC X(33).      UNIMPLEMENTED
1595              05 VALUE ' BACKGROUND-COLOR    ' PIC X(33).
1596              05 VALUE ' BACKGROUND-COLOUR   ' PIC X(33).
1597              05 VALUE ' BASED               ' PIC X(33).
1598              05 VALUE ' BEEP                ' PIC X(33).
1599              05 VALUE ' BEFORE              ' PIC X(33).
1600              05 VALUE ' BELL                ' PIC X(33).
1601              05 VALUE ' BINARY              ' PIC X(33).
1602              05 VALUE ' BINARY-C-LONG        ' PIC X(33).
1603              05 VALUE ' BINARY-CHAR         ' PIC X(33).
1604              05 VALUE ' BINARY-DOUBLE       ' PIC X(33).
1605              05 VALUE ' BINARY-INT          ' PIC X(33).
1606              05 VALUE ' BINARY-LONG         ' PIC X(33).
1607              05 VALUE ' BINARY-LONG-LONG    ' PIC X(33).
1608              05 VALUE ' BINARY-SHORT        ' PIC X(33).
1609              05 VALUE ' BIT                 ' PIC X(33).      UNIMPLEMENTED
1610              05 VALUE ' BLANK               ' PIC X(33).
1611              05 VALUE ' BLINK               ' PIC X(33).
1612              05 VALUE ' BLOCK               ' PIC X(33).
1613              05 VALUE ' BOOLEAN             ' PIC X(33).      UNIMPLEMENTED
1614 GC1213      05 VALUE 'FBOOLEAN-OF-INTEGER   ' PIC X(33).      UNIMPLEMENTED
1615              05 VALUE ' BOTTOM              ' PIC X(33).
1616              05 VALUE ' YBY                ' PIC X(33).
1617 GC1213      05 VALUE 'FBYTE-LENGTH         ' PIC X(33).
1618              05 VALUE 'MC01                ' PIC X(33).
1619              05 VALUE 'MC02                ' PIC X(33).
1620              05 VALUE 'MC03                ' PIC X(33).
1621              05 VALUE 'MC04                ' PIC X(33).
1622              05 VALUE 'MC05                ' PIC X(33).
1623              05 VALUE 'MC06                ' PIC X(33).
1624              05 VALUE 'MC07                ' PIC X(33).
1625              05 VALUE 'MC08                ' PIC X(33).
1626              05 VALUE 'MC09                ' PIC X(33).
1627              05 VALUE 'MC10                ' PIC X(33).
1628              05 VALUE 'MC11                ' PIC X(33).
1629              05 VALUE 'MC12                ' PIC X(33).
1630              05 VALUE 'VCALL                ' PIC X(33).
1631              05 VALUE 'MCALL-CONVENTION      ' PIC X(33).
1632              05 VALUE 'VCANCEL              ' PIC X(33).
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=====
1633          05 VALUE ' CAPACITY          ' PIC X(33).      UNIMPLEMENTED
1634          05 VALUE ' CD                ' PIC X(33).      OBSOLETE
1635          05 VALUE ' CENTER             ' PIC X(33).      UNIMPLEMENTED
1636          05 VALUE ' CF                 ' PIC X(33).
1637          05 VALUE ' CH                 ' PIC X(33).
1638          05 VALUE ' CHAIN               ' PIC X(33).      UNIMPLEMENTED
1639          05 VALUE ' CHAINING            ' PIC X(33).
1640 GC1213    05 VALUE 'FCHAR               ' PIC X(33).
1641 GC1213    05 VALUE 'FCHAR-NATIONAL      ' PIC X(33).      UNIMPLEMENTED
1642          05 VALUE ' CHARACTER           ' PIC X(33).
1643          05 VALUE ' CHARACTERS          ' PIC X(33).
1644          05 VALUE ' CLASS               ' PIC X(33).
1645          05 VALUE ' CLASS-ID            ' PIC X(33).      UNIMPLEMENTED
1646 GC0711    05 VALUE ' CLASSIFICATION     ' PIC X(33).
1647          05 VALUE 'VCLOSE              ' PIC X(33).
1648 GC1213    05 VALUE 'FCOB-CRT-STATUS    ' PIC X(33).
1649          05 VALUE ' CODE                ' PIC X(33).
1650          05 VALUE ' CODE-SET            ' PIC X(33).
1651          05 VALUE ' COL                 ' PIC X(33).
1652          05 VALUE ' COLLATING           ' PIC X(33).
1653          05 VALUE ' COLS                ' PIC X(33).
1654          05 VALUE ' COLUMN              ' PIC X(33).
1655          05 VALUE ' COLUMNS             ' PIC X(33).
1656 GC1213    05 VALUE 'FCOMBINED-DATETIME ' PIC X(33).
1657          05 VALUE ' COMMA               ' PIC X(33).
1658          05 VALUE ' COMMAND-LINE        ' PIC X(33).
1659          05 VALUE 'VCOMMIT              ' PIC X(33).
1660          05 VALUE ' COMMON              ' PIC X(33).
1661          05 VALUE ' COMMUNICATION       ' PIC X(33).      OBSOLETE
1662          05 VALUE ' COMP                ' PIC X(33).
1663          05 VALUE ' COMP-1              ' PIC X(33).
1664          05 VALUE ' COMP-2              ' PIC X(33).
1665          05 VALUE ' COMP-3              ' PIC X(33).
1666          05 VALUE ' COMP-4              ' PIC X(33).
1667          05 VALUE ' COMP-5              ' PIC X(33).
1668          05 VALUE ' COMP-6              ' PIC X(33).
1669          05 VALUE ' COMP-X              ' PIC X(33).
1670          05 VALUE ' COMPUTATIONAL       ' PIC X(33).
1671          05 VALUE ' COMPUTATIONAL-1     ' PIC X(33).
1672          05 VALUE ' COMPUTATIONAL-2     ' PIC X(33).
1673          05 VALUE ' COMPUTATIONAL-3     ' PIC X(33).
1674          05 VALUE ' COMPUTATIONAL-4     ' PIC X(33).
1675          05 VALUE ' COMPUTATIONAL-5     ' PIC X(33).
1676          05 VALUE ' COMPUTATIONAL-X     ' PIC X(33).
1677          05 VALUE 'VCOMPUTE            ' PIC X(33).
1678 GC1213    05 VALUE 'FCONCATENATE        ' PIC X(33).
1679 GC0712    05 VALUE ' CONDITION          ' PIC X(33).
1680          05 VALUE 'KCONFIGURATION      ' PIC X(33).
1681          05 VALUE 'MCONSOLE            ' PIC X(33).
1682          05 VALUE ' CONSTANT            ' PIC X(33).
1683          05 VALUE ' CONTAINS            ' PIC X(33).
1684 GC0712    05 VALUE 'ACONTENT           ' PIC X(33).
1685          05 VALUE 'VCONTINUE           ' PIC X(33).
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=====
1686          05 VALUE ' CONTROL                ' PIC X(33).
1687          05 VALUE ' CONTROLS                ' PIC X(33).
1688 GC0711    05 VALUE ' CONVERSION              ' PIC X(33).
1689          05 VALUE 'KCONVERTING              ' PIC X(33).
1690          05 VALUE ' COPY                    ' PIC X(33).
1691          05 VALUE ' CORR                    ' PIC X(33).
1692          05 VALUE ' CORRESPONDING            ' PIC X(33).
1693 GC1213    05 VALUE 'FCOS                    ' PIC X(33).
1694          05 VALUE 'KCOUNT                  ' PIC X(33).
1695          05 VALUE ' CRT                      ' PIC X(33).
1696          05 VALUE ' CRT-UNDER                ' PIC X(33).
1697          05 VALUE 'MCSP                     ' PIC X(33).
1698          05 VALUE ' CURRENCY                 ' PIC X(33).
1699 GC1213    05 VALUE 'FCURRENCY-SYMBOL          ' PIC X(33).
1700 GC1213    05 VALUE 'FCURRENT-DATE            ' PIC X(33).
1701          05 VALUE ' CURSOR                  ' PIC X(33).
1702          05 VALUE ' CYCLE                    ' PIC X(33).
1703          05 VALUE 'KDATA                    ' PIC X(33).
1704          05 VALUE ' DATA-POINTER            ' PIC X(33).
1705          05 VALUE ' DATE                    ' PIC X(33).
1706          05 VALUE ' DATE-COMPILED            ' PIC X(33).
1707          05 VALUE ' DATE-MODIFIED            ' PIC X(33).
1708 GC1213    05 VALUE 'FDATE-OF-INTEGGER        ' PIC X(33).
1709 GC1213    05 VALUE 'FDATE-TO-YYYYMMDD        ' PIC X(33).
1710          05 VALUE ' DATE-WRITTEN            ' PIC X(33).
1711          05 VALUE ' DAY                      ' PIC X(33).
1712 GC1213    05 VALUE 'FDAY-OF-INTEGGER          ' PIC X(33).
1713          05 VALUE ' DAY-OF-WEEK              ' PIC X(33).
1714 GC1213    05 VALUE 'IDAY-TO-YYYYDDD          ' PIC X(33).
1715          05 VALUE ' DE                      ' PIC X(33).
1716 GC0712    05 VALUE 'IDEBUG-CONTENTS          ' PIC X(33).
1717 GC0712    05 VALUE 'IDEBUG-ITEM              ' PIC X(33).
1718 GC0712    05 VALUE 'IDEBUG-LINE             ' PIC X(33).
1719 GC0712    05 VALUE 'IDEBUG-NAME             ' PIC X(33).
1720 GC0712    05 VALUE 'IDEBUG-SUB-1            ' PIC X(33).
1721 GC0712    05 VALUE 'IDEBUG-SUB-2            ' PIC X(33).
1722 GC0712    05 VALUE 'IDEBUG-SUB-3            ' PIC X(33).
1723          05 VALUE ' DEBUGGING               ' PIC X(33).
1724          05 VALUE ' DECIMAL-POINT            ' PIC X(33).
1725          05 VALUE ' DECLARATIVES            ' PIC X(33).
1726          05 VALUE ' DEFAULT                 ' PIC X(33).
1727          05 VALUE 'VDELETE                   ' PIC X(33).
1728          05 VALUE ' DELIMITED                ' PIC X(33).
1729          05 VALUE 'KDELIMITER               ' PIC X(33).
1730          05 VALUE ' DEPENDING                ' PIC X(33).
1731          05 VALUE ' DESCENDING               ' PIC X(33).
1732          05 VALUE ' DESTINATION              ' PIC X(33).
1733          05 VALUE ' DETAIL                   ' PIC X(33).
1734 GC0711    05 VALUE ' DISC                    ' PIC X(33).
1735          05 VALUE ' DISK                     ' PIC X(33).
1736          05 VALUE 'VDISPLAY                  ' PIC X(33).
1737 GC1213    05 VALUE 'FDISPLAY-OF              ' PIC X(33).
1738          05 VALUE 'VDIVIDE                  ' PIC X(33).
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OBSOLETE

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=====
1739          05 VALUE 'KDIVISION              ' PIC X(33).
1740          05 VALUE 'KDOWN                  ' PIC X(33).
1741          05 VALUE ' DUPLICATES              ' PIC X(33).
1742          05 VALUE ' DYNAMIC                  ' PIC X(33).
1743 GC1213     05 VALUE 'FE                      ' PIC X(33).
1744          05 VALUE ' EBCDIC                  ' PIC X(33).
1745 GC0712     05 VALUE ' EC                      ' PIC X(33).
1746          05 VALUE ' EGI                      ' PIC X(33).      OBSOLETE
1747          05 VALUE 'VELSE                    ' PIC X(33).
1748          05 VALUE ' EMI                      ' PIC X(33).      OBSOLETE
1749          05 VALUE ' EMPTY-CHECK              ' PIC X(33).
1750          05 VALUE 'VENABLE                  ' PIC X(33).      OBSOLETE
1751 GC0710     05 VALUE 'KEND                    ' PIC X(33).
1752          05 VALUE ' END-ACCEPT                ' PIC X(33).
1753          05 VALUE ' END-ADD                  ' PIC X(33).
1754          05 VALUE ' END-CALL                  ' PIC X(33).
1755          05 VALUE ' END-CHAIN                  ' PIC X(33).      UNIMPLEMENTED
1756          05 VALUE ' END-COMPUTE              ' PIC X(33).
1757          05 VALUE ' END-DELETE                ' PIC X(33).
1758          05 VALUE ' END-DISPLAY              ' PIC X(33).
1759          05 VALUE ' END-DIVIDE                ' PIC X(33).
1760          05 VALUE ' END-EVALUATE              ' PIC X(33).
1761          05 VALUE ' END-IF                    ' PIC X(33).
1762          05 VALUE ' END-MULTIPLY              ' PIC X(33).
1763          05 VALUE ' END-OF-PAGE                ' PIC X(33).
1764          05 VALUE ' END-PERFORM                ' PIC X(33).
1765          05 VALUE ' END-READ                  ' PIC X(33).
1766          05 VALUE ' END-RECEIVE              ' PIC X(33).      OBSOLETE
1767          05 VALUE ' END-RETURN                ' PIC X(33).
1768          05 VALUE ' END-REWRITE              ' PIC X(33).
1769          05 VALUE ' END-SEARCH                ' PIC X(33).
1770          05 VALUE ' END-START                ' PIC X(33).
1771          05 VALUE ' END-STRING                ' PIC X(33).
1772          05 VALUE ' END-SUBTRACT              ' PIC X(33).
1773          05 VALUE ' END-UNSTRING              ' PIC X(33).
1774          05 VALUE ' END-WRITE                ' PIC X(33).
1775          05 VALUE 'VENTRY                    ' PIC X(33).
1776          05 VALUE ' ENTRY-CONVENTION          ' PIC X(33).      UNIMPLEMENTED
1777          05 VALUE ' KENVIRONMENT              ' PIC X(33).
1778          05 VALUE ' ENVIRONMENT-NAME          ' PIC X(33).
1779          05 VALUE ' ENVIRONMENT-VALUE          ' PIC X(33).
1780          05 VALUE ' EO                        ' PIC X(33).      UNIMPLEMENTED
1781          05 VALUE ' EOL                      ' PIC X(33).
1782          05 VALUE ' EOP                      ' PIC X(33).
1783          05 VALUE ' EOS                      ' PIC X(33).
1784          05 VALUE ' EQUAL                    ' PIC X(33).
1785          05 VALUE ' KEQUALS                  ' PIC X(33).
1786          05 VALUE ' ERASE                    ' PIC X(33).
1787          05 VALUE ' ERROR                    ' PIC X(33).
1788          05 VALUE ' ESCAPE                    ' PIC X(33).
1789          05 VALUE ' ESI                      ' PIC X(33).      OBSOLETE
1790          05 VALUE ' VEVALUATE                  ' PIC X(33).
1791          05 VALUE ' EXCEPTION                  ' PIC X(33).
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=====
1792 GC1213      05 VALUE 'FEXCEPTION-FILE          ' PIC X(33).
1793 GC1213      05 VALUE 'FEXCEPTION-FILE-N        ' PIC X(33).      UNIMPLEMENTED
1794 GC1213      05 VALUE 'FEXCEPTION-LOCATION        ' PIC X(33).
1795 GC1213      05 VALUE 'FEXCEPTION-LOCATION-N      ' PIC X(33).      UNIMPLEMENTED
1796           05 VALUE ' EXCEPTION-OBJECT          ' PIC X(33).      UNIMPLEMENTED
1797 GC1213      05 VALUE 'FEXCEPTION-STATEMENT      ' PIC X(33).
1798 GC1213      05 VALUE 'FEXCEPTION-STATUS        ' PIC X(33).
1799           05 VALUE ' EXCLUSIVE                  ' PIC X(33).
1800           05 VALUE 'VEXIT                        ' PIC X(33).
1801 GC1213      05 VALUE 'FEXP                      ' PIC X(33).
1802 GC1213      05 VALUE 'FEXP10                    ' PIC X(33).
1803           05 VALUE ' EXPANDS                    ' PIC X(33).      UNIMPLEMENTED
1804           05 VALUE ' EXTEND                     ' PIC X(33).
1805           05 VALUE ' EXTERNAL                   ' PIC X(33).
1806 GC1213      05 VALUE 'FFACTORIAL                 ' PIC X(33).
1807           05 VALUE ' FACTORY                    ' PIC X(33).      UNIMPLEMENTED
1808           05 VALUE ' FALSE                      ' PIC X(33).
1809           05 VALUE 'KFD                         ' PIC X(33).
1810           05 VALUE 'KFILE                       ' PIC X(33).
1811           05 VALUE ' FILE-CONTROL               ' PIC X(33).
1812           05 VALUE ' FILE-ID                    ' PIC X(33).
1813 GC1113      05 VALUE ' FILLER                    ' PIC X(33).
1814           05 VALUE ' FINAL                      ' PIC X(33).
1815           05 VALUE ' FIRST                     ' PIC X(33).
1816 GC0712      05 VALUE ' FLOAT-BINARY-128          ' PIC X(33).      UNIMPLEMENTED
1817 GC0712      05 VALUE ' FLOAT-BINARY-32          ' PIC X(33).      UNIMPLEMENTED
1818 GC0712      05 VALUE ' FLOAT-BINARY-64          ' PIC X(33).      UNIMPLEMENTED
1819           05 VALUE ' FLOAT-DECIMAL-16          ' PIC X(33).
1820           05 VALUE ' FLOAT-DECIMAL-34          ' PIC X(33).
1821           05 VALUE ' FLOAT-EXTENDED             ' PIC X(33).      UNIMPLEMENTED
1822 GC0712      05 VALUE ' FLOAT-INFINITY           ' PIC X(33).      UNIMPLEMENTED
1823           05 VALUE ' FLOAT-LONG                 ' PIC X(33).
1824 GC0712      05 VALUE ' FLOAT-NOT-A-NUMBER        ' PIC X(33).      UNIMPLEMENTED
1825           05 VALUE ' FLOAT-SHORT                ' PIC X(33).
1826           05 VALUE ' FOOTING                    ' PIC X(33).
1827           05 VALUE ' FOR                        ' PIC X(33).
1828           05 VALUE ' FOREGROUND-COLOR           ' PIC X(33).
1829           05 VALUE ' FOREGROUND-COLOUR          ' PIC X(33).
1830 GC0711      05 VALUE ' FOREVER                  ' PIC X(33).
1831           05 VALUE ' FORMAT                     ' PIC X(33).      UNIMPLEMENTED
1832 GC1213      05 VALUE 'FFORMATTED-CURRENT-DATE    ' PIC X(33).      UNIMPLEMENTED
1833 GC1213      05 VALUE 'FFORMATTED-DATE            ' PIC X(33).      UNIMPLEMENTED
1834 GC1213      05 VALUE 'FFORMATTED-DATETIME       ' PIC X(33).      UNIMPLEMENTED
1835 GC1213      05 VALUE 'FFORMATTED-TIME           ' PIC X(33).      UNIMPLEMENTED
1836           05 VALUE 'MFORMFEED                  ' PIC X(33).
1837 GC1213      05 VALUE 'FFRACTION-PART            ' PIC X(33).
1838           05 VALUE 'VFREE                       ' PIC X(33).
1839           05 VALUE ' FROM                       ' PIC X(33).
1840           05 VALUE ' FULL                       ' PIC X(33).
1841           05 VALUE ' FUNCTION                   ' PIC X(33).
1842 GC0712      05 VALUE 'KFUNCTION-ID               ' PIC X(33).
1843           05 VALUE ' FUNCTION-POINTER           ' PIC X(33).      UNIMPLEMENTED
1844           05 VALUE 'VGENERATE                   ' PIC X(33).
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1845          05 VALUE ' GET                                ' PIC X(33).      UNIMPLEMENTED
1846          05 VALUE 'KGIVING                            ' PIC X(33).
1847          05 VALUE ' GLOBAL                              ' PIC X(33).
1848          05 VALUE 'VGO                                  ' PIC X(33).
1849          05 VALUE 'VGOBACK                              ' PIC X(33).
1850          05 VALUE ' GREATER                              ' PIC X(33).
1851          05 VALUE ' GROUP                                ' PIC X(33).
1852          05 VALUE ' GROUP-USAGE                          ' PIC X(33).      UNIMPLEMENTED
1853          05 VALUE ' HEADING                              ' PIC X(33).
1854          05 VALUE ' HIGH-VALUE                          ' PIC X(33).
1855          05 VALUE ' HIGH-VALUES                         ' PIC X(33).
1856 GC1213    05 VALUE 'FHIGHEST-ALGEBRAIC                ' PIC X(33).
1857          05 VALUE ' HIGHLIGHT                          ' PIC X(33).
1858          05 VALUE ' I-O                                  ' PIC X(33).
1859          05 VALUE ' I-O-CONTROL                        ' PIC X(33).
1860          05 VALUE 'KID                                    ' PIC X(33).
1861          05 VALUE 'KIDENTIFICATION                      ' PIC X(33).
1862          05 VALUE 'VIF                                    ' PIC X(33).
1863          05 VALUE ' IGNORE                              ' PIC X(33).
1864          05 VALUE ' IGNORING                            ' PIC X(33).
1865          05 VALUE ' IMPLEMENTS                          ' PIC X(33).      UNIMPLEMENTED
1866          05 VALUE ' IN                                  ' PIC X(33).
1867          05 VALUE ' INDEX                                ' PIC X(33).
1868          05 VALUE 'KINDEXED                             ' PIC X(33).
1869          05 VALUE ' INDICATE                             ' PIC X(33).
1870          05 VALUE ' INDIRECT                             ' PIC X(33).      UNIMPLEMENTED
1871          05 VALUE ' INHERITS                             ' PIC X(33).      UNIMPLEMENTED
1872          05 VALUE ' INITIAL                             ' PIC X(33).
1873          05 VALUE 'VINITIALISE                          ' PIC X(33).
1874          05 VALUE ' INITIALISED                        ' PIC X(33).
1875          05 VALUE 'VINITIALIZE                          ' PIC X(33).
1876          05 VALUE ' INITIALIZED                        ' PIC X(33).
1877          05 VALUE 'VINITIATE                            ' PIC X(33).
1878          05 VALUE ' INPUT                                ' PIC X(33).
1879          05 VALUE 'KINPUT-OUTPUT                        ' PIC X(33).
1880          05 VALUE 'VINSPECT                             ' PIC X(33).
1881          05 VALUE ' INSTALLATION                       ' PIC X(33).      OBSOLETE
1882 GC1213    05 VALUE 'FINTEGER                            ' PIC X(33).
1883 GC1213    05 VALUE 'FINTEGER-OF-BOOLEAN                ' PIC X(33).      UNIMPLEMENTED
1884 GC1213    05 VALUE 'FINTEGER-OF-DATE                   ' PIC X(33).
1885 GC1213    05 VALUE 'FINTEGER-OF-DAY                    ' PIC X(33).
1886 GC1213    05 VALUE 'FINTEGER-OF-FORMATTED-DATE         ' PIC X(33).      UNIMPLEMENTED
1887 GC1213    05 VALUE 'FINTEGER-PART                     ' PIC X(33).
1888          05 VALUE ' INTERFACE                          ' PIC X(33).      UNIMPLEMENTED
1889          05 VALUE ' INTERFACE-ID                        ' PIC X(33).      UNIMPLEMENTED
1890          05 VALUE ' INTERMEDIATE                        ' PIC X(33).      UNIMPLEMENTED
1891          05 VALUE 'KINTO                                 ' PIC X(33).
1892          05 VALUE ' INTRINSIC                           ' PIC X(33).
1893          05 VALUE ' INVALID                              ' PIC X(33).
1894          05 VALUE ' INVOKE                              ' PIC X(33).      UNIMPLEMENTED
1895          05 VALUE ' IS                                  ' PIC X(33).
1896          05 VALUE ' JUST                                ' PIC X(33).
1897          05 VALUE ' JUSTIFIED                          ' PIC X(33).
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=====
1898          05 VALUE ' KEPT                ' PIC X(33).
1899          05 VALUE ' KEY                  ' PIC X(33).
1900          05 VALUE ' KEYBOARD              ' PIC X(33).
1901          05 VALUE ' LABEL                 ' PIC X(33).
1902          05 VALUE ' LAST                  ' PIC X(33).
1903          05 VALUE ' LC_ALL                 ' PIC X(33).      UNIMPLEMENTED
1904          05 VALUE ' LC_COLLATE             ' PIC X(33).      UNIMPLEMENTED
1905          05 VALUE ' LC_CTYPE               ' PIC X(33).      UNIMPLEMENTED
1906          05 VALUE ' LC_MESSAGES            ' PIC X(33).      UNIMPLEMENTED
1907          05 VALUE ' LC_MONETARY            ' PIC X(33).      UNIMPLEMENTED
1908          05 VALUE ' LC_NUMERIC              ' PIC X(33).      UNIMPLEMENTED
1909          05 VALUE ' LC_TIME                 ' PIC X(33).      UNIMPLEMENTED
1910          05 VALUE ' LEADING                 ' PIC X(33).
1911          05 VALUE ' LEFT                    ' PIC X(33).
1912          05 VALUE ' LEFT-JUSTIFY            ' PIC X(33).      UNIMPLEMENTED
1913          05 VALUE ' LEFTLINE               ' PIC X(33).
1914 GC1213     05 VALUE ' FLENGTH               ' PIC X(33).
1915 GC1213     05 VALUE ' FLENGTH-AN            ' PIC X(33).
1916          05 VALUE ' LENGTH-CHECK           ' PIC X(33).
1917          05 VALUE ' LESS                   ' PIC X(33).
1918          05 VALUE ' LIMIT                   ' PIC X(33).
1919          05 VALUE ' LIMITS                  ' PIC X(33).
1920          05 VALUE ' LINAGE                  ' PIC X(33).
1921          05 VALUE ' ILINAGE-COUNTER         ' PIC X(33).
1922          05 VALUE ' LINE                    ' PIC X(33).
1923 GC1213     05 VALUE ' ILINE-COUNTER          ' PIC X(33).
1924          05 VALUE ' LINES                   ' PIC X(33).
1925          05 VALUE ' KLINKAGE                ' PIC X(33).
1926          05 VALUE ' KLOCAL-STORAGE          ' PIC X(33).
1927          05 VALUE ' LOCALE                  ' PIC X(33).
1928 GC1213     05 VALUE ' FLOCALE-COMPARE        ' PIC X(33).
1929 GC1213     05 VALUE ' FLOCALE-DATE          ' PIC X(33).
1930 GC1213     05 VALUE ' FLOCALE-TIME          ' PIC X(33).
1931 GC1213     05 VALUE ' FLOCALE-TIME-FROM-SECONDS ' PIC X(33).
1932          05 VALUE ' LOCK                   ' PIC X(33).
1933 GC1213     05 VALUE ' FLOG                  ' PIC X(33).
1934 GC1213     05 VALUE ' FLOG10                ' PIC X(33).
1935          05 VALUE ' LOW-VALUE               ' PIC X(33).
1936          05 VALUE ' LOW-VALUES              ' PIC X(33).
1937          05 VALUE ' LOWER                   ' PIC X(33).
1938 GC1213     05 VALUE ' FLOWER-CASE            ' PIC X(33).
1939 GC1213     05 VALUE ' FLOWEST-ALGEBRAIC      ' PIC X(33).
1940          05 VALUE ' LOWLIGHT                ' PIC X(33).
1941          05 VALUE ' MANUAL                  ' PIC X(33).
1942 GC1213     05 VALUE ' FMAX                   ' PIC X(33).
1943 GC1213     05 VALUE ' FMEAN                  ' PIC X(33).
1944 GC1213     05 VALUE ' FMEDIAN                ' PIC X(33).
1945          05 VALUE ' MEMORY                  ' PIC X(33).
1946          05 VALUE ' VMERGE                  ' PIC X(33).
1947          05 VALUE ' MESSAGE                 ' PIC X(33).      OBSOLETE
1948          05 VALUE ' METHOD                   ' PIC X(33).      UNIMPLEMENTED
1949          05 VALUE ' METHOD-ID                ' PIC X(33).      UNIMPLEMENTED
1950 GC1213     05 VALUE ' FMIDRANGE              ' PIC X(33).
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1951 GC1213      05 VALUE 'FMIN                ' PIC X(33).
1952              05 VALUE ' MINUS              ' PIC X(33).
1953 GC1213      05 VALUE 'FMOD                ' PIC X(33).
1954              05 VALUE ' MODE                ' PIC X(33).
1955 GC1213      05 VALUE 'FMODULE-CALLER-ID    ' PIC X(33).
1956 GC1213      05 VALUE 'FMODULE-DATE        ' PIC X(33).
1957 GC1213      05 VALUE 'FMODULE-FORMATTED-DATE ' PIC X(33).
1958 GC1213      05 VALUE 'FMODULE-ID          ' PIC X(33).
1959 GC1213      05 VALUE 'FMODULE-PATH        ' PIC X(33).
1960 GC1213      05 VALUE 'FMODULE-SOURCE      ' PIC X(33).
1961 GC1213      05 VALUE 'FMODULE-TIME        ' PIC X(33).
1962 GC1213      05 VALUE 'FMONETARY-DECIMAL-POINT ' PIC X(33).
1963 GC1213      05 VALUE 'FMONETARY-THOUSANDS-SEPARATOR ' PIC X(33).
1964              05 VALUE 'VMOVE              ' PIC X(33).
1965              05 VALUE ' MULTIPLE            ' PIC X(33).
1966              05 VALUE 'VMULTIPLY           ' PIC X(33).
1967 GC0711      05 VALUE ' NAME                ' PIC X(33).
1968              05 VALUE ' NATIONAL            ' PIC X(33).
1969              05 VALUE ' NATIONAL-EDITED     ' PIC X(33).
1970 GC1213      05 VALUE 'FNATIONAL-OF        ' PIC X(33).      UNIMPLEMENTED
1971              05 VALUE ' NATIVE             ' PIC X(33).
1972              05 VALUE ' NEAREST-AWAY-FROM-ZERO ' PIC X(33).
1973              05 VALUE ' NEAREST-EVEN       ' PIC X(33).
1974              05 VALUE ' NEAREST-TOWARD-ZERO ' PIC X(33).
1975              05 VALUE ' NEGATIVE           ' PIC X(33).
1976              05 VALUE ' NESTED              ' PIC X(33).      UNIMPLEMENTED
1977              05 VALUE 'VNEXT              ' PIC X(33).
1978              05 VALUE ' NO                 ' PIC X(33).
1979              05 VALUE ' NO-ECHO            ' PIC X(33).
1980              05 VALUE ' NONE               ' PIC X(33).      UNIMPLEMENTED
1981              05 VALUE ' NORMAL            ' PIC X(33).
1982              05 VALUE ' NOT                ' PIC X(33).
1983              05 VALUE ' NULL              ' PIC X(33).
1984              05 VALUE ' NULLS             ' PIC X(33).
1985              05 VALUE ' NUMBER            ' PIC X(33).
1986              05 VALUE 'INUMBER-OF-CALL-PARAMETERS ' PIC X(33).
1987              05 VALUE ' NUMBERS           ' PIC X(33).
1988              05 VALUE ' NUMERIC           ' PIC X(33).
1989 GC1213      05 VALUE 'FNUMERIC-DECIMAL-POINT ' PIC X(33).
1990              05 VALUE ' NUMERIC-EDITED     ' PIC X(33).
1991 GC1213      05 VALUE 'FNUMERIC-THOUSANDS-SEPARATOR ' PIC X(33).
1992 GC1213      05 VALUE 'FNUMVAL             ' PIC X(33).
1993 GC1213      05 VALUE 'FNUMVAL-C          ' PIC X(33).
1994 GC1213      05 VALUE 'FNUMVAL-F          ' PIC X(33).
1995              05 VALUE ' OBJECT            ' PIC X(33).      UNIMPLEMENTED
1996              05 VALUE ' OBJECT-COMPUTER    ' PIC X(33).
1997              05 VALUE ' OBJECT-REFERENCE   ' PIC X(33).      UNIMPLEMENTED
1998              05 VALUE ' OCCURS            ' PIC X(33).
1999              05 VALUE ' OF                ' PIC X(33).
2000              05 VALUE ' OFF               ' PIC X(33).
2001              05 VALUE ' OMITTED           ' PIC X(33).
2002              05 VALUE ' ON               ' PIC X(33).
2003              05 VALUE ' ONLY              ' PIC X(33).
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2004          05 VALUE 'VOPEN'                                ' PIC X(33).
2005          05 VALUE ' OPTIONAL'                            ' PIC X(33).
2006          05 VALUE ' OPTIONS'                              ' PIC X(33).      UNIMPLEMENTED
2007          05 VALUE ' OR'                                    ' PIC X(33).
2008 GC1213    05 VALUE 'FORD'                                  ' PIC X(33).
2009 GC1213    05 VALUE 'FORD-MAX'                              ' PIC X(33).
2010 GC1213    05 VALUE 'FORD-MIN'                              ' PIC X(33).
2011          05 VALUE ' ORDER'                                ' PIC X(33).
2012          05 VALUE ' ORGANISATION'                          ' PIC X(33).
2013          05 VALUE ' ORGANIZATION'                          ' PIC X(33).
2014          05 VALUE ' OTHER'                                  ' PIC X(33).
2015          05 VALUE ' OUTPUT'                                ' PIC X(33).
2016          05 VALUE ' OVERFLOW'                              ' PIC X(33).
2017          05 VALUE ' OVERLINE'                              ' PIC X(33).
2018          05 VALUE ' OVERRIDE'                              ' PIC X(33).
2019          05 VALUE ' PACKED-DECIMAL'                        ' PIC X(33).
2020          05 VALUE ' PADDING'                                ' PIC X(33).
2021          05 VALUE ' PAGE'                                    ' PIC X(33).
2022 GC1213    05 VALUE 'IPAGE-COUNTER'                          ' PIC X(33).
2023          05 VALUE ' PARAGRAPH'                              ' PIC X(33).
2024          05 VALUE 'VPERFORM'                                ' PIC X(33).
2025          05 VALUE ' PF'                                      ' PIC X(33).
2026          05 VALUE ' PH'                                      ' PIC X(33).
2027 GC1213    05 VALUE 'FPI'                                    ' PIC X(33).
2028          05 VALUE 'KPIC'                                    ' PIC X(33).
2029          05 VALUE 'KPICTURE'                                ' PIC X(33).
2030          05 VALUE ' PLUS'                                    ' PIC X(33).
2031          05 VALUE 'KPOINTER'                                ' PIC X(33).
2032          05 VALUE ' POSITION'                                ' PIC X(33).
2033          05 VALUE ' POSITIVE'                              ' PIC X(33).
2034          05 VALUE ' PREFIXED'                              ' PIC X(33).      UNIMPLEMENTED
2035          05 VALUE ' PRESENT'                                ' PIC X(33).
2036 GC1213    05 VALUE 'FPRESENT-VALUE'                          ' PIC X(33).
2037          05 VALUE ' PREVIOUS'                                ' PIC X(33).
2038          05 VALUE 'MPRINTER'                                ' PIC X(33).
2039          05 VALUE ' PRINTING'                                ' PIC X(33).
2040          05 VALUE 'KPROCEDURE'                              ' PIC X(33).
2041          05 VALUE ' PROCEDURE-POINTER'                      ' PIC X(33).
2042          05 VALUE ' PROCEDURES'                              ' PIC X(33).
2043          05 VALUE ' PROCEED'                                ' PIC X(33).
2044          05 VALUE ' PROGRAM'                                ' PIC X(33).
2045          05 VALUE 'KPROGRAM-ID'                              ' PIC X(33).
2046          05 VALUE ' PROGRAM-POINTER'                        ' PIC X(33).
2047          05 VALUE ' PROHIBITED'                              ' PIC X(33).
2048          05 VALUE ' PROMPT'                                  ' PIC X(33).
2049          05 VALUE ' PROPERTY'                                ' PIC X(33).      UNIMPLEMENTED
2050          05 VALUE ' PROTOTYPE'                              ' PIC X(33).      UNIMPLEMENTED
2051          05 VALUE ' PURGE'                                    ' PIC X(33).      OBSOLETE
2052          05 VALUE ' QUEUE'                                    ' PIC X(33).      OBSOLETE
2053          05 VALUE ' QUOTE'                                    ' PIC X(33).
2054          05 VALUE ' QUOTES'                                  ' PIC X(33).
2055          05 VALUE ' RAISE'                                    ' PIC X(33).      UNIMPLEMENTED
2056          05 VALUE ' RAISING'                                ' PIC X(33).      UNIMPLEMENTED
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2057 GC1213      05 VALUE 'FRANDOM                ' PIC X(33).
2058 GC1213      05 VALUE 'FRANGE                  ' PIC X(33).
2059 GC1213      05 VALUE 'KRD                      ' PIC X(33).
2060              05 VALUE 'VREAD                  ' PIC X(33).
2061              05 VALUE 'VREADY                 ' PIC X(33).
2062              05 VALUE 'VRECEIVE                ' PIC X(33).      OBSOLETE
2063              05 VALUE ' RECORD                 ' PIC X(33).
2064              05 VALUE ' RECORDING               ' PIC X(33).
2065              05 VALUE ' RECORDS                 ' PIC X(33).
2066              05 VALUE ' RECURSIVE               ' PIC X(33).
2067              05 VALUE 'KREDEFINES              ' PIC X(33).
2068              05 VALUE ' REEL                    ' PIC X(33).
2069 GC0712      05 VALUE 'AREFERENCE               ' PIC X(33).
2070              05 VALUE ' REFERENCES              ' PIC X(33).
2071              05 VALUE ' RELATION                 ' PIC X(33).      UNIMPLEMENTED
2072              05 VALUE ' RELATIVE                 ' PIC X(33).
2073              05 VALUE 'VRELEASE                 ' PIC X(33).
2074 GC1213      05 VALUE 'FREM                      ' PIC X(33).
2075              05 VALUE ' REMAINDER               ' PIC X(33).
2076              05 VALUE ' REMARKS                 ' PIC X(33).      OBSOLETE
2077              05 VALUE ' REMOVAL                 ' PIC X(33).
2078              05 VALUE 'KRENAMES                 ' PIC X(33).
2079              05 VALUE ' REPLACE                 ' PIC X(33).
2080              05 VALUE 'KREPLACING               ' PIC X(33).
2081              05 VALUE 'KREPORT                  ' PIC X(33).
2082              05 VALUE ' REPORTING                ' PIC X(33).
2083              05 VALUE ' REPORTS                 ' PIC X(33).
2084              05 VALUE ' REPOSITORY               ' PIC X(33).
2085              05 VALUE ' REQUIRED                 ' PIC X(33).
2086              05 VALUE ' RESERVE                 ' PIC X(33).
2087              05 VALUE 'VRESET                   ' PIC X(33).
2088              05 VALUE ' RESUME                   ' PIC X(33).      UNIMPLEMENTED
2089              05 VALUE ' RETRY                   ' PIC X(33).      UNIMPLEMENTED
2090              05 VALUE 'VRETURN                   ' PIC X(33).
2091              05 VALUE 'IRETURN-CODE              ' PIC X(33).
2092              05 VALUE 'KRETURNING               ' PIC X(33).
2093 GC1213      05 VALUE 'FREVERSE                 ' PIC X(33).
2094              05 VALUE ' REVERSE-VIDEO            ' PIC X(33).
2095              05 VALUE ' REVERSED                 ' PIC X(33).
2096              05 VALUE ' REWIND                  ' PIC X(33).
2097              05 VALUE 'VREWRITE                 ' PIC X(33).
2098              05 VALUE ' RF                      ' PIC X(33).
2099              05 VALUE ' RH                      ' PIC X(33).
2100              05 VALUE ' RIGHT                   ' PIC X(33).
2101              05 VALUE ' RIGHT-JUSTIFY             ' PIC X(33).      UNIMPLEMENTED
2102              05 VALUE 'VROLLBACK                 ' PIC X(33).
2103              05 VALUE ' ROUNDED                  ' PIC X(33).
2104              05 VALUE ' ROUNDING                 ' PIC X(33).      UNIMPLEMENTED
2105              05 VALUE ' RUN                      ' PIC X(33).
2106              05 VALUE ' SAME                     ' PIC X(33).
2107              05 VALUE 'KSCREEN                   ' PIC X(33).
2108              05 VALUE ' SCROLL                   ' PIC X(33).
2109              05 VALUE 'KSD                      ' PIC X(33).
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2110          05 VALUE 'VSEARCH'          ' PIC X(33).
2111          05 VALUE ' SECONDS'         ' PIC X(33).      UNIMPLEMENTED
2112 GC1213    05 VALUE 'FSECONDS-FROM-FORMATTED-TIME' ' PIC X(33).
2113 GC1213    05 VALUE 'FSECONDS-PAST-MIDNIGHT'      ' PIC X(33).
2114          05 VALUE 'KSECTION'         ' PIC X(33).
2115          05 VALUE ' SECURE'           ' PIC X(33).
2116          05 VALUE ' SECURITY'         ' PIC X(33).      OBSOLETE
2117          05 VALUE ' SEGMENT'          ' PIC X(33).      OBSOLETE
2118          05 VALUE ' SEGMENT-LIMIT'     ' PIC X(33).
2119          05 VALUE ' SELECT'            ' PIC X(33).
2120          05 VALUE ' SELF'              ' PIC X(33).      UNIMPLEMENTED
2121          05 VALUE 'VSEND'              ' PIC X(33).      OBSOLETE
2122          05 VALUE ' SENTENCE'          ' PIC X(33).
2123          05 VALUE ' SEPARATE'          ' PIC X(33).
2124          05 VALUE ' SEQUENCE'          ' PIC X(33).
2125          05 VALUE ' SEQUENTIAL'        ' PIC X(33).
2126          05 VALUE 'VSET'              ' PIC X(33).
2127          05 VALUE ' SHARING'           ' PIC X(33).
2128 GC1213    05 VALUE 'FSIGN'             ' PIC X(33).
2129          05 VALUE ' SIGNED'            ' PIC X(33).
2130          05 VALUE ' SIGNED-INT'         ' PIC X(33).
2131          05 VALUE ' SIGNED-LONG'        ' PIC X(33).
2132          05 VALUE ' SIGNED-SHORT'       ' PIC X(33).
2133 GC1213    05 VALUE 'FSIN'              ' PIC X(33).
2134          05 VALUE ' SIZE'               ' PIC X(33).
2135          05 VALUE 'VSORT'               ' PIC X(33).
2136          05 VALUE ' SORT-MERGE'         ' PIC X(33).
2137          05 VALUE ' ISORT-RETURN'       ' PIC X(33).
2138          05 VALUE ' SOURCE'             ' PIC X(33).
2139          05 VALUE ' SOURCE-COMPUTER'     ' PIC X(33).
2140          05 VALUE ' SOURCES'            ' PIC X(33).      UNIMPLEMENTED
2141          05 VALUE ' SPACE'              ' PIC X(33).
2142          05 VALUE ' SPACE-FILL'         ' PIC X(33).      UNIMPLEMENTED
2143          05 VALUE ' SPACES'             ' PIC X(33).
2144          05 VALUE ' SPECIAL-NAMES'      ' PIC X(33).
2145 GC1213    05 VALUE 'FSQRT'             ' PIC X(33).
2146          05 VALUE ' STANDARD'           ' PIC X(33).
2147          05 VALUE ' STANDARD-1'         ' PIC X(33).
2148          05 VALUE ' STANDARD-2'         ' PIC X(33).
2149          05 VALUE ' STANDARD-BINARY'    ' PIC X(33).      UNIMPLEMENTED
2150 GC1213    05 VALUE 'FSTANDARD-COMPARE'   ' PIC X(33).      UNIMPLEMENTED
2151          05 VALUE ' STANDARD-DECIMAL'   ' PIC X(33).      UNIMPLEMENTED
2152 GC1213    05 VALUE 'FSTANDARD-DEVIATION' ' PIC X(33).
2153          05 VALUE 'VSTART'              ' PIC X(33).
2154          05 VALUE ' STATEMENT'          ' PIC X(33).      UNIMPLEMENTED
2155          05 VALUE ' STATIC'             ' PIC X(33).
2156          05 VALUE ' STATUS'             ' PIC X(33).
2157          05 VALUE ' STDCALL'            ' PIC X(33).
2158          05 VALUE 'MSTDERR'             ' PIC X(33).
2159          05 VALUE 'MSTDIN'              ' PIC X(33).
2160          05 VALUE 'MSTDOUT'             ' PIC X(33).
2161          05 VALUE ' STEP'               ' PIC X(33).
2162          05 VALUE 'VSTOP'               ' PIC X(33).
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2163 GC1213      05 VALUE 'FSTORED-CHAR-LENGTH'      ' PIC X(33).
2164              05 VALUE 'VSTRING'                  ' PIC X(33).
2165              05 VALUE ' STRONG'                    ' PIC X(33).
2166              05 VALUE ' SUB-QUEUE-1'                ' PIC X(33).
2167              05 VALUE ' SUB-QUEUE-2'                ' PIC X(33).
2168              05 VALUE ' SUB-QUEUE-3'                ' PIC X(33).
2169 GC1213      05 VALUE 'FSUBSTITUTE'                ' PIC X(33).
2170 GC1213      05 VALUE 'FSUBSTITUTE-CASE'            ' PIC X(33).
2171              05 VALUE 'VSUBTRACT'                  ' PIC X(33).
2172 GC1213      05 VALUE 'FSUM'                        ' PIC X(33).
2173              05 VALUE ' SUPER'                      ' PIC X(33).
2174              05 VALUE 'VSUPPRESS'                  ' PIC X(33).
2175              05 VALUE 'MSW0'                        ' PIC X(33).
2176              05 VALUE 'MSW1'                        ' PIC X(33).
2177              05 VALUE 'MSW10'                      ' PIC X(33).
2178              05 VALUE 'MSW11'                      ' PIC X(33).
2179              05 VALUE 'MSW12'                      ' PIC X(33).
2180              05 VALUE 'MSW13'                      ' PIC X(33).
2181              05 VALUE 'MSW14'                      ' PIC X(33).
2182              05 VALUE 'MSW15'                      ' PIC X(33).
2183              05 VALUE 'MSW2'                      ' PIC X(33).
2184              05 VALUE 'MSW3'                      ' PIC X(33).
2185              05 VALUE 'MSW4'                      ' PIC X(33).
2186              05 VALUE 'MSW5'                      ' PIC X(33).
2187              05 VALUE 'MSW6'                      ' PIC X(33).
2188              05 VALUE 'MSW7'                      ' PIC X(33).
2189              05 VALUE 'MSW8'                      ' PIC X(33).
2190              05 VALUE 'MSW9'                      ' PIC X(33).
2191              05 VALUE 'MSWITCH-0'                  ' PIC X(33).
2192              05 VALUE 'MSWITCH-1'                  ' PIC X(33).
2193              05 VALUE 'MSWITCH-10'                 ' PIC X(33).
2194              05 VALUE 'MSWITCH-11'                 ' PIC X(33).
2195              05 VALUE 'MSWITCH-12'                 ' PIC X(33).
2196              05 VALUE 'MSWITCH-13'                 ' PIC X(33).
2197              05 VALUE 'MSWITCH-14'                 ' PIC X(33).
2198              05 VALUE 'MSWITCH-15'                 ' PIC X(33).
2199              05 VALUE 'MSWITCH-2'                  ' PIC X(33).
2200              05 VALUE 'MSWITCH-3'                  ' PIC X(33).
2201              05 VALUE 'MSWITCH-4'                  ' PIC X(33).
2202              05 VALUE 'MSWITCH-5'                  ' PIC X(33).
2203              05 VALUE 'MSWITCH-6'                  ' PIC X(33).
2204              05 VALUE 'MSWITCH-7'                  ' PIC X(33).
2205              05 VALUE 'MSWITCH-8'                  ' PIC X(33).
2206              05 VALUE 'MSWITCH-9'                  ' PIC X(33).
2207              05 VALUE ' SYMBOL'                    ' PIC X(33).
2208              05 VALUE ' SYMBOLIC'                  ' PIC X(33).
2209              05 VALUE ' SYNC'                      ' PIC X(33).
2210              05 VALUE ' SYNCHRONISED'              ' PIC X(33).
2211              05 VALUE ' SYNCHRONIZED'              ' PIC X(33).
2212              05 VALUE 'MSYSERR'                    ' PIC X(33).
2213              05 VALUE 'MSYSIN'                     ' PIC X(33).
2214              05 VALUE 'MSYSIPT'                    ' PIC X(33).
2215              05 VALUE 'MSYSLIST'                   ' PIC X(33).
=====

```

UNIMPLEMENTED

OBSOLETE

OBSOLETE

OBSOLETE

UNIMPLEMENTED

UNIMPLEMENTED

```
=====
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=====
2216          05 VALUE 'MSYSLST                ' PIC X(33).
2217          05 VALUE 'MSYSOUT                ' PIC X(33).
2218          05 VALUE ' SYSTEM-DEFAULT        ' PIC X(33).
2219          05 VALUE ' TABLE                ' PIC X(33).      UNIMPLEMENTED
2220          05 VALUE 'KTALLYING              ' PIC X(33).
2221 GC1213     05 VALUE 'FTAN                  ' PIC X(33).
2222          05 VALUE ' TAPE                   ' PIC X(33).
2223          05 VALUE ' TERMINAL               ' PIC X(33).      OBSOLETE
2224          05 VALUE 'VTERMINATE              ' PIC X(33).
2225          05 VALUE ' TEST                   ' PIC X(33).
2226 GC1213     05 VALUE 'FTEST-DATE-YYYYMMDD   ' PIC X(33).
2227 GC1213     05 VALUE 'FTEST-DAY-YYYYDDD     ' PIC X(33).
2228 GC1213     05 VALUE 'FTEST-FORMATTED-DATETIME ' PIC X(33).      UNIMPLEMENTED
2229 GC1213     05 VALUE 'FTEST-NUMVAL          ' PIC X(33).
2230 GC1213     05 VALUE 'FTEST-NUMVAL-C        ' PIC X(33).
2231 GC1213     05 VALUE 'FTEST-NUMVAL-F        ' PIC X(33).
2232          05 VALUE ' TEXT                   ' PIC X(33).      OBSOLETE
2233          05 VALUE ' THAN                   ' PIC X(33).
2234          05 VALUE ' THEN                   ' PIC X(33).
2235          05 VALUE ' THROUGH                ' PIC X(33).
2236          05 VALUE ' THRU                   ' PIC X(33).
2237          05 VALUE ' TIME                   ' PIC X(33).
2238 GC0711     05 VALUE ' TIME-OUT              ' PIC X(33).
2239 GC0711     05 VALUE ' TIMEOUT              ' PIC X(33).
2240          05 VALUE ' TIMES                   ' PIC X(33).
2241          05 VALUE 'KTO                     ' PIC X(33).
2242          05 VALUE ' TOP                     ' PIC X(33).
2243          05 VALUE ' TOWARD-GREATER          ' PIC X(33).
2244          05 VALUE ' TOWARD-LESSER          ' PIC X(33).
2245          05 VALUE ' TRAILING               ' PIC X(33).
2246          05 VALUE ' TRAILING-SIGN          ' PIC X(33).      UNIMPLEMENTED
2247          05 VALUE 'VTRANSFORM              ' PIC X(33).
2248 GC1213     05 VALUE 'FTRIM                  ' PIC X(33).
2249          05 VALUE ' TRUE                    ' PIC X(33).
2250          05 VALUE ' TRUNCATION              ' PIC X(33).
2251          05 VALUE ' TYPE                    ' PIC X(33).
2252          05 VALUE ' TYPEDEF                 ' PIC X(33).      UNIMPLEMENTED
2253          05 VALUE ' UCS-4                   ' PIC X(33).      UNIMPLEMENTED
2254          05 VALUE ' UNDERLINE              ' PIC X(33).
2255          05 VALUE ' UNIT                    ' PIC X(33).
2256          05 VALUE ' UNIVERSAL               ' PIC X(33).      UNIMPLEMENTED
2257          05 VALUE 'VUNLOCK                  ' PIC X(33).
2258          05 VALUE ' UNSIGNED                ' PIC X(33).
2259          05 VALUE ' UNSIGNED-INT            ' PIC X(33).
2260          05 VALUE ' UNSIGNED-LONG           ' PIC X(33).
2261          05 VALUE ' UNSIGNED-SHORT          ' PIC X(33).
2262          05 VALUE 'VUNSTRING                ' PIC X(33).
2263          05 VALUE ' UNTIL                   ' PIC X(33).
2264          05 VALUE 'KUP                      ' PIC X(33).
2265          05 VALUE ' UPDATE                  ' PIC X(33).
2266          05 VALUE ' UPON                    ' PIC X(33).
2267          05 VALUE ' UPPER                   ' PIC X(33).
2268 GC1213     05 VALUE 'FUPPER-CASE            ' PIC X(33).
=====

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=====
2269          05 VALUE 'USAGE'                ' PIC X(33).
2270          05 VALUE 'VUSE'                  ' PIC X(33).
2271 GC0711    05 VALUE 'USER'                  ' PIC X(33).
2272          05 VALUE 'USER-DEFAULT'           ' PIC X(33).
2273          05 VALUE 'KUSING'                  ' PIC X(33).
2274          05 VALUE 'UTF-16'                  ' PIC X(33).      UNIMPLEMENTED
2275          05 VALUE 'UTF-8'                   ' PIC X(33).      UNIMPLEMENTED
2276          05 VALUE 'VAL-STATUS'              ' PIC X(33).      UNIMPLEMENTED
2277          05 VALUE 'VALID'                   ' PIC X(33).      UNIMPLEMENTED
2278          05 VALUE 'VALIDATE'                 ' PIC X(33).      UNIMPLEMENTED
2279          05 VALUE 'VALIDATE-STATUS'          ' PIC X(33).      UNIMPLEMENTED
2280 GC0712    05 VALUE 'AVALUE'                 ' PIC X(33).
2281          05 VALUE 'VALUES'                  ' PIC X(33).
2282 GC1213    05 VALUE 'FVARIANCE'              ' PIC X(33).
2283          05 VALUE 'KVARYING'                 ' PIC X(33).
2284          05 VALUE 'VDISABLE'                 ' PIC X(33).      UNIMPLEMENTED
2285          05 VALUE 'WAIT'                     ' PIC X(33).
2286          05 VALUE 'VWHEN'                    ' PIC X(33).
2287 GC1213    05 VALUE 'FWHEN-COMPILED'          ' PIC X(33).
2288          05 VALUE 'WITH'                     ' PIC X(33).
2289          05 VALUE 'WORDS'                     ' PIC X(33).
2290          05 VALUE 'KWORKING-STORAGE'           ' PIC X(33).
2291          05 VALUE 'VWRITE'                    ' PIC X(33).
2292 GC1213    05 VALUE 'FYEAR-T0-YYYY'           ' PIC X(33).
2293          05 VALUE 'YYYYDDD'                  ' PIC X(33).
2294          05 VALUE 'YYYYMMDD'                 ' PIC X(33).
2295          05 VALUE 'ZERO'                      ' PIC X(33).
2296          05 VALUE 'ZERO-FILL'                ' PIC X(33).      UNIMPLEMENTED
2297          05 VALUE 'ZEROES'                   ' PIC X(33).
2298          05 VALUE 'ZEROS'                     ' PIC X(33).
2299          01 WS-Reserved-Word-Table-TXT REDEFINES WS-Reserved-Words-TXT.
2300 GC1113    05 WS-Reserved-Word-TXT OCCURS 754 TIMES
2301                                     ASCENDING KEY
2302                                     WS-RW-Word-TXT
2303                                     INDEXED WS-RW-IDX.
2304          10 WS-RW-Type-CD                     PIC X(1).
2305          10 WS-RW-Word-TXT                     PIC X(32).
2306
2307          01 WS-Runtime-Switches.
2308 GC0710    05 WS-RS-Duplicate-CHR              PIC X(1).
2309          05 WS-RS-In-Which-Pgm-CHR            PIC X(1).
2310          88 WS-RS-In-Main-Module-BOOL        VALUE 'M'.
2311          88 WS-RS-In-Copybook-BOOL          VALUE 'C'.
2312          05 WS-RS-Last-Token-Ended-Sent-CHR  PIC X(1).
2313          05 WS-RS-Processing-PICTURE-CHR     PIC X(1).
2314          05 WS-RS-Token-Ended-Sentence-CHR   PIC X(1).
2315 GC0710    05 WS-RS-Verb-Has-Been-Found-CHR  PIC X(1).
2316
2317          01 WS-Saved-Section-TXT              PIC X(15).
2318
2319 GC1213 01 WS-Src-Dashes-TXT.
2320 GC0712    05 VALUE '====='                   PIC X(7).
2321 GC0712    05 VALUE ALL '='                   PIC X(128).
=====

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=====
2322
2323      01 WS-Src-Detail-Line-TXT.
2324      05 WS-SDL-Line-NUM          PIC ZZZZZ9.
2325      05 FILLER                   PIC X(1).
2326      05 WS-SDL-Statement-TXT     PIC X(256).
2327
2328 GC1213 01 WS-Src-Hold-TXT        PIC X(256).
2329
2330      01 WS-Src-Line-NUM           PIC 9(6).
2331
2332 GC1213 01 WS-Src-Lines-NUM        USAGE BINARY-LONG.
2333
2334      01 WS-Src-SUB                USAGE BINARY-LONG.
2335
2336      01 WS-Tally-QTY              USAGE BINARY-LONG.
2337
2338      01 WS-Temp-10-Chars-TXT      PIC X(10).
2339
2340      01 WS-Temp-32-Chars-1-TXT     PIC X(32).
2341
2342 GC0711 01 WS-Temp-32-Chars-2-TXT   PIC X(32).
2343
2344 GC0711 01 WS-Temp-32-Chars-3-TXT   PIC X(32).
2345
2346 GC0712 01 WS-Temp-65-Chars-TXT    PIC X(65).
2347
2348      01 WS-Temp-256-Chars-TXT      PIC X(256).
2349
2350      01 WS-Today-DT               PIC 9(8).
2351
2352      01 WS-Token-Curr-TXT          PIC X(32).
2353
2354      01 WS-Token-Curr-Uc-TXT       PIC X(32).
2355
2356      01 WS-Token-Prev-TXT          PIC X(32).
2357
2358      01 WS-Token-Search-TXT        PIC X(32).
2359
2360      01 WS-Token-Type-CD           PIC X(1).
2361 GC0712      88 WS-TT-Token-Is-Argtype-BOOL  VALUE 'A'.
2362      88 WS-TT-Token-Is-EOF-BOOL          VALUE HIGH-VALUES.
2363 GC1213      88 WS-TT-Token-Is-Function-BOOL  VALUE 'F'.
2364      88 WS-TT-Token-Is-Identifier-BOOL      VALUE 'I'.
2365 GC0712      88 WS-TT-Token-Is-Keyword-BOOL  VALUE 'K', 'V', 'A'.
2366      88 WS-TT-Token-Is-Lit-Alpha-BOOL      VALUE 'L'.
2367      88 WS-TT-Token-Is-Lit-Number-BOOL     VALUE 'N'.
2368      88 WS-TT-Token-Is-Verb-BOOL          VALUE 'V'.
2369 GC1213      88 WS-TT-Token-Is-Reserved-Wd-BOOL  VALUE ' ', 'F'.
2370
2371      01 WS-Usernames-QTY            USAGE BINARY-LONG.
2372
2373      01 WS-Version-TXT              PIC X(23).
2374

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=====
2375      01  WS-Xref-Detail-Line-TXT.
2376          05  WS-XDL-Prog-ID-TXT          PIC X(15).
2377          05  FILLER                      PIC X(1).
2378          05  WS-XDL-Token-TXT             PIC X(32).
2379          05  FILLER                      PIC X(1).
2380          05  WS-XDL-Def-Line-NUM          PIC ZZZZZ9.
2381          05  FILLER                      PIC X(1).
2382          05  WS-XDL-Section-TXT           PIC X(15).
2383          05  FILLER                      PIC X(1).
2384          05  WS-XDL-Reference-TXT          OCCURS 8 TIMES.
2385              10  WS-XDL-Ref-Line-NUM      PIC ZZZZZ9.
2386              10  WS-XDL-Ref-Flag-CHR      PIC X(1).
2387              10  FILLER                   PIC X(1).
2388
2389 GC1213 01  WS-Xref-Lines-Per-Rec-NUM      PIC 9(1).
2390
2391      LINKAGE SECTION.
2392 GC0712 01  L-Listing-Fn-TXT                PIC X(256).
2393
2394      01  L-Src-Fn-TXT                      PIC X(256).
2395
2396 GC0712 01  L-OS-Type-CD                    PIC 9(1).
2397
2398 GC1213 01  L-LPP-NUM                       USAGE BINARY-LONG.
2399
2400 GC1213 01  L-LPP-Port-NUM                  USAGE BINARY-LONG.
2401
2402 GC1213 01  L-Listing-CD                    PIC 9(1).
=====

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```
=====
2404 GC0712 PROCEDURE DIVISION USING L-Listing-Fn-TXT
2405 GC0712                      L-Src-Fn-TXT
2406 GC0712                      L-OS-Type-CD
2407 GC1213                      L-LPP-NUM
2408 GC1213                      L-LPP-Port-NUM
2409 GC1213                      L-Listing-CD.
2410      000-Main SECTION.
2411      PERFORM 100-Initialization
2412 GC0712      OPEN OUTPUT F-Listing-FILE
2413 GC0712      PERFORM 500-Produce-Source-Listing
2414 GC0712      SORT F-Sort-Work-FILE
2415 GC0712          ASCENDING KEY    F-SW-Prog-ID-TXT
2416 GC0712          F-SW-Token-Uc-TXT
2417 GC0712          F-SW-Ref-Line-NUM
2418 GC0712          INPUT PROCEDURE  300-Tokenize-Source
2419 GC0712          OUTPUT PROCEDURE 400-Produce-Xref-Listing
2420 GC0712      CLOSE F-Listing-FILE
2421      GOBACK
2422      .
```

```
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2424      *>*****
2425      *> Perform all program-wide initialization operations      **
2426      *>*****
2427      100-Initialization SECTION.
2428 GC1213      MOVE 0 TO WS-Page-NUM
2429 GC1213      MOVE 'N' TO WS-Suppress-FF-CHR
2430 GC1213      MOVE SPACES TO WS-Copyright-TXT
2431 GC1213      STRING 'GCic for '                DELIMITED SIZE
2432 GC1213              WS-OS-Type-TXT(L-OS-Type-CD) DELIMITED SPACE
2433 GC1213              ' Copyright (C) 2009-2018, Gary L. Cutler, GPL'
2434 GC1213              DELIMITED SIZE
2435 GC1213      INTO WS-Copyright-TXT
2436 GC1213      MOVE 'GNUCOBOL 3.0 24DEC2017' TO WS-Version-TXT
2437      MOVE TRIM(L-Src-Fn-TXT,Leading) TO L-Src-Fn-TXT
2438 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
2439 GC1010              UNTIL L-Src-Fn-TXT(WS-I-SUB:1) = '/' OR '\ '
2440 GC1010              OR WS-I-SUB = 0
2441 GC1010      END-PERFORM
2442 GC1010      IF WS-I-SUB = 0
2443 GC1010          MOVE UPPER-CASE(L-Src-Fn-TXT) TO WS-Main-Module-Name-TXT *> No directory d
               elimiter, whole thing is filename
2444 GC1010      ELSE
2445 GC1010          ADD 1 TO WS-I-SUB
2446 GC1010          MOVE UPPER-CASE(L-Src-Fn-TXT(WS-I-SUB:))
2447 GC1010              TO WS-Main-Module-Name-TXT *> Extract filename
2448 GC1010      END-IF
2449 GC1213      IF L-Listing-CD = 1 *> LANDSCAPE
2450 GC1213          MOVE 8 TO WS-Xref-Lines-Per-Rec-NUM
2451 GC1213          ACCEPT WS-Lines-Per-Page-Env-TXT
2452 GC1213              FROM ENVIRONMENT 'GCXREF_LINES'
2453 GC1213      ELSE *> PORTRAIT
2454 GC1213          MOVE 3 TO WS-Xref-Lines-Per-Rec-NUM
2455 GC1213          ACCEPT WS-Lines-Per-Page-Env-TXT
2456 GC1213              FROM ENVIRONMENT 'GCXREF_LINES_PORT'
2457 GC1213      END-IF
2458      INSPECT L-Src-Fn-TXT REPLACING ALL '\ ' BY '/'
2459      MOVE L-Src-Fn-TXT TO WS-Program-Path-TXT
2460      CALL 'C$JUSTIFY' USING WS-Program-Path-TXT, 'Right'
2461      MOVE LENGTH(TRIM(L-Src-Fn-TXT,Trailing)) TO WS-I-SUB
2462      MOVE 0 TO WS-J-SUB
2463      PERFORM UNTIL L-Src-Fn-TXT(WS-I-SUB:1) = '/'
2464          OR WS-I-SUB = 0
2465          SUBTRACT 1 FROM WS-I-SUB
2466          ADD      1 TO      WS-J-SUB
2467      END-PERFORM
2468      UNSTRING L-Src-Fn-TXT((WS-I-SUB + 1):WS-J-SUB)
2469          DELIMITED BY ' .'
2470      INTO WS-Filename-TXT
2471          WS-Dummy-TXT
2472 GC1010      STRING
2473 GC1010          TRIM(WS-Filename-TXT,Trailing)

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

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```

=====
2500      300-Tokenize-Source SECTION.
2501      OPEN INPUT F-Expanded-Src-FILE
2502      MOVE SPACES TO F-Expanded-Src-REC
2503      MOVE 256 TO WS-Src-SUB
2504      MOVE 0 TO WS-Usernames-QTY
2505              WS-Curr-Line-NUM
2506      MOVE '?' TO WS-Curr-Division-TXT
2507 GC0710  MOVE 'N' TO WS-RS-Verb-Has-Been-Found-CHR
2508      PERFORM FOREVER
2509              PERFORM 310-Get-Token
2510              IF WS-TT-Token-Is-EOF-BOOL
2511                  EXIT PERFORM
2512              END-IF
2513              MOVE UPPER-CASE(WS-Token-Curr-TXT)
2514                  TO WS-Token-Curr-Uc-TXT
2515 GC1010  IF WS-TT-Token-Is-Keyword-BOOL
2516 GC1010  OR WS-TT-Token-Is-Reserved-Wd-BOOL
2517 GC1010  MOVE WS-Token-Curr-Uc-TXT TO WS-Token-Curr-TXT
2518 GC1010  END-IF
2519      IF WS-TT-Token-Is-Verb-BOOL
2520          MOVE WS-Token-Curr-Uc-TXT TO WS-Curr-Verb-TXT
2521                  WS-Token-Prev-TXT
2522          IF WS-Held-Reference-TXT NOT = SPACES
2523              MOVE WS-Held-Reference-TXT TO F-Sort-Work-REC
2524              MOVE SPACES TO WS-Held-Reference-TXT
2525              RELEASE F-Sort-Work-REC
2526          END-IF
2527      END-IF
2528      EVALUATE TRUE
2529      WHEN WS-CD-In-IDENT-DIV-BOOL
2530          PERFORM 320-IDENTIFICATION-DIVISION
2531      WHEN WS-CD-In-ENV-DIV-BOOL
2532          PERFORM 330-ENVIRONMENT-DIVISION
2533      WHEN WS-CD-In-DATA-DIV-BOOL
2534          PERFORM 340-DATA-DIVISION
2535      WHEN WS-CD-In-PROC-DIV-BOOL
2536          PERFORM 350-PROCEDURE-DIVISION
2537      END-EVALUATE
2538      IF WS-TT-Token-Is-Keyword-BOOL
2539          MOVE WS-Token-Curr-Uc-TXT TO WS-Token-Prev-TXT
2540      END-IF
2541      IF WS-RS-Token-Ended-Sentence-CHR = 'Y'
2542      AND WS-Curr-Division-TXT NOT = 'I'
2543          MOVE SPACES TO WS-Token-Prev-TXT
2544                  WS-Curr-Verb-TXT
2545      END-IF
2546
2547      END-PERFORM
2548      CLOSE F-Expanded-Src-FILE
2549      .

```

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=====
2551      310-Get-Token SECTION.
2552      *>-- Position to 1st non-blank character
2553          MOVE WS-RS-Token-Ended-Sentence-CHR
2554              TO WS-RS-Last-Token-Ended-Sent-CHR
2555          MOVE 'N' TO WS-RS-Token-Ended-Sentence-CHR
2556          PERFORM UNTIL F-Expanded-Src-REC(WS-Src-SUB : 1) NOT = SPACE
2557              IF WS-Src-SUB > 255
2558                  READ F-Expanded-Src-FILE AT END
2559                  IF WS-Held-Reference-TXT NOT = SPACES
2560                      MOVE WS-Held-Reference-TXT TO F-Sort-Work-REC
2561                      MOVE SPACES TO WS-Held-Reference-TXT
2562                      RELEASE F-Sort-Work-REC
2563                  END-IF
2564                  SET WS-TT-Token-Is-EOF-BOOL TO TRUE
2565                  MOVE 0 TO WS-Curr-Line-NUM
2566                  EXIT SECTION
2567              END-READ
2568 GC0712          IF F-ES-1-7-TXT NOT = '#DEFLIT'
2569 GC0712              IF F-ES-1-CHR = '#'
2570 GC0712                  PERFORM 311-Control-Record
2571 GC0712              ELSE
2572 GC0712                  PERFORM 312-Expanded-Src-Record
2573 GC0712              END-IF
2574 GC0712          END-IF
2575              ELSE
2576                  ADD 1 TO WS-Src-SUB
2577              END-IF
2578          END-PERFORM
2579      *>-- Extract token string
2580          MOVE F-Expanded-Src-REC(WS-Src-SUB : 1)
2581              TO WS-Curr-CHR
2582          MOVE F-Expanded-Src-REC(WS-Src-SUB + 1: 1)
2583              TO WS-Next-CHR
2584          IF WS-Curr-CHR = '.'
2585              ADD 1 TO WS-Src-SUB
2586              MOVE WS-Curr-CHR TO WS-Token-Curr-TXT
2587              MOVE SPACE TO WS-Token-Type-CD
2588              MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
2589              EXIT SECTION
2590          END-IF
2591          IF WS-Curr-Char-Is-Punct-BOOL
2592              AND WS-Curr-CHR = '='
2593              AND WS-Curr-Division-TXT = 'P'
2594                  ADD 1 TO WS-Src-SUB
2595                  MOVE 'EQUALS' TO WS-Token-Curr-TXT
2596                  MOVE 'K' TO WS-Token-Type-CD
2597              EXIT SECTION
2598          END-IF
2599          IF WS-Curr-Char-Is-Punct-BOOL *> So subscripts don't get flagged w/ '*'
2600              AND WS-Curr-CHR = '('
2601              AND WS-Curr-Division-TXT = 'P'
2602              MOVE SPACES TO WS-Token-Prev-TXT

```

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```

=====
2603      END-IF
2604      IF WS-Curr-Char-Is-Punct-BOOL
2605          ADD 1 TO WS-Src-SUB
2606          MOVE WS-Curr-CHR TO WS-Token-Curr-TXT
2607          MOVE SPACE TO WS-Token-Type-CD
2608          EXIT SECTION
2609      END-IF
2610      IF WS-Curr-Char-Is-Quote-BOOL
2611          ADD 1 TO WS-Src-SUB
2612          UNSTRING F-Expanded-Src-REC
2613              DELIMITED BY WS-Curr-CHR
2614              INTO WS-Token-Curr-TXT
2615              WITH POINTER WS-Src-SUB
2616          IF F-Expanded-Src-REC(WS-Src-SUB : 1) = '.'
2617              MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
2618              ADD 1 TO WS-Src-SUB
2619          END-IF
2620          SET WS-TT-Token-Is-Lit-Alpha-BOOL TO TRUE
2621          EXIT SECTION
2622      END-IF
2623      IF WS-Curr-Char-Is-X-BOOL AND WS-Next-Char-Is-Quote-BOOL
2624          ADD 2 TO WS-Src-SUB
2625          UNSTRING F-Expanded-Src-REC
2626              DELIMITED BY WS-Next-CHR
2627              INTO WS-Token-Curr-TXT
2628              WITH POINTER WS-Src-SUB
2629          IF F-Expanded-Src-REC(WS-Src-SUB : 1) = '.'
2630              MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
2631              ADD 1 TO WS-Src-SUB
2632          END-IF
2633          SET WS-TT-Token-Is-Lit-Number-BOOL TO TRUE
2634          EXIT SECTION
2635      END-IF
2636      IF WS-Curr-Char-Is-Z-BOOL AND WS-Next-Char-Is-Quote-BOOL
2637          ADD 2 TO WS-Src-SUB
2638          UNSTRING F-Expanded-Src-REC
2639              DELIMITED BY WS-Next-CHR
2640              INTO WS-Token-Curr-TXT
2641              WITH POINTER WS-Src-SUB
2642          IF F-Expanded-Src-REC(WS-Src-SUB : 1) = '.'
2643              MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
2644              ADD 1 TO WS-Src-SUB
2645          END-IF
2646          SET WS-TT-Token-Is-Lit-Alpha-BOOL TO TRUE
2647          EXIT SECTION
2648      END-IF
2649      IF WS-RS-Processing-PICTURE-CHR = 'Y'
2650          UNSTRING F-Expanded-Src-REC
2651              DELIMITED BY ', ' OR ' '
2652              INTO WS-Token-Curr-TXT
2653              DELIMITER IN WS-Delim-TXT
2654              WITH POINTER WS-Src-SUB
2655          IF WS-Delim-TXT = ', '

```

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```

=====
2656             MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
2657             ADD 1 TO WS-Src-SUB
2658         END-IF
2659         IF UPPER-CASE(WS-Token-Curr-TXT) = 'IS'
2660             MOVE SPACE TO WS-Token-Type-CD
2661             EXIT SECTION
2662         ELSE
2663             MOVE 'N' TO WS-RS-Processing-PICTURE-CHR
2664             MOVE SPACE TO WS-Token-Type-CD
2665             EXIT SECTION
2666         END-IF
2667     END-IF
2668     UNSTRING F-Expanded-Src-REC
2669         DELIMITED BY ' . ' OR ' ' OR '=' OR '(' OR ')' OR '*'
2670             OR '/' OR '&' OR ';' OR ',' OR '<'
2671             OR '>' OR ':'
2672         INTO WS-Token-Curr-TXT
2673         DELIMITER IN WS-Delim-TXT
2674         WITH POINTER WS-Src-SUB
2675     IF WS-Delim-TXT = ' . '
2676         MOVE 'Y' TO WS-RS-Token-Ended-Sentence-CHR
2677     END-IF
2678     IF WS-Delim-TXT NOT = ' . ' AND ' '
2679         SUBTRACT 1 FROM WS-Src-SUB
2680     END-IF
2681     *>-- Classify Token
2682     MOVE UPPER-CASE(WS-Token-Curr-TXT) TO WS-Token-Search-TXT
2683     IF WS-Token-Search-TXT = 'EQUAL' OR 'EQUALS'
2684         MOVE 'EQUALS' TO WS-Token-Curr-TXT
2685         MOVE 'K'      TO WS-Token-Type-CD
2686         EXIT SECTION
2687     END-IF
2688     SEARCH ALL WS-Reserved-Word-TXT
2689         WHEN WS-RW-Word-TXT (WS-RW-IDX) = WS-Token-Search-TXT
2690             MOVE WS-RW-Type-CD (WS-RW-IDX) TO WS-Token-Type-CD
2691 GC0710         IF WS-TT-Token-Is-Verb-BOOL
2692 GC0710             MOVE 'Y' TO WS-RS-Verb-Has-Been-Found-CHR
2693 GC0710         END-IF
2694         EXIT SECTION
2695     END-SEARCH
2696     *>-- Not a reserved word, must be a user name
2697     SET WS-TT-Token-Is-Identifier-BOOL TO TRUE
2698     PERFORM 313-Check-For-Numeric-Token
2699     IF WS-TT-Token-Is-Lit-Number-BOOL
2700         IF (WS-RS-Last-Token-Ended-Sent-CHR = 'Y')
2701             AND (WS-Curr-Division-TXT = 'D')
2702             MOVE 'LEVEL #' TO WS-Token-Curr-TXT
2703             MOVE 'K'      TO WS-Token-Type-CD
2704             EXIT SECTION
2705         ELSE
2706             EXIT SECTION
2707     END-IF
2708     END-IF
=====

```

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=====
2709      .
```

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```

=====
2711      311-Control-Record SECTION.
2712      UNSTRING F-ES-2-256-TXT-256
2713          DELIMITED BY '''
2714      INTO WS-Temp-10-Chars-TXT
2715          WS-Temp-256-Chars-TXT
2716          WS-Dummy-TXT
2717      INSPECT WS-Temp-10-Chars-TXT REPLACING ALL ''' BY SPACE
2718 GC0712  IF WS-Temp-10-Chars-TXT(1:4) = 'line'
2719 GC0712      MOVE SPACES TO WS-Temp-10-Chars-TXT(1:4)
2720 GC0712  END-IF
2721      COMPUTE WS-I-SUB = NUMVAL(WS-Temp-10-Chars-TXT) - 1
2722 GC1010  IF UPPER-CASE(TRIM(WS-Temp-256-Chars-TXT,Trailing)) =
2723 GC1010      TRIM(WS-Main-Module-Name-TXT)
2724      MOVE WS-I-SUB TO WS-Curr-Line-NUM
2725      SET WS-RS-In-Main-Module-BOOL TO TRUE
2726      IF WS-Saved-Section-TXT NOT = SPACES
2727          MOVE WS-Saved-Section-TXT TO WS-Curr-Section-TXT
2728      END-IF
2729      ELSE
2730      SET WS-RS-In-Copybook-BOOL TO TRUE
2731      IF WS-Saved-Section-TXT = SPACES
2732          MOVE WS-Curr-Section-TXT TO WS-Saved-Section-TXT
2733      END-IF
2734      MOVE LENGTH(TRIM(WS-Temp-256-Chars-TXT,Trailing))
2735          TO WS-I-SUB
2736      MOVE 0 TO WS-J-SUB
2737      PERFORM UNTIL WS-Temp-256-Chars-TXT(WS-I-SUB:1) = '/'
2738          OR WS-I-SUB = 0
2739          SUBTRACT 1 FROM WS-I-SUB
2740          ADD 1 TO WS-J-SUB
2741      END-PERFORM
2742      UNSTRING WS-Temp-256-Chars-TXT((WS-I-SUB + 1):WS-J-SUB)
2743          DELIMITED BY ' .'
2744      INTO WS-Filename-TXT
2745          WS-Dummy-TXT
2746      MOVE '[' TO WS-CS-1-CHR
2747      MOVE WS-Filename-TXT TO WS-CS-2-14-TXT
2748      IF WS-CS-11-14-TXT NOT = SPACES
2749          MOVE '...' TO WS-CS-11-14-TXT
2750      END-IF
2751      MOVE ']' TO WS-CS-15-CHR
2752      END-IF
2753      MOVE SPACES TO F-Expanded-Src-REC *> Force another READ
2754      MOVE 256 TO WS-Src-SUB
2755      .
=====

```

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```
=====
2757      312-Expanded-Src-Record SECTION.
2758 GC0314      IF F-Expanded-Src-REC(1:1) = SPACE
2759 GC0314          MOVE 2 TO WS-Src-SUB
2760 GC0314      ELSE
2761 GC0314          MOVE 1 TO WS-Src-SUB
2762 GC0314      END-IF
2763      IF WS-RS-In-Main-Module-BOOL
2764          ADD 1 To WS-Curr-Line-NUM
2765      END-IF
2766      .
```

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=====
2768      313-Check-For-Numeric-Token SECTION.
2769      MOVE WS-Token-Curr-TXT TO WS-Temp-32-Chars-1-TXT
2770      INSPECT WS-Temp-32-Chars-1-TXT
2771 GC0711      CONVERTING '0123456789' TO SPACES
2772 GC0711      IF WS-Temp-32-Chars-1-TXT = SPACES                *> Simple Unsigned Integer
2773      SET WS-TT-Token-Is-Lit-Number-BOOL TO TRUE
2774      EXIT SECTION
2775      END-IF
2776 GC0711      MOVE SPACES TO WS-Temp-32-Chars-2-TXT
2777 GC0711      WS-Temp-32-Chars-3-TXT
2778 GC0711      WS-Dummy-TXT
2779 GC0711      UNSTRING WS-Temp-32-Chars-1-TXT
2780 GC0711      DELIMITED BY 'e' OR 'E'
2781 GC0711      INTO WS-Temp-32-Chars-2-TXT
2782 GC0711      WS-Temp-32-Chars-3-TXT
2783 GC0711      WS-Dummy-TXT
2784 GC0711      IF WS-Dummy-TXT NOT = SPACES                      *> More than one 'E' - Not Numeric
2785 GC0711      EXIT SECTION
2786 GC0711      END-IF
2787 GC0711      IF WS-Temp-32-Chars-2-TXT(1:1) = '+' OR '-'
2788 GC0711      MOVE SPACE TO WS-Temp-32-Chars-2-TXT(1:1)
2789 GC0711      END-IF
2790 GC0711      IF WS-Temp-32-Chars-3-TXT(1:1) = '+' OR '-'
2791 GC0711      MOVE SPACE TO WS-Temp-32-Chars-3-TXT(1:1)
2792 GC0711      END-IF
2793      MOVE 0 TO WS-Tally-QTY
2794 GC0711      INSPECT WS-Temp-32-Chars-2-TXT
2795      TALLYING WS-Tally-QTY FOR ALL '.'
2796      IF WS-Tally-QTY = 1
2797 GC0711      INSPECT WS-Temp-32-Chars-2-TXT REPLACING ALL '.' BY SPACE
2798      END-IF
2799 GC0711      INSPECT WS-Temp-32-Chars-3-TXT
2800 GC0711      TALLYING WS-Tally-QTY FOR ALL '.'
2801 GC0711      IF WS-Tally-QTY = 1
2802 GC0711      INSPECT WS-Temp-32-Chars-3-TXT REPLACING ALL '.' BY SPACE
2803 GC0711      END-IF
2804 GC0711      IF WS-Temp-32-Chars-2-TXT = SPACES AND WS-Temp-32-Chars-3-TXT = SPACES
2805      SET WS-TT-Token-Is-Lit-Number-BOOL TO TRUE
2806      EXIT SECTION
2807      END-IF
2808      .

```

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```
=====
2810      320-IDENTIFICATION-DIVISION SECTION.
2811 GC0712      IF WS-TT-Token-Is-Argtype-BOOL
2812 GC0712          SET WS-TT-Token-Is-Reserved-Wd-BOOL TO TRUE
2813 GC0712      END-IF
2814 GC0710      MOVE 'N' TO WS-RS-Verb-Has-Been-Found-CHR
2815              IF WS-TT-Token-Is-Keyword-BOOL
2816                  AND WS-Token-Curr-TXT = 'DIVISION'
2817                      MOVE WS-Token-Prev-TXT TO WS-Curr-Division-TXT
2818                  EXIT SECTION
2819      END-IF
2820 GC0712      IF WS-Token-Prev-TXT = 'PROGRAM-ID' OR 'FUNCTION-ID'
2821              MOVE SPACES TO WS-Token-Prev-TXT
2822              MOVE WS-Token-Curr-TXT TO WS-Curr-Prog-ID-TXT
2823 GC0712      IF WS-CPI-16-CHR NOT = SPACES
2824              MOVE '...' TO WS-CPI-13-15-TXT
2825      END-IF
2826      EXIT SECTION
2827      END-IF
2828      .
```

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=====
2830      330-ENVIRONMENT-DIVISION SECTION.
2831 GC0712      IF WS-TT-Token-Is-Argtype-BOOL
2832 GC0712          SET WS-TT-Token-Is-Reserved-Wd-BOOL TO TRUE
2833 GC0712      END-IF
2834      IF WS-TT-Token-Is-Keyword-BOOL
2835          AND WS-Token-Curr-TXT = 'DIVISION'
2836          MOVE WS-Token-Prev-TXT TO WS-Curr-Division-TXT
2837          EXIT SECTION
2838      END-IF
2839      IF WS-TT-Token-Is-Keyword-BOOL
2840          AND WS-Token-Curr-TXT = 'SECTION'
2841          MOVE WS-Token-Prev-TXT TO WS-Curr-Section-TXT
2842          EXIT SECTION
2843      END-IF
2844      IF WS-TT-Token-Is-Identifier-BOOL
2845 GC0712          IF WS-Token-Prev-TXT = 'FUNCTION'
2846 GC0712              PERFORM 360-Release-Def
2847 GC0712          ELSE
2848 GC0712              PERFORM 361-Release-Ref
2849 GC0712          END-IF
2850      END-IF
2851 GC1213      IF WS-TT-Token-Is-Function-BOOL
2852 GC1213          PERFORM 361-Release-Ref
2853 GC1213      END-IF
2854      .

```

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=====
2856      340-DATA-DIVISION SECTION.
2857 GC0712      IF WS-TT-Token-Is-Argtype-BOOL
2858 GC0712          SET WS-TT-Token-Is-Reserved-Wd-BOOL TO TRUE
2859 GC0712      END-IF
2860      IF WS-TT-Token-Is-Keyword-BOOL
2861      AND WS-Token-Curr-TXT = 'DIVISION'
2862          MOVE WS-Token-Prev-TXT TO WS-Curr-Division-TXT
2863      EXIT SECTION
2864      END-IF
2865      IF WS-TT-Token-Is-Keyword-BOOL
2866      AND WS-Token-Curr-TXT = 'SECTION'
2867          MOVE WS-Token-Prev-TXT TO WS-Curr-Section-TXT
2868      EXIT SECTION
2869      END-IF
2870      IF (WS-Token-Curr-TXT = 'PIC' OR 'PICTURE')
2871      AND (WS-TT-Token-Is-Keyword-BOOL)
2872          MOVE 'Y' TO WS-RS-Processing-PICTURE-CHR
2873      EXIT SECTION
2874      END-IF
2875 GC0710      IF WS-TT-Token-Is-Reserved-Wd-BOOL
2876 GC0710      AND WS-Token-Prev-TXT = 'LEVEL #'
2877 GC0710          MOVE SPACES TO WS-Token-Prev-TXT
2878 GC0710      EXIT SECTION
2879 GC0710      END-IF
2880      IF WS-TT-Token-Is-Identifier-BOOL
2881      EVALUATE WS-Token-Prev-TXT
2882      WHEN 'FD'
2883          PERFORM 360-Release-Def
2884          MOVE SPACES TO WS-Token-Prev-TXT
2885 GC1213      WHEN 'RD'
2886 GC1213          PERFORM 360-Release-Def
2887 GC1213          MOVE SPACES TO WS-Token-Prev-TXT
2888      WHEN 'SD'
2889          PERFORM 360-Release-Def
2890          MOVE SPACES TO WS-Token-Prev-TXT
2891      WHEN 'LEVEL #'
2892          PERFORM 360-Release-Def
2893          MOVE SPACES TO WS-Token-Prev-TXT
2894      WHEN 'INDEXED'
2895          PERFORM 360-Release-Def
2896          MOVE SPACES TO WS-Token-Prev-TXT
2897      WHEN 'USING'
2898          PERFORM 362-Release-Upd
2899          MOVE SPACES TO WS-Token-Prev-TXT
2900      WHEN 'INTO'
2901          PERFORM 362-Release-Upd
2902          MOVE SPACES TO WS-Token-Prev-TXT
2903      WHEN OTHER
2904 GC1213          IF WS-Token-Curr-TXT NOT = 'SUM'
2905 GC1213              PERFORM 361-Release-Ref
2906 GC1213          END-IF
2907      END-EVALUATE

```

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```
=====
2908          EXIT SECTION
2909          END-IF
2910          .
```

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=====
2912      350-PROCEDURE-DIVISION SECTION.
2913          IF WS-Curr-Section-TXT NOT = 'PROCEDURE'
2914              MOVE 'PROCEDURE' TO WS-Curr-Section-TXT
2915          END-IF
2916 GC0710      IF WS-Token-Curr-Uc-TXT = 'PROGRAM'
2917 GC0710      AND WS-Token-Prev-TXT = 'END'
2918 GC0710          MOVE '?' TO WS-Curr-Division-TXT
2919 GC0710      EXIT SECTION
2920 GC0710      END-IF
2921          IF WS-TT-Token-Is-Keyword-BOOL
2922          AND WS-Token-Curr-TXT = 'DIVISION'
2923              MOVE WS-Token-Prev-TXT TO WS-Curr-Division-TXT
2924          EXIT SECTION
2925          END-IF
2926 GC0313      IF WS-TT-Token-Is-Identifier-BOOL
2927 GC0313      AND WS-Token-Prev-TXT = SPACES
2928 GC0313      AND WS-Curr-Verb-TXT = SPACES
2929 GC0313*> ----- Definition of a Paragraph or Section
2930 GC0313          PERFORM 360-Release-Def
2931 GC0313          MOVE SPACES TO WS-Token-Prev-TXT
2932 GC0313          EXIT SECTION
2933 GC0313      END-IF
2934          IF NOT WS-TT-Token-Is-Identifier-BOOL
2935          EXIT SECTION
2936          END-IF
2937          EVALUATE WS-Curr-Verb-TXT
2938          WHEN 'ACCEPT'
2939              PERFORM 351-ACCEPT
2940          WHEN 'ADD'
2941              PERFORM 351-ADD
2942          WHEN 'ALLOCATE'
2943              PERFORM 351-ALLOCATE
2944          WHEN 'CALL'
2945              PERFORM 351-CALL
2946          WHEN 'COMPUTE'
2947              PERFORM 351-COMPUTE
2948          WHEN 'DIVIDE'
2949              PERFORM 351-DIVIDE
2950          WHEN 'FREE'
2951              PERFORM 351-FREE
2952 GC1213      WHEN 'GENERATE'
2953 GC1213          PERFORM 351-GENERATE
2954          WHEN 'INITIALIZE'
2955              PERFORM 351-INITIALIZE
2956 GC1213      WHEN 'INITIATE'
2957 GC1213          PERFORM 351-GENERATE
2958          WHEN 'INSPECT'
2959              PERFORM 351-INSPECT
2960          WHEN 'MOVE'
2961              PERFORM 351-MOVE
2962          WHEN 'MULTIPLY'
2963              PERFORM 351-MULTIPLY

```

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

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=====
2983      351-ACCEPT SECTION.
2984          EVALUATE WS-Token-Prev-TXT
2985              WHEN 'ACCEPT'
2986                  PERFORM 362-Release-Upd
2987                  MOVE SPACES TO WS-Token-Prev-TXT
2988              WHEN OTHER
2989                  PERFORM 361-Release-Ref
2990          END-EVALUATE
2991      .
2992
2993      351-ADD SECTION.
2994          EVALUATE WS-Token-Prev-TXT
2995              WHEN 'GIVING'
2996                  PERFORM 362-Release-Upd
2997              WHEN 'TO'
2998                  PERFORM 362-Release-Upd
2999              WHEN OTHER
3000                  PERFORM 361-Release-Ref
3001          END-EVALUATE
3002      .
3003
3004      351-ALLOCATE SECTION.
3005          EVALUATE WS-Token-Prev-TXT
3006              WHEN 'ALLOCATE'
3007                  PERFORM 362-Release-Upd
3008                  MOVE SPACES TO WS-Token-Prev-TXT
3009              WHEN 'RETURNING'
3010                  PERFORM 362-Release-Upd
3011              WHEN OTHER
3012                  PERFORM 361-Release-Ref
3013          END-EVALUATE
3014      .
3015
3016      351-CALL SECTION.
3017          EVALUATE WS-Token-Prev-TXT
3018              WHEN 'RETURNING'
3019                  PERFORM 362-Release-Upd
3020              WHEN 'GIVING'
3021                  PERFORM 362-Release-Upd
3022              WHEN OTHER
3023 GC1213          PERFORM 365-Release-Arg
3024          END-EVALUATE
3025      .
3026
3027      351-COMPUTE SECTION.
3028          EVALUATE WS-Token-Prev-TXT
3029              WHEN 'COMPUTE'
3030                  PERFORM 362-Release-Upd
3031              WHEN OTHER
3032                  PERFORM 361-Release-Ref
3033          END-EVALUATE
3034      .

```

```
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=====
3035
3036      351-DIVIDE SECTION.
3037          EVALUATE WS-Token-Prev-TXT
3038              WHEN 'INTO'
3039                  PERFORM 363-Set-Upd
3040                  MOVE F-Sort-Work-REC TO WS-Held-Reference-TXT
3041              WHEN 'GIVING'
3042                  IF WS-Held-Reference-TXT NOT = SPACES
3043                      MOVE WS-Held-Reference-TXT To F-Sort-Work-REC
3044                      MOVE SPACES          To WS-Held-Reference-TXT
3045                      F-SW-Ref-Flag-CHR
3046                  RELEASE F-Sort-Work-REC
3047              END-IF
3048              PERFORM 362-Release-Upd
3049              WHEN 'REMAINDER'
3050                  PERFORM 362-Release-Upd
3051              WHEN OTHER
3052                  PERFORM 361-Release-Ref
3053          END-EVALUATE
3054      .
3055
3056      351-FREE SECTION.
3057          PERFORM 362-Release-Upd
3058      .
3059
3060 GC1213 351-GENERATE SECTION.
3061 GC1213      PERFORM 362-Release-Upd
3062 GC1213      .
3063
3064      351-INITIALIZE SECTION.
3065          EVALUATE WS-Token-Prev-TXT
3066              WHEN 'INITIALIZE'
3067                  PERFORM 362-Release-Upd
3068              WHEN 'REPLACING'
3069                  PERFORM 361-Release-Ref
3070          END-EVALUATE
3071      .
3072
3073 GC1213 351-INITIATE SECTION.
3074 GC1213      PERFORM 362-Release-Upd
3075 GC1213      .
3076
3077      351-INSPECT SECTION.
3078          EVALUATE WS-Token-Prev-TXT
3079              WHEN 'INSPECT'
3080                  PERFORM 364-Set-Ref
3081                  MOVE SPACES TO WS-Held-Reference-TXT
3082                  MOVE SPACES TO WS-Token-Prev-TXT
3083              WHEN 'TALLYING'
3084                  PERFORM 362-Release-Upd
3085                  MOVE SPACES TO WS-Token-Prev-TXT
3086              WHEN 'REPLACING'
3087                  IF WS-Held-Reference-TXT NOT = SPACES

```

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=====
3088             MOVE WS-Held-Reference-TXT TO F-Sort-Work-REC
3089             MOVE SPACES             TO WS-Held-Reference-TXT
3090             MOVE '*'                 TO F-SW-Ref-Flag-CHR
3091             RELEASE F-Sort-Work-REC
3092             END-IF
3093             MOVE SPACES TO WS-Token-Prev-TXT
3094             WHEN 'CONVERTING'
3095                 IF WS-Held-Reference-TXT NOT = SPACES
3096                     MOVE WS-Held-Reference-TXT TO F-Sort-Work-REC
3097                     MOVE SPACES             TO WS-Held-Reference-TXT
3098                     MOVE '*'                 TO F-SW-Ref-Flag-CHR
3099                     RELEASE F-Sort-Work-REC
3100                 END-IF
3101                 MOVE SPACES TO WS-Token-Prev-TXT
3102             WHEN OTHER
3103                 PERFORM 361-Release-Ref
3104             END-EVALUATE
3105             .
3106
3107             351-MOVE SECTION.
3108                 EVALUATE WS-Token-Prev-TXT
3109                 WHEN 'TO'
3110                     PERFORM 362-Release-Upd
3111                 WHEN OTHER
3112                     PERFORM 361-Release-Ref
3113                 END-EVALUATE
3114                 .
3115
3116             351-MULTIPLY SECTION.
3117                 EVALUATE WS-Token-Prev-TXT
3118                 WHEN 'BY'
3119                     PERFORM 363-Set-Upd
3120                     MOVE F-Sort-Work-REC TO WS-Held-Reference-TXT
3121                 WHEN 'GIVING'
3122                     MOVE WS-Held-Reference-TXT TO F-Sort-Work-REC
3123                     MOVE SPACES             TO WS-Held-Reference-TXT
3124                                     F-SW-Ref-Flag-CHR
3125                     RELEASE F-Sort-Work-REC
3126                     PERFORM 362-Release-Upd
3127                 WHEN OTHER
3128                     PERFORM 361-Release-Ref
3129                 END-EVALUATE
3130                 .
3131
3132             351-PERFORM SECTION.
3133                 EVALUATE WS-Token-Prev-TXT
3134                 WHEN 'VARYING'
3135                     PERFORM 362-Release-Upd
3136                     MOVE SPACES TO WS-Token-Prev-TXT
3137                 WHEN 'AFTER'
3138                     PERFORM 362-Release-Upd
3139                     MOVE SPACES TO WS-Token-Prev-TXT
3140                 WHEN OTHER

```

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=====
3141          PERFORM 361-Release-Ref
3142          END-EVALUATE
3143          .
3144
3145      351-SET SECTION.
3146          EVALUATE WS-Token-Prev-TXT
3147          WHEN 'SET'
3148              PERFORM 362-Release-Upd
3149          WHEN OTHER
3150              PERFORM 361-Release-Ref
3151          END-EVALUATE
3152          .
3153
3154      351-STRING SECTION.
3155          EVALUATE WS-Token-Prev-TXT
3156          WHEN 'INTO'
3157              PERFORM 362-Release-Upd
3158          WHEN 'POINTER'
3159              PERFORM 362-Release-Upd
3160          WHEN OTHER
3161              PERFORM 361-Release-Ref
3162          END-EVALUATE
3163          .
3164
3165      351-SUBTRACT SECTION.
3166          EVALUATE WS-Token-Prev-TXT
3167          WHEN 'GIVING'
3168              PERFORM 362-Release-Upd
3169          WHEN 'FROM'
3170              PERFORM 362-Release-Upd
3171          WHEN OTHER
3172              PERFORM 361-Release-Ref
3173          END-EVALUATE
3174          .
3175
3176 GC1213 351-TERMINATE SECTION.
3177 GC1213     PERFORM 362-Release-Upd
3178 GC1213     .
3179
3180      351-TRANSFORM SECTION.
3181          EVALUATE WS-Token-Prev-TXT
3182          WHEN 'TRANSFORM'
3183              PERFORM 362-Release-Upd
3184              MOVE SPACES TO WS-Token-Prev-TXT
3185          WHEN OTHER
3186              PERFORM 361-Release-Ref
3187          END-EVALUATE
3188          .
3189
3190      351-UNSTRING SECTION.
3191          EVALUATE WS-Token-Prev-TXT
3192          WHEN 'INTO'
3193              PERFORM 362-Release-Upd

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=====
3194      WHEN 'DELIMITER'
3195          PERFORM 362-Release-Upd
3196      WHEN 'COUNT'
3197          PERFORM 362-Release-Upd
3198      WHEN 'POINTER'
3199          PERFORM 362-Release-Upd
3200      WHEN 'TALLYING'
3201          PERFORM 362-Release-Upd
3202      WHEN OTHER
3203          PERFORM 361-Release-Ref
3204      END-EVALUATE
3205      .
3206
3207      360-Release-Def SECTION.
3208          MOVE SPACES              TO F-Sort-Work-REC
3209          MOVE WS-Curr-Prog-ID-TXT TO F-SW-Prog-ID-TXT
3210          MOVE WS-Token-Curr-Uc-TXT TO F-SW-Token-Uc-TXT
3211          MOVE WS-Token-Curr-TXT    TO F-SW-Token-TXT
3212          MOVE WS-Curr-Section-TXT  TO F-SW-Section-TXT
3213          MOVE WS-Curr-Line-NUM     TO F-SW-Def-Line-NUM
3214          MOVE 0                    TO F-SW-Ref-Line-NUM
3215          RELEASE F-Sort-Work-REC
3216      .
3217
3218      361-Release-Ref SECTION.
3219          PERFORM 364-Set-Ref
3220          RELEASE F-Sort-Work-REC
3221      .
3222
3223      362-Release-Upd SECTION.
3224          PERFORM 363-Set-Upd
3225          RELEASE F-Sort-Work-REC
3226      .
3227
3228      363-Set-Upd SECTION.
3229          MOVE SPACES              TO F-Sort-Work-REC
3230          MOVE WS-Curr-Prog-ID-TXT TO F-SW-Prog-ID-TXT
3231          MOVE WS-Token-Curr-Uc-TXT TO F-SW-Token-Uc-TXT
3232          MOVE WS-Token-Curr-TXT    TO F-SW-Token-TXT
3233          MOVE WS-Curr-Section-TXT  TO F-SW-Section-TXT
3234          MOVE WS-Curr-Line-NUM     TO F-SW-Ref-Line-NUM
3235          MOVE '*'                  TO F-SW-Ref-Flag-CHR
3236      .
3237
3238      364-Set-Ref SECTION.
3239          MOVE SPACES              TO F-Sort-Work-REC
3240          MOVE WS-Curr-Prog-ID-TXT TO F-SW-Prog-ID-TXT
3241          MOVE WS-Token-Curr-Uc-TXT TO F-SW-Token-Uc-TXT
3242          MOVE WS-Token-Curr-TXT    TO F-SW-Token-TXT
3243          MOVE WS-Curr-Section-TXT  TO F-SW-Section-TXT
3244          MOVE WS-Curr-Line-NUM     TO F-SW-Ref-Line-NUM
3245      .
3246
=====

```

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```
=====
3247 GC1213 365-Release-Arg SECTION.
3248 GC1213     PERFORM 366-Set-Arg
3249 GC1213     RELEASE F-Sort-Work-REC
3250 GC1213     .
3251
3252 GC1213 366-Set-Arg SECTION.
3253 GC1213     MOVE SPACES              TO F-Sort-Work-REC
3254 GC1213     MOVE WS-Curr-Prog-ID-TXT TO F-SW-Prog-ID-TXT
3255 GC1213     MOVE WS-Token-Curr-Uc-TXT TO F-SW-Token-Uc-TXT
3256 GC1213     MOVE WS-Token-Curr-TXT   TO F-SW-Token-TXT
3257 GC1213     MOVE WS-Curr-Section-TXT TO F-SW-Section-TXT
3258 GC1213     MOVE WS-Curr-Line-NUM    TO F-SW-Ref-Line-NUM
3259 GC1213     MOVE 'C'                 TO F-SW-Ref-Flag-CHR
3260 GC1213     .
3261
```

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=====
3263      400-Produce-Xref-Listing SECTION.
3264      MOVE SPACES      TO WS-Xref-Detail-Line-TXT
3265      WS-Group-Indicators-TXT
3266      MOVE 0            TO WS-I-SUB
3267      WS-Lines-Left-NUM
3268 GC0710  MOVE 'N'      TO WS-RS-Duplicate-CHR
3269      PERFORM FOREVER
3270      RETURN F-Sort-Work-FILE AT END
3271 GC1213  IF WS-Xref-Detail-Line-TXT NOT = SPACES
3272 GC1213      PERFORM 410-Generate-Report-Line
3273 GC1213  END-IF
3274 GC1213  MOVE SPACES TO WS-Xref-Detail-Line-TXT
3275 GC1213  PERFORM 410-Generate-Report-Line
3276 GC1213  UNTIL WS-Lines-Left-NUM = 0
3277 GC1213  MOVE 'Y' TO WS-Suppress-FF-CHR
3278 GC1213  PERFORM 420-Generate-Xref-Footer
3279      EXIT PERFORM
3280  END-RETURN
3281  IF F-SW-Prog-ID-TXT NOT = WS-GI-Prog-ID-TXT
3282  OR F-SW-Token-Uc-TXT NOT = WS-GI-Token-TXT
3283 GC0710  MOVE 'N' TO WS-RS-Duplicate-CHR
3284      IF WS-Xref-Detail-Line-TXT NOT = SPACES
3285      PERFORM 410-Generate-Report-Line
3286      END-IF
3287  IF F-SW-Prog-ID-TXT NOT = WS-GI-Prog-ID-TXT
3288 GC1213  MOVE SPACES TO WS-Xref-Detail-Line-TXT
3289 GC1213  PERFORM 410-Generate-Report-Line
3290 GC1213  UNTIL WS-Lines-Left-NUM = 0
3291      END-IF
3292      MOVE F-SW-Prog-ID-TXT TO WS-GI-Prog-ID-TXT
3293      MOVE F-SW-Token-Uc-TXT TO WS-GI-Token-TXT
3294  END-IF
3295 GC0710  IF F-SW-Token-Uc-TXT = WS-GI-Token-TXT
3296 GC0710  AND F-SW-Def-Line-NUM NOT = SPACES
3297 GC0710  AND WS-Xref-Detail-Line-TXT NOT = SPACES
3298 GC0710  MOVE 'Y' TO WS-RS-Duplicate-CHR
3299 GC0710  PERFORM 410-Generate-Report-Line
3300 GC0710  MOVE 0 TO WS-I-SUB
3301 GC0710  MOVE F-SW-Prog-ID-TXT TO WS-XDL-Prog-ID-TXT
3302 GC0710  MOVE ' (Duplicate Definition)' TO WS-XDL-Token-TXT
3303 GC0710  MOVE F-SW-Section-TXT TO WS-XDL-Section-TXT
3304 GC0710  MOVE F-SW-Def-Line-NUM TO WS-XDL-Def-Line-NUM
3305 GC0710  EXIT PERFORM CYCLE
3306 GC0710  END-IF
3307 GC0710  IF F-SW-Token-Uc-TXT = WS-GI-Token-TXT
3308 GC0710  AND F-SW-Def-Line-NUM = SPACES
3309 GC0710  AND WS-RS-Duplicate-CHR = 'Y'
3310 GC0710  MOVE 'N' TO WS-RS-Duplicate-CHR
3311 GC0710  PERFORM 410-Generate-Report-Line
3312 GC0710  MOVE 0 TO WS-I-SUB
3313 GC0710  MOVE F-SW-Prog-ID-TXT TO WS-XDL-Prog-ID-TXT
3314 GC0710  MOVE ' (Duplicate References)' TO WS-XDL-Token-TXT

```

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

```

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=====
3341      410-Generate-Report-Line SECTION.
3342      IF WS-Lines-Left-NUM < 1
3343 GC1213      PERFORM 420-Generate-Xref-Footer
3344 GC1213      ADD 1 TO WS-Page-NUM
3345 GC1213      MOVE 'Page:' TO WS-PN-Literal-TXT
3346 GC1213      MOVE WS-Page-NUM TO WS-PN-Page-NUM
3347 GC1213      CALL 'C$JUSTIFY' USING WS-PN-Page-NUM, 'Left'
3348 GC1213      CALL 'C$JUSTIFY' USING WS-Page-No-TXT, 'Right'
3349 GC1213      IF L-Listing-CD = 1 *> LANDSCAPE
3350 GC1213          MOVE WS-Version-TXT
3351 GC1213              TO F-Listing-135-REC
3352 GC1213          MOVE 'Cross-Reference Listing'
3353 GC1213              TO F-Listing-135-REC(25:23)
3354 GC1213          MOVE WS-Formatted-DT
3355 GC1213              TO F-Listing-135-REC(126:10)
3356 GC1213          WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #1
3357 GC1213          MOVE WS-Program-Path-TXT
3358 GC1213              TO F-Listing-135-REC
3359 GC1213          WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #2
3360 GC1213          MOVE 'PROGRAM-ID Identifier/Register/Function' &
3361 GC1213              ' Defn Where Defined References'
3362 GC1213              TO F-Listing-135-REC
3363 GC1213          MOVE WS-Page-No-TXT
3364 GC1213              TO F-Listing-135-REC(126:10)
3365 GC1213          WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #3
3366 GC1213          MOVE ALL '=' TO F-Listing-135-REC
3367 GC1213          MOVE SPACE TO F-Listing-135-REC(16:1)
3368 GC1213              F-Listing-135-REC(49:1)
3369 GC1213              F-Listing-135-REC(56:1)
3370 GC1213              F-Listing-135-REC(72:1)
3371 GC1213          WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #4
3372 GC1213      ELSE *> PORTRAIT
3373 GC1213          MOVE WS-Version-TXT
3374 GC1213              TO F-Listing-96-REC
3375 GC1213          MOVE 'Cross-Reference Listing'
3376 GC1213              TO F-Listing-96-REC(25:23)
3377 GC1213          MOVE WS-Formatted-DT
3378 GC1213              TO F-Listing-96-REC(87:10)
3379 GC1213          WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #1
3380 GC1213          MOVE WS-Program-Path-TXT(40:96)
3381 GC1213              TO F-Listing-96-REC
3382 GC1213          WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #2
3383 GC1213          MOVE 'PROGRAM-ID Identifier/Register/Function' &
3384 GC1213              ' Defn Where Defined References'
3385 GC1213              TO F-Listing-96-REC
3386 GC1213          MOVE WS-Page-No-TXT
3387 GC1213              TO F-Listing-96-REC(87:10)
3388 GC1213          WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #3
3389 GC1213          MOVE ALL '=' TO F-Listing-96-REC
3390 GC1213          MOVE SPACE TO F-Listing-96-REC(16:1)
3391 GC1213              F-Listing-96-REC(49:1)
3392 GC1213              F-Listing-96-REC(56:1)

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```

=====
3393 GC1213                                F-Listing-96-REC(72:1)
3394 GC1213                                WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #4
3395 GC1213                                END-IF
3396 GC1213                                COMPUTE WS-Lines-Left-NUM = WS-Lines-Per-Page-NUM - 4
3397 GC1213                                END-IF
3398 GC1213                                IF L-Listing-CD = 1 *> LANDSCAPE
3399 GC1213                                    WRITE F-Listing-135-REC FROM WS-Xref-Detail-Line-TXT
3400 GC1213                                    BEFORE 1
3401 GC1213                                ELSE                                *> PORTRAIT
3402 GC1213                                    WRITE F-Listing-96-REC FROM WS-Xref-Detail-Line-TXT
3403 GC1213                                    BEFORE 1
3404 GC1213                                END-IF
3405 GC1213                                MOVE SPACES TO WS-Xref-Detail-Line-TXT
3406 GC1213                                MOVE 0 TO WS-I-SUB
3407 GC1213                                SUBTRACT 1 FROM WS-Lines-Left-NUM
3408 GC1213                                .
3409 GC1213 420-Generate-Xref-Footer SECTION.
3410 GC1213                                IF L-Listing-CD = 1 *> LANDSCAPE
3411 GC1213                                    WRITE F-Listing-135-REC FROM SPACES BEFORE 1 *> Footer Line #1
3412 GC1213                                    MOVE ALL '='
3413 GC1213                                        TO F-Listing-135-REC
3414 GC1213                                    WRITE F-Listing-135-REC BEFORE 1 *> Footer Line #2
3415 GC1213                                    MOVE WS-Copyright-TXT
3416 GC1213                                        TO F-Listing-135-REC
3417 GC1213                                    MOVE WS-Page-No-TXT
3418 GC1213                                        TO F-Listing-135-REC(126:10)
3419 GC1213                                    IF WS-Suppress-FF-CHR = 'Y'
3420 GC1213                                        WRITE F-Listing-135-REC BEFORE 1 *> Footer Line #3
3421 GC1213                                    ELSE
3422 GC1213                                        WRITE F-Listing-135-REC BEFORE PAGE *> Footer Line #3
3423 GC1213                                        WRITE F-Listing-135-REC FROM SPACES BEFORE 1 *> Spaces After FF Charac
3424 GC1213                                        ter
3425 GC1213                                    END-IF
3426 GC1213                                ELSE                                *> PORTRAIT
3427 GC1213                                    WRITE F-Listing-96-REC FROM SPACES BEFORE 1 *> Footer Line #1
3428 GC1213                                    MOVE ALL '='
3429 GC1213                                        TO F-Listing-96-REC
3430 GC1213                                    WRITE F-Listing-96-REC BEFORE 1 *> Footer Line #2
3431 GC1213                                    MOVE WS-Copyright-TXT
3432 GC1213                                        TO F-Listing-96-REC
3433 GC1213                                    MOVE WS-Page-No-TXT
3434 GC1213                                        TO F-Listing-96-REC(87:10)
3435 GC1213                                    IF WS-Suppress-FF-CHR = 'Y'
3436 GC1213                                        WRITE F-Listing-96-REC BEFORE 1 *> Footer Line #3
3437 GC1213                                    ELSE
3438 GC1213                                        WRITE F-Listing-96-REC BEFORE PAGE *> Footer Line #3
3439 GC1213                                        WRITE F-Listing-96-REC FROM SPACES BEFORE 1 *> Spaces After FF Charact
3440 GC1213                                        er
3441 GC1213                                    END-IF
3442 GC1213                                END-IF
3443 GC1213                                .
=====

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=====
3443      500-Produce-Source-Listing SECTION.
3444      OPEN INPUT F-Original-Src-FILE
3445              F-Expanded-Src-FILE
3446      MOVE 0 TO WS-Src-Line-NUM
3447      PERFORM FOREVER
3448              READ F-Expanded-Src-FILE AT END
3449 GC1213      MOVE SPACES TO WS-Src-Detail-Line-TXT
3450 GC1213      PERFORM 530-Generate-Source-Line
3451 GC1213      UNTIL WS-Lines-Left-NUM = 0
3452      EXIT PERFORM
3453      END-READ
3454 GC0712      IF F-ES-1-7-TXT NOT = '#DEFLIT'
3455 GC0712      IF F-ES-1-CHR = '#'
3456 GC0712      PERFORM 510-Control-Record
3457 GC0712      ELSE
3458 GC0712      PERFORM 520-Expanded-Src-Record
3459 GC0712      END-IF
3460 GC0712      END-IF
3461      END-PERFORM
3462      CLOSE F-Original-Src-FILE
3463              F-Expanded-Src-FILE
3464      .

```

```
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```

=====
3466      510-Control-Record SECTION.
3467      UNSTRING F-ES-2-256-TXT-256
3468      DELIMITED BY '''
3469      INTO WS-Temp-10-Chars-TXT
3470      WS-Temp-256-Chars-TXT
3471      WS-Dummy-TXT
3472 GC1010  IF UPPER-CASE(TRIM(WS-Temp-256-Chars-TXT,Trailing)) =
3473 GC1010  TRIM(WS-Main-Module-Name-TXT) *> Main Pgm
3474      SET WS-RS-In-Main-Module-BOOL TO TRUE
3475      IF WS-Src-Line-NUM > 0
3476      READ F-Expanded-Src-FILE END-READ
3477      END-IF
3478      ELSE *> COPY
3479      SET WS-RS-In-Copybook-BOOL TO TRUE
3480      END-IF
3481      .

```

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```

=====
3483      520-Expanded-Src-Record SECTION.
3484      IF WS-RS-In-Main-Module-BOOL
3485          ADD 1 To WS-Curr-Line-NUM
3486 GC0712      READ F-Original-Src-FILE AT END CONTINUE END-READ
3487          ADD 1 TO WS-Src-Line-NUM
3488          MOVE SPACES TO WS-Src-Detail-Line-TXT
3489          MOVE WS-Src-Line-NUM TO WS-SDL-Line-NUM
3490 GC1213      MOVE F-Original-Src-REC TO WS-SDL-Statement-TXT
3491 GC0712      MOVE LOWER-CASE(TRIM(F-OS-8-72-TXT,LEADING))
3492 GC0712          TO WS-Temp-65-Chars-TXT
3493 GC0712      INSPECT WS-Temp-65-Chars-TXT REPLACING ALL '.' BY SPACE
3494 GC0712      EVALUATE TRUE
3495 GC0712          WHEN F-OS-7-CHR = '/'
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          WHEN WS-Temp-65-Chars-TXT = "eject"
3500 GC1213              MOVE SPACES TO WS-Src-Detail-Line-TXT
3501 GC1213              PERFORM 530-Generate-Source-Line
3502 GC1213                  UNTIL WS-Lines-Left-NUM = 0
3503 GC0712          EXIT SECTION
3504 GC0712          WHEN WS-Temp-65-Chars-TXT = "skip1"
3505 GC0712              MOVE SPACES TO WS-Src-Detail-Line-TXT
3506 GC0712              PERFORM 530-Generate-Source-Line
3507 GC0712          EXIT SECTION
3508 GC0712          WHEN WS-Temp-65-Chars-TXT = "skip2"
3509 GC0712              MOVE SPACES TO WS-Src-Detail-Line-TXT
3510 GC0712              PERFORM 530-Generate-Source-Line 2 TIMES
3511 GC0712          EXIT SECTION
3512 GC0712          WHEN WS-Temp-65-Chars-TXT = "skip3"
3513 GC0712              MOVE SPACES TO WS-Src-Detail-Line-TXT
3514 GC0712              PERFORM 530-Generate-Source-Line 3 TIMES
3515 GC0712          EXIT SECTION
3516 GC0712      END-EVALUATE
3517      PERFORM 530-Generate-Source-Line
3518  ELSE
3519      IF F-Expanded-Src-REC NOT = SPACES
3520          MOVE SPACES TO WS-Src-Detail-Line-TXT
3521 GC1213      MOVE F-Expanded-Src-REC
3522          TO WS-SDL-Statement-TXT
3523 GC0712      MOVE LOWER-CASE(TRIM(F-OS-8-72-TXT,LEADING))
3524 GC0712          TO WS-Temp-65-Chars-TXT
3525 GC0712      INSPECT WS-Temp-65-Chars-TXT
3526 GC0712          REPLACING ALL '.' BY SPACE
3527 GC0712      EVALUATE TRUE
3528 GC0712          WHEN WS-Temp-65-Chars-TXT = "eject"
3529 GC0712              MOVE 0 TO WS-Lines-Left-NUM
3530 GC0712          EXIT SECTION
3531 GC0712          WHEN WS-Temp-65-Chars-TXT = "skip1"
3532 GC0712              MOVE SPACES TO WS-Src-Detail-Line-TXT
3533 GC0712              PERFORM 530-Generate-Source-Line
3534 GC0712          EXIT SECTION

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

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```

=====
3549      530-Generate-Source-Line SECTION.
3550 GC1213      MOVE 1 TO WS-Src-Lines-NUM
3551 GC1213      IF L-Listing-CD = 1 *> LANDSCAPE
3552 GC1213          IF WS-SDL-Statement-TXT(129:128) > SPACES
3553 GC1213              ADD 1 TO WS-Src-Lines-NUM
3554 GC1213          END-IF
3555 GC1213      ELSE
3556 GC1213          IF WS-SDL-Statement-TXT(90:167) > SPACES
3557 GC1213              ADD 1 TO WS-Src-Lines-NUM
3558 GC1213              IF WS-SDL-Statement-TXT(179:78) > SPACES
3559 GC1213                  ADD 1 TO WS-Src-Lines-NUM
3560 GC1213              END-IF
3561 GC1213          END-IF
3562 GC1213      END-IF
3563 GC1213      IF WS-Lines-Left-NUM < WS-Src-Lines-NUM
3564 GC1213          IF WS-Page-Num > 0 *> Don't print footer before page 1
3565 GC1213              IF L-Listing-CD = 1 *> LANDSCAPE
3566 GC1213                  IF WS-Src-Lines-Num = 2
3567 GC1213                      WRITE F-Listing-135-REC FROM SPACES BEFORE 1 *> Blank Line
3568 GC1213                  END-IF
3569 GC1213                  WRITE F-Listing-135-REC FROM SPACES BEFORE 1 *> Footer Line #1
3570 GC1213                  MOVE ALL '='
3571 GC1213                      TO F-Listing-135-REC
3572 GC1213                  WRITE F-Listing-135-REC BEFORE 1 *> Footer Line #2
3573 GC1213                  MOVE WS-Copyright-TXT
3574 GC1213                      TO F-Listing-135-REC
3575 GC1213                  MOVE WS-Page-No-TXT
3576 GC1213                      TO F-Listing-135-REC(126:10)
3577 GC1213                  WRITE F-Listing-135-REC BEFORE PAGE *> Footer Line #3
3578 GC1213                  WRITE F-Listing-135-REC FROM SPACES BEFORE 1 *> Spaces After FF Ch
aracter
3579 GC1213              ELSE
3580 GC1213                  EVALUATE WS-Src-Lines-Num
3581 GC1213                      WHEN 1 *> Need no extra blank lines
3582 GC1213                          CONTINUE
3583 GC1213                      WHEN 2 *> Need 1 extra blank line
3584 GC1213                          WRITE F-Listing-96-REC FROM SPACES BEFORE 1
3585 GC1213                      WHEN 3 *> Need 2 extra blank lines
3586 GC1213                          WRITE F-Listing-96-REC FROM SPACES BEFORE 1
3587 GC1213                          WRITE F-Listing-96-REC FROM SPACES BEFORE 1
3588 GC1213                      END-EVALUATE
3589 GC1213                  WRITE F-Listing-96-REC FROM SPACES BEFORE 1 *> Footer Line #1
3590 GC1213                  MOVE ALL '='
3591 GC1213                      TO F-Listing-96-REC
3592 GC1213                  WRITE F-Listing-96-REC BEFORE 1 *> Footer Line #2
3593 GC1213                  MOVE WS-Copyright-TXT
3594 GC1213                      TO F-Listing-96-REC
3595 GC1213                  MOVE WS-Page-No-TXT
3596 GC1213                      TO F-Listing-96-REC(87:10)
3597 GC1213                  WRITE F-Listing-96-REC BEFORE PAGE *> Footer Line #3
3598 GC1213                  WRITE F-Listing-96-REC FROM SPACES BEFORE 1 *> Spaces After FF Cha
racter
=====

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```

=====
3599 GC1213      END-IF
3600 GC1213      END-IF
3601 GC1213      ADD 1 TO WS-Page-NUM
3602 GC1213      MOVE 'Page:' TO WS-PN-Literal-TXT
3603 GC1213      MOVE WS-Page-NUM TO WS-PN-Page-NUM
3604 GC1213      CALL 'C$JUSTIFY' USING WS-PN-Page-NUM, 'Left'
3605 GC1213      CALL 'C$JUSTIFY' USING WS-Page-No-TXT, 'Right'
3606 GC1213      IF L-Listing-CD = 1 *> LANDSCAPE
3607 GC1213          MOVE WS-Version-TXT
3608 GC1213              TO F-Listing-135-REC
3609 GC1213          MOVE 'Source Listing'
3610 GC1213              TO F-Listing-135-REC(25:14)
3611 GC1213          MOVE WS-Formatted-DT
3612 GC1213              TO F-Listing-135-REC(126:10)
3613 GC1213          WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #1
3614 GC1213          MOVE WS-Program-Path-TXT
3615 GC1213              TO F-Listing-135-REC
3616 GC1213          WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #2
3617 GC1213          MOVE 'Line Statement'
3618 GC1213              TO F-Listing-135-REC
3619 GC1213          MOVE WS-Page-No-TXT
3620 GC1213              TO F-Listing-135-REC(126:10)
3621 GC1213          WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #3
3622 GC1213          MOVE WS-Src-Dashes-TXT
3623 GC1213              TO F-Listing-135-REC
3624 GC1213          WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #4
3625 GC1213      ELSE
3626 GC1213          MOVE WS-Version-TXT
3627 GC1213              TO F-Listing-96-REC
3628 GC1213          MOVE 'Source Listing'
3629 GC1213              TO F-Listing-96-REC(25:14)
3630 GC1213          MOVE WS-Formatted-DT
3631 GC1213              TO F-Listing-96-REC(87:10)
3632 GC1213          WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #1
3633 GC1213          MOVE WS-Program-Path-TXT(40:96)
3634 GC1213              TO F-Listing-96-REC
3635 GC1213          WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #2
3636 GC1213          MOVE 'Line Statement'
3637 GC1213              TO F-Listing-96-REC
3638 GC1213          MOVE WS-Page-No-TXT
3639 GC1213              TO F-Listing-96-REC(87:10)
3640 GC1213          WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #3
3641 GC1213          MOVE WS-Src-Dashes-TXT
3642 GC1213              TO F-Listing-96-REC
3643 GC1213          WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #4
3644 GC1213      END-IF
3645 GC1213      COMPUTE WS-Lines-Left-NUM = WS-Lines-Per-Page-NUM - 4
3646 GC1213      END-IF
3647 GC1213      IF L-Listing-CD = 1 *> LANDSCAPE
3648 GC1213          EVALUATE WS-Src-Lines-NUM
3649 GC1213              WHEN 1
3650 GC1213                  MOVE WS-Src-Detail-Line-TXT TO F-Listing-135-REC
3651 GC1213                  WRITE F-Listing-96-REC BEFORE 1

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```

=====
3652 GC1213          SUBTRACT 1 FROM WS-Lines-Left-NUM
3653 GC1213          WHEN 2
3654 GC1213              MOVE WS-SDL-Statement-TXT TO WS-Src-Hold-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 1-128 of stmtnt
3657 GC1213              MOVE SPACES TO WS-Src-Detail-Line-TXT
3658 GC1213              MOVE WS-Src-Hold-TXT(129:128) TO WS-SDL-Statement-TXT
3659 GC1213              MOVE WS-Src-Detail-Line-TXT TO F-Listing-135-REC
3660 GC1213              WRITE F-Listing-135-REC BEFORE 1 *> Prints chars 129-256 of stmtnt
3661 GC1213              SUBTRACT 2 FROM WS-Lines-Left-NUM
3662 GC1213          END-EVALUATE
3663 GC1213          ELSE          *> PORTRAIT
3664 GC1213              EVALUATE WS-Src-Lines-NUM
3665 GC1213              WHEN 1 *> Print only chars 1-89 of stmtnt
3666 GC1213                  WRITE F-Listing-96-REC FROM WS-Src-Detail-Line-TXT
3667 GC1213                      BEFORE 1
3668 GC1213                  SUBTRACT 1 FROM WS-Lines-Left-NUM
3669 GC1213              WHEN 2 *> Print only chars 1-89 and 90-178 of text
3670 GC1213                  MOVE WS-SDL-Statement-TXT TO WS-Src-Hold-TXT
3671 GC1213                  WRITE F-Listing-96-REC FROM WS-Src-Detail-Line-TXT
3672 GC1213                      BEFORE 1
3673 GC1213                  MOVE SPACES TO WS-Src-Detail-Line-TXT
3674 GC1213                  MOVE WS-Src-Hold-TXT(90:89) TO WS-SDL-Statement-TXT
3675 GC1213                  WRITE F-Listing-96-REC FROM WS-Src-Detail-Line-TXT
3676 GC1213                      BEFORE 1
3677 GC1213                  SUBTRACT 2 FROM WS-Lines-Left-NUM
3678 GC1213              WHEN 3 *> Print chars 1-89, 90-178 and 179-256 of stmtnt
3679 GC1213                  MOVE WS-SDL-Statement-TXT TO WS-Src-Hold-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(90:89) TO WS-SDL-Statement-TXT
3684 GC1213                  WRITE F-Listing-96-REC FROM WS-Src-Detail-Line-TXT
3685 GC1213                      BEFORE 1
3686 GC1213                  MOVE SPACES TO WS-Src-Detail-Line-TXT
3687 GC1213                  MOVE WS-Src-Hold-TXT(179:78) TO WS-SDL-Statement-TXT
3688 GC1213                  WRITE F-Listing-96-REC FROM WS-Src-Detail-Line-TXT
3689 GC1213                      BEFORE 1
3690 GC1213                  SUBTRACT 3 FROM WS-Lines-Left-NUM
3691 GC1213          END-EVALUATE
3692 GC1213          END-IF
3693 GC1213              MOVE SPACES TO WS-Src-Detail-Line-TXT
3694 GC1213              .
3695
3696          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 | 1318 | PROCEDURE | | | |
| CHECKSRC | L-A1-CHR | 1308 | LINKAGE | 1320 | 1332 | 1335 |
| | | | | 1342 | | |
| CHECKSRC | L-A2-IDENT-DIVISION-BOOL | 1313 | LINKAGE | 1364* | | |
| CHECKSRC | L-A2-LINKAGE-SECTION-BOOL | 1312 | LINKAGE | 1358* | | |
| CHECKSRC | L-A2-Nothing-Special-BOOL | 1314 | LINKAGE | 1319* | | |
| CHECKSRC | L-Argument-1-TXT | 1307 | LINKAGE | 1316 | | |
| CHECKSRC | L-Argument-2-CHR | 1311 | LINKAGE | 1317 | | |
| CHECKSRC | WS-Compressed-Src-TXT | 1294 | WORKING-STORAGE | 1329* | 1352 | 1356 |
| | | | | 1362 | | |
| CHECKSRC | WS-CS-CHR | 1295 | WORKING-STORAGE | 1336* | 1342* | 1351 |
| | | | | 1355 | 1361 | |
| CHECKSRC | WS-I-SUB | 1303 | WORKING-STORAGE | 1330* | 1331 | 1332 |
| | | | | 1335 | 1342 | 1348* |
| | | | | 1349 | 1351 | 1352 |
| | | | | 1355 | 1355 | 1356 |
| | | | | 1361 | 1361 | 1362 |
| CHECKSRC | WS-J-SUB | 1305 | WORKING-STORAGE | 1328* | 1334* | 1336 |
| | | | | 1341* | 1342 | |
| CHECKSRC | WS-RS-Found-SPACE-CHR | 1299 | WORKING-STORAGE | | | |
| CHECKSRC | WS-RS-Not-Skipping-SPACE-BOOL | 1301 | WORKING-STORAGE | 1327* | 1333 | 1340* |
| CHECKSRC | WS-RS-Skipping-SPACE-BOOL | 1300 | WORKING-STORAGE | 1337* | | |
| CHECKSRC | WS-Runtime-Switches-TXT | 1298 | WORKING-STORAGE | | | |

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| GCic | 000-File-Error | 657 | PROCEDURE | | | |
| GCic | 000-Main | 678 | PROCEDURE | | | |
| GCic | 100-Initialization | 702 | PROCEDURE | 679 | | |
| GCic | 200-Let-User-Set-Switches | 816 | PROCEDURE | 682 | | |
| GCic | 210-Run-Compiler | 907 | PROCEDURE | 683 | | |
| GCic | 220-Make-Listing | 1043 | PROCEDURE | 687 | | |
| GCic | 230-Run-Program | 1074 | PROCEDURE | 691 | | |
| GCic | 240-Find-LINKAGE-SECTION | 1176 | PROCEDURE | 750 | | |
| GCic | 250-Autoload-Listing | 1215 | PROCEDURE | 693 | 1034 | 1068 |
| GCic | 900-Terminate | 1261 | PROCEDURE | 695 | 744 | 887 |
| | | | | 1035 | 1169 | |
| GCic | COB-COLOR-BLACK | 181 | [screenio] | 442 | 447 | 537 |
| | | | | 547 | 557 | 562 |
| | | | | 572 | 579 | 594 |
| | | | | 609 | 625 | 632 |
| | | | | 639 | | |
| GCic | COB-COLOR-BLUE | 181 | [screenio] | 525 | | |
| GCic | COB-COLOR-CYAN | 181 | [screenio] | 538 | | |
| GCic | COB-COLOR-GREEN | 181 | [screenio] | 448 | 563 | 610 |
| | | | | 626 | | |
| GCic | COB-COLOR-MAGENTA | 181 | [screenio] | | | |
| GCic | COB-COLOR-RED | 181 | [screenio] | 531 | 595 | |
| GCic | COB-COLOR-WHITE | 181 | [screenio] | 443 | 526 | 532 |
| | | | | 548 | 558 | 573 |
| | | | | 580 | 633 | 640 |
| GCic | COB-COLOR-YELLOW | 181 | [screenio] | | | |
| GCic | COB-SCR-BACK-TAB | 181 | [screenio] | | | |
| GCic | COB-SCR-BACKSPACE | 181 | [screenio] | | | |
| GCic | COB-SCR-DELETE | 181 | [screenio] | | | |
| GCic | COB-SCR-ESC | 181 | [screenio] | 886 | | |
| GCic | COB-SCR-F1 | 181 | [screenio] | 833 | | |
| GCic | COB-SCR-F10 | 181 | [screenio] | | | |
| GCic | COB-SCR-F11 | 181 | [screenio] | | | |
| GCic | COB-SCR-F12 | 181 | [screenio] | 889 | | |
| GCic | COB-SCR-F13 | 181 | [screenio] | | | |
| GCic | COB-SCR-F14 | 181 | [screenio] | | | |
| GCic | COB-SCR-F15 | 181 | [screenio] | | | |
| GCic | COB-SCR-F16 | 181 | [screenio] | | | |
| GCic | COB-SCR-F17 | 181 | [screenio] | | | |
| GCic | COB-SCR-F18 | 181 | [screenio] | | | |
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| GCic | COB-SCR-F20 | 181 | [screenio] | | | |
| GCic | COB-SCR-F21 | 181 | [screenio] | | | |
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| GCic | COB-SCR-F23 | 181 | [screenio] | | | |
| GCic | COB-SCR-F24 | 181 | [screenio] | | | |
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| GCic | COB-SCR-F27 | 181 | [screenio] | | | |
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| GCic | COB-SCR-F3 | 181 | [screenio] | 845 | | |

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| GCic | COB-SCR-F30 | 181 | [screenio] | | |
| GCic | COB-SCR-F31 | 181 | [screenio] | | |
| GCic | COB-SCR-F32 | 181 | [screenio] | | |
| GCic | COB-SCR-F33 | 181 | [screenio] | | |
| GCic | COB-SCR-F34 | 181 | [screenio] | | |
| GCic | COB-SCR-F35 | 181 | [screenio] | | |
| GCic | COB-SCR-F36 | 181 | [screenio] | | |
| GCic | COB-SCR-F37 | 181 | [screenio] | | |
| GCic | COB-SCR-F38 | 181 | [screenio] | | |
| GCic | COB-SCR-F39 | 181 | [screenio] | | |
| GCic | COB-SCR-F4 | 181 | [screenio] | 851 | |
| GCic | COB-SCR-F40 | 181 | [screenio] | | |
| GCic | COB-SCR-F41 | 181 | [screenio] | | |
| GCic | COB-SCR-F42 | 181 | [screenio] | | |
| GCic | COB-SCR-F43 | 181 | [screenio] | | |
| GCic | COB-SCR-F44 | 181 | [screenio] | | |
| GCic | COB-SCR-F45 | 181 | [screenio] | | |
| GCic | COB-SCR-F46 | 181 | [screenio] | | |
| GCic | COB-SCR-F47 | 181 | [screenio] | | |
| GCic | COB-SCR-F48 | 181 | [screenio] | | |
| GCic | COB-SCR-F49 | 181 | [screenio] | | |
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| GCic | COB-SCR-F51 | 181 | [screenio] | | |
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| GCic | COB-SCR-F53 | 181 | [screenio] | | |
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| GCic | COB-SCR-F55 | 181 | [screenio] | | |
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| GCic | WS-Cmd-TXT | 230 | WORKING-STORAGE | 908* 1003* 1008* 1010C 1079* 1086* 1096* 1099* 1106* 1110* 1116* 1121* 1126* 1134* 1142* 1148* 1154* 1159* 1166C 1218* 1222* 1223C 1225* 1229* 1230C 1240* 1243* 1246C 1248C 1250C 1252C 1254C | |
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| GCic | WS-CS-EXECUTE-CHR | 221 | WORKING-STORAGE | 599 689 852 853* 855* | |
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| GCic | WS-CS-LISTING-CHR | 224 | WORKING-STORAGE | 600 685 822* 825* 828* 971 973* 975 | |
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| GCic | WS-RS-Output-File-Avail-BOOL | 346 | WORKING-STORAGE | 690 | 1002* | |
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| LISTING | 310-Get-Token | 2551 | PROCEDURE | 2509 | |
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/home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl

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| | | | | 3584 3586 3587 | |
| | | | | 3589 3591* 3592 | |
| | | | | 3594* 3596* 3597 | |
| | | | | 3598 3627* 3629* | |
| | | | | 3631* 3632 3634* | |
| | | | | 3635 3637* 3639* | |
| | | | | 3640 3642* 3643 | |
| | | | | 3651 3666 3671 | |
| | | | | 3675 3680 3684 | |
| | | | | 3688 | |
| LISTING | F-Listing-FILE | 1433 | FILE | 1418 2412 2420 | |
| LISTING | F-Listing-REC | 1436 | FILE | | |
| LISTING | F-Original-Src-FILE | 1438 | FILE | 1420 3444 3462 | |
| | | | | 3486 | |
| LISTING | F-Original-Src-REC | 1439 | FILE | 3490 | |
| LISTING | F-OS-1-128-TXT | 1440 | FILE | | |
| LISTING | F-OS-129-256-TXT | 1445 | FILE | | |
| LISTING | F-OS-7-CHR | 1442 | FILE | 3495 | |
| LISTING | F-OS-8-72-TXT | 1443 | FILE | 3491 3523 | |
| LISTING | F-Sort-Work-FILE | 1447 | FILE | 1422 2414 3270 | |
| LISTING | F-Sort-Work-REC | 1448 | FILE | 2523* 2525 2560* | |
| | | | | 2562 3040 3043* | |
| | | | | 3046 3088* 3091 | |
| | | | | 3096* 3099 3120 | |
| | | | | 3122* 3125 3208* | |
| | | | | 3215 3220 3225 | |
| | | | | 3229* 3239* 3249 | |
| | | | | 3253* | |
| LISTING | F-SW-Def-Line-NUM | 1453 | FILE | 3213* 3296 3304 | |
| | | | | 3308 3320 3321 | |
| LISTING | F-SW-Prog-ID-TXT | 1449 | FILE | 2415 3209* 3230* | |
| | | | | 3240* 3254* 3281 | |
| | | | | 3287 3292 3301 | |
| | | | | 3313 3317 | |
| LISTING | F-SW-Ref-Flag-CHR | 1456 | FILE | 3045* 3090* 3098* | |
| | | | | 3124* 3235* 3259* | |
| | | | | 3332 | |
| LISTING | F-SW-Ref-Line-NUM | 1455 | FILE | 2417 3214* 3234* | |
| | | | | 3244* 3258* 3330 | |
| LISTING | F-SW-Reference-TXT | 1454 | FILE | 3324 | |
| LISTING | F-SW-Section-TXT | 1452 | FILE | 3212* 3233* 3243* | |
| | | | | 3257* 3303 3319 | |
| LISTING | F-SW-Token-TXT | 1451 | FILE | 3211* 3232* 3242* | |
| | | | | 3256* 3318 | |
| LISTING | F-SW-Token-Uc-TXT | 1450 | FILE | 2416 3210* 3231* | |
| | | | | 3241* 3255* 3282 | |
| | | | | 3293 3295 3307 | |
| LISTING | L-Listing-CD | 2402 | LINKAGE | 2409 2449 2486 | |
| | | | | 3349 3398 3410 | |
| | | | | 3551 3565 3606 | |
| | | | | 3647 | |
| LISTING | L-Listing-Fn-TXT | 2392 | LINKAGE | 1418 2404 | |
| LISTING | L-LPP-NUM | 2398 | LINKAGE | 2407 2487 | |

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| LISTING | L-LPP-Port-NUM | 2400 | LINKAGE | 2408 | 2489 | |
| LISTING | L-OS-Type-CD | 2396 | LINKAGE | 2406 | 2432 | |
| LISTING | L-Src-Fn-TXT | 2394 | LINKAGE | 1420 | 2405 | 2437 |
| | | | | 2437* | 2438 | 2439 |
| | | | | 2443 | 2446 | 2459 |
| | | | | 2461 | 2463 | 2468 |
| LISTING | RETURN-CODE | | PROCEDURE | 2479 | | |
| LISTING | WS-CD-In-DATA-DIV-BOOL | 1473 | WORKING-STORAGE | 2533 | | |
| LISTING | WS-CD-In-ENV-DIV-BOOL | 1472 | WORKING-STORAGE | 2531 | | |
| LISTING | WS-CD-In-IDENT-DIV-BOOL | 1471 | WORKING-STORAGE | 2529 | | |
| LISTING | WS-CD-In-PROC-DIV-BOOL | 1474 | WORKING-STORAGE | 2535 | | |
| LISTING | WS-Copyright-TXT | 1459 | WORKING-STORAGE | 2430* | 2435* | 3415 |
| | | | | 3430 | 3573 | 3593 |
| LISTING | WS-CPI-13-15-TXT | 1480 | WORKING-STORAGE | 2824* | | |
| LISTING | WS-CPI-16-CHR | 1481 | WORKING-STORAGE | 2823 | | |
| LISTING | WS-CS-1-CHR | 1484 | WORKING-STORAGE | 2746* | | |
| LISTING | WS-CS-11-14-TXT | 1487 | WORKING-STORAGE | 2748 | 2749* | |
| LISTING | WS-CS-15-CHR | 1488 | WORKING-STORAGE | 2751* | | |
| LISTING | WS-CS-2-14-TXT | 1485 | WORKING-STORAGE | 2747* | | |
| LISTING | WS-Curr-Char-Is-Punct-BOOL | 1462 | WORKING-STORAGE | 2591 | 2599 | 2604 |
| LISTING | WS-Curr-Char-Is-Quote-BOOL | 1466 | WORKING-STORAGE | 2610 | | |
| LISTING | WS-Curr-Char-Is-X-BOOL | 1467 | WORKING-STORAGE | 2623 | | |
| LISTING | WS-Curr-Char-Is-Z-BOOL | 1468 | WORKING-STORAGE | 2636 | | |
| LISTING | WS-Curr-CHR | 1461 | WORKING-STORAGE | 2581* | 2584 | 2586 |
| | | | | 2592 | 2600 | 2606 |
| | | | | 2613 | | |
| LISTING | WS-Curr-Division-TXT | 1470 | WORKING-STORAGE | 2506* | 2542 | 2593 |
| | | | | 2601 | 2701 | 2817* |
| | | | | 2836* | 2862* | 2918* |
| | | | | 2923* | | |
| LISTING | WS-Curr-Line-NUM | 1476 | WORKING-STORAGE | 2505* | 2565* | 2724* |
| | | | | 2764* | 3213 | 3234 |
| | | | | 3244 | 3258 | 3485* |
| LISTING | WS-Curr-Prog-ID-TXT | 1478 | WORKING-STORAGE | 2495* | 2822* | 3209 |
| | | | | 3230 | 3240 | 3254 |
| LISTING | WS-Curr-Section-TXT | 1483 | WORKING-STORAGE | 2727* | 2732 | 2841* |
| | | | | 2867* | 2913 | 2914* |
| | | | | 3212 | 3233 | 3243 |
| | | | | 3257 | | |
| LISTING | WS-Curr-Verb-TXT | 1490 | WORKING-STORAGE | 2496* | 2520* | 2544* |
| | | | | 2928 | 2937 | |
| LISTING | WS-Delim-TXT | 1492 | WORKING-STORAGE | 2653* | 2655 | 2673* |
| | | | | 2675 | 2678 | |
| LISTING | WS-Dummy-TXT | 1494 | WORKING-STORAGE | 2471* | 2716* | 2745* |
| | | | | 2778* | 2783* | 2784 |
| | | | | 3471* | | |
| LISTING | WS-Expanded-Src-Fn-TXT | 1496 | WORKING-STORAGE | 1416 | 2476* | 2477C |
| LISTING | WS-Filename-TXT | 1498 | WORKING-STORAGE | 2470* | 2473 | 2744* |
| | | | | 2747 | | |
| LISTING | WS-Flags-TXT | 1500 | WORKING-STORAGE | | | |
| LISTING | WS-Formatted-DT | 1503 | WORKING-STORAGE | 2494* | 3354 | 3377 |
| | | | | 3611 | 3630 | |
| LISTING | WS-GI-Prog-ID-TXT | 1506 | WORKING-STORAGE | 3281 | 3287 | 3292* |

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| LISTING | WS-GI-Token-TXT | 1507 | WORKING-STORAGE | 3282 3307 | 3293* | 3295 |
| LISTING | WS-Group-Indicators-TXT | 1505 | WORKING-STORAGE | 3265* | | |
| LISTING | WS-Held-Reference-TXT | 1509 | WORKING-STORAGE | 2497* | 2522 | 2523 |
| | | | | 2524* | 2559 | 2560 |
| | | | | 2561* | 3040* | 3042 |
| | | | | 3043 | 3044* | 3081* |
| | | | | 3087 | 3088 | 3089* |
| | | | | 3095 | 3096 | 3097* |
| | | | | 3120* | 3122 | 3123* |
| LISTING | WS-I-SUB | 1511 | WORKING-STORAGE | 2438* | 2439 | 2440 |
| | | | | 2442 | 2445* | 2446 |
| | | | | 2461* | 2463 | 2464 |
| | | | | 2465 | 2468 | 2721* |
| | | | | 2724 | 2735* | 2737 |
| | | | | 2738 | 2739 | 2742 |
| | | | | 3266* | 3300* | 3312* |
| | | | | 3325* | 3326 | 3328* |
| | | | | 3331 | 3333 | 3406* |
| LISTING | WS-J-SUB | 1513 | WORKING-STORAGE | 2462* | 2466* | 2468 |
| | | | | 2736* | 2740* | 2742 |
| LISTING | WS-Lines-Left-NUM | 1515 | WORKING-STORAGE | 3267* | 3276 | 3290 |
| | | | | 3342 | 3396* | 3407 |
| | | | | 3451 | 3498 | 3502 |
| | | | | 3529* | 3563 | 3645* |
| | | | | 3652 | 3661 | 3668 |
| | | | | 3677 | 3690 | |
| LISTING | WS-Lines-Per-Page-Env-TXT | 1519 | WORKING-STORAGE | 2451* | 2455* | 2482 |
| | | | | 2483 | | |
| LISTING | WS-Lines-Per-Page-NUM | 1517 | WORKING-STORAGE | 2484* | 2487* | 2489* |
| | | | | 2492 | 3396 | 3645 |
| LISTING | WS-Main-Module-Name-TXT | 1521 | WORKING-STORAGE | 2443* | 2447* | 2723 |
| | | | | 3473 | | |
| LISTING | WS-Next-Char-Is-Quote-BOOL | 1524 | WORKING-STORAGE | 2623 | 2636 | |
| LISTING | WS-Next-CHR | 1523 | WORKING-STORAGE | 2583* | 2626 | 2639 |
| LISTING | WS-OS-Type-FILLER-TXT | 1526 | WORKING-STORAGE | 1532 | | |
| LISTING | WS-OS-Type-TXT | 1533 | WORKING-STORAGE | 2432 | | |
| LISTING | WS-OS-Types-TXT | 1532 | WORKING-STORAGE | | | |
| LISTING | WS-Page-No-TXT | 1538 | WORKING-STORAGE | 3348C | 3363 | 3386 |
| | | | | 3417 | 3432 | 3575 |
| | | | | 3595 | 3605C | 3619 |
| | | | | 3638 | | |
| LISTING | WS-Page-NUM | 1536 | WORKING-STORAGE | 2428* | 3344* | 3346 |
| | | | | 3564 | 3601* | 3603 |
| LISTING | WS-PN-Literal-TXT | 1539 | WORKING-STORAGE | 3345* | 3602* | |
| LISTING | WS-PN-Page-NUM | 1540 | WORKING-STORAGE | 3346* | 3347C | 3603* |
| | | | | 3604C | | |
| LISTING | WS-Program-Path-TXT | 1542 | WORKING-STORAGE | 2459* | 2460C | 3357 |
| | | | | 3380 | 3614 | 3633 |
| LISTING | WS-Reserved-Word-Table-TXT | 2299 | WORKING-STORAGE | | | |
| LISTING | WS-Reserved-Word-TXT | 2300 | WORKING-STORAGE | 2688 | | |
| LISTING | WS-Reserved-Words-TXT | 1544 | WORKING-STORAGE | 2299 | | |
| LISTING | WS-RS-Duplicate-CHR | 2308 | WORKING-STORAGE | 3268* | 3283* | 3298* |

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| LISTING | WS-RS-In-Copybook-BOOL | 2311 | WORKING-STORAGE | 3309 3310* 2730* 3479* | |
| LISTING | WS-RS-In-Main-Module-BOOL | 2310 | WORKING-STORAGE | 2725* 2763 3474* 3484 | |
| LISTING | WS-RS-In-Which-Pgm-CHR | 2309 | WORKING-STORAGE | | |
| LISTING | WS-RS-Last-Token-Ended-Sent-CHR | 2312 | WORKING-STORAGE | 2554* 2700 | |
| LISTING | WS-RS-Processing-PICTURE-CHR | 2313 | WORKING-STORAGE | 2649 2663* 2872* | |
| LISTING | WS-RS-Token-Ended-Sentence-CHR | 2314 | WORKING-STORAGE | 2541 2553 2555* 2588* 2617* 2630* 2643* 2656* 2676* 2507* 2692* 2814* | |
| LISTING | WS-RS-Verb-Has-Been-Found-CHR | 2315 | WORKING-STORAGE | | |
| LISTING | WS-Runtime-Switches | 2307 | WORKING-STORAGE | | |
| LISTING | WS-RW-IDX | 2303 | WORKING-STORAGE | 2689 2690 | |
| LISTING | WS-RW-Type-CD | 2304 | WORKING-STORAGE | 2690 | |
| LISTING | WS-RW-Word-TXT | 2305 | WORKING-STORAGE | 2302 2689 | |
| LISTING | WS-Saved-Section-TXT | 2317 | WORKING-STORAGE | 2726 2727 2731 2732* | |
| LISTING | WS-SDL-Line-NUM | 2324 | WORKING-STORAGE | 3489* | |
| LISTING | WS-SDL-Statement-TXT | 2326 | WORKING-STORAGE | 3490* 3522* 3552 3556 3558 3654 3658* 3670 3674* 3679 3683* 3687* | |
| LISTING | WS-Src-Dashes-TXT | 2319 | WORKING-STORAGE | 3622 3641 | |
| LISTING | WS-Src-Detail-Line-TXT | 2323 | WORKING-STORAGE | 3449* 3488* 3496* 3500* 3505* 3509* 3513* 3520* 3532* 3536* 3540* 3650 3655 3657* 3659 3666 3671 3673* 3675 3680 3682* 3684 3686* 3688 3693* | |
| LISTING | WS-Src-Hold-TXT | 2328 | WORKING-STORAGE | 3654* 3658 3670* 3674 3679* 3683 3687 | |
| LISTING | WS-Src-Line-NUM | 2330 | WORKING-STORAGE | 3446* 3475 3487* 3489 | |
| LISTING | WS-Src-Lines-NUM | 2332 | WORKING-STORAGE | 3550* 3553* 3557* 3559* 3563 3566 3580 3648 3664 | |
| LISTING | WS-Src-SUB | 2334 | WORKING-STORAGE | 2503* 2556 2557 2576* 2580 2582 2585* 2594* 2605* 2611* 2615* 2616 2618* 2624* 2628* 2629 2631* 2637* 2641* 2642 2644* 2654* 2657* 2674* 2679 2754* 2759* 2761* | |
| LISTING | WS-Suppress-FF-CHR | 1501 | WORKING-STORAGE | 2429* 3277* 3419 3434 | |
| LISTING | WS-Tally-QTY | 2336 | WORKING-STORAGE | 2793* 2795* 2796 | |

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| LISTING | WS-Temp-10-Chars-TXT | 2338 | WORKING-STORAGE | 2800* 2801 2714* 2718 2719* 2721 3469* | | |
| LISTING | WS-Temp-256-Chars-TXT | 2348 | WORKING-STORAGE | 2478C 2715* 2722 2734 2737 2742 3470* 3472 | | |
| LISTING | WS-Temp-32-Chars-1-TXT | 2340 | WORKING-STORAGE | 2769* 2772 2779 | | |
| LISTING | WS-Temp-32-Chars-2-TXT | 2342 | WORKING-STORAGE | 2776* 2781* 2787 2788* 2804 | | |
| LISTING | WS-Temp-32-Chars-3-TXT | 2344 | WORKING-STORAGE | 2777* 2782* 2790 2791* 2804 | | |
| LISTING | WS-Temp-65-Chars-TXT | 2346 | WORKING-STORAGE | 3492* 3499 3504 3508 3512 3524* 3528 3531 3535 3539 | | |
| LISTING | WS-Today-DT | 2350 | WORKING-STORAGE | 2493* 2494 | | |
| LISTING | WS-Token-Curr-TXT | 2352 | WORKING-STORAGE | 2513 2517* 2586* 2595* 2606* 2614* 2627* 2640* 2652* 2659 2672* 2682 2684* 2702* 2769 2816 2822 2835 2840 2861 2866 2870 2904 2922 3211 3232 3242 3256 | | |
| LISTING | WS-Token-Curr-Uc-TXT | 2354 | WORKING-STORAGE | 2514* 2517 2520 2539 2916 3210 3231 3241 3255 | | |
| LISTING | WS-Token-Prev-TXT | 2356 | WORKING-STORAGE | 2521* 2539* 2543* 2602* 2817 2820 2821* 2836 2841 2845 2862 2867 2876 2877* 2881 2884* 2887* 2890* 2893* 2896* 2899* 2902* 2917 2923 2927 2931* 2984 2987* 2994 3005 3008* 3017 3028 3037 3065 3078 3082* 3085* 3093* 3101* 3108 3117 3133 3136* 3139* 3146 3155 3166 3181 3184* 3191 | | |
| LISTING | WS-Token-Search-TXT | 2358 | WORKING-STORAGE | 2682* 2683 2689 | | |
| LISTING | WS-Token-Type-CD | 2360 | WORKING-STORAGE | 2587* 2596* 2607* 2660* 2664* 2685* 2690* 2703* | | |
| LISTING | WS-TT-Token-Is-Argtype-BOOL | 2361 | WORKING-STORAGE | 2811 2831 2857 | | |
| LISTING | WS-TT-Token-Is-EOF-BOOL | 2362 | WORKING-STORAGE | 2510 2564* | | |
| LISTING | WS-TT-Token-Is-Function-BOOL | 2363 | WORKING-STORAGE | 2851 | | |

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| LISTING | WS-TT-Token-Is-Identifier-BOOL | 2364 | WORKING-STORAGE | 2697* 2926 | 2844 2934 | 2880 |
| LISTING | WS-TT-Token-Is-Keyword-BOOL | 2365 | WORKING-STORAGE | 2515 2834 2865 | 2538 2839 2871 | 2815 2860 2921 |
| LISTING | WS-TT-Token-Is-Lit-Alpha-BOOL | 2366 | WORKING-STORAGE | 2620* | 2646* | |
| LISTING | WS-TT-Token-Is-Lit-Number-BOOL | 2367 | WORKING-STORAGE | 2633* 2805* | 2699 | 2773* |
| LISTING | WS-TT-Token-Is-Reserved-Wd-BOOL | 2369 | WORKING-STORAGE | 2516 2858* | 2812* 2875 | 2832* |
| LISTING | WS-TT-Token-Is-Verb-BOOL | 2368 | WORKING-STORAGE | 2519 | 2691 | |
| LISTING | WS-Usernames-QTY | 2371 | WORKING-STORAGE | 2504* | | |
| LISTING | WS-Version-TXT | 2373 | WORKING-STORAGE | 2436* 3607 | 3350 3626 | 3373 |
| LISTING | WS-XDL-Def-Line-NUM | 2380 | WORKING-STORAGE | 3304* | 3321* | |
| LISTING | WS-XDL-Prog-ID-TXT | 2376 | WORKING-STORAGE | 3301* | 3313* | 3317* |
| LISTING | WS-XDL-Ref-Flag-CHR | 2386 | WORKING-STORAGE | 3333* | | |
| LISTING | WS-XDL-Ref-Line-NUM | 2385 | WORKING-STORAGE | 3331* | | |
| LISTING | WS-XDL-Reference-TXT | 2384 | WORKING-STORAGE | | | |
| LISTING | WS-XDL-Section-TXT | 2382 | WORKING-STORAGE | 3303* | 3319* | |
| LISTING | WS-XDL-Token-TXT | 2378 | WORKING-STORAGE | 3302* | 3314* | 3318* |
| LISTING | WS-Xref-Detail-Line-TXT | 2375 | WORKING-STORAGE | 3264* 3284 3316 3402 | 3271 3288* 3336 3405* | 3274* 3297 3399 |
| LISTING | WS-Xref-Lines-Per-Rec-NUM | 2389 | WORKING-STORAGE | 2450* | 2454* | 3326 |

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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.

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Line Statement

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```

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

```

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=====
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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=====
  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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=====
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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| | | | | 401 | 406 | 411 |
| STREAMIO | 040-Check-WRITE-SCB-Return-CD | 444 | PROCEDURE | 424 | 570 | |
| STREAMIO | 050-Check-READ-SCB-Return-CD | 455 | PROCEDURE | 582 | 594 | |
| STREAMIO | 060-Identify-TEMP | 466 | PROCEDURE | 493 | 508 | |
| STREAMIO | 099-ERROR-Return | 478 | PROCEDURE | 417 | 428 | 435 |
| | | | | 441 | 447 | 451 |
| | | | | 458 | 489 | 535 |
| | | | | 544 | 548 | 557 |
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| | | | | 581C | 588* | 593C |
| | | | | 599 | 600* | 640 |
| | | | | 652* | 655* | |
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| STREAMIO | L-SCB-Delimiter-Mode-CD | 379 | [STREAMIOcb] | | | |
| STREAMIO | L-SCB-Error-Routine-NUM | 379 | [STREAMIOcb] | 479 | | |
| STREAMIO | L-SCB-Error-Routine-PTR | 379 | [STREAMIOcb] | 379 | 480C | |
| STREAMIO | L-SCB-Filename-TXT | 379 | [STREAMIOcb] | 390C | 487 | 492 |
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| | | | | 541C | 554C | 560* |
| | | | | 565C | 577C | 589C |
| | | | | 607C | | |
| STREAMIO | L-SCB-MODE-Both-BOOL | 379 | [STREAMIOcb] | 486 | 531 | |
| STREAMIO | L-SCB-Mode-CD | 379 | [STREAMIOcb] | | | |
| STREAMIO | L-SCB-MODE-Input-BOOL | 379 | [STREAMIOcb] | 486 | 527 | |
| STREAMIO | L-SCB-MODE-Output-BOOL | 379 | [STREAMIOcb] | 529 | | |
| STREAMIO | L-SCB-Offset-NUM | 379 | [STREAMIOcb] | 420C | 425* | 551* |
| | | | | 566C | 571* | 578C |
| | | | | 583* | 590C | 602* |

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| PROGRAM-ID | Identifier/Register/Function | Defn | Where Defined | References | Page: 16 |
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| STREAMIO | L-SCB-Return-CD | 379 | [STREAMIOcb] | 608C 623* 629* 638* 384* 416* 427* 434* 440* 446* 450* 453* 457* 461* 464* 488* 534* 543* 547* 550* 556* 559* 603* 613* | |
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