GnuCOBOL Sample Programs

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This manual documents GnuCOBOL 2.2 Final, 7Sept2017 build.

Table of Contents

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 travelling 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                                                                 Page: 1
====== =====================================================================================
    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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```

```
GNU COBOL 2.1 23NOV2013 Source Listing                                        2014/03/27
                                 C:/Users/tda010/Documents/Programs/Samples/COBDUMP.cbl
Line    Statement                                                                Page: 2
======  ================================================================================
   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)

==

```
GNU COBOL 2.1 23NOV2013 Source Listing                                         2014/03/27
                                  C:/Users/tda010/Documents/Programs/Samples/COBDUMP.cbl
Line   Statement                                                                  Page: 4
====== =================================================================================
   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                              2014/03/27
                                  C:/Users/tda010/Documents/Programs/Samples/COBDUMP.cbl
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.

```
GNU COBOL 2.1 23NOV2013 Source Listing                                    2014/03/27
                                    C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line    Statement                                                            Page: 1
====== ================================================================================
    1        >>SOURCE FREE
    2 IDENTIFICATION DIVISION.
    3 PROGRAM-ID. colors.
    4 DATA DIVISION.
    5 SCREEN SECTION.
    6 01 S-COLORTST-SCR BACKGROUND-COLOR 0 FOREGROUND-COLOR 7 BLANK SCREEN.
    7 05 LINE 01.
    8 10 COL 1 VALUE ' LOWLIGHT  -------- HIGHLIGHT  LOWLIGHT  -------- HIGHLIGHT'.
    9 05 LINE + 1.
   10 10 COL 1 VALUE ' --------  --------  --------  --------  --------  --------'.
   11 05 LINE + 1.
   12 10 COL 1 VALUE ' --------  --------  --------   REVERSE   REVERSE   REVERSE'.
   13 05 LINE + 1.
   14 10 COL 1 VALUE ' 01234567  01234567  01234567  01234567  01234567  01234567'.
   15 05 LINE + 1.
   16 10 COL 1 VALUE '0         0         0         0         0         0        '.
   17 05 LINE + 1.
   18 10 COL 1 VALUE '1         1         1         1         1         1        '.
   19 05 LINE + 1.
   20 10 COL 1 VALUE '2         2         2         2         2         2        '.
   21 05 LINE + 1.
   22 10 COL 1 VALUE '3    1    3    2    3    3    3    4    3    5    3    6    '.
   23 05 LINE + 1.
   24 10 COL 1 VALUE '4         4         4         4         4         4        '.
   25 05 LINE + 1.
   26 10 COL 1 VALUE '5         5         5         5         5         5        '.
   27 05 LINE + 1.
   28 10 COL 1 VALUE '6         6         6         6         6         6        '.
   29 05 LINE + 1.
   30 10 COL 1 VALUE '7         7         7         7         7         7        '.
   31 05 LINE + 1.
   32 10 COL 1 VALUE ' LOWLIGHT  -------- HIGHLIGHT  LOWLIGHT  -------- HIGHLIGHT'.
   33 05 LINE + 1.
   34 10 COL 1 VALUE '   BLINK     BLINK     BLINK     BLINK     BLINK     BLINK'.
   35 05 LINE + 1.
   36 10 COL 1 VALUE ' --------  --------  --------   REVERSE   REVERSE   REVERSE'.
   37 05 LINE + 1.
   38 10 COL 1 VALUE ' 01234567  01234567  01234567  01234567  01234567  01234567'.
   39 05 LINE + 1.
   40 10 COL 1 VALUE '0         0         0         0         0         0        '.
   41 05 LINE + 1.
   42 10 COL 1 VALUE '1         1         1         1         1         1        '.
   43 05 LINE + 1.
   44 10 COL 1 VALUE '2         2         2         2         2         2        '.
   45 05 LINE + 1.
   46 10 COL 1 VALUE '3    7    3    8    3    9    3    10   3    11   3    12   '.
   47 05 LINE + 1.
   48 10 COL 1 VALUE '4         4         4         4         4         4        '.
   49 05 LINE + 1.

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```

```
GNU COBOL 2.1 23NOV2013 Source Listing                                  2014/03/27
                                C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line    Statement                                                          Page: 2
====== ===========================================================================
   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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```
GNU COBOL 2.1 23NOV2013 Source Listing                                      2014/03/27
                                      C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line    Statement                                                              Page: 3
====== =====================================================================================
    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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GNU COBOL 2.1 23NOV2013 Source Listing                                           2014/03/27
                                     C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line    Statement                                                                   Page: 4
====== =====================================================================================
   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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GNU COBOL 2.1 23NOV2013 Source Listing                                   2014/03/27
                              C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line    Statement                                                           Page: 5
====== =============================================================================
   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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GNU COBOL 2.1 23NOV2013 Source Listing                                    2014/03/27
                                    C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line    Statement                                                               Page: 6
====== ==============================================================================
  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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GNU COBOL 2.1 23NOV2013 Source Listing                               2014/03/27
                               C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line    Statement                                                       Page: 7
======  ==================================================================================
   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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GNU COBOL 2.1 23NOV2013 Source Listing                                    2014/03/27
                                       C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line    Statement                                                                 Page: 8
======  ====================================================================================
  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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                                   C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line    Statement                                                             Page: 9
======  ==============================================================================
  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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                             C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line    Statement                                                          Page: 10
======  ===========================================================================
   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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                             C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line    Statement                                                       Page: 11
======= ========================================================================
   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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                                 C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line    Statement                                                             Page: 12
====== =================================================================================
   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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GNU COBOL 2.1 23NOV2013 Source Listing                              2014/03/27
                                 C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line    Statement                                                      Page: 13
====== ========================================================================================
   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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GNU COBOL 2.1 23NOV2013 Source Listing                                   2014/03/27
                                   C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line    Statement                                                            Page: 14
======  ================================================================================
   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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GNU COBOL 2.1 23NOV2013 Source Listing                              2014/03/27
                              C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line    Statement                                                       Page: 15
====== =========================================================================
   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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GNU COBOL 2.1 23NOV2013 Source Listing                                  2014/03/27
                                 C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line    Statement                                                         Page: 16
======  =========================================================================
   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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GNU COBOL 2.1 23NOV2013 Source Listing                                      2014/03/27
                                     C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line    Statement                                                             Page: 17
====== ================================================================================
  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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```
GNU COBOL 2.1 23NOV2013 Source Listing                                      2014/03/27
                                    C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line   Statement                                                            Page: 18
====== ===================================================================================
   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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```
GNU COBOL 2.1 23NOV2013 Source Listing                                    2014/03/27
                                    C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line    Statement                                                            Page: 19
====== =====================================================================================
   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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```

```
GNU COBOL 2.1 23NOV2013 Source Listing                                2014/03/27
                                  C:/Users/tda010/Documents/Programs/Samples/colors.cbl
Line    Statement                                                       Page: 20
====== =========================================================================
   932 000-Main SECTION.
   933  DISPLAY S-COLORTST-SCR
   934  STOP RUN
   935  .
```

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```

```
GNU COBOL 2.1 23NOV2013 Cross-Reference Listing                            2014/03/27
                                  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
```

```
============================================================================================
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```

4. DAY-FROM-DATE

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

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

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

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

- Coding a GnuCOBOL user-defined function

- Using the `"ANY LENGTH"` data item attribute

- Using the `"RETURNING"` option in a subprogram

- Using the `"DATE-OF-INTEGER"` intrinsic function

- Using the `"C$PARAMSIZE"` built-in system subroutine

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

```
GNU COBOL 2.1 23NOV2013 Source Listing                              2014/03/27
                        C:/Users/tda010/Documents/Programs/Samples/DAY-FROM-DATE.cbl
Line   Statement                                                       Page: 1
====== ========================================================================================
    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 yyyymmdd **
   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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```

```
GNU COBOL 2.1 23NOV2013 Source Listing                                        2014/03/27
                            C:/Users/tda010/Documents/Programs/Samples/DAY-FROM-DATE.cbl
Line    Statement                                                                 Page: 2
======  ================================================================================
   50             EVALUATE RETURN-CODE
   51             WHEN 7
   52                 IF TEST-DAY-YYYYDDD(L-Input-Date-DT) > 0
   53                     MOVE 0 TO L-Output-Day-NUM
   54                     GOBACK
   55                 END-IF
   56                 MOVE DATE-OF-INTEGER(INTEGER-OF-DAY(L-Input-Date-DT))
   57                   TO WS-Input-Date-DT
   58             WHEN 8
   59                 IF TEST-DATE-YYYYMMDD(L-Input-Date-DT) > 0
   60                     MOVE 0 TO L-Output-Day-NUM
   61                     GOBACK
   62                 END-IF
   63                 MOVE L-Input-Date-DT TO WS-Input-Date-DT
   64             WHEN OTHER
   65                 MOVE 0 TO L-Output-Day-NUM
   66                 GOBACK
   67             END-EVALUATE
   68         *> IF january OR february
   69         *>    y = year - 1
   70         *>    m = month + 10
   71         *> ELSE
   72         *>    y = year
   73         *>    m = month - 2
   74         *> END-IF
   75         *> For Gregorian calendar:
   76         *>    result = (day + y + y/4 - y/100 + y/400 + (31*m)/12) mod 7
   77         *> (All divisions are integer divisions, discarding any remainder)
   78             IF WS-ID-MM-NUM = 1 OR 2
   79                 SUBTRACT 1 FROM WS-ID-YYYY-NUM GIVING WS-Y-NUM
   80                 ADD WS-ID-MM-NUM, 10 GIVING WS-M-NUM
   81             ELSE
   82                 MOVE WS-ID-YYYY-NUM TO WS-Y-NUM
   83                 SUBTRACT 2 FROM WS-ID-MM-NUM GIVING WS-M-NUM
   84             END-IF
   85             COMPUTE L-Output-Day-NUM =
   86                 WS-ID-DD-NUM
   87               + WS-Y-NUM
   88               + INTEGER(WS-Y-NUM/4)
   89               - INTEGER(WS-Y-NUM/100)
   90               + INTEGER(WS-Y-NUM/400)
   91               + INTEGER((31*WS-M-NUM)/12)
   92             DIVIDE L-Output-Day-NUM BY 7
   93                 GIVING WS-Temp-NUM
   94                 REMAINDER L-Output-Day-NUM
   95             ADD 1 TO L-Output-Day-NUM
   96             GOBACK
   97             .
   98

========================================================================================
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```

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

```
=================================================================================================
GCic for OSX Copyright (C) 2009-2014, Gary L. Cutler, GPL                            Page: 3
```

5. GCic

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

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

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

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

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

- Creating a GnuCOBOL compilation unit that consists of multiple programs

- Using CDF conditional compilation facilities

- Using the "SCREEN SECTION" and associated "ACCEPT" and "DISPLAY" statements

- Using "DECLARATIVES" to trap file I/O errors

- Using "FILE-STATUS"

- Using the "REPLACING" clause on a CDF "COPY" statement

- Using the following statements:

    o "ACCEPT FROM COMMAND-LINE" statement

    o "ACCEPT FROM DATE/TIME" statement

    o "ACCEPT FROM ENVIRONMENT" statement

    o "EXIT PERFORM" statement

    o "EXIT SECTION" statement

    o "INSPECT" statement

    o "PERFORM FOREVER" statement

- o `"SEARCH ALL"` statement

- o `"SET ENVIRONMENT"` statement

- o `"SORT"` statement

- o `"STRING"` statement

- o `"UNSTRING"` statement

- Using the following built-in subroutines:

  - o `"C$JUSTIFY"` built-in system subroutine

  - o `"C$SLEEP"` built-in system subroutine

  - o `"CBL_CHANGE_DIR"` built-in system subroutine

  - o `"CBL_CHECK_FILE_EXIST"` built-in system subroutine

  - o `"CBL_DELETE_FILE"` built-in system subroutine

  - o `"SYSTEM"` built-in system subroutine

- Using the following intrinsic functions:

  - o `"CONCATENATE"` intrinsic function

  - o `"LENGTH"` intrinsic function

  - o `"LOWER-CASE"` intrinsic function

  - o `"NUMVAL"` intrinsic function

  - o `"TRIM"` intrinsic function

  - o `"UPPER-CASE"` intrinsic function

- Using the `"COB-CRT-STATUS,Special Registers"` special register

- Programmatically producing a report destined for either portrait or landscape printing

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

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

```
GNUCOBOL 2.2 20JUL2017  Source Listing                                       2017/07/22
                                             /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                                  Page: 1
====== =====================================================================================
    1        >>SOURCE FORMAT IS FIXED
    2        *> CONFIGURATION SETTINGS: Set these switches before compiling:
    3        *>
    4        *> LINEDRAW Set to:
    5        *>    0   To use spaces (no lines)
    6        *>    1   To use the line-drawing characterset (PC codepage 437)
    7        *>    2   To use conventional ASCII characters (+, -, |)
    8        *>
    9        *>          OSX USERS - To use the linedrawing characterset,
   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
```

====== ==

```
   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 '2> 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        **
```

====== ===
```
   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          **
```

```
GNUCOBOL 2.2 20JUL2017  Source Listing                                    2017/07/22
                                         /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                             Page: 4
====== =================================================================================
   150      *>  VBC   intrinstics=ALL. Changed mod detail inits for Gary   **
   151      *>        from GCL to GLC.                                      **
   152      *>        Update version printed to 2.2 20JUL2017.             **
   153      *>        Should really get this from the compiler if avail?   **
   154      *>***********************************************************
   155      *>
   156       ENVIRONMENT DIVISION.
   157       CONFIGURATION SECTION.
   158       REPOSITORY.
   159           FUNCTION ALL INTRINSIC.
   160       INPUT-OUTPUT SECTION.
   161       FILE-CONTROL.
   162 GC1010    SELECT F-Cobc-Output-FILE   ASSIGN TO WS-Listing-Filename-TXT
   163                                        ORGANIZATION IS LINE SEQUENTIAL.
   164
   165           SELECT F-Source-Code-FILE   ASSIGN TO WS-File-Name-TXT
   166                                        ORGANIZATION IS LINE SEQUENTIAL
   167                                        FILE STATUS IS WS-FSM-Status-CD.
```

```
GNUCOBOL 2.2 20JUL2017  Source Listing                                    2017/07/22
                                         /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line   Statement                                                             Page: 5
====== =================================================================================

   169        DATA DIVISION.
   170        FILE SECTION.
   171        FD  F-Cobc-Output-FILE.
   172        01  F-Cobc-Output-REC                 PIC X(256).
   173
   174        FD  F-Source-Code-FILE.
   175 GC0313 01  F-Source-Code-REC                 PIC X(256).
   176
   177        WORKING-STORAGE SECTION.
   178        COPY screenio.
        78 COB-COLOR-BLACK VALUE 0.
        78 COB-COLOR-BLUE VALUE 1.
        78 COB-COLOR-GREEN VALUE 2.
        78 COB-COLOR-CYAN VALUE 3.
        78 COB-COLOR-RED VALUE 4.
        78 COB-COLOR-MAGENTA VALUE 5.
        78 COB-COLOR-YELLOW VALUE 6.
        78 COB-COLOR-WHITE VALUE 7.
        78 COB-SCR-OK VALUE 0.
        78 COB-SCR-F1 VALUE 1001.
        78 COB-SCR-F2 VALUE 1002.
        78 COB-SCR-F3 VALUE 1003.
        78 COB-SCR-F4 VALUE 1004.
        78 COB-SCR-F5 VALUE 1005.
        78 COB-SCR-F6 VALUE 1006.
        78 COB-SCR-F7 VALUE 1007.
        78 COB-SCR-F8 VALUE 1008.
        78 COB-SCR-F9 VALUE 1009.
        78 COB-SCR-F10 VALUE 1010.
        78 COB-SCR-F11 VALUE 1011.
        78 COB-SCR-F12 VALUE 1012.
        78 COB-SCR-F13 VALUE 1013.
        78 COB-SCR-F14 VALUE 1014.
        78 COB-SCR-F15 VALUE 1015.
        78 COB-SCR-F16 VALUE 1016.
        78 COB-SCR-F17 VALUE 1017.
        78 COB-SCR-F18 VALUE 1018.
        78 COB-SCR-F19 VALUE 1019.
        78 COB-SCR-F20 VALUE 1020.
        78 COB-SCR-F21 VALUE 1021.
        78 COB-SCR-F22 VALUE 1022.
        78 COB-SCR-F23 VALUE 1023.
        78 COB-SCR-F24 VALUE 1024.
        78 COB-SCR-F25 VALUE 1025.
        78 COB-SCR-F26 VALUE 1026.
        78 COB-SCR-F27 VALUE 1027.
        78 COB-SCR-F28 VALUE 1028.
        78 COB-SCR-F29 VALUE 1029.
        78 COB-SCR-F30 VALUE 1030.
        78 COB-SCR-F31 VALUE 1031.
        78 COB-SCR-F32 VALUE 1032.
        78 COB-SCR-F33 VALUE 1033.
```

```
GNUCOBOL 2.2 20JUL2017  Source Listing                                   2017/07/22
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                          Page: 6
====== ========================================================================================
        78 COB-SCR-F34 VALUE 1034.
        78 COB-SCR-F35 VALUE 1035.
        78 COB-SCR-F36 VALUE 1036.
        78 COB-SCR-F37 VALUE 1037.
        78 COB-SCR-F38 VALUE 1038.
        78 COB-SCR-F39 VALUE 1039.
        78 COB-SCR-F40 VALUE 1040.
        78 COB-SCR-F41 VALUE 1041.
        78 COB-SCR-F42 VALUE 1042.
        78 COB-SCR-F43 VALUE 1043.
        78 COB-SCR-F44 VALUE 1044.
        78 COB-SCR-F45 VALUE 1045.
        78 COB-SCR-F46 VALUE 1046.
        78 COB-SCR-F47 VALUE 1047.
        78 COB-SCR-F48 VALUE 1048.
        78 COB-SCR-F49 VALUE 1049.
        78 COB-SCR-F50 VALUE 1050.
        78 COB-SCR-F51 VALUE 1051.
        78 COB-SCR-F52 VALUE 1052.
        78 COB-SCR-F53 VALUE 1053.
        78 COB-SCR-F54 VALUE 1054.
        78 COB-SCR-F55 VALUE 1055.
        78 COB-SCR-F56 VALUE 1056.
        78 COB-SCR-F57 VALUE 1057.
        78 COB-SCR-F58 VALUE 1058.
        78 COB-SCR-F59 VALUE 1059.
        78 COB-SCR-F60 VALUE 1060.
        78 COB-SCR-F61 VALUE 1061.
        78 COB-SCR-F62 VALUE 1062.
        78 COB-SCR-F63 VALUE 1063.
        78 COB-SCR-F64 VALUE 1064.
        78 COB-SCR-PAGE_UP VALUE 2001.
        78 COB-SCR-PAGE_DOWN VALUE 2002.
        78 COB-SCR-KEY-UP VALUE 2003.
        78 COB-SCR-KEY-DOWN VALUE 2004.
        78 COB-SCR-ESC VALUE 2005.
        78 COB-SCR-PRINT VALUE 2006.
        78 COB-SCR-NO-FIELD VALUE 8000.
        78 COB-SCR-TIME-OUT VALUE 8001.
        78 COB-SCR-FATAL VALUE 9000.
        78 COB-SCR-MAX-FIELD VALUE 9001.
   179
   180 GC0712 01  WS-Compilation-Switches-TXT.
   181 GC0712     05 WS-CS-Args-TXT VALUE SPACES.
   182 GC0712         10 WS-CS-Arg-H1-TXT             PIC X(76).
   183 GC0712         10 WS-CS-Arg-H2-TXT             PIC X(76).
   184 GC0712     05 WS-CS-Filenames-TXT.
   185 GC0712         10 VALUE 'BS2000'               PIC X(9).
   186 GC0712         10 VALUE 'COBOL85'              PIC X(9).
   187 GC0712         10 VALUE 'COBOL2002'            PIC X(9).
   188 GC0712         10 VALUE 'DEFAULT'              PIC X(9).
   189 GC0712         10 VALUE 'IBM'                  PIC X(9).
```

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

==

```
GNUCOBOL 2.2 20JUL2017  Source Listing                                          2017/07/22
                                              /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                                   Page: 7
====== ===================================================================================
   191 GC0712        10 VALUE 'MVS'                    PIC X(9).
   192 GC0712     05 WS-CS-Filenames-Table-TXT REDEFINES WS-CS-Filenames-TXT.
   193 GC0712        10 WS-CS-Filename-TXT             OCCURS 7 TIMES
   194 GC0712                                          PIC X(9).
   195 GC0712 >>IF F12 < 1
   196 GC0712     05 WS-CS-Config-NUM     VALUE 4      PIC 9(1).
   197 GC0712 >>ELIF F12 > 7
   198 GC0712     05 WS-CS-Config-NUM     VALUE 4      PIC 9(1).
   199 GC0712 >>ELSE
   200 GC0712     05 WS-CS-Config-NUM     VALUE F12    PIC 9(1).
   201 GC0712 >>END-IF
   202 GC0712     05 WS-CS-Extra-TXT VALUE SPACES.
   203 GC0712        10 WS-CS-Extra-H1-TXT             PIC X(76).
   204 GC0712        10 WS-CS-Extra-H2-TXT             PIC X(76).
   205 GC0712     05 WS-CS-Switch-Defaults-TXT.
   206 GC0712        10 VALUE F1                       PIC 9(1). *> WS-CS-DEBUG-CHR
   207 GC0712        10 VALUE F4                       PIC 9(1). *> WS-CS-EXECUTE-CHR
   208 GC0712        10 VALUE F8                       PIC 9(1). *> WS-CS-FREE-CHR
   209 GC0712        10 VALUE F3                       PIC 9(1). *> WS-CS-LIBRARY-CHR
   210 GC0712        10 VALUE F5                       PIC 9(1). *> WS-CS-LISTING-CHR
   211 GC0712        10 VALUE F6                       PIC 9(1). *> WS-CS-NOFUNC-CHR
   212 GC0712        10 VALUE F9                       PIC 9(1). *> WS-CS-NOTRUNC-CHR
   213 GC0712        10 VALUE F2                       PIC 9(1). *> WS-CS-TRACEALL-CHR
   214 GC0712        10 VALUE F7                       PIC 9(1). *> WS-CS-WARNALL-CHR
   215 GC0712     05 WS-CS-All-Switches-TXT REDEFINES
   216 GC0712                            WS-CS-Switch-Defaults-TXT.
   217 GC0712        10 WS-CS-DEBUG-CHR                PIC X(1).
   218 GC0712        10 WS-CS-EXECUTE-CHR              PIC X(1).
   219 GC0712        10 WS-CS-FREE-CHR                 PIC X(1).
   220 GC0712        10 WS-CS-LIBRARY-CHR              PIC X(1).
   221 GC0712        10 WS-CS-LISTING-CHR              PIC X(1).
   222 GC0712        10 WS-CS-NOFUNC-CHR               PIC X(1).
   223 GC0712        10 WS-CS-NOTRUNC-CHR              PIC X(1).
   224 GC0712        10 WS-CS-TRACEALL-CHR             PIC X(1).
   225 GC0712        10 WS-CS-WARNALL-CHR              PIC X(1).
   226
   227 GC0909 01  WS-Cmd-TXT                           PIC X(512).
   228
   229 GC0712 01  WS-Cmd-Args-TXT                      PIC X(256).
   230
   231 GC0712 01  WS-Cmd-End-Quote-CHR                 PIC X(1).
   232
   233 GC0712 01  WS-Cmd-SUB                           USAGE BINARY-LONG.
   234
   235        01  WS-Cobc-Cmd-TXT                      PIC X(256).
   236
   237        01  WS-Config-Fn-TXT                     PIC X(12).
   238
   239 GC1113 01  WS-Delete-Fn-TXT                     PIC X(256).
   240
   241        01  WS-File-Name-TXT.
   242            05 WS-FN-CHR                         OCCURS 256 TIMES
```

```
   243                                                    PIC X(1).
```

===

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

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

```
GNUCOBOL 2.2 20JUL2017  Source Listing                                   2017/07/22
                                       /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                            Page: 9
====== ===============================================================================
   297 GC0909     88 WS-OS-Cygwin-BOOL  VALUE 2.
   298 GC0712     88 WS-OS-UNIX-BOOL    VALUE 3, 4.
   299 GC0712     88 WS-OS-OSX-BOOL     VALUE 4.
   300
   301        01  WS-OS-Type-FILLER-TXT.
   302            05 VALUE 'Windows'                   PIC X(14).
   303            05 VALUE 'Windows/Cygwin'            PIC X(14).
   304            05 VALUE 'UNIX/Linux'                PIC X(14).
   305            05 VALUE 'OSX'                       PIC X(14).
   306            05 VALUE 'Windows/MinGW'             PIC X(14).
   307        01  WS-OS-Types-TXT REDEFINES WS-OS-Type-FILLER-TXT.
   308            05 WS-OS-Type-TXT                    OCCURS 5 TIMES
   309                                                 PIC X(14).
   310
   311        01  WS-Output-Msg-TXT                    PIC X(80).
   312
   313        01  WS-Path-Delimiter-CHR                PIC X(1).
   314
   315        01  WS-Prog-Extension-TXT                PIC X(256).
   316
   317        01  WS-Prog-Folder-TXT                   PIC X(256).
   318
   319 GC0712 01  WS-Prog-File-Name-TXT.
   320 GC0712     05 WS-PFN-CHR                        OCCURS 256 TIMES
   321 GC0712                                          PIC X(1).
   322
   323 GC0712 01  WS-Pgm-Nm-TXT                        PIC X(31).
   324
   325        01  WS-Runtime-Switches-TXT.
   326            05 WS-RS-Compile-OK-CHR              PIC X(1).
   327               88 WS-RS-Compile-OK-BOOL          VALUE 'Y'.
   328 GC0909        88 WS-RS-Compile-OK-Warn-BOOL     VALUE 'W'.
   329               88 WS-RS-Compile-Failed-BOOL      VALUE 'N'.
   330 GC0609     05 WS-RS-Complete-CHR                PIC X(1).
   331 GC0609        88 WS-RS-Complete-BOOL            VALUE 'Y'.
   332 GC0609        88 WS-RS-Not-Complete-BOOL        VALUE 'N'.
   333 GC0712     05 WS-RS-Quote-CHR                   PIC X(1).
   334 GC0712        88 WS-RS-Double-Quote-Used-BOOL   VALUE 'Y' FALSE 'N'.
   335 GC0809     05 WS-RS-IDENT-DIV-CHR               PIC X(1).
   336 GC0809        88 WS-RS-1st-Prog-Complete-BOOL   VALUE 'Y'.
   337 GC0809        88 WS-RS-More-To-1st-Prog-BOOL    VALUE 'N'.
   338            05 WS-RS-No-Switch-Chgs-CHR          PIC X(1).
   339               88 WS-RS-No-Switch-Changes-BOOL   VALUE 'Y'.
   340               88 WS-RS-Switch-Changes-BOOL      VALUE 'N'.
   341 GC0709     05 WS-RS-Output-File-Busy-CHR        PIC X(1).
   342 GC0709        88 WS-RS-Output-File-Busy-BOOL    VALUE 'Y'.
   343 GC0709        88 WS-RS-Output-File-Avail-BOOL   VALUE 'N'.
   344 GC0809     05 WS-RS-Source-Record-Type-CHR      PIC X(1).
   345 GC0809        88 WS-RS-Source-Rec-Linkage-BOOL  VALUE 'L'.
   346 GC0809        88 WS-RS-Source-Rec-Ident-BOOL    VALUE 'I'.
   347 GC0712        88 WS-RS-Source-Rec-Ignored-BOOL  VALUE ' '.
   348            05 WS-RS-Switch-Error-CHR            PIC X(1).
```

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

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```
GNUCOBOL 2.2 20JUL2017  Source Listing                                    2017/07/22
                                         /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line   Statement                                                          Page: 10
====== =================================================================================
   350               88 WS-RS-Switch-Is-Good-BOOL       VALUE 'N'.
   351
   352        01  WS-Tally-QTY                          USAGE BINARY-LONG.
```

====== ==

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

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

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```
GNUCOBOL 2.2 20JUL2017  Source Listing                                    2017/07/22
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                            Page: 12
====== =============================================================================
  406       *> simply by setting their 'terminal' application's font to "Lucida Console".
  407       *>
  408       >>IF LINEDRAW IS EQUAL TO 0
  409       78 LD-UL-Corner                 VALUE ' '.
  410       78 LD-LL-Corner                 VALUE ' '.
  411       78 LD-UR-Corner                 VALUE ' '.
  412       78 LD-LR-Corner                 VALUE ' '.
  413       78 LD-Upper-T                   VALUE ' '.
  414       78 LD-Lower-T                   VALUE ' '.
  415       78 LD-Horiz-Line                VALUE ' '.
  416       78 LD-Vert-Line                 VALUE ' '.
  417       >>ELIF LINEDRAW IS EQUAL TO 1
  418       78 LD-UL-Corner                 VALUE X'DA'.
  419       78 LD-LL-Corner                 VALUE X'C0'.
  420       78 LD-UR-Corner                 VALUE X'BF'.
  421       78 LD-LR-Corner                 VALUE X'D9'.
  422       78 LD-Upper-T                   VALUE X'C2'.
  423       78 LD-Lower-T                   VALUE X'C1'.
  424       78 LD-Horiz-Line                VALUE X'C4'.
  425       78 LD-Vert-Line                 VALUE X'B3'.
  426       >>ELSE
  427       78 LD-UL-Corner                 VALUE '+'.
  428       78 LD-LL-Corner                 VALUE '+'.
  429       78 LD-UR-Corner                 VALUE '+'.
  430       78 LD-LR-Corner                 VALUE '+'.
  431       78 LD-Upper-T                   VALUE '+'.
  432       78 LD-Lower-T                   VALUE '+'.
  433       78 LD-Horiz-Line                VALUE '-'.
  434       78 LD-Vert-Line                 VALUE '|'.
  435       >>END-IF
  436
  437       01 S-Blank-SCR LINE 1 COLUMN 1 BLANK SCREEN.
  438
  439       01 S-Switches-SCR BACKGROUND-COLOR COB-COLOR-BLACK
  440                         FOREGROUND-COLOR COB-COLOR-WHITE AUTO.
  441       *>
  442       *> GENERAL SCREEN FRAMEWORK
  443       *>
  444          03 BACKGROUND-COLOR COB-COLOR-BLACK
  445             FOREGROUND-COLOR COB-COLOR-GREEN HIGHLIGHT.
  446 GC0712    05 LINE 02 COL 01          VALUE LD-UL-Corner.
  447 GC0712    05        COL 02 PIC X(78) FROM  WS-Horizontal-Line-TXT.
  448          05        COL 80          VALUE LD-UR-Corner.
  449
  450 GC0712    05 LINE 03 COL 01          VALUE LD-Vert-Line.
  451          05        COL 80          VALUE LD-Vert-Line.
  452
  453 GC0712    05 LINE 04 COL 01          VALUE LD-Vert-Line.
  454          05        COL 80          VALUE LD-Vert-Line.
  455
  456 GC0712    05 LINE 05 COL 01          VALUE LD-LL-Corner.
  457 GC0712    05        COL 02 PIC X(78) FROM  WS-Horizontal-Line-TXT.
```

```
   458            05        COL 80          VALUE LD-LR-Corner.
```

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```
GNUCOBOL 2.2 20JUL2017  Source Listing                                    2017/07/22
                                     /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                           Page: 13
====== =============================================================================
   459
   460 GC0712       05 LINE 07 COL 01           VALUE LD-UL-Corner.
   461 GC0712       05         COL 02 PIC X(65) FROM  WS-Horizontal-Line-TXT.
   462 GC0712       05         COL 67           VALUE LD-Upper-T.
   463 GC0712       05         COL 68 PIC X(12) FROM  WS-Horizontal-Line-TXT.
   464          05         COL 80           VALUE LD-UR-Corner.
   465
   466 GC0712       05 LINE 08 COL 01           VALUE LD-Vert-Line.
   467 GC0712       05         COL 67           VALUE LD-Vert-Line.
   468          05         COL 80           VALUE LD-Vert-Line.
   469
   470 GC0712       05 LINE 09 COL 01           VALUE LD-Vert-Line.
   471 GC0712       05         COL 67           VALUE LD-Vert-Line.
   472          05         COL 80           VALUE LD-Vert-Line.
   473
   474 GC0712       05 LINE 10 COL 01           VALUE LD-Vert-Line.
   475 GC0712       05         COL 67           VALUE LD-Vert-Line.
   476          05         COL 80           VALUE LD-Vert-Line.
   477
   478 GC0712       05 LINE 11 COL 01           VALUE LD-Vert-Line.
   479 GC0712       05         COL 67           VALUE LD-Vert-Line.
   480          05         COL 80           VALUE LD-Vert-Line.
   481
   482 GC0712       05 LINE 12 COL 01           VALUE LD-Vert-Line.
   483 GC0712       05         COL 67           VALUE LD-Vert-Line.
   484          05         COL 80           VALUE LD-Vert-Line.
   485
   486 GC0712       05 LINE 13 COL 01           VALUE LD-LL-Corner.
   487 GC0712       05         COL 02 PIC X(65) FROM  WS-Horizontal-Line-TXT.
   488 GC0712       05         COL 67           VALUE LD-Lower-T.
   489 GC0712       05         COL 68 PIC X(12) FROM  WS-Horizontal-Line-TXT.
   490          05         COL 80           VALUE LD-LR-Corner.
   491
   492 GC0712       05 LINE 15 COL 01           VALUE LD-UL-Corner.
   493 GC0712       05         COL 02 PIC X(78) FROM  WS-Horizontal-Line-TXT.
   494          05         COL 80           VALUE LD-UR-Corner.
   495
   496 GC0712       05 LINE 16 COL 01           VALUE LD-Vert-Line.
   497          05         COL 80           VALUE LD-Vert-Line.
   498
   499 GC0712       05 LINE 17 COL 01           VALUE LD-Vert-Line.
   500          05         COL 80           VALUE LD-Vert-Line.
   501
   502 GC0712       05 LINE 18 COL 01           VALUE LD-LL-Corner.
   503 GC0712       05         COL 02 PIC X(78) FROM  WS-Horizontal-Line-TXT.
   504          05         COL 80           VALUE LD-LR-Corner.
   505
   506 GC0712       05 LINE 20 COL 01           VALUE LD-UL-Corner.
   507 GC0712       05         COL 02 PIC X(78) FROM  WS-Horizontal-Line-TXT.
   508          05         COL 80           VALUE LD-UR-Corner.
   509
   510 GC0712       05 LINE 21 COL 01           VALUE LD-Vert-Line.
```

```
 511              05       COL 80           VALUE LD-Vert-Line.
```

```
GNUCOBOL 2.2 20JUL2017  Source Listing                              2017/07/22
                                     /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                        Page: 14
====== =========================================================================
  512
  513 GC0712      05 LINE 22 COL 01           VALUE LD-Vert-Line.
  514            05         COL 80           VALUE LD-Vert-Line.
  515
  516 GC0712      05 LINE 23 COL 01           VALUE LD-LL-Corner.
  517 GC0712      05         COL 02 PIC X(78) FROM  WS-Horizontal-Line-TXT.
  518            05         COL 80           VALUE LD-LR-Corner.
  519      *>
  520      *> TOP AND BOTTOM LINES
  521      *>
  522 GC0712   03 BACKGROUND-COLOR COB-COLOR-BLUE
  523            FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
  524 GC0410      05 LINE 01 COL 01 VALUE ' GCic ('.
  525 GC0410      05         COL 08 PIC X(16) FROM WS-OC-Compile-DT.
  526 GC1213      05         COL 24 VALUE ') GNUCOBOL 2.2 20JUL2017 ' &
  527 GC0410                        'Interactive Compilation        '.
  528 VC0617   03 BACKGROUND-COLOR COB-COLOR-RED
  529 GC0712      FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
  530 GC0712      05 LINE 24 COL 01 PIC X(80) FROM WS-Output-Msg-TXT.
  531      *>
  532      *> LABELS
  533      *>
  534         03 BACKGROUND-COLOR COB-COLOR-BLACK
  535            FOREGROUND-COLOR COB-COLOR-CYAN  HIGHLIGHT.
  536 GC0712      05 LINE 06 COL 02 VALUE 'Set/Clr Switches Via F1-F9; ' &
  537 GC0712                        'Set Config Via F12; Enter Key ' &
  538 GC0712                        'Compiles; Esc Quits'.
  539 GC0712      05 LINE 14 COL 02 VALUE 'Extra "cobc" Switches, If Any ' &
  540 GC0712                        '("-save-temps=xxx" Prevents ' &
  541 GC0712                        'Listings):'.
  542 GC0712      05 LINE 19 COL 02 VALUE 'Program Execution Arguments, ' &
  543 GC0712                        'If Any:'.
  544 GC0712   03 BACKGROUND-COLOR COB-COLOR-BLACK
  545 GC0712      FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
  546 GC0712      05 LINE 06 COL 23 VALUE 'F1'.
  547 GC0712      05         COL 26 VALUE 'F9'.
  548 GC0712      05         COL 45 VALUE 'F12'.
  549 GC0712      05         COL 50 VALUE 'ENTER'.
  550 GC0712      05         COL 70 VALUE 'ESC'.
  551      *>
  552      *> TOP SECTION BACKGROUND
  553      *>
  554         03 BACKGROUND-COLOR COB-COLOR-BLACK
  555            FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
  556 GC0712      05 LINE 03 COL 62 VALUE 'Enter'.
  557 GC0712      05 LINE 04 COL 62 VALUE 'Esc'.
  558
  559         03 BACKGROUND-COLOR COB-COLOR-BLACK
  560            FOREGROUND-COLOR COB-COLOR-GREEN HIGHLIGHT.
  561 GC0712      05 LINE 04 COL 03 VALUE 'Folder:   '.
  562 GC0712      05 LINE 03 COL 03 VALUE 'Filename: '.
  563
```

```
    564 GC0712        05 LINE 03 COL 67 VALUE ': Compile   '.
```
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```
GNUCOBOL 2.2 20JUL2017  Source Listing                                      2017/07/22
                                           /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                             Page: 15
====== ===============================================================================
  565 GC0712       05 LINE 04 COL 65 VALUE ':   Quit        '.
  566       *>
  567       *> TOP SECTION PROGRAM INFO
  568       *>
  569            03 BACKGROUND-COLOR COB-COLOR-BLACK
  570               FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
  571 GC0712       05 LINE 03 COL 13 PIC X(66) FROM WS-Prog-File-Name-TXT.
  572 GC0712       05 LINE 04 COL 13 PIC X(66) FROM WS-Prog-Folder-TXT.
  573       *>
  574       *> MIDDLE LEFT SECTION F-KEYS
  575       *>
  576            03 BACKGROUND-COLOR COB-COLOR-BLACK
  577               FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
  578 GC0712       05 LINE 08 COL 03 VALUE 'F1'.
  579 GC0712       05 LINE 09 COL 03 VALUE 'F2'.
  580 GC0712       05 LINE 10 COL 03 VALUE 'F3'.
  581 GC0712       05 LINE 11 COL 03 VALUE 'F4'.
  582 GC0712       05 LINE 12 COL 03 VALUE 'F5'.
  583
  584 GC0712       05 LINE 08 COL 35 VALUE 'F6'.
  585 GC0712       05 LINE 09 COL 35 VALUE 'F7'.
  586 GC0712       05 LINE 10 COL 35 VALUE 'F8'.
  587 GC0712       05 LINE 11 COL 35 VALUE 'F9'.
  588       *>
  589       *> MIDDLE LEFT SECTION SWITCHES
  590       *>
  591            03 BACKGROUND-COLOR COB-COLOR-BLACK
  592               FOREGROUND-COLOR COB-COLOR-RED    HIGHLIGHT.
  593 GC0712       05 LINE 08 COL 06 PIC X(1) FROM WS-CS-DEBUG-CHR.
  594 GC0712       05 LINE 09 COL 06 PIC X(1) FROM WS-CS-TRACEALL-CHR.
  595 GC0712       05 LINE 10 COL 06 PIC X(1) FROM WS-CS-LIBRARY-CHR.
  596 GC0712       05 LINE 11 COL 06 PIC X(1) FROM WS-CS-EXECUTE-CHR.
  597 GC0712       05 LINE 12 COL 06 PIC X(1) FROM WS-CS-LISTING-CHR.
  598
  599 GC0712       05 LINE 08 COL 38 PIC X(1) FROM WS-CS-NOFUNC-CHR.
  600 GC0712       05 LINE 09 COL 38 PIC X(1) FROM WS-CS-WARNALL-CHR.
  601 GC0712       05 LINE 10 COL 38 PIC X(1) FROM WS-CS-FREE-CHR.
  602 GC0712       05 LINE 11 COL 38 PIC X(1) FROM WS-CS-NOTRUNC-CHR.
  603       *>
  604       *> MIDDLE LEFT SECTION BACKGROUND
  605       *>
  606            03 BACKGROUND-COLOR COB-COLOR-BLACK
  607               FOREGROUND-COLOR COB-COLOR-GREEN HIGHLIGHT.
  608 GC0712       05 LINE 08 COL 07 VALUE 'Assume WITH DEBUGGING MODE'.
  609 GC0712       05 LINE 09 COL 07 VALUE 'Procedure+Statement Trace '.
  610 GC0712       05 LINE 10 COL 07 VALUE 'Make a Library ('.
  611 GC0712       05        COL 23 VALUE WS-OS-Lib-Type-CONST.
  612 GC0712       05 LINE 11 COL 07 VALUE 'Execute If Compilation OK '.
  613 GC1213       05 LINE 12 COL 07 FROM  WS-Listing-TXT.
  614
  615 GC0712       05 LINE 08 COL 39 VALUE '"FUNCTION" Is Optional    '.
  616 GC0712       05 LINE 09 COL 39 VALUE 'Enable All Warnings       '.
```

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

```
GNUCOBOL 2.2 20JUL2017  Source Listing                                     2017/07/22
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                             Page: 16
====== =================================================================================
  618 GC0712       05 LINE 11 COL 39 VALUE 'No COMP/BINARY Truncation '.
  619       *>
  620       *> MIDDLE RIGHT SECTION Text
  621       *>
  622           03 BACKGROUND-COLOR COB-COLOR-BLACK
  623              FOREGROUND-COLOR COB-COLOR-GREEN HIGHLIGHT.
  624 GC0712       05 LINE 08 COL 69 VALUE 'Current'.
  625 GC0712       05 LINE 09 COL 69 VALUE 'Config:'.
  626       *>
  627       *> MIDDLE RIGHT SECTION CONFIG FILE
  628       *>
  629           03 BACKGROUND-COLOR COB-COLOR-BLACK
  630              FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
  631 GC0712       05 LINE 10 COL 69 PIC X(10)
  632 GC0712          FROM WS-CS-Filename-TXT (WS-CS-Config-NUM).
  633       *>
  634       *> FREE-FORM OPTIONS FIELDS
  635       *>
  636           03 BACKGROUND-COLOR COB-COLOR-BLACK
  637              FOREGROUND-COLOR COB-COLOR-WHITE HIGHLIGHT.
  638 GC0712       05 LINE 16 COL 03 PIC X(76) USING WS-CS-Extra-H1-TXT.
  639 GC0712       05 LINE 17 COL 03 PIC X(76) USING WS-CS-Extra-H2-TXT.
  640 GC0712       05 LINE 21 COL 03 PIC X(76) USING WS-CS-Arg-H1-TXT.
  641 GC0712       05 LINE 22 COL 03 PIC X(76) USING WS-CS-Arg-H2-TXT.
```

```
GNUCOBOL 2.2 20JUL2017  Source Listing                                 2017/07/22
                                   /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                         Page: 17
======  =========================================================================
   643       PROCEDURE DIVISION.
   644       *>*************************************************************
   645       *> Legend to procedure names:                              **
   646       *>                                                          **
   647       *> 00x-xxx   All MAIN driver procedures                    **
   648       *> 0xx-xxx   All GLOBAL UTILITY procedures                 **
   649       *> 1xx-xxx   All INITIALIZATION procedures                 **
   650       *> 2xx-xxx   All CORE PROCESSING procedures                **
   651       *> 9xx-xxx   All TERMINATION procedures                    **
   652       *>*************************************************************
   653       DECLARATIVES.
   654       000-File-Error SECTION.
   655           USE AFTER STANDARD ERROR PROCEDURE ON F-Source-Code-FILE.
   656           COPY FileStat-Msgs
   657               REPLACING STATUS BY WS-FSM-Status-CD
   658                        MSG    BY WS-FSM-Msg-TXT.
        EVALUATE WS-FSM-Status-CD
        WHEN 00 MOVE 'SUCCESS                ' TO WS-FSM-Msg-TXT
        WHEN 02 MOVE 'SUCCESS DUPLICATE      ' TO WS-FSM-Msg-TXT
        WHEN 04 MOVE 'SUCCESS INCOMPLETE     ' TO WS-FSM-Msg-TXT
        WHEN 05 MOVE 'SUCCESS OPTIONAL       ' TO WS-FSM-Msg-TXT
        WHEN 07 MOVE 'SUCCESS NO UNIT        ' TO WS-FSM-Msg-TXT
        WHEN 10 MOVE 'END OF FILE            ' TO WS-FSM-Msg-TXT
        WHEN 14 MOVE 'OUT OF KEY RANGE       ' TO WS-FSM-Msg-TXT
        WHEN 21 MOVE 'KEY INVALID            ' TO WS-FSM-Msg-TXT
        WHEN 22 MOVE 'KEY EXISTS             ' TO WS-FSM-Msg-TXT
        WHEN 23 MOVE 'KEY NOT EXISTS         ' TO WS-FSM-Msg-TXT
        WHEN 30 MOVE 'PERMANENT ERROR        ' TO WS-FSM-Msg-TXT
        WHEN 31 MOVE 'INCONSISTENT FILENAME  ' TO WS-FSM-Msg-TXT
        WHEN 34 MOVE 'BOUNDARY VIOLATION     ' TO WS-FSM-Msg-TXT
        WHEN 35 MOVE 'FILE NOT FOUND         ' TO WS-FSM-Msg-TXT
        WHEN 37 MOVE 'PERMISSION DENIED      ' TO WS-FSM-Msg-TXT
        WHEN 38 MOVE 'CLOSED WITH LOCK       ' TO WS-FSM-Msg-TXT
        WHEN 39 MOVE 'CONFLICT ATTRIBUTE     ' TO WS-FSM-Msg-TXT
        WHEN 41 MOVE 'ALREADY OPEN           ' TO WS-FSM-Msg-TXT
        WHEN 42 MOVE 'NOT OPEN               ' TO WS-FSM-Msg-TXT
        WHEN 43 MOVE 'READ NOT DONE          ' TO WS-FSM-Msg-TXT
        WHEN 44 MOVE 'RECORD OVERFLOW        ' TO WS-FSM-Msg-TXT
        WHEN 46 MOVE 'READ ERROR             ' TO WS-FSM-Msg-TXT
        WHEN 47 MOVE 'INPUT DENIED           ' TO WS-FSM-Msg-TXT
        WHEN 48 MOVE 'OUTPUT DENIED          ' TO WS-FSM-Msg-TXT
        WHEN 49 MOVE 'I/O DENIED             ' TO WS-FSM-Msg-TXT
        WHEN 51 MOVE 'RECORD LOCKED          ' TO WS-FSM-Msg-TXT
        WHEN 52 MOVE 'END-OF-PAGE            ' TO WS-FSM-Msg-TXT
        WHEN 57 MOVE 'I/O LINAGE             ' TO WS-FSM-Msg-TXT
        WHEN 61 MOVE 'FILE SHARING FAILURE   ' TO WS-FSM-Msg-TXT
        WHEN 91 MOVE 'FILE NOT AVAILABLE     ' TO WS-FSM-Msg-TXT
        END-EVALUATE.
   659           MOVE SPACES TO WS-Output-Msg-TXT
   660           IF WS-FSM-Status-CD = 35
   661               DISPLAY
```

```
   662                      'File not found: "'
```

==

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

====== ==

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

```
   747             PERFORM 240-Find-LINKAGE-SECTION
```

===
GCic for UNIX/Linux Copyright (C) 2009-2017, Gary L. Cutler, GPL   Page: 19

```
GNUCOBOL 2.2 20JUL2017   Source Listing                              2017/07/22
                                      /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                        Page: 20
======  ========================================================================
   748        *>***************************************************************
   749        *> Split 'WS-File-Name-TXT' into 'WS-Prog-Folder-TXT' and      **
   750        *> 'WS-Prog-File-Name-TXT'                                     **
   751        *>***************************************************************
   752 GC0909     IF WS-OS-Cygwin-BOOL AND WS-File-Name-TXT (2:1) = ':'
   753 GC0712         MOVE '\' TO WS-OS-Dir-CHR
   754 GC0909     END-IF
   755 GC0712     MOVE LENGTH(WS-File-Name-TXT) TO WS-I-SUB
   756 GC0712     PERFORM UNTIL WS-I-SUB = 0
   757 GC0712     OR WS-FN-CHR (WS-I-SUB) = WS-OS-Dir-CHR
   758             SUBTRACT 1 FROM WS-I-SUB
   759            END-PERFORM
   760            IF WS-I-SUB = 0
   761                MOVE SPACES     TO WS-Prog-Folder-TXT
   762                MOVE WS-File-Name-TXT TO WS-Prog-File-Name-TXT
   763            ELSE
   764                MOVE '*' TO WS-FN-CHR (WS-I-SUB)
   765                UNSTRING WS-File-Name-TXT DELIMITED BY '*'
   766                    INTO WS-Prog-Folder-TXT
   767                        WS-Prog-File-Name-TXT
   768 GC0712         MOVE WS-OS-Dir-CHR TO WS-FN-CHR (WS-I-SUB)
   769            END-IF
   770            IF WS-Prog-Folder-TXT = SPACES
   771                ACCEPT WS-Prog-Folder-TXT FROM ENVIRONMENT 'CD'
   772 GC0909     ELSE
   773 GC0909         CALL 'CBL_CHANGE_DIR'
   774 GC0909             USING TRIM(WS-Prog-Folder-TXT,TRAILING)
   775            END-IF
   776 GC0909     IF WS-OS-Cygwin-BOOL AND WS-File-Name-TXT (2:1) = ':'
   777 GC0712         MOVE '/' TO WS-OS-Dir-CHR
   778 GC0909     END-IF
   779        *>***************************************************************
   780        *> Split 'WS-Prog-File-Name-TXT' into 'WS-Pgm-Nm-TXT' &        **
   781        *> 'WS-Prog-Extension-TXT'                                     **
   782        *>***************************************************************
   783 GC0712     MOVE LENGTH(WS-Prog-File-Name-TXT) TO WS-I-SUB
   784 GC0712     PERFORM UNTIL WS-I-SUB = 0
   785 GC0712     OR WS-PFN-CHR (WS-I-SUB) = '.'
   786 GC0712         SUBTRACT 1 FROM WS-I-SUB
   787 GC0712     END-PERFORM
   788 GC0712     IF WS-I-SUB = 0
   789 GC0712         MOVE WS-Prog-File-Name-TXT TO WS-Pgm-Nm-TXT
   790 GC0712         MOVE SPACES         TO WS-Prog-Extension-TXT
   791 GC0712     ELSE
   792 GC0712         MOVE '*' TO WS-PFN-CHR (WS-I-SUB)
   793 GC0712         UNSTRING WS-Prog-File-Name-TXT DELIMITED BY '*'
   794 GC0712             INTO WS-Pgm-Nm-TXT
   795 GC0712                 WS-Prog-Extension-TXT
   796 GC0712         MOVE '.' TO WS-PFN-CHR (WS-I-SUB)
   797 GC0712     END-IF
   798        *>***************************************************************
   799        *> Build initial Line 24 Message                              **
```

```
800          *>**********************************************************
```

```
GNUCOBOL 2.2 20JUL2017  Source Listing                                   2017/07/22
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                            Page: 21
====== =========================================================================
   801 GC0909     MOVE ALL LD-Horiz-Line TO WS-Horizontal-Line-TXT.
   802 GC0410     MOVE CONCATENATE(' GCic for '
   803 GC0410                     TRIM(WS-OS-Type-TXT(WS-OS-Type-CD),Trailing)
   804 GC1213                     ' Copyright (C) 2009-2017, Gary L. '
   805 GC0410                     'Cutler, GPL')
   806 GC0410        TO WS-Output-Msg-TXT.
   807 GC0909
```

```
GNUCOBOL 2.2 20JUL2017  Source Listing                              2017/07/22
                                      /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line   Statement                                                        Page: 22
====== =========================================================================

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

```
   860 GC0712                    IF WS-CS-NOFUNC-CHR = SPACE
```

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```
GNUCOBOL 2.2 20JUL2017  Source Listing                                    2017/07/22
                                          /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                          Page: 23
====== =================================================================================
   861 GC0712                           MOVE SELCHAR TO WS-CS-NOFUNC-CHR
   862 GC0712                     ELSE
   863 GC0712                           MOVE ' ' TO WS-CS-NOFUNC-CHR
   864 GC0712                     END-IF
   865 GC0712                  WHEN COB-SCR-F7
   866 GC0712                     IF WS-CS-WARNALL-CHR = SPACE
   867 GC0712                           MOVE SELCHAR TO WS-CS-WARNALL-CHR
   868 GC0712                     ELSE
   869 GC0712                           MOVE ' ' TO WS-CS-WARNALL-CHR
   870 GC0712                     END-IF
   871 GC0712                  WHEN COB-SCR-F8
   872 GC0712                     IF WS-CS-FREE-CHR = SPACE
   873 GC0712                           MOVE SELCHAR TO WS-CS-FREE-CHR
   874 GC0712                     ELSE
   875 GC0712                           MOVE ' ' TO WS-CS-FREE-CHR
   876 GC0712                     END-IF
   877 GC0712                  WHEN COB-SCR-F9
   878 GC0712                     IF  WS-CS-NOTRUNC-CHR = SPACE
   879 GC0712                           MOVE SELCHAR TO WS-CS-NOTRUNC-CHR
   880 GC0712                     ELSE
   881 GC0712                           MOVE ' ' TO WS-CS-NOTRUNC-CHR
   882 GC0712                     END-IF
   883                           WHEN COB-SCR-ESC
   884                              PERFORM 900-Terminate
   885       * ----------------- Control will NOT return
   886 GC0712                  WHEN COB-SCR-F12
   887 GC0712                     ADD 1 TO WS-CS-Config-NUM
   888 GC0712                     IF WS-CS-Config-NUM > 7
   889 GC0712                           MOVE 1 TO WS-CS-Config-NUM
   890 GC0712                     END-IF
   891                           WHEN OTHER
   892                              MOVE 'An unsupported key was pressed'
   893                                 TO WS-Output-Msg-TXT
   894                        END-EVALUATE
   895               ELSE
   896                   SET WS-RS-No-Switch-Changes-BOOL TO TRUE
   897               END-IF
   898          END-PERFORM
   899              .
```

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

```
   952 GC0712                DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
```

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```
GNUCOBOL 2.2 20JUL2017  Source Listing                                      2017/07/22
                                     /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                            Page: 25
====== =================================================================================
   953 GC0712          WITH POINTER WS-I-SUB
   954 GC0712     END-IF
   955 GC0712     IF WS-CS-FREE-CHR NOT = ' '
   956 GC0712        STRING '-free '
   957 GC0712            DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
   958 GC0712            WITH POINTER WS-I-SUB
   959 GC0712     ELSE
   960 GC0712        STRING '-fixed '
   961 GC0712            DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
   962 GC0712            WITH POINTER WS-I-SUB
   963 GC0712     END-IF
   964
   965 GC0712     MOVE 0 TO WS-Tally-QTY
   966 GC0712     INSPECT WS-CS-Extra-TXT
   967 GC0712        TALLYING WS-Tally-QTY FOR ALL '-save-temps'
   968 GC0712     IF WS-CS-LISTING-CHR > SPACE
   969 GC0712     AND WS-Tally-QTY > 0
   970 GC0712        MOVE SPACE TO WS-CS-LISTING-CHR *> Can't generate listing if -save-temps u
       sed
   971 GC0712     END-IF
   972 GC0712     IF WS-CS-LISTING-CHR > SPACE
   973 GC1010        STRING '-save-temps '
   974 GC1010            DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
   975 GC1010            WITH POINTER WS-I-SUB
   976 GC1010     END-IF
   977
   978 GC0709     IF WS-CS-Extra-TXT > SPACES
   979 GC0709        STRING ' '
   980 GC0709              TRIM(WS-CS-Extra-TXT,TRAILING)
   981 GC0709              ' '
   982 GC0709              DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
   983 GC0709              WITH POINTER WS-I-SUB
   984 GC0709     END-IF
   985 GC0909     STRING TRIM(WS-Prog-File-Name-TXT,TRAILING)
   986 GC0909        DELIMITED SIZE INTO WS-Cobc-Cmd-TXT
   987 GC0909        WITH POINTER WS-I-SUB
   988      *>**************************************************************
   989      *> Prepare the compilation listing file                    **
   990      *>**************************************************************
   991 GC1113    MOVE CONCATENATE(TRIM(WS-Pgm-Nm-TXT,Trailing),'.gclst')
   992 GC0712      TO WS-Listing-Filename-TXT
   993 GC0712    CALL 'CBL_DELETE_FILE' USING WS-Listing-Filename-TXT
   994      *>**************************************************************
   995      *> Now execute the 'cobc' command                          **
   996      *>**************************************************************
   997 GC0410    MOVE ' Compiling...' TO WS-Output-Msg-TXT
   998 GC0410    DISPLAY S-Switches-SCR
   999 GC0609    SET WS-RS-Output-File-Avail-BOOL TO TRUE
  1000          MOVE SPACES TO WS-Cmd-TXT
  1001          STRING TRIM(WS-Cobc-Cmd-TXT,TRAILING)
  1002 GC0712          ' >' WS-Listing-Filename-TXT
  1003 GC0712          ' 2>&1'
```

```
   1004                    DELIMITED SIZE
```

===
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```
GNUCOBOL 2.2 20JUL2017  Source Listing                                    2017/07/22
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                             Page: 26
====== =================================================================================
 1005                    INTO WS-Cmd-TXT
 1006 DEBUG D    DISPLAY WS-Cmd-TXT UPON SYSERR
 1007            CALL 'SYSTEM' USING TRIM(WS-Cmd-TXT,TRAILING)
 1008 GC0712     OPEN EXTEND F-Cobc-Output-FILE
 1009 GC0712     WRITE F-Cobc-Output-REC FROM SPACES
 1010 GC0712     IF RETURN-CODE = 0
 1011 GC0712        SET WS-RS-Compile-OK-BOOL TO TRUE
 1012 GC0712        MOVE ' Compilation Was Successful' TO WS-Output-Msg-TXT
 1013 GC0712        MOVE CONCATENATE('GNU COBOL',WS-Output-Msg-TXT)
 1014 GC0712          TO F-Cobc-Output-REC
 1015 GC0712        WRITE F-Cobc-Output-REC
 1016 GC0712        SET WS-RS-Complete-BOOL TO TRUE
 1017 GC0712     ELSE
 1018 GC0712        SET WS-RS-Compile-Failed-BOOL TO TRUE
 1019 GC0712        MOVE CONCATENATE(' Compilation Failed - See ',
 1020 GC0712                   TRIM(WS-Listing-Filename-TXT,Trailing))
 1021 GC0712          TO WS-Output-Msg-TXT
 1022 GC0712        MOVE 'GNU COBOL Compilation HAS FAILED - See Above'
 1023 GC0712          TO F-Cobc-Output-REC
 1024 GC0712        WRITE F-Cobc-Output-REC
 1025 GC0712     END-IF
 1026 GC0712     CLOSE F-Cobc-Output-FILE
 1027 GC0712     DISPLAY S-Switches-SCR
 1028 GC0712     CALL 'C$SLEEP' USING 2
 1029 GC0712     MOVE SPACES TO WS-Output-Msg-TXT
 1030            IF WS-RS-Compile-Failed-BOOL
 1031 GC0712        PERFORM 250-Autoload-Listing
 1032            PERFORM 900-Terminate
 1033       *> ----- Control will not return
 1034            END-IF
 1035            .
```

```
GNUCOBOL 2.2 20JUL2017  Source Listing                                    2017/07/22
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line   Statement                                                            Page: 27
====== =================================================================================

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

```
GNUCOBOL 2.2 20JUL2017  Source Listing                                      2017/07/22
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                              Page: 28
====== =================================================================================

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

```
  1119 GC0909              WITH POINTER WS-I-SUB
```

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```
GNUCOBOL 2.2 20JUL2017  Source Listing                                     2017/07/22
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line   Statement                                                             Page: 29
====== ===============================================================================
 1120 GC0909     ELSE
 1121 GC0909         IF WS-OS-Cygwin-BOOL OR WS-OS-UNIX-BOOL
 1122 GC0909             STRING './'
 1123 GC0909                 INTO WS-Cmd-TXT
 1124 GC0909                 WITH POINTER WS-I-SUB
 1125 GC0909         END-IF
 1126             END-IF
 1127       *>****************************************************************
 1128       *> Insert program filename                                    **
 1129       *>****************************************************************
 1130 GC0909     STRING TRIM(WS-Pgm-Nm-TXT,TRAILING)
 1131 GC0909         INTO WS-Cmd-TXT
 1132 GC0909         WITH POINTER WS-I-SUB
 1133       *>****************************************************************
 1134       *> Insert proper extension                                    **
 1135       *>****************************************************************
 1136 GC0712     IF WS-CS-LIBRARY-CHR = ' '
 1137 GC0712         IF WS-OS-Exe-Ext-CONST > ' '
 1138 GC0712             STRING WS-OS-Exe-Ext-CONST DELIMITED SPACE
 1139 GC0712                 INTO WS-Cmd-TXT
 1140 GC0712                 WITH POINTER WS-I-SUB
 1141 GC0712         END-IF
 1142 GC0712     ELSE
 1143 GC0712         IF WS-OS-Lib-Ext-CONST > ' '
 1144 GC0712             STRING WS-OS-Lib-Ext-CONST DELIMITED SPACE
 1145 GC0712                 INTO WS-Cmd-TXT
 1146 GC0712                 WITH POINTER WS-I-SUB
 1147 GC0712         END-IF
 1148 GC0712     END-IF
 1149 GC0712     IF WS-RS-Double-Quote-Used-BOOL
 1150 GC0712         STRING '"' DELIMITED SIZE
 1151 GC0712             INTO WS-Cmd-TXT
 1152 GC0712             WITH POINTER WS-I-SUB
 1153 GC0712     END-IF
 1154             IF WS-CS-Args-TXT NOT = SPACES
 1155 GC0809         STRING ' ' TRIM(WS-CS-Args-TXT,TRAILING)
 1156                     INTO WS-Cmd-TXT
 1157                     WITH POINTER WS-I-SUB
 1158             END-IF
 1159       *>****************************************************************
 1160       *> Run the program                                            **
 1161       *>****************************************************************
 1162 GC0114     CALL X'E4'
 1163             CALL 'SYSTEM' USING TRIM(WS-Cmd-TXT,TRAILING)
 1164 GC0712     MOVE SPACES TO WS-Output-Msg-TXT
 1165 GC0114     ACCEPT WS-Output-Msg-TXT(1:1) AT 0101
 1166             PERFORM 900-Terminate
 1167       * -- Control will NOT return
 1168             .
```

```
=================================================================================================
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```

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

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

```
GNUCOBOL 2.2 20JUL2017  Source Listing                                    2017/07/22
                                         /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                              Page: 32
====== ================================================================================

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

```
===============================================================================================
GCic for UNIX/Linux Copyright (C) 2009-2017, Gary L. Cutler, GPL                    Page: 32
```

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

====== ==

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

```
   1364                    END-EVALUATE
```

===

```
GNUCOBOL 2.2 20JUL2017  Source Listing                              2017/07/22
                                   /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line   Statement                                                         Page: 35
====== =========================================================================
 1365          END-PERFORM
 1366       *>
 1367       *> If we get to here, we never found anything!
 1368       *>
 1369 +         GOBACK
 1370             .
 1371        END PROGRAM CHECKSRC.
 1372
 1373        IDENTIFICATION DIVISION.
 1374        PROGRAM-ID.  LISTING.
 1375       *>****************************************************************
 1376       *> This subprogram generates a cross-reference listing of an   **
 1377       *> GNU COBOL program.                                          **
 1378       *>****************************************************************
 1379       *>                                                             **
 1380       *> AUTHOR:      GARY L. CUTLER                                 **
 1381       *>                  Copyright (C) 2010, Gary L. Cutler, GPL     **
 1382       *>                                                             **
 1383       *> DATE-WRITTEN: April 1, 2010                                 **
 1384       *>                                                             **
 1385       *>****************************************************************
 1386       *>   DATE   CHANGE DESCRIPTION                                  **
 1387       *> ====== ==================================================== **
 1388       *> GC0410 Initial coding                                       **
 1389       *> GC0711 Updates to accommodate the 12MAR2010 version of OC   **
 1390       *> GC0710 Handle duplicate data names (i.e. 'CORRESPONDING' or **
 1391       *>        qualified items) better; ignore 'END PROGRAM' recs   **
 1392       *>        so program name doesn't appear in listing.           **
 1393       *> GC0313 Fix problem where the first procedure name defined   **
 1394       *>        in the PROCEDURE DIVISION lacks a "Defined" line      **
 1395       *>        number.                                              **
 1396       *> GC1213 Updated for 23NOV2013 version of GNU COBOL 2.1; Stop **
 1397       *>        showing functions as if they were identifiers in the **
 1398       *>        xref listing; Flag all CALL argument references with **
 1399       *>        a "C" rather than "*" because they aren't necessari- **
 1400       *>        ly altered; Fixed assorted formatting bugs; DOWN-    **
 1401       *>        WARD COMPATIBLE WITH GNU COBOL 2.0 SYNTAX             **
 1402       *> GC0314 Fix problem where 1st char of 1st token on a line is **
 1403       *>        lost if >>SOURCE MODE IS FREE is in effect and the   **
 1404       *>        1st character is non-blank.                          **
 1405       *>****************************************************************
 1406        ENVIRONMENT DIVISION.
 1407        CONFIGURATION SECTION.
 1408        REPOSITORY.
 1409            FUNCTION ALL INTRINSIC.
 1410        INPUT-OUTPUT SECTION.
 1411        FILE-CONTROL.
 1412            SELECT F-Expanded-Src-FILE  ASSIGN TO WS-Expanded-Src-Fn-TXT
 1413                                        ORGANIZATION IS LINE SEQUENTIAL.
 1414 GC0712     SELECT F-Listing-FILE       ASSIGN TO L-Listing-Fn-TXT
 1415                                        ORGANIZATION IS LINE SEQUENTIAL.
 1416            SELECT F-Original-Src-FILE  ASSIGN TO L-Src-Fn-TXT
```

```
   1417                                      ORGANIZATION IS LINE SEQUENTIAL.
==================================================================================================
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```

```
GNUCOBOL 2.2 20JUL2017  Source Listing                                2017/07/22
                                     /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                      Page: 36
====== =========================================================================
 1418           SELECT F-Sort-Work-FILE     ASSIGN TO DISK.
 1419        DATA DIVISION.
 1420        FILE SECTION.
 1421        FD  F-Expanded-Src-FILE.
 1422        01  F-Expanded-Src-REC.
 1423            05 F-ES-1-CHR                     PIC X.
 1424            05 F-ES-2-256-TXT-256             PIC X(256).
 1425 GC0712 01  F-Expanded-Src2-REC.
 1426 GC0712     05 F-ES-1-7-TXT                   PIC X(7).
 1427 GC0712     05 F-ES-8-256-TXT                 PIC X(249).
 1428
 1429 GC0712 FD  F-Listing-FILE.
 1430 GC1213 01  F-Listing-96-REC                  PIC X(96).
 1431 GC1213 01  F-Listing-135-REC                 PIC X(135).
 1432        01  F-Listing-REC                     PIC X(135).
 1433
 1434        FD  F-Original-Src-FILE.
 1435        01  F-Original-Src-REC.
 1436 GC0410     05 F-OS-1-128-TXT.
 1437 GC0410        10 FILLER                      PIC X(6).
 1438 GC0410        10 F-OS-7-CHR                  PIC X(1).
 1439 GC0712        10 F-OS-8-72-TXT               PIC X(65).
 1440 GC0712        10 FILLER                      PIC X(56).
 1441            05 F-OS-129-256-TXT               PIC X(128).
 1442
 1443        SD  F-Sort-Work-FILE.
 1444        01  F-Sort-Work-REC.
 1445            05 F-SW-Prog-ID-TXT               PIC X(15).
 1446            05 F-SW-Token-Uc-TXT              PIC X(32).
 1447            05 F-SW-Token-TXT                 PIC X(32).
 1448            05 F-SW-Section-TXT               PIC X(15).
 1449            05 F-SW-Def-Line-NUM              PIC 9(6).
 1450            05 F-SW-Reference-TXT.
 1451               10 F-SW-Ref-Line-NUM           PIC 9(6).
 1452               10 F-SW-Ref-Flag-CHR           PIC X(1).
 1453
 1454        WORKING-STORAGE SECTION.
 1455 GC1213 01  WS-Copyright-TXT                  PIC X(86).
 1456
 1457        01  WS-Curr-CHR                       PIC X(1).
 1458            88 WS-Curr-Char-Is-Punct-BOOL     VALUE '=', '(', ')',
 1459                                                    '*', '/', '&',
 1460                                                    ';', ',', '<',
 1461                                                    '>', ':'.
 1462            88 WS-Curr-Char-Is-Quote-BOOL     VALUE "'", '"'.
 1463            88 WS-Curr-Char-Is-X-BOOL         VALUE 'x', 'X'.
 1464            88 WS-Curr-Char-Is-Z-BOOL         VALUE 'z', 'Z'.
 1465
 1466        01  WS-Curr-Division-TXT              PIC X(1).
 1467 GC1010     88 WS-CD-In-IDENT-DIV-BOOL        VALUE 'i', 'I', '?'.
 1468 GC1010     88 WS-CD-In-ENV-DIV-BOOL          VALUE 'e', 'E'.
 1469 GC1010     88 WS-CD-In-DATA-DIV-BOOL         VALUE 'd', 'D'.
```

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

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GNUCOBOL 2.2 20JUL2017  Source Listing                                    2017/07/22
                                         /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line   Statement                                                             Page: 37
====== =============================================================================
 1471
 1472        01  WS-Curr-Line-NUM                      PIC 9(6).
 1473
 1474        01  WS-Curr-Prog-ID-TXT.
 1475             05 FILLER                            PIC X(12).
 1476             05 WS-CPI-13-15-TXT                  PIC X(3).
 1477 GC0712      05 WS-CPI-16-CHR                     PIC X(1).
 1478
 1479        01  WS-Curr-Section-TXT.
 1480             05 WS-CS-1-CHR                       PIC X(1).
 1481             05 WS-CS-2-14-TXT.
 1482                10 FILLER                         PIC X(10).
 1483                10 WS-CS-11-14-TXT                PIC X(3).
 1484             05 WS-CS-15-CHR                      PIC X(1).
 1485
 1486        01  WS-Curr-Verb-TXT                      PIC X(12).
 1487
 1488        01  WS-Delim-TXT                          PIC X(2).
 1489
 1490        01  WS-Dummy-TXT                          PIC X(1).
 1491
 1492        01  WS-Expanded-Src-Fn-TXT                PIC X(256).
 1493
 1494        01  WS-Filename-TXT                       PIC X(256).
 1495
 1496 GC1213 01  WS-Flags-TXT.
 1497 GC1213      05 WS-Suppress-FF-CHR                PIC X(1).
 1498
 1499 GC1213 01  WS-Formatted-DT                       PIC 9999/99/99.
 1500
 1501        01  WS-Group-Indicators-TXT.
 1502             05 WS-GI-Prog-ID-TXT                 PIC X(15).
 1503             05 WS-GI-Token-TXT                   PIC X(32).
 1504
 1505        01  WS-Held-Reference-TXT                 PIC X(100).
 1506
 1507        01  WS-I-SUB                              USAGE BINARY-LONG.
 1508
 1509        01  WS-J-SUB                              USAGE BINARY-LONG.
 1510
 1511        01  WS-Lines-Left-NUM                     USAGE BINARY-LONG.
 1512
 1513        01  WS-Lines-Per-Page-NUM                 USAGE BINARY-LONG.
 1514
 1515        01  WS-Lines-Per-Page-Env-TXT             PIC X(256).
 1516
 1517 GC1010 01  WS-Main-Module-Name-TXT               PIC X(256).
 1518
 1519        01  WS-Next-CHR                           PIC X(1).
 1520             88 WS-Next-Char-Is-Quote-BOOL        VALUE '"', "'".
 1521
 1522        01  WS-OS-Type-FILLER-TXT.
```

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

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GNUCOBOL 2.2 20JUL2017  Source Listing                              2017/07/22
                                       /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                        Page: 38
====== ========================================================================
 1524           05 VALUE 'Windows/Cygwin'        PIC X(14).
 1525           05 VALUE 'UNIX/Linux'            PIC X(14).
 1526           05 VALUE 'OSX'                   PIC X(14).
 1527           05 VALUE 'Windows/MinGW'         PIC X(14).
 1528        01 WS-OS-Types-TXT REDEFINES WS-OS-Type-FILLER-TXT.
 1529           05 WS-OS-Type-TXT                PIC X(14)
 1530                                       OCCURS 5 TIMES .
 1531
 1532 GC0712 01  WS-Page-NUM                     USAGE BINARY-LONG.
 1533
 1534 GC0712 01  WS-Page-No-TXT.
 1535 GC0712     05 WS-PN-Literal-TXT            PIC X(6).
 1536 GC0712     05 WS-PN-Page-NUM               PIC Z(3)9.
 1537
 1538 GC1213 01  WS-Program-Path-TXT            PIC X(135).
 1539
 1540        01  WS-Reserved-Words-TXT.
 1541           05 VALUE '                    ' PIC X(33).
 1542 GC1213     05 VALUE 'FABS                ' PIC X(33).
 1543           05 VALUE 'VACCEPT             ' PIC X(33).
 1544           05 VALUE ' ACCESS             ' PIC X(33).
 1545 GC1213     05 VALUE 'FACOS               ' PIC X(33).
 1546           05 VALUE ' ACTIVE-CLASS       ' PIC X(33).     UNIMPLEMENTED
 1547           05 VALUE 'VADD                ' PIC X(33).
 1548           05 VALUE ' ADDRESS            ' PIC X(33).
 1549           05 VALUE ' ADVANCING          ' PIC X(33).
 1550           05 VALUE 'KAFTER              ' PIC X(33).
 1551           05 VALUE ' ALIGNED            ' PIC X(33).     UNIMPLEMENTED
 1552           05 VALUE ' ALL                ' PIC X(33).
 1553           05 VALUE 'VALLOCATE           ' PIC X(33).
 1554           05 VALUE ' ALPHABET           ' PIC X(33).
 1555           05 VALUE ' ALPHABETIC         ' PIC X(33).
 1556           05 VALUE ' ALPHABETIC-LOWER   ' PIC X(33).
 1557           05 VALUE ' ALPHABETIC-UPPER   ' PIC X(33).
 1558           05 VALUE ' ALPHANUMERIC       ' PIC X(33).
 1559           05 VALUE ' ALPHANUMERIC-EDITED ' PIC X(33).
 1560           05 VALUE ' ALSO               ' PIC X(33).
 1561           05 VALUE 'VALTER              ' PIC X(33).
 1562           05 VALUE ' ALTERNATE          ' PIC X(33).
 1563           05 VALUE ' AND                ' PIC X(33).
 1564 GC1213     05 VALUE 'FANNUITY            ' PIC X(33).
 1565           05 VALUE ' ANY                ' PIC X(33).
 1566           05 VALUE ' ANYCASE            ' PIC X(33).     UNIMPLEMENTED
 1567           05 VALUE ' ARE                ' PIC X(33).
 1568           05 VALUE ' AREA               ' PIC X(33).
 1569           05 VALUE ' AREAS              ' PIC X(33).
 1570           05 VALUE ' ARGUMENT-NUMBER    ' PIC X(33).
 1571           05 VALUE ' ARGUMENT-VALUE     ' PIC X(33).
 1572           05 VALUE ' ARITHMETIC         ' PIC X(33).     UNIMPLEMENTED
 1573           05 VALUE ' AS                 ' PIC X(33).
 1574           05 VALUE ' ASCENDING          ' PIC X(33).
 1575           05 VALUE ' ASCII              ' PIC X(33).
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1576 GC1213    05 VALUE 'FASIN                           ' PIC X(33).
```

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GNUCOBOL 2.2 20JUL2017  Source Listing                                        2017/07/22
                                             /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                              Page: 39
====== ========================================================================================
 1577             05 VALUE ' ASSIGN                     ' PIC X(33).
 1578             05 VALUE ' AT                         ' PIC X(33).
 1579 GC1213      05 VALUE 'FATAN                       ' PIC X(33).
 1580 GC0711      05 VALUE ' ATTRIBUTE                  ' PIC X(33).
 1581             05 VALUE ' AUTHOR                     ' PIC X(33).       OBSOLETE
 1582             05 VALUE ' AUTO                       ' PIC X(33).
 1583             05 VALUE ' AUTO-SKIP                  ' PIC X(33).
 1584             05 VALUE ' AUTOMATIC                  ' PIC X(33).
 1585             05 VALUE ' AUTOTERMINATE              ' PIC X(33).
 1586             05 VALUE ' AWAY-FROM-ZERO             ' PIC X(33).
 1587             05 VALUE ' B-AND                      ' PIC X(33).       UNIMPLEMENTED
 1588             05 VALUE ' B-NOT                      ' PIC X(33).       UNIMPLEMENTED
 1589             05 VALUE ' B-OR                       ' PIC X(33).       UNIMPLEMENTED
 1590             05 VALUE ' B-XOR                      ' PIC X(33).       UNIMPLEMENTED
 1591             05 VALUE ' BACKGROUND-COLOR           ' PIC X(33).
 1592             05 VALUE ' BACKGROUND-COLOUR          ' PIC X(33).
 1593             05 VALUE ' BASED                      ' PIC X(33).
 1594             05 VALUE ' BEEP                       ' PIC X(33).
 1595             05 VALUE ' BEFORE                     ' PIC X(33).
 1596             05 VALUE ' BELL                       ' PIC X(33).
 1597             05 VALUE ' BINARY                     ' PIC X(33).
 1598             05 VALUE ' BINARY-C-LONG              ' PIC X(33).
 1599             05 VALUE ' BINARY-CHAR                ' PIC X(33).
 1600             05 VALUE ' BINARY-DOUBLE              ' PIC X(33).
 1601             05 VALUE ' BINARY-INT                 ' PIC X(33).
 1602             05 VALUE ' BINARY-LONG                ' PIC X(33).
 1603             05 VALUE ' BINARY-LONG-LONG           ' PIC X(33).
 1604             05 VALUE ' BINARY-SHORT               ' PIC X(33).
 1605             05 VALUE ' BIT                        ' PIC X(33).       UNIMPLEMENTED
 1606             05 VALUE ' BLANK                      ' PIC X(33).
 1607             05 VALUE ' BLINK                      ' PIC X(33).
 1608             05 VALUE ' BLOCK                      ' PIC X(33).
 1609             05 VALUE ' BOOLEAN                    ' PIC X(33).       UNIMPLEMENTED
 1610 GC1213      05 VALUE 'FBOOLEAN-OF-INTEGER         ' PIC X(33).       UNIMPLEMENTED
 1611             05 VALUE ' BOTTOM                     ' PIC X(33).
 1612             05 VALUE 'YBY                         ' PIC X(33).
 1613 GC1213      05 VALUE 'FBYTE-LENGTH                ' PIC X(33).
 1614             05 VALUE 'MC01                        ' PIC X(33).
 1615             05 VALUE 'MC02                        ' PIC X(33).
 1616             05 VALUE 'MC03                        ' PIC X(33).
 1617             05 VALUE 'MC04                        ' PIC X(33).
 1618             05 VALUE 'MC05                        ' PIC X(33).
 1619             05 VALUE 'MC06                        ' PIC X(33).
 1620             05 VALUE 'MC07                        ' PIC X(33).
 1621             05 VALUE 'MC08                        ' PIC X(33).
 1622             05 VALUE 'MC09                        ' PIC X(33).
 1623             05 VALUE 'MC10                        ' PIC X(33).
 1624             05 VALUE 'MC11                        ' PIC X(33).
 1625             05 VALUE 'MC12                        ' PIC X(33).
 1626             05 VALUE 'VCALL                       ' PIC X(33).
 1627             05 VALUE 'MCALL-CONVENTION            ' PIC X(33).
 1628             05 VALUE 'VCANCEL                     ' PIC X(33).
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  1629            05 VALUE ' CAPACITY                     ' PIC X(33).    UNIMPLEMENTED
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GNUCOBOL 2.2 20JUL2017  Source Listing                              2017/07/22
                                      /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                       Page: 40
====== =======================================================================
 1630            05 VALUE ' CD                        ' PIC X(33).    OBSOLETE
 1631            05 VALUE ' CENTER                    ' PIC X(33).    UNIMPLEMENTED
 1632            05 VALUE ' CF                        ' PIC X(33).
 1633            05 VALUE ' CH                        ' PIC X(33).
 1634            05 VALUE ' CHAIN                     ' PIC X(33).    UNIMPLEMENTED
 1635            05 VALUE ' CHAINING                  ' PIC X(33).
 1636 GC1213     05 VALUE 'FCHAR                      ' PIC X(33).
 1637 GC1213     05 VALUE 'FCHAR-NATIONAL             ' PIC X(33).    UNIMPLEMENTED
 1638            05 VALUE ' CHARACTER                 ' PIC X(33).
 1639            05 VALUE ' CHARACTERS                ' PIC X(33).
 1640            05 VALUE ' CLASS                     ' PIC X(33).
 1641            05 VALUE ' CLASS-ID                  ' PIC X(33).    UNIMPLEMENTED
 1642 GC0711     05 VALUE ' CLASSIFICATION            ' PIC X(33).
 1643            05 VALUE 'VCLOSE                     ' PIC X(33).
 1644 GC1213     05 VALUE 'FCOB-CRT-STATUS            ' PIC X(33).
 1645            05 VALUE ' CODE                      ' PIC X(33).
 1646            05 VALUE ' CODE-SET                  ' PIC X(33).
 1647            05 VALUE ' COL                       ' PIC X(33).
 1648            05 VALUE ' COLLATING                 ' PIC X(33).
 1649            05 VALUE ' COLS                      ' PIC X(33).
 1650            05 VALUE ' COLUMN                    ' PIC X(33).
 1651            05 VALUE ' COLUMNS                   ' PIC X(33).
 1652 GC1213     05 VALUE 'FCOMBINED-DATETIME         ' PIC X(33).
 1653            05 VALUE ' COMMA                     ' PIC X(33).
 1654            05 VALUE ' COMMAND-LINE              ' PIC X(33).
 1655            05 VALUE 'VCOMMIT                    ' PIC X(33).
 1656            05 VALUE ' COMMON                    ' PIC X(33).
 1657            05 VALUE ' COMMUNICATION             ' PIC X(33).    OBSOLETE
 1658            05 VALUE ' COMP                      ' PIC X(33).
 1659            05 VALUE ' COMP-1                    ' PIC X(33).
 1660            05 VALUE ' COMP-2                    ' PIC X(33).
 1661            05 VALUE ' COMP-3                    ' PIC X(33).
 1662            05 VALUE ' COMP-4                    ' PIC X(33).
 1663            05 VALUE ' COMP-5                    ' PIC X(33).
 1664            05 VALUE ' COMP-6                    ' PIC X(33).
 1665            05 VALUE ' COMP-X                    ' PIC X(33).
 1666            05 VALUE ' COMPUTATIONAL             ' PIC X(33).
 1667            05 VALUE ' COMPUTATIONAL-1           ' PIC X(33).
 1668            05 VALUE ' COMPUTATIONAL-2           ' PIC X(33).
 1669            05 VALUE ' COMPUTATIONAL-3           ' PIC X(33).
 1670            05 VALUE ' COMPUTATIONAL-4           ' PIC X(33).
 1671            05 VALUE ' COMPUTATIONAL-5           ' PIC X(33).
 1672            05 VALUE ' COMPUTATIONAL-X           ' PIC X(33).
 1673            05 VALUE 'VCOMPUTE                   ' PIC X(33).
 1674 GC1213     05 VALUE 'FCONCATENATE               ' PIC X(33).
 1675 GC0712     05 VALUE ' CONDITION                 ' PIC X(33).
 1676            05 VALUE 'KCONFIGURATION             ' PIC X(33).
 1677            05 VALUE 'MCONSOLE                   ' PIC X(33).
 1678            05 VALUE ' CONSTANT                  ' PIC X(33).
 1679            05 VALUE ' CONTAINS                  ' PIC X(33).
 1680 GC0712     05 VALUE 'ACONTENT                   ' PIC X(33).
 1681            05 VALUE 'VCONTINUE                  ' PIC X(33).
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1682              05 VALUE ' CONTROL                        ' PIC X(33).
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GNUCOBOL 2.2 20JUL2017  Source Listing                              2017/07/22
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                          Page: 41
====== =========================================================================================
 1683            05 VALUE ' CONTROLS               ' PIC X(33).
 1684 GC0711     05 VALUE ' CONVERSION             ' PIC X(33).
 1685            05 VALUE 'KCONVERTING             ' PIC X(33).
 1686            05 VALUE ' COPY                   ' PIC X(33).
 1687            05 VALUE ' CORR                   ' PIC X(33).
 1688            05 VALUE ' CORRESPONDING          ' PIC X(33).
 1689 GC1213     05 VALUE 'FCOS                    ' PIC X(33).
 1690            05 VALUE 'KCOUNT                  ' PIC X(33).
 1691            05 VALUE ' CRT                    ' PIC X(33).
 1692            05 VALUE ' CRT-UNDER              ' PIC X(33).
 1693            05 VALUE 'MCSP                    ' PIC X(33).
 1694            05 VALUE ' CURRENCY               ' PIC X(33).
 1695 GC1213     05 VALUE 'FCURRENCY-SYMBOL        ' PIC X(33).
 1696 GC1213     05 VALUE 'FCURRENT-DATE           ' PIC X(33).
 1697            05 VALUE ' CURSOR                 ' PIC X(33).
 1698            05 VALUE ' CYCLE                  ' PIC X(33).
 1699            05 VALUE 'KDATA                   ' PIC X(33).
 1700            05 VALUE ' DATA-POINTER           ' PIC X(33).     UNIMPLEMENTED
 1701            05 VALUE ' DATE                   ' PIC X(33).
 1702            05 VALUE ' DATE-COMPILED          ' PIC X(33).     OBSOLETE
 1703            05 VALUE ' DATE-MODIFIED          ' PIC X(33).     OBSOLETE
 1704 GC1213     05 VALUE 'FDATE-OF-INTEGER        ' PIC X(33).
 1705 GC1213     05 VALUE 'FDATE-TO-YYYYMMDD       ' PIC X(33).
 1706            05 VALUE ' DATE-WRITTEN           ' PIC X(33).     OBSOLETE
 1707            05 VALUE ' DAY                    ' PIC X(33).
 1708 GC1213     05 VALUE 'FDAY-OF-INTEGER         ' PIC X(33).
 1709            05 VALUE ' DAY-OF-WEEK            ' PIC X(33).
 1710 GC1213     05 VALUE 'IDAY-TO-YYYYDDD         ' PIC X(33).
 1711            05 VALUE ' DE                     ' PIC X(33).
 1712 GC0712     05 VALUE 'IDEBUG-CONTENTS         ' PIC X(33).
 1713 GC0712     05 VALUE 'IDEBUG-ITEM             ' PIC X(33).
 1714 GC0712     05 VALUE 'IDEBUG-LINE             ' PIC X(33).
 1715 GC0712     05 VALUE 'IDEBUG-NAME             ' PIC X(33).
 1716 GC0712     05 VALUE 'IDEBUG-SUB-1            ' PIC X(33).
 1717 GC0712     05 VALUE 'IDEBUG-SUB-2            ' PIC X(33).
 1718 GC0712     05 VALUE 'IDEBUG-SUB-3            ' PIC X(33).
 1719            05 VALUE ' DEBUGGING              ' PIC X(33).
 1720            05 VALUE ' DECIMAL-POINT          ' PIC X(33).
 1721            05 VALUE ' DECLARATIVES           ' PIC X(33).
 1722            05 VALUE ' DEFAULT                ' PIC X(33).
 1723            05 VALUE 'VDELETE                 ' PIC X(33).
 1724            05 VALUE ' DELIMITED              ' PIC X(33).
 1725            05 VALUE 'KDELIMITER              ' PIC X(33).
 1726            05 VALUE ' DEPENDING              ' PIC X(33).
 1727            05 VALUE ' DESCENDING             ' PIC X(33).
 1728            05 VALUE ' DESTINATION            ' PIC X(33).     UNIMPLEMENTED
 1729            05 VALUE ' DETAIL                 ' PIC X(33).
 1730 GC0711     05 VALUE ' DISC                   ' PIC X(33).
 1731            05 VALUE ' DISK                   ' PIC X(33).
 1732            05 VALUE 'VDISPLAY                ' PIC X(33).
 1733 GC1213     05 VALUE 'FDISPLAY-OF             ' PIC X(33).     UNIMPLEMENTED
 1734            05 VALUE 'VDIVIDE                 ' PIC X(33).
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   1735            05 VALUE 'KDIVISION                        ' PIC X(33).
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GNUCOBOL 2.2 20JUL2017  Source Listing                                       2017/07/22
                                              /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                               Page: 42
======  ================================================================================
 1736              05 VALUE 'KDOWN                      ' PIC X(33).
 1737              05 VALUE ' DUPLICATES                ' PIC X(33).
 1738              05 VALUE ' DYNAMIC                   ' PIC X(33).
 1739 GC1213       05 VALUE 'FE                         ' PIC X(33).
 1740              05 VALUE ' EBCDIC                    ' PIC X(33).
 1741 GC0712       05 VALUE ' EC                        ' PIC X(33).
 1742              05 VALUE ' EGI                       ' PIC X(33).    OBSOLETE
 1743              05 VALUE 'VELSE                      ' PIC X(33).
 1744              05 VALUE ' EMI                       ' PIC X(33).    OBSOLETE
 1745              05 VALUE ' EMPTY-CHECK               ' PIC X(33).
 1746              05 VALUE 'VENABLE                    ' PIC X(33).    OBSOLETE
 1747 GC0710       05 VALUE 'KEND                       ' PIC X(33).
 1748              05 VALUE ' END-ACCEPT                ' PIC X(33).
 1749              05 VALUE ' END-ADD                   ' PIC X(33).
 1750              05 VALUE ' END-CALL                  ' PIC X(33).
 1751              05 VALUE ' END-CHAIN                 ' PIC X(33).    UNIMPLEMENTED
 1752              05 VALUE ' END-COMPUTE               ' PIC X(33).
 1753              05 VALUE ' END-DELETE                ' PIC X(33).
 1754              05 VALUE ' END-DISPLAY               ' PIC X(33).
 1755              05 VALUE ' END-DIVIDE                ' PIC X(33).
 1756              05 VALUE ' END-EVALUATE              ' PIC X(33).
 1757              05 VALUE ' END-IF                    ' PIC X(33).
 1758              05 VALUE ' END-MULTIPLY              ' PIC X(33).
 1759              05 VALUE ' END-OF-PAGE               ' PIC X(33).
 1760              05 VALUE ' END-PERFORM               ' PIC X(33).
 1761              05 VALUE ' END-READ                  ' PIC X(33).
 1762              05 VALUE ' END-RECEIVE               ' PIC X(33).    OBSOLETE
 1763              05 VALUE ' END-RETURN                ' PIC X(33).
 1764              05 VALUE ' END-REWRITE               ' PIC X(33).
 1765              05 VALUE ' END-SEARCH                ' PIC X(33).
 1766              05 VALUE ' END-START                 ' PIC X(33).
 1767              05 VALUE ' END-STRING                ' PIC X(33).
 1768              05 VALUE ' END-SUBTRACT              ' PIC X(33).
 1769              05 VALUE ' END-UNSTRING              ' PIC X(33).
 1770              05 VALUE ' END-WRITE                 ' PIC X(33).
 1771              05 VALUE 'VENTRY                     ' PIC X(33).
 1772              05 VALUE ' ENTRY-CONVENTION          ' PIC X(33).    UNIMPLEMENTED
 1773              05 VALUE 'KENVIRONMENT               ' PIC X(33).
 1774              05 VALUE ' ENVIRONMENT-NAME          ' PIC X(33).
 1775              05 VALUE ' ENVIRONMENT-VALUE         ' PIC X(33).
 1776              05 VALUE ' EO                        ' PIC X(33).    UNIMPLEMENTED
 1777              05 VALUE ' EOL                       ' PIC X(33).
 1778              05 VALUE ' EOP                       ' PIC X(33).
 1779              05 VALUE ' EOS                       ' PIC X(33).
 1780              05 VALUE ' EQUAL                     ' PIC X(33).
 1781              05 VALUE 'KEQUALS                    ' PIC X(33).
 1782              05 VALUE ' ERASE                     ' PIC X(33).
 1783              05 VALUE ' ERROR                     ' PIC X(33).
 1784              05 VALUE ' ESCAPE                    ' PIC X(33).
 1785              05 VALUE ' ESI                       ' PIC X(33).    OBSOLETE
 1786              05 VALUE 'VEVALUATE                  ' PIC X(33).
 1787              05 VALUE ' EXCEPTION                 ' PIC X(33).
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1788 GC1213    05 VALUE 'FEXCEPTION-FILE                ' PIC X(33).
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GNUCOBOL 2.2 20JUL2017  Source Listing                                  2017/07/22
                                       /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                          Page: 43
====== ==========================================================================
  1789 GC1213    05 VALUE 'FEXCEPTION-FILE-N          ' PIC X(33).   UNIMPLEMENTED
  1790 GC1213    05 VALUE 'FEXCEPTION-LOCATION        ' PIC X(33).
  1791 GC1213    05 VALUE 'FEXCEPTION-LOCATION-N      ' PIC X(33).   UNIMPLEMENTED
  1792           05 VALUE ' EXCEPTION-OBJECT          ' PIC X(33).   UNIMPLEMENTED
  1793 GC1213    05 VALUE 'FEXCEPTION-STATEMENT       ' PIC X(33).
  1794 GC1213    05 VALUE 'FEXCEPTION-STATUS          ' PIC X(33).
  1795           05 VALUE ' EXCLUSIVE                 ' PIC X(33).
  1796           05 VALUE 'VEXIT                      ' PIC X(33).
  1797 GC1213    05 VALUE 'FEXP                       ' PIC X(33).
  1798 GC1213    05 VALUE 'FEXP10                     ' PIC X(33).
  1799           05 VALUE ' EXPANDS                   ' PIC X(33).   UNIMPLEMENTED
  1800           05 VALUE ' EXTEND                    ' PIC X(33).
  1801           05 VALUE ' EXTERNAL                  ' PIC X(33).
  1802 GC1213    05 VALUE 'FFACTORIAL                 ' PIC X(33).
  1803           05 VALUE ' FACTORY                   ' PIC X(33).   UNIMPLEMENTED
  1804           05 VALUE ' FALSE                     ' PIC X(33).
  1805           05 VALUE 'KFD                        ' PIC X(33).
  1806           05 VALUE 'KFILE                      ' PIC X(33).
  1807           05 VALUE ' FILE-CONTROL              ' PIC X(33).
  1808           05 VALUE ' FILE-ID                   ' PIC X(33).
  1809 GC1113    05 VALUE ' FILLER                    ' PIC X(33).
  1810           05 VALUE ' FINAL                     ' PIC X(33).
  1811           05 VALUE ' FIRST                     ' PIC X(33).
  1812 GC0712    05 VALUE ' FLOAT-BINARY-128          ' PIC X(33).   UNIMPLEMENTED
  1813 GC0712    05 VALUE ' FLOAT-BINARY-32           ' PIC X(33).   UNIMPLEMENTED
  1814 GC0712    05 VALUE ' FLOAT-BINARY-64           ' PIC X(33).   UNIMPLEMENTED
  1815           05 VALUE ' FLOAT-DECIMAL-16          ' PIC X(33).
  1816           05 VALUE ' FLOAT-DECIMAL-34          ' PIC X(33).
  1817           05 VALUE ' FLOAT-EXTENDED            ' PIC X(33).   UNIMPLEMENTED
  1818 GC0712    05 VALUE ' FLOAT-INFINITY            ' PIC X(33).   UNIMPLEMENTED
  1819           05 VALUE ' FLOAT-LONG                ' PIC X(33).
  1820 GC0712    05 VALUE ' FLOAT-NOT-A-NUMBER        ' PIC X(33).   UNIMPLEMENTED
  1821           05 VALUE ' FLOAT-SHORT               ' PIC X(33).
  1822           05 VALUE ' FOOTING                   ' PIC X(33).
  1823           05 VALUE ' FOR                       ' PIC X(33).
  1824           05 VALUE ' FOREGROUND-COLOR          ' PIC X(33).
  1825           05 VALUE ' FOREGROUND-COLOUR         ' PIC X(33).
  1826 GC0711    05 VALUE ' FOREVER                   ' PIC X(33).
  1827           05 VALUE ' FORMAT                    ' PIC X(33).   UNIMPLEMENTED
  1828 GC1213    05 VALUE 'FFORMATTED-CURRENT-DATE    ' PIC X(33).   UNIMPLEMENTED
  1829 GC1213    05 VALUE 'FFORMATTED-DATE            ' PIC X(33).   UNIMPLEMENTED
  1830 GC1213    05 VALUE 'FFORMATTED-DATETIME        ' PIC X(33).   UNIMPLEMENTED
  1831 GC1213    05 VALUE 'FFORMATTED-TIME            ' PIC X(33).   UNIMPLEMENTED
  1832           05 VALUE 'MFORMFEED                  ' PIC X(33).
  1833 GC1213    05 VALUE 'FFRACTION-PART             ' PIC X(33).
  1834           05 VALUE 'VFREE                      ' PIC X(33).
  1835           05 VALUE ' FROM                      ' PIC X(33).
  1836           05 VALUE ' FULL                      ' PIC X(33).
  1837           05 VALUE ' FUNCTION                  ' PIC X(33).
  1838 GC0712    05 VALUE 'KFUNCTION-ID               ' PIC X(33).
  1839           05 VALUE ' FUNCTION-POINTER          ' PIC X(33).   UNIMPLEMENTED
  1840           05 VALUE 'VGENERATE                  ' PIC X(33).
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  1841          05 VALUE ' GET                          ' PIC X(33).     UNIMPLEMENTED
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 1842           05 VALUE 'KGIVING                    ' PIC X(33).
 1843           05 VALUE ' GLOBAL                     ' PIC X(33).
 1844           05 VALUE 'VGO                         ' PIC X(33).
 1845           05 VALUE 'VGOBACK                     ' PIC X(33).
 1846           05 VALUE ' GREATER                    ' PIC X(33).
 1847           05 VALUE ' GROUP                      ' PIC X(33).
 1848           05 VALUE ' GROUP-USAGE                ' PIC X(33).      UNIMPLEMENTED
 1849           05 VALUE ' HEADING                    ' PIC X(33).
 1850           05 VALUE ' HIGH-VALUE                 ' PIC X(33).
 1851           05 VALUE ' HIGH-VALUES                ' PIC X(33).
 1852 GC1213    05 VALUE 'FHIGHEST-ALGEBRAIC          ' PIC X(33).
 1853           05 VALUE ' HIGHLIGHT                  ' PIC X(33).
 1854           05 VALUE ' I-O                        ' PIC X(33).
 1855           05 VALUE ' I-O-CONTROL                ' PIC X(33).
 1856           05 VALUE 'KID                         ' PIC X(33).
 1857           05 VALUE 'KIDENTIFICATION             ' PIC X(33).
 1858           05 VALUE 'VIF                         ' PIC X(33).
 1859           05 VALUE ' IGNORE                     ' PIC X(33).
 1860           05 VALUE ' IGNORING                   ' PIC X(33).
 1861           05 VALUE ' IMPLEMENTS                 ' PIC X(33).      UNIMPLEMENTED
 1862           05 VALUE ' IN                         ' PIC X(33).
 1863           05 VALUE ' INDEX                      ' PIC X(33).
 1864           05 VALUE 'KINDEXED                    ' PIC X(33).
 1865           05 VALUE ' INDICATE                   ' PIC X(33).
 1866           05 VALUE ' INDIRECT                   ' PIC X(33).      UNIMPLEMENTED
 1867           05 VALUE ' INHERITS                   ' PIC X(33).      UNIMPLEMENTED
 1868           05 VALUE ' INITIAL                    ' PIC X(33).
 1869           05 VALUE 'VINITIALISE                 ' PIC X(33).
 1870           05 VALUE ' INITIALISED                ' PIC X(33).
 1871           05 VALUE 'VINITIALIZE                 ' PIC X(33).
 1872           05 VALUE ' INITIALIZED                ' PIC X(33).
 1873           05 VALUE 'VINITIATE                   ' PIC X(33).
 1874           05 VALUE ' INPUT                      ' PIC X(33).
 1875           05 VALUE 'KINPUT-OUTPUT               ' PIC X(33).
 1876           05 VALUE 'VINSPECT                    ' PIC X(33).
 1877           05 VALUE ' INSTALLATION               ' PIC X(33).      OBSOLETE
 1878 GC1213    05 VALUE 'FINTEGER                    ' PIC X(33).
 1879 GC1213    05 VALUE 'FINTEGER-OF-BOOLEAN         ' PIC X(33).      UNIMPLEMENTED
 1880 GC1213    05 VALUE 'FINTEGER-OF-DATE            ' PIC X(33).
 1881 GC1213    05 VALUE 'FINTEGER-OF-DAY             ' PIC X(33).
 1882 GC1213    05 VALUE 'FINTEGER-OF-FORMATTED-DATE  ' PIC X(33).      UNIMPLEMENTED
 1883 GC1213    05 VALUE 'FINTEGER-PART               ' PIC X(33).
 1884           05 VALUE ' INTERFACE                  ' PIC X(33).      UNIMPLEMENTED
 1885           05 VALUE ' INTERFACE-ID               ' PIC X(33).      UNIMPLEMENTED
 1886           05 VALUE ' INTERMEDIATE               ' PIC X(33).      UNIMPLEMENTED
 1887           05 VALUE 'KINTO                       ' PIC X(33).
 1888           05 VALUE ' INTRINSIC                  ' PIC X(33).
 1889           05 VALUE ' INVALID                    ' PIC X(33).
 1890           05 VALUE ' INVOKE                     ' PIC X(33).      UNIMPLEMENTED
 1891           05 VALUE ' IS                         ' PIC X(33).
 1892           05 VALUE ' JUST                       ' PIC X(33).
 1893           05 VALUE ' JUSTIFIED                  ' PIC X(33).
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1894             05 VALUE ' KEPT                            ' PIC X(33).
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 1895           05 VALUE ' KEY                       ' PIC X(33).
 1896           05 VALUE ' KEYBOARD                  ' PIC X(33).
 1897           05 VALUE ' LABEL                     ' PIC X(33).
 1898           05 VALUE ' LAST                      ' PIC X(33).
 1899           05 VALUE ' LC_ALL                    ' PIC X(33).     UNIMPLEMENTED
 1900           05 VALUE ' LC_COLLATE                ' PIC X(33).     UNIMPLEMENTED
 1901           05 VALUE ' LC_CTYPE                  ' PIC X(33).     UNIMPLEMENTED
 1902           05 VALUE ' LC_MESSAGES               ' PIC X(33).     UNIMPLEMENTED
 1903           05 VALUE ' LC_MONETARY               ' PIC X(33).     UNIMPLEMENTED
 1904           05 VALUE ' LC_NUMERIC                ' PIC X(33).     UNIMPLEMENTED
 1905           05 VALUE ' LC_TIME                   ' PIC X(33).     UNIMPLEMENTED
 1906           05 VALUE ' LEADING                   ' PIC X(33).
 1907           05 VALUE ' LEFT                      ' PIC X(33).
 1908           05 VALUE ' LEFT-JUSTIFY              ' PIC X(33).     UNIMPLEMENTED
 1909           05 VALUE ' LEFTLINE                  ' PIC X(33).
 1910 GC1213    05 VALUE 'FLENGTH                    ' PIC X(33).
 1911 GC1213    05 VALUE 'FLENGTH-AN                 ' PIC X(33).
 1912           05 VALUE ' LENGTH-CHECK              ' PIC X(33).
 1913           05 VALUE ' LESS                      ' PIC X(33).
 1914           05 VALUE ' LIMIT                     ' PIC X(33).
 1915           05 VALUE ' LIMITS                    ' PIC X(33).
 1916           05 VALUE ' LINAGE                    ' PIC X(33).
 1917           05 VALUE 'ILINAGE-COUNTER            ' PIC X(33).
 1918           05 VALUE ' LINE                      ' PIC X(33).
 1919 GC1213    05 VALUE 'ILINE-COUNTER              ' PIC X(33).
 1920           05 VALUE ' LINES                     ' PIC X(33).
 1921           05 VALUE 'KLINKAGE                   ' PIC X(33).
 1922           05 VALUE 'KLOCAL-STORAGE             ' PIC X(33).
 1923           05 VALUE ' LOCALE                    ' PIC X(33).
 1924 GC1213    05 VALUE 'FLOCALE-COMPARE            ' PIC X(33).
 1925 GC1213    05 VALUE 'FLOCALE-DATE               ' PIC X(33).
 1926 GC1213    05 VALUE 'FLOCALE-TIME               ' PIC X(33).
 1927 GC1213    05 VALUE 'FLOCALE-TIME-FROM-SECONDS  ' PIC X(33).
 1928           05 VALUE ' LOCK                      ' PIC X(33).
 1929 GC1213    05 VALUE 'FLOG                       ' PIC X(33).
 1930 GC1213    05 VALUE 'FLOG10                     ' PIC X(33).
 1931           05 VALUE ' LOW-VALUE                 ' PIC X(33).
 1932           05 VALUE ' LOW-VALUES                ' PIC X(33).
 1933           05 VALUE ' LOWER                     ' PIC X(33).
 1934 GC1213    05 VALUE 'FLOWER-CASE                ' PIC X(33).
 1935 GC1213    05 VALUE 'FLOWEST-ALGEBRAIC          ' PIC X(33).
 1936           05 VALUE ' LOWLIGHT                  ' PIC X(33).
 1937           05 VALUE ' MANUAL                    ' PIC X(33).
 1938 GC1213    05 VALUE 'FMAX                       ' PIC X(33).
 1939 GC1213    05 VALUE 'FMEAN                      ' PIC X(33).
 1940 GC1213    05 VALUE 'FMEDIAN                    ' PIC X(33).
 1941           05 VALUE ' MEMORY                    ' PIC X(33).
 1942           05 VALUE 'VMERGE                     ' PIC X(33).
 1943           05 VALUE ' MESSAGE                   ' PIC X(33).     OBSOLETE
 1944           05 VALUE ' METHOD                    ' PIC X(33).     UNIMPLEMENTED
 1945           05 VALUE ' METHOD-ID                 ' PIC X(33).     UNIMPLEMENTED
 1946 GC1213    05 VALUE 'FMIDRANGE                  ' PIC X(33).
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  1947 GC1213    05 VALUE 'FMIN                             ' PIC X(33).
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 1948             05 VALUE ' MINUS                   ' PIC X(33).
 1949 GC1213      05 VALUE 'FMOD                     ' PIC X(33).
 1950             05 VALUE ' MODE                    ' PIC X(33).
 1951 GC1213      05 VALUE 'FMODULE-CALLER-ID        ' PIC X(33).
 1952 GC1213      05 VALUE 'FMODULE-DATE             ' PIC X(33).
 1953 GC1213      05 VALUE 'FMODULE-FORMATTED-DATE   ' PIC X(33).
 1954 GC1213      05 VALUE 'FMODULE-ID               ' PIC X(33).
 1955 GC1213      05 VALUE 'FMODULE-PATH             ' PIC X(33).
 1956 GC1213      05 VALUE 'FMODULE-SOURCE           ' PIC X(33).
 1957 GC1213      05 VALUE 'FMODULE-TIME             ' PIC X(33).
 1958 GC1213      05 VALUE 'FMONETARY-DECIMAL-POINT  ' PIC X(33).
 1959 GC1213      05 VALUE 'FMONETARY-THOUSANDS-SEPARATOR ' PIC X(33).
 1960             05 VALUE 'VMOVE                    ' PIC X(33).
 1961             05 VALUE ' MULTIPLE                ' PIC X(33).
 1962             05 VALUE 'VMULTIPLY                ' PIC X(33).
 1963 GC0711      05 VALUE ' NAME                    ' PIC X(33).
 1964             05 VALUE ' NATIONAL                ' PIC X(33).
 1965             05 VALUE ' NATIONAL-EDITED         ' PIC X(33).
 1966 GC1213      05 VALUE 'FNATIONAL-OF             ' PIC X(33).      UNIMPLEMENTED
 1967             05 VALUE ' NATIVE                  ' PIC X(33).
 1968             05 VALUE ' NEAREST-AWAY-FROM-ZERO  ' PIC X(33).
 1969             05 VALUE ' NEAREST-EVEN            ' PIC X(33).
 1970             05 VALUE ' NEAREST-TOWARD-ZERO     ' PIC X(33).
 1971             05 VALUE ' NEGATIVE                ' PIC X(33).
 1972             05 VALUE ' NESTED                  ' PIC X(33).      UNIMPLEMENTED
 1973             05 VALUE 'VNEXT                    ' PIC X(33).
 1974             05 VALUE ' NO                      ' PIC X(33).
 1975             05 VALUE ' NO-ECHO                 ' PIC X(33).
 1976             05 VALUE ' NONE                    ' PIC X(33).      UNIMPLEMENTED
 1977             05 VALUE ' NORMAL                  ' PIC X(33).
 1978             05 VALUE ' NOT                     ' PIC X(33).
 1979             05 VALUE ' NULL                    ' PIC X(33).
 1980             05 VALUE ' NULLS                   ' PIC X(33).
 1981             05 VALUE ' NUMBER                  ' PIC X(33).
 1982             05 VALUE 'INUMBER-OF-CALL-PARAMETERS ' PIC X(33).
 1983             05 VALUE ' NUMBERS                 ' PIC X(33).
 1984             05 VALUE ' NUMERIC                 ' PIC X(33).
 1985 GC1213      05 VALUE 'FNUMERIC-DECIMAL-POINT   ' PIC X(33).
 1986             05 VALUE ' NUMERIC-EDITED          ' PIC X(33).
 1987 GC1213      05 VALUE 'FNUMERIC-THOUSANDS-SEPARATOR ' PIC X(33).
 1988 GC1213      05 VALUE 'FNUMVAL                  ' PIC X(33).
 1989 GC1213      05 VALUE 'FNUMVAL-C                ' PIC X(33).
 1990 GC1213      05 VALUE 'FNUMVAL-F                ' PIC X(33).
 1991             05 VALUE ' OBJECT                  ' PIC X(33).      UNIMPLEMENTED
 1992             05 VALUE ' OBJECT-COMPUTER         ' PIC X(33).
 1993             05 VALUE ' OBJECT-REFERENCE        ' PIC X(33).      UNIMPLEMENTED
 1994             05 VALUE ' OCCURS                  ' PIC X(33).
 1995             05 VALUE ' OF                      ' PIC X(33).
 1996             05 VALUE ' OFF                     ' PIC X(33).
 1997             05 VALUE ' OMITTED                 ' PIC X(33).
 1998             05 VALUE ' ON                      ' PIC X(33).
 1999             05 VALUE ' ONLY                    ' PIC X(33).
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  2000              05 VALUE 'VOPEN                               ' PIC X(33).
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 2001            05 VALUE ’ OPTIONAL              ’ PIC X(33).
 2002            05 VALUE ’ OPTIONS               ’ PIC X(33).      UNIMPLEMENTED
 2003            05 VALUE ’ OR                    ’ PIC X(33).
 2004 GC1213     05 VALUE ’FORD                   ’ PIC X(33).
 2005 GC1213     05 VALUE ’FORD-MAX               ’ PIC X(33).
 2006 GC1213     05 VALUE ’FORD-MIN               ’ PIC X(33).
 2007            05 VALUE ’ ORDER                 ’ PIC X(33).
 2008            05 VALUE ’ ORGANISATION          ’ PIC X(33).
 2009            05 VALUE ’ ORGANIZATION          ’ PIC X(33).
 2010            05 VALUE ’ OTHER                 ’ PIC X(33).
 2011            05 VALUE ’ OUTPUT                ’ PIC X(33).
 2012            05 VALUE ’ OVERFLOW              ’ PIC X(33).
 2013            05 VALUE ’ OVERLINE              ’ PIC X(33).
 2014            05 VALUE ’ OVERRIDE              ’ PIC X(33).
 2015            05 VALUE ’ PACKED-DECIMAL        ’ PIC X(33).
 2016            05 VALUE ’ PADDING               ’ PIC X(33).
 2017            05 VALUE ’ PAGE                  ’ PIC X(33).
 2018 GC1213     05 VALUE ’IPAGE-COUNTER          ’ PIC X(33).
 2019            05 VALUE ’ PARAGRAPH             ’ PIC X(33).
 2020            05 VALUE ’VPERFORM               ’ PIC X(33).
 2021            05 VALUE ’ PF                    ’ PIC X(33).
 2022            05 VALUE ’ PH                    ’ PIC X(33).
 2023 GC1213     05 VALUE ’FPI                    ’ PIC X(33).
 2024            05 VALUE ’KPIC                   ’ PIC X(33).
 2025            05 VALUE ’KPICTURE               ’ PIC X(33).
 2026            05 VALUE ’ PLUS                  ’ PIC X(33).
 2027            05 VALUE ’KPOINTER               ’ PIC X(33).
 2028            05 VALUE ’ POSITION              ’ PIC X(33).
 2029            05 VALUE ’ POSITIVE              ’ PIC X(33).
 2030            05 VALUE ’ PREFIXED              ’ PIC X(33).      UNIMPLEMENTED
 2031            05 VALUE ’ PRESENT               ’ PIC X(33).
 2032 GC1213     05 VALUE ’FPRESENT-VALUE         ’ PIC X(33).
 2033            05 VALUE ’ PREVIOUS              ’ PIC X(33).
 2034            05 VALUE ’MPRINTER               ’ PIC X(33).
 2035            05 VALUE ’ PRINTING              ’ PIC X(33).
 2036            05 VALUE ’KPROCEDURE             ’ PIC X(33).
 2037            05 VALUE ’ PROCEDURE-POINTER     ’ PIC X(33).
 2038            05 VALUE ’ PROCEDURES            ’ PIC X(33).
 2039            05 VALUE ’ PROCEED               ’ PIC X(33).
 2040            05 VALUE ’ PROGRAM               ’ PIC X(33).
 2041            05 VALUE ’KPROGRAM-ID            ’ PIC X(33).
 2042            05 VALUE ’ PROGRAM-POINTER       ’ PIC X(33).
 2043            05 VALUE ’ PROHIBITED            ’ PIC X(33).
 2044            05 VALUE ’ PROMPT                ’ PIC X(33).
 2045            05 VALUE ’ PROPERTY              ’ PIC X(33).      UNIMPLEMENTED
 2046            05 VALUE ’ PROTOTYPE             ’ PIC X(33).      UNIMPLEMENTED
 2047            05 VALUE ’ PURGE                 ’ PIC X(33).      OBSOLETE
 2048            05 VALUE ’ QUEUE                 ’ PIC X(33).      OBSOLETE
 2049            05 VALUE ’ QUOTE                 ’ PIC X(33).
 2050            05 VALUE ’ QUOTES                ’ PIC X(33).
 2051            05 VALUE ’ RAISE                 ’ PIC X(33).      UNIMPLEMENTED
 2052            05 VALUE ’ RAISING               ’ PIC X(33).      UNIMPLEMENTED
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  2053 GC1213     05 VALUE 'FRANDOM                           ' PIC X(33).
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  2054 GC1213    05 VALUE 'FRANGE                        ' PIC X(33).
  2055 GC1213    05 VALUE 'KRD                           ' PIC X(33).
  2056          05 VALUE 'VREAD                          ' PIC X(33).
  2057          05 VALUE 'VREADY                         ' PIC X(33).
  2058          05 VALUE 'VRECEIVE                       ' PIC X(33).     OBSOLETE
  2059          05 VALUE ' RECORD                        ' PIC X(33).
  2060          05 VALUE ' RECORDING                     ' PIC X(33).
  2061          05 VALUE ' RECORDS                       ' PIC X(33).
  2062          05 VALUE ' RECURSIVE                     ' PIC X(33).
  2063          05 VALUE 'KREDEFINES                     ' PIC X(33).
  2064          05 VALUE ' REEL                          ' PIC X(33).
  2065 GC0712    05 VALUE 'AREFERENCE                    ' PIC X(33).
  2066          05 VALUE ' REFERENCES                    ' PIC X(33).
  2067          05 VALUE ' RELATION                      ' PIC X(33).     UNIMPLEMENTED
  2068          05 VALUE ' RELATIVE                      ' PIC X(33).
  2069          05 VALUE 'VRELEASE                       ' PIC X(33).
  2070 GC1213    05 VALUE 'FREM                          ' PIC X(33).
  2071          05 VALUE ' REMAINDER                     ' PIC X(33).
  2072          05 VALUE ' REMARKS                       ' PIC X(33).     OBSOLETE
  2073          05 VALUE ' REMOVAL                       ' PIC X(33).
  2074          05 VALUE 'KRENAMES                       ' PIC X(33).
  2075          05 VALUE ' REPLACE                       ' PIC X(33).
  2076          05 VALUE 'KREPLACING                     ' PIC X(33).
  2077          05 VALUE 'KREPORT                        ' PIC X(33).
  2078          05 VALUE ' REPORTING                     ' PIC X(33).
  2079          05 VALUE ' REPORTS                       ' PIC X(33).
  2080          05 VALUE ' REPOSITORY                    ' PIC X(33).
  2081          05 VALUE ' REQUIRED                      ' PIC X(33).
  2082          05 VALUE ' RESERVE                       ' PIC X(33).
  2083          05 VALUE 'VRESET                         ' PIC X(33).
  2084          05 VALUE ' RESUME                        ' PIC X(33).     UNIMPLEMENTED
  2085          05 VALUE ' RETRY                         ' PIC X(33).     UNIMPLEMENTED
  2086          05 VALUE 'VRETURN                        ' PIC X(33).
  2087          05 VALUE 'IRETURN-CODE                   ' PIC X(33).
  2088          05 VALUE 'KRETURNING                     ' PIC X(33).
  2089 GC1213    05 VALUE 'FREVERSE                      ' PIC X(33).
  2090          05 VALUE ' REVERSE-VIDEO                 ' PIC X(33).
  2091          05 VALUE ' REVERSED                      ' PIC X(33).
  2092          05 VALUE ' REWIND                        ' PIC X(33).
  2093          05 VALUE 'VREWRITE                       ' PIC X(33).
  2094          05 VALUE ' RF                            ' PIC X(33).
  2095          05 VALUE ' RH                            ' PIC X(33).
  2096          05 VALUE ' RIGHT                         ' PIC X(33).
  2097          05 VALUE ' RIGHT-JUSTIFY                 ' PIC X(33).     UNIMPLEMENTED
  2098          05 VALUE 'VROLLBACK                      ' PIC X(33).
  2099          05 VALUE ' ROUNDED                       ' PIC X(33).
  2100          05 VALUE ' ROUNDING                      ' PIC X(33).     UNIMPLEMENTED
  2101          05 VALUE ' RUN                           ' PIC X(33).
  2102          05 VALUE ' SAME                          ' PIC X(33).
  2103          05 VALUE 'KSCREEN                        ' PIC X(33).
  2104          05 VALUE ' SCROLL                        ' PIC X(33).
  2105          05 VALUE 'KSD                            ' PIC X(33).
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2106           05 VALUE 'VSEARCH                        ' PIC X(33).
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 2108 GC1213    05 VALUE 'FSECONDS-FROM-FORMATTED-TIME   ' PIC X(33).
 2109 GC1213    05 VALUE 'FSECONDS-PAST-MIDNIGHT         ' PIC X(33).
 2110           05 VALUE 'KSECTION                       ' PIC X(33).
 2111           05 VALUE ' SECURE                        ' PIC X(33).
 2112           05 VALUE ' SECURITY                      ' PIC X(33).    OBSOLETE
 2113           05 VALUE ' SEGMENT                       ' PIC X(33).    OBSOLETE
 2114           05 VALUE ' SEGMENT-LIMIT                 ' PIC X(33).
 2115           05 VALUE ' SELECT                        ' PIC X(33).
 2116           05 VALUE ' SELF                          ' PIC X(33).    UNIMPLEMENTED
 2117           05 VALUE 'VSEND                          ' PIC X(33).    OBSOLETE
 2118           05 VALUE ' SENTENCE                      ' PIC X(33).
 2119           05 VALUE ' SEPARATE                      ' PIC X(33).
 2120           05 VALUE ' SEQUENCE                      ' PIC X(33).
 2121           05 VALUE ' SEQUENTIAL                    ' PIC X(33).
 2122           05 VALUE 'VSET                           ' PIC X(33).
 2123           05 VALUE ' SHARING                       ' PIC X(33).
 2124 GC1213    05 VALUE 'FSIGN                          ' PIC X(33).
 2125           05 VALUE ' SIGNED                        ' PIC X(33).
 2126           05 VALUE ' SIGNED-INT                    ' PIC X(33).
 2127           05 VALUE ' SIGNED-LONG                   ' PIC X(33).
 2128           05 VALUE ' SIGNED-SHORT                  ' PIC X(33).
 2129 GC1213    05 VALUE 'FSIN                           ' PIC X(33).
 2130           05 VALUE ' SIZE                          ' PIC X(33).
 2131           05 VALUE 'VSORT                          ' PIC X(33).
 2132           05 VALUE ' SORT-MERGE                    ' PIC X(33).
 2133           05 VALUE 'ISORT-RETURN                   ' PIC X(33).
 2134           05 VALUE ' SOURCE                        ' PIC X(33).
 2135           05 VALUE ' SOURCE-COMPUTER               ' PIC X(33).
 2136           05 VALUE ' SOURCES                       ' PIC X(33).    UNIMPLEMENTED
 2137           05 VALUE ' SPACE                         ' PIC X(33).
 2138           05 VALUE ' SPACE-FILL                    ' PIC X(33).    UNIMPLEMENTED
 2139           05 VALUE ' SPACES                        ' PIC X(33).
 2140           05 VALUE ' SPECIAL-NAMES                 ' PIC X(33).
 2141 GC1213    05 VALUE 'FSQRT                          ' PIC X(33).
 2142           05 VALUE ' STANDARD                      ' PIC X(33).
 2143           05 VALUE ' STANDARD-1                    ' PIC X(33).
 2144           05 VALUE ' STANDARD-2                    ' PIC X(33).
 2145           05 VALUE ' STANDARD-BINARY               ' PIC X(33).    UNIMPLEMENTED
 2146 GC1213    05 VALUE 'FSTANDARD-COMPARE              ' PIC X(33).    UNIMPLEMENTED
 2147           05 VALUE ' STANDARD-DECIMAL              ' PIC X(33).    UNIMPLEMENTED
 2148 GC1213    05 VALUE 'FSTANDARD-DEVIATION            ' PIC X(33).
 2149           05 VALUE 'VSTART                         ' PIC X(33).
 2150           05 VALUE ' STATEMENT                     ' PIC X(33).    UNIMPLEMENTED
 2151           05 VALUE ' STATIC                        ' PIC X(33).
 2152           05 VALUE ' STATUS                        ' PIC X(33).
 2153           05 VALUE ' STDCALL                       ' PIC X(33).
 2154           05 VALUE 'MSTDERR                        ' PIC X(33).
 2155           05 VALUE 'MSTDIN                         ' PIC X(33).
 2156           05 VALUE 'MSTDOUT                        ' PIC X(33).
 2157           05 VALUE ' STEP                          ' PIC X(33).
 2158           05 VALUE 'VSTOP                          ' PIC X(33).
```

```
 2159 GC1213     05 VALUE 'FSTORED-CHAR-LENGTH               ' PIC X(33).
```

```
GNUCOBOL 2.2 20JUL2017  Source Listing                              2017/07/22
                                         /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                            Page: 50
====== =========================================================================
 2160            05 VALUE 'VSTRING              ' PIC X(33).
 2161            05 VALUE ' STRONG              ' PIC X(33).    UNIMPLEMENTED
 2162            05 VALUE ' SUB-QUEUE-1         ' PIC X(33).    OBSOLETE
 2163            05 VALUE ' SUB-QUEUE-2         ' PIC X(33).    OBSOLETE
 2164            05 VALUE ' SUB-QUEUE-3         ' PIC X(33).    OBSOLETE
 2165 GC1213     05 VALUE 'FSUBSTITUTE          ' PIC X(33).
 2166 GC1213     05 VALUE 'FSUBSTITUTE-CASE     ' PIC X(33).
 2167            05 VALUE 'VSUBTRACT            ' PIC X(33).
 2168 GC1213     05 VALUE 'FSUM                 ' PIC X(33).
 2169            05 VALUE ' SUPER               ' PIC X(33).    UNIMPLEMENTED
 2170            05 VALUE 'VSUPPRESS            ' PIC X(33).
 2171            05 VALUE 'MSW0                 ' PIC X(33).
 2172            05 VALUE 'MSW1                 ' PIC X(33).
 2173            05 VALUE 'MSW10                ' PIC X(33).
 2174            05 VALUE 'MSW11                ' PIC X(33).
 2175            05 VALUE 'MSW12                ' PIC X(33).
 2176            05 VALUE 'MSW13                ' PIC X(33).
 2177            05 VALUE 'MSW14                ' PIC X(33).
 2178            05 VALUE 'MSW15                ' PIC X(33).
 2179            05 VALUE 'MSW2                 ' PIC X(33).
 2180            05 VALUE 'MSW3                 ' PIC X(33).
 2181            05 VALUE 'MSW4                 ' PIC X(33).
 2182            05 VALUE 'MSW5                 ' PIC X(33).
 2183            05 VALUE 'MSW6                 ' PIC X(33).
 2184            05 VALUE 'MSW7                 ' PIC X(33).
 2185            05 VALUE 'MSW8                 ' PIC X(33).
 2186            05 VALUE 'MSW9                 ' PIC X(33).
 2187            05 VALUE 'MSWITCH-0            ' PIC X(33).
 2188            05 VALUE 'MSWITCH-1            ' PIC X(33).
 2189            05 VALUE 'MSWITCH-10           ' PIC X(33).
 2190            05 VALUE 'MSWITCH-11           ' PIC X(33).
 2191            05 VALUE 'MSWITCH-12           ' PIC X(33).
 2192            05 VALUE 'MSWITCH-13           ' PIC X(33).
 2193            05 VALUE 'MSWITCH-14           ' PIC X(33).
 2194            05 VALUE 'MSWITCH-15           ' PIC X(33).
 2195            05 VALUE 'MSWITCH-2            ' PIC X(33).
 2196            05 VALUE 'MSWITCH-3            ' PIC X(33).
 2197            05 VALUE 'MSWITCH-4            ' PIC X(33).
 2198            05 VALUE 'MSWITCH-5            ' PIC X(33).
 2199            05 VALUE 'MSWITCH-6            ' PIC X(33).
 2200            05 VALUE 'MSWITCH-7            ' PIC X(33).
 2201            05 VALUE 'MSWITCH-8            ' PIC X(33).
 2202            05 VALUE 'MSWITCH-9            ' PIC X(33).
 2203            05 VALUE ' SYMBOL              ' PIC X(33).    UNIMPLEMENTED
 2204            05 VALUE ' SYMBOLIC            ' PIC X(33).
 2205            05 VALUE ' SYNC                ' PIC X(33).
 2206            05 VALUE ' SYNCHRONISED        ' PIC X(33).
 2207            05 VALUE ' SYNCHRONIZED        ' PIC X(33).
 2208            05 VALUE 'MSYSERR              ' PIC X(33).
 2209            05 VALUE 'MSYSIN               ' PIC X(33).
 2210            05 VALUE 'MSYSIPT              ' PIC X(33).
 2211            05 VALUE 'MSYSLIST             ' PIC X(33).
```

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

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GNUCOBOL 2.2 20JUL2017  Source Listing                                 2017/07/22
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                        Page: 51
====== ========================================================================================
 2213            05 VALUE 'MSYSOUT                      ' PIC X(33).
 2214            05 VALUE ' SYSTEM-DEFAULT              ' PIC X(33).
 2215            05 VALUE ' TABLE                       ' PIC X(33).      UNIMPLEMENTED
 2216            05 VALUE 'KTALLYING                    ' PIC X(33).
 2217 GC1213     05 VALUE 'FTAN                         ' PIC X(33).
 2218            05 VALUE ' TAPE                        ' PIC X(33).
 2219            05 VALUE ' TERMINAL                    ' PIC X(33).      OBSOLETE
 2220            05 VALUE 'VTERMINATE                   ' PIC X(33).
 2221            05 VALUE ' TEST                        ' PIC X(33).
 2222 GC1213     05 VALUE 'FTEST-DATE-YYYYMMDD          ' PIC X(33).
 2223 GC1213     05 VALUE 'FTEST-DAY-YYYYDDD            ' PIC X(33).
 2224 GC1213     05 VALUE 'FTEST-FORMATTED-DATETIME     ' PIC X(33).      UNIMPLEMENTED
 2225 GC1213     05 VALUE 'FTEST-NUMVAL                 ' PIC X(33).
 2226 GC1213     05 VALUE 'FTEST-NUMVAL-C               ' PIC X(33).
 2227 GC1213     05 VALUE 'FTEST-NUMVAL-F               ' PIC X(33).
 2228            05 VALUE ' TEXT                        ' PIC X(33).      OBSOLETE
 2229            05 VALUE ' THAN                        ' PIC X(33).
 2230            05 VALUE ' THEN                        ' PIC X(33).
 2231            05 VALUE ' THROUGH                     ' PIC X(33).
 2232            05 VALUE ' THRU                        ' PIC X(33).
 2233            05 VALUE ' TIME                        ' PIC X(33).
 2234 GC0711     05 VALUE ' TIME-OUT                    ' PIC X(33).
 2235 GC0711     05 VALUE ' TIMEOUT                     ' PIC X(33).
 2236            05 VALUE ' TIMES                       ' PIC X(33).
 2237            05 VALUE 'KTO                          ' PIC X(33).
 2238            05 VALUE ' TOP                         ' PIC X(33).
 2239            05 VALUE ' TOWARD-GREATER              ' PIC X(33).
 2240            05 VALUE ' TOWARD-LESSER               ' PIC X(33).
 2241            05 VALUE ' TRAILING                    ' PIC X(33).
 2242            05 VALUE ' TRAILING-SIGN               ' PIC X(33).      UNIMPLEMENTED
 2243            05 VALUE 'VTRANSFORM                   ' PIC X(33).
 2244 GC1213     05 VALUE 'FTRIM                        ' PIC X(33).
 2245            05 VALUE ' TRUE                        ' PIC X(33).
 2246            05 VALUE ' TRUNCATION                  ' PIC X(33).
 2247            05 VALUE ' TYPE                        ' PIC X(33).
 2248            05 VALUE ' TYPEDEF                     ' PIC X(33).      UNIMPLEMENTED
 2249            05 VALUE ' UCS-4                       ' PIC X(33).      UNIMPLEMENTED
 2250            05 VALUE ' UNDERLINE                   ' PIC X(33).
 2251            05 VALUE ' UNIT                        ' PIC X(33).
 2252            05 VALUE ' UNIVERSAL                   ' PIC X(33).      UNIMPLEMENTED
 2253            05 VALUE 'VUNLOCK                      ' PIC X(33).
 2254            05 VALUE ' UNSIGNED                    ' PIC X(33).
 2255            05 VALUE ' UNSIGNED-INT                ' PIC X(33).
 2256            05 VALUE ' UNSIGNED-LONG               ' PIC X(33).
 2257            05 VALUE ' UNSIGNED-SHORT              ' PIC X(33).
 2258            05 VALUE 'VUNSTRING                    ' PIC X(33).
 2259            05 VALUE ' UNTIL                       ' PIC X(33).
 2260            05 VALUE 'KUP                          ' PIC X(33).
 2261            05 VALUE ' UPDATE                      ' PIC X(33).
 2262            05 VALUE ' UPON                        ' PIC X(33).
 2263            05 VALUE ' UPPER                       ' PIC X(33).
 2264 GC1213     05 VALUE 'FUPPER-CASE                  ' PIC X(33).
```

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

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GNUCOBOL 2.2 20JUL2017  Source Listing                                    2017/07/22
                                         /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                            Page: 52
====== =================================================================================
 2266           05 VALUE 'VUSE               ' PIC X(33).
 2267 GC0711    05 VALUE ' USER              ' PIC X(33).
 2268           05 VALUE ' USER-DEFAULT      ' PIC X(33).
 2269           05 VALUE 'KUSING             ' PIC X(33).
 2270           05 VALUE ' UTF-16            ' PIC X(33).        UNIMPLEMENTED
 2271           05 VALUE ' UTF-8             ' PIC X(33).        UNIMPLEMENTED
 2272           05 VALUE ' VAL-STATUS        ' PIC X(33).        UNIMPLEMENTED
 2273           05 VALUE ' VALID             ' PIC X(33).        UNIMPLEMENTED
 2274           05 VALUE ' VALIDATE          ' PIC X(33).        UNIMPLEMENTED
 2275           05 VALUE ' VALIDATE-STATUS   ' PIC X(33).        UNIMPLEMENTED
 2276 GC0712    05 VALUE 'AVALUE             ' PIC X(33).
 2277           05 VALUE ' VALUES            ' PIC X(33).
 2278 GC1213    05 VALUE 'FVARIANCE          ' PIC X(33).
 2279           05 VALUE 'KVARYING           ' PIC X(33).
 2280           05 VALUE ' VDISABLE          ' PIC X(33).        UNIMPLEMENTED
 2281           05 VALUE ' WAIT              ' PIC X(33).
 2282           05 VALUE 'VWHEN              ' PIC X(33).
 2283 GC1213    05 VALUE 'FWHEN-COMPILED     ' PIC X(33).
 2284           05 VALUE ' WITH              ' PIC X(33).
 2285           05 VALUE ' WORDS             ' PIC X(33).
 2286           05 VALUE 'KWORKING-STORAGE   ' PIC X(33).
 2287           05 VALUE 'VWRITE             ' PIC X(33).
 2288 GC1213    05 VALUE 'FYEAR-TO-YYYY      ' PIC X(33).
 2289           05 VALUE ' YYYYDDD           ' PIC X(33).
 2290           05 VALUE ' YYYYMMDD          ' PIC X(33).
 2291           05 VALUE ' ZERO              ' PIC X(33).
 2292           05 VALUE ' ZERO-FILL         ' PIC X(33).        UNIMPLEMENTED
 2293           05 VALUE ' ZEROES            ' PIC X(33).
 2294           05 VALUE ' ZEROS             ' PIC X(33).
 2295        01 WS-Reserved-Word-Table-TXT REDEFINES WS-Reserved-Words-TXT.
 2296 GC1113    05 WS-Reserved-Word-TXT      OCCURS 754 TIMES
 2297                                        ASCENDING KEY
 2298                                           WS-RW-Word-TXT
 2299                                        INDEXED WS-RW-IDX.
 2300              10 WS-RW-Type-CD          PIC X(1).
 2301              10 WS-RW-Word-TXT         PIC X(32).
 2302
 2303        01 WS-Runtime-Switches.
 2304 GC0710    05 WS-RS-Duplicate-CHR       PIC X(1).
 2305           05 WS-RS-In-Which-Pgm-CHR    PIC X(1).
 2306              88 WS-RS-In-Main-Module-BOOL    VALUE 'M'.
 2307              88 WS-RS-In-Copybook-BOOL       VALUE 'C'.
 2308           05 WS-RS-Last-Token-Ended-Sent-CHR  PIC X(1).
 2309           05 WS-RS-Processing-PICTURE-CHR PIC X(1).
 2310           05 WS-RS-Token-Ended-Sentence-CHR PIC X(1).
 2311 GC0710    05 WS-RS-Verb-Has-Been-Found-CHR PIC X(1).
 2312
 2313        01 WS-Saved-Section-TXT         PIC X(15).
 2314
 2315 GC1213 01 WS-Src-Dashes-TXT.
 2316 GC0712    05 VALUE '======'            PIC X(7).
 2317 GC0712    05 VALUE ALL '='             PIC X(128).
```

2318

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GNUCOBOL 2.2 20JUL2017  Source Listing                                    2017/07/22
                                          /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                            Page: 53
====== =================================================================================
 2319        01  WS-Src-Detail-Line-TXT.
 2320            05 WS-SDL-Line-NUM                    PIC ZZZZZ9.
 2321            05 FILLER                             PIC X(1).
 2322            05 WS-SDL-Statement-TXT               PIC X(256).
 2323
 2324 GC1213 01  WS-Src-Hold-TXT                       PIC X(256).
 2325
 2326        01  WS-Src-Line-NUM                       PIC 9(6).
 2327
 2328 GC1213 01  WS-Src-Lines-NUM                      USAGE BINARY-LONG.
 2329
 2330        01  WS-Src-SUB                            USAGE BINARY-LONG.
 2331
 2332        01  WS-Tally-QTY                          USAGE BINARY-LONG.
 2333
 2334        01  WS-Temp-10-Chars-TXT                  PIC X(10).
 2335
 2336        01  WS-Temp-32-Chars-1-TXT                PIC X(32).
 2337
 2338 GC0711 01  WS-Temp-32-Chars-2-TXT                PIC X(32).
 2339
 2340 GC0711 01  WS-Temp-32-Chars-3-TXT                PIC X(32).
 2341
 2342 GC0712 01  WS-Temp-65-Chars-TXT                  PIC X(65).
 2343
 2344        01  WS-Temp-256-Chars-TXT                 PIC X(256).
 2345
 2346        01  WS-Today-DT                           PIC 9(8).
 2347
 2348        01  WS-Token-Curr-TXT                     PIC X(32).
 2349
 2350        01  WS-Token-Curr-Uc-TXT                  PIC X(32).
 2351
 2352        01  WS-Token-Prev-TXT                     PIC X(32).
 2353
 2354        01  WS-Token-Search-TXT                   PIC X(32).
 2355
 2356        01  WS-Token-Type-CD                      PIC X(1).
 2357 GC0712     88 WS-TT-Token-Is-Argtype-BOOL        VALUE 'A'.
 2358            88 WS-TT-Token-Is-EOF-BOOL            VALUE HIGH-VALUES.
 2359 GC1213     88 WS-TT-Token-Is-Function-BOOL       VALUE 'F'.
 2360            88 WS-TT-Token-Is-Identifier-BOOL     VALUE 'I'.
 2361 GC0712     88 WS-TT-Token-Is-Keyword-BOOL        VALUE 'K', 'V', 'A'.
 2362            88 WS-TT-Token-Is-Lit-Alpha-BOOL      VALUE 'L'.
 2363            88 WS-TT-Token-Is-Lit-Number-BOOL     VALUE 'N'.
 2364            88 WS-TT-Token-Is-Verb-BOOL           VALUE 'V'.
 2365 GC1213     88 WS-TT-Token-Is-Reserved-Wd-BOOL    VALUE ' ', 'F'.
 2366
 2367        01  WS-Usernames-QTY                      USAGE BINARY-LONG.
 2368
 2369        01  WS-Version-TXT                        PIC X(23).
 2370
```

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

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GNUCOBOL 2.2 20JUL2017  Source Listing                                   2017/07/22
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line   Statement                                                           Page: 54
====== =================================================================================
 2372             05 WS-XDL-Prog-ID-TXT                PIC X(15).
 2373             05 FILLER                             PIC X(1).
 2374             05 WS-XDL-Token-TXT                   PIC X(32).
 2375             05 FILLER                             PIC X(1).
 2376             05 WS-XDL-Def-Line-NUM                PIC ZZZZZ9.
 2377             05 FILLER                             PIC X(1).
 2378             05 WS-XDL-Section-TXT                 PIC X(15).
 2379             05 FILLER                             PIC X(1).
 2380             05 WS-XDL-Reference-TXT               OCCURS 8 TIMES.
 2381                10 WS-XDL-Ref-Line-NUM             PIC ZZZZZ9.
 2382                10 WS-XDL-Ref-Flag-CHR             PIC X(1).
 2383                10 FILLER                          PIC X(1).
 2384
 2385 GC1213 01  WS-Xref-Lines-Per-Rec-NUM             PIC 9(1).
 2386
 2387         LINKAGE SECTION.
 2388 GC0712 01  L-Listing-Fn-TXT                       PIC X(256).
 2389
 2390        01  L-Src-Fn-TXT                           PIC X(256).
 2391
 2392 GC0712 01  L-OS-Type-CD                           PIC 9(1).
 2393
 2394 GC1213 01  L-LPP-NUM                              USAGE BINARY-LONG.
 2395
 2396 GC1213 01  L-LPP-Port-NUM                         USAGE BINARY-LONG.
 2397
 2398 GC1213 01  L-Listing-CD                           PIC 9(1).
```

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

```
GNUCOBOL 2.2 20JUL2017  Source Listing                                2017/07/22
                                    /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line   Statement                                                         Page: 56
====== =========================================================================

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

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

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```
GNUCOBOL 2.2 20JUL2017  Source Listing                                    2017/07/22
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                            Page: 57
====== ================================================================================
  2470 GC1010             '.i'
  2471 GC1010               DELIMITED SIZE
  2472 GC1010               INTO WS-Expanded-Src-Fn-TXT
  2473 GC1010        CALL 'CBL_CHECK_FILE_EXIST' USING WS-Expanded-Src-Fn-TXT
  2474 GC1010                                          WS-Temp-256-Chars-TXT
  2475 GC1010        IF RETURN-CODE NOT = 0
  2476 GC1010            GOBACK
  2477 GC1010        END-IF
  2478               IF WS-Lines-Per-Page-Env-TXT NOT = SPACES
  2479                   MOVE NUMVAL(WS-Lines-Per-Page-Env-TXT)
  2480                     TO WS-Lines-Per-Page-NUM
  2481               ELSE
  2482 GC1213            IF L-LISTING-CD = 1 *> LANDSCAPE
  2483 GC1213                MOVE L-LPP-NUM TO WS-Lines-Per-Page-NUM
  2484 GC1213            ELSE               *> PORTRAIT
  2485 GC1213                MOVE L-LPP-Port-NUM TO WS-Lines-Per-Page-NUM
  2486 GC1213            END-IF
  2487               END-IF
  2488 GC1213        SUBTRACT 3 FROM WS-Lines-Per-Page-NUM *> FOR PAGE FOOTER
  2489               ACCEPT WS-Today-DT FROM DATE YYYYMMDD
  2490 GC1213        MOVE WS-Today-DT TO WS-Formatted-DT
  2491               MOVE '????????????...' TO WS-Curr-Prog-ID-TXT
  2492               MOVE SPACES            TO WS-Curr-Verb-TXT
  2493                                         WS-Held-Reference-TXT
  2494               .
```

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

====== ===

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

```
     2598                 MOVE SPACES TO WS-Token-Prev-TXT
```

===
GCic for UNIX/Linux Copyright (C) 2009-2017, Gary L. Cutler, GPL   Page: 59

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

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

==

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

```
2704              END-IF
```

===

```
GNUCOBOL 2.2 20JUL2017  Source Listing                                    2017/07/22
                                          /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                            Page: 62
====== =================================================================================
  2705           .
```

```
================================================================================================
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```

====== ===

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

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```
GNUCOBOL 2.2 20JUL2017  Source Listing                                    2017/07/22
                                           /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                            Page: 64
====== =====================================================================================

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

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

====== ===

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

```
================================================================================================
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```

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

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

```
  2903                 END-EVALUATE
```

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```
GNUCOBOL 2.2 20JUL2017  Source Listing                              2017/07/22
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line   Statement                                                       Page: 69
====== =======================================================================
  2904                  EXIT SECTION
  2905            END-IF
  2906            .
```

====== ===

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

```
2959                 PERFORM 351-MULTIPLY
```

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```
GNUCOBOL 2.2 20JUL2017  Source Listing                                      2017/07/22
                                              /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                              Page: 71
====== ================================================================================
 2960            WHEN 'PERFORM'
 2961                PERFORM 351-PERFORM
 2962            WHEN 'SET'
 2963                PERFORM 351-SET
 2964            WHEN 'STRING'
 2965                PERFORM 351-STRING
 2966            WHEN 'SUBTRACT'
 2967                PERFORM 351-SUBTRACT
 2968 GC1213    WHEN 'TERMINATE'
 2969 GC1213        PERFORM 351-GENERATE
 2970            WHEN 'TRANSFORM'
 2971                PERFORM 351-TRANSFORM
 2972            WHEN 'UNSTRING'
 2973                PERFORM 351-UNSTRING
 2974            WHEN OTHER
 2975                PERFORM 361-Release-Ref
 2976            END-EVALUATE
 2977            .
```

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

```
  3030                .
```

===

```
GNUCOBOL 2.2 20JUL2017  Source Listing                                    2017/07/22
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line   Statement                                                             Page: 73
====== =============================================================================
 3031
 3032       351-DIVIDE SECTION.
 3033           EVALUATE WS-Token-Prev-TXT
 3034           WHEN 'INTO'
 3035               PERFORM 363-Set-Upd
 3036               MOVE F-Sort-Work-REC TO WS-Held-Reference-TXT
 3037           WHEN 'GIVING'
 3038               IF WS-Held-Reference-TXT NOT = SPACES
 3039                   MOVE WS-Held-Reference-TXT To F-Sort-Work-REC
 3040                   MOVE SPACES          To WS-Held-Reference-TXT
 3041                                           F-SW-Ref-Flag-CHR
 3042                   RELEASE F-Sort-Work-REC
 3043               END-IF
 3044               PERFORM 362-Release-Upd
 3045           WHEN 'REMAINDER'
 3046               PERFORM 362-Release-Upd
 3047           WHEN OTHER
 3048               PERFORM 361-Release-Ref
 3049           END-EVALUATE
 3050           .
 3051
 3052       351-FREE SECTION.
 3053           PERFORM 362-Release-Upd
 3054           .
 3055
 3056 GC1213 351-GENERATE SECTION.
 3057 GC1213     PERFORM 362-Release-Upd
 3058 GC1213     .
 3059
 3060       351-INITIALIZE SECTION.
 3061           EVALUATE WS-Token-Prev-TXT
 3062           WHEN 'INITIALIZE'
 3063               PERFORM 362-Release-Upd
 3064           WHEN 'REPLACING'
 3065               PERFORM 361-Release-Ref
 3066           END-EVALUATE
 3067           .
 3068
 3069 GC1213 351-INITIATE SECTION.
 3070 GC1213     PERFORM 362-Release-Upd
 3071 GC1213     .
 3072
 3073       351-INSPECT SECTION.
 3074           EVALUATE WS-Token-Prev-TXT
 3075           WHEN 'INSPECT'
 3076               PERFORM 364-Set-Ref
 3077               MOVE SPACES TO WS-Held-Reference-TXT
 3078               MOVE SPACES TO WS-Token-Prev-TXT
 3079           WHEN 'TALLYING'
 3080               PERFORM 362-Release-Upd
 3081               MOVE SPACES TO WS-Token-Prev-TXT
 3082           WHEN 'REPLACING'
```

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

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

```
3136            WHEN OTHER
```

==

```
GNUCOBOL 2.2 20JUL2017  Source Listing                               2017/07/22
                                   /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line   Statement                                                        Page: 75
====== =========================================================================
 3137                  PERFORM 361-Release-Ref
 3138              END-EVALUATE
 3139              .
 3140
 3141      351-SET SECTION.
 3142          EVALUATE WS-Token-Prev-TXT
 3143          WHEN 'SET'
 3144              PERFORM 362-Release-Upd
 3145          WHEN OTHER
 3146              PERFORM 361-Release-Ref
 3147          END-EVALUATE
 3148          .
 3149
 3150      351-STRING SECTION.
 3151          EVALUATE WS-Token-Prev-TXT
 3152          WHEN 'INTO'
 3153              PERFORM 362-Release-Upd
 3154          WHEN 'POINTER'
 3155              PERFORM 362-Release-Upd
 3156          WHEN OTHER
 3157              PERFORM 361-Release-Ref
 3158          END-EVALUATE
 3159          .
 3160
 3161      351-SUBTRACT SECTION.
 3162          EVALUATE WS-Token-Prev-TXT
 3163          WHEN 'GIVING'
 3164              PERFORM 362-Release-Upd
 3165          WHEN 'FROM'
 3166              PERFORM 362-Release-Upd
 3167          WHEN OTHER
 3168              PERFORM 361-Release-Ref
 3169          END-EVALUATE
 3170          .
 3171
 3172 GC1213 351-TERMINATE SECTION.
 3173 GC1213     PERFORM 362-Release-Upd
 3174 GC1213     .
 3175
 3176      351-TRANSFORM SECTION.
 3177          EVALUATE WS-Token-Prev-TXT
 3178          WHEN 'TRANSFORM'
 3179              PERFORM 362-Release-Upd
 3180              MOVE SPACES TO WS-Token-Prev-TXT
 3181          WHEN OTHER
 3182              PERFORM 361-Release-Ref
 3183          END-EVALUATE
 3184          .
 3185
 3186      351-UNSTRING SECTION.
 3187          EVALUATE WS-Token-Prev-TXT
 3188          WHEN 'INTO'
```

```
   3189              PERFORM 362-Release-Upd
```

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

```
3242
```

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```
GNUCOBOL 2.2 20JUL2017  Source Listing                                     2017/07/22
                                            /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line   Statement                                                            Page: 77
====== =================================================================================
 3243 GC1213 365-Release-Arg SECTION.
 3244 GC1213     PERFORM 366-Set-Arg
 3245 GC1213     RELEASE F-Sort-Work-REC
 3246 GC1213     .
 3247
 3248 GC1213 366-Set-Arg SECTION.
 3249 GC1213     MOVE SPACES               TO F-Sort-Work-REC
 3250 GC1213     MOVE WS-Curr-Prog-ID-TXT  TO F-SW-Prog-ID-TXT
 3251 GC1213     MOVE WS-Token-Curr-Uc-TXT TO F-SW-Token-Uc-TXT
 3252 GC1213     MOVE WS-Token-Curr-TXT    TO F-SW-Token-TXT
 3253 GC1213     MOVE WS-Curr-Section-TXT  TO F-SW-Section-TXT
 3254 GC1213     MOVE WS-Curr-Line-NUM     TO F-SW-Ref-Line-NUM
 3255 GC1213     MOVE 'C'                  TO F-SW-Ref-Flag-CHR
 3256 GC1213     .
 3257
```

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

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

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

```
GNUCOBOL 2.2 20JUL2017  Source Listing                              2017/07/22
                                       /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                        Page: 80
======  ================================================================================

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

```
   3388 GC1213                          F-Listing-96-REC(56:1)
```

==

```
GNUCOBOL 2.2 20JUL2017  Source Listing                              2017/07/22
                                  /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                     Page: 81
====== =========================================================================
  3389 GC1213                     F-Listing-96-REC(72:1)
  3390 GC1213           WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #4
  3391 GC1213         END-IF
  3392 GC1213         COMPUTE WS-Lines-Left-NUM = WS-Lines-Per-Page-NUM - 4
  3393            END-IF
  3394 GC1213    IF L-Listing-CD = 1 *> LANDSCAPE
  3395 GC1213        WRITE F-Listing-135-REC FROM WS-Xref-Detail-Line-TXT
  3396 GC1213            BEFORE 1
  3397 GC1213    ELSE                 *> PORTRAIT
  3398 GC1213        WRITE F-Listing-96-REC FROM WS-Xref-Detail-Line-TXT
  3399 GC1213            BEFORE 1
  3400 GC1213    END-IF
  3401            MOVE SPACES TO WS-Xref-Detail-Line-TXT
  3402            MOVE 0 TO WS-I-SUB
  3403            SUBTRACT 1 FROM WS-Lines-Left-NUM
  3404            .
  3405 GC1213 420-Generate-Xref-Footer SECTION.
  3406 GC1213    IF L-Listing-CD = 1 *> LANDSCAPE
  3407 GC1213        WRITE F-Listing-135-REC FROM SPACES BEFORE 1 *> Footer Line #1
  3408 GC1213        MOVE ALL '='
  3409 GC1213          TO F-Listing-135-REC
  3410 GC1213        WRITE F-Listing-135-REC BEFORE 1 *> Footer Line #2
  3411 GC1213        MOVE WS-Copyright-TXT
  3412 GC1213          TO F-Listing-135-REC
  3413 GC1213        MOVE WS-Page-No-TXT
  3414 GC1213          TO F-Listing-135-REC(126:10)
  3415 GC1213        IF WS-Suppress-FF-CHR = 'Y'
  3416 GC1213            WRITE F-Listing-135-REC BEFORE 1 *> Footer Line #3
  3417 GC1213        ELSE
  3418 GC1213            WRITE F-Listing-135-REC BEFORE PAGE *> Footer Line #3
  3419 GC1213            WRITE F-Listing-135-REC FROM SPACES BEFORE 1 *> Spaces After FF Charac
       ter
  3420 GC1213        END-IF
  3421 GC1213    ELSE                 *> PORTRAIT
  3422 GC1213        WRITE F-Listing-96-REC FROM SPACES BEFORE 1 *> Footer Line #1
  3423 GC1213        MOVE ALL '='
  3424 GC1213          TO F-Listing-96-REC
  3425 GC1213        WRITE F-Listing-96-REC BEFORE 1 *> Footer Line #2
  3426 GC1213        MOVE WS-Copyright-TXT
  3427 GC1213          TO F-Listing-96-REC
  3428 GC1213        MOVE WS-Page-No-TXT
  3429 GC1213          TO F-Listing-96-REC(87:10)
  3430 GC1213        IF WS-Suppress-FF-CHR = 'Y'
  3431 GC1213            WRITE F-Listing-96-REC BEFORE 1 *> Footer Line #3
  3432 GC1213        ELSE
  3433 GC1213            WRITE F-Listing-96-REC BEFORE PAGE *> Footer Line #3
  3434 GC1213            WRITE F-Listing-96-REC FROM SPACES BEFORE 1 *> Spaces After FF Charact
       er
  3435 GC1213        END-IF
  3436 GC1213    END-IF
  3437 GC1213    .
```

==

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

```
GNUCOBOL 2.2 20JUL2017  Source Listing                              2017/07/22
                                      /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                        Page: 83
====== ==========================================================================

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

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

```
  3530 GC0712                        EXIT SECTION
```

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```
GNUCOBOL 2.2 20JUL2017  Source Listing                                        2017/07/22
                                              /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line   Statement                                                                  Page: 85
====== ======================================================================================
  3531 GC0712               WHEN WS-Temp-65-Chars-TXT = "skip2"
  3532 GC0712                   MOVE SPACES TO WS-Src-Detail-Line-TXT
  3533 GC0712                   PERFORM 530-Generate-Source-Line 2 TIMES
  3534 GC0712                   EXIT SECTION
  3535 GC0712               WHEN WS-Temp-65-Chars-TXT = "skip3"
  3536 GC0712                   MOVE SPACES TO WS-Src-Detail-Line-TXT
  3537 GC0712                   PERFORM 530-Generate-Source-Line 3 TIMES
  3538 GC0712                   EXIT SECTION
  3539 GC0712             END-EVALUATE
  3540                     PERFORM 530-Generate-Source-Line
  3541              END-IF
  3542          END-IF
  3543              .
```

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

```
      racter
```

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```
GNUCOBOL 2.2 20JUL2017  Source Listing                                    2017/07/22
                                       /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                            Page: 87
====== =============================================================================
  3595 GC1213          END-IF
  3596 GC1213        END-IF
  3597 GC1213        ADD  1           TO WS-Page-NUM
  3598 GC1213        MOVE 'Page:'     TO WS-PN-Literal-TXT
  3599 GC1213        MOVE WS-Page-NUM TO WS-PN-Page-NUM
  3600 GC1213        CALL 'C$JUSTIFY' USING WS-PN-Page-NUM, 'Left'
  3601 GC1213        CALL 'C$JUSTIFY' USING WS-Page-No-TXT, 'Right'
  3602 GC1213        IF L-Listing-CD = 1 *> LANDSCAPE
  3603 GC1213            MOVE WS-Version-TXT
  3604 GC1213              TO F-Listing-135-REC
  3605 GC1213            MOVE 'Source Listing'
  3606 GC1213              TO F-Listing-135-REC(25:14)
  3607 GC1213            MOVE WS-Formatted-DT
  3608 GC1213              TO F-Listing-135-REC(126:10)
  3609 GC1213            WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #1
  3610 GC1213            MOVE WS-Program-Path-TXT
  3611 GC1213              TO F-Listing-135-REC
  3612 GC1213            WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #2
  3613 GC1213            MOVE 'Line   Statement'
  3614 GC1213              TO F-Listing-135-REC
  3615 GC1213            MOVE WS-Page-No-TXT
  3616 GC1213              TO F-Listing-135-REC(126:10)
  3617 GC1213            WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #3
  3618 GC1213            MOVE WS-Src-Dashes-TXT
  3619 GC1213              TO F-Listing-135-REC
  3620 GC1213            WRITE F-Listing-135-REC BEFORE 1 *> Page Header Line #4
  3621 GC1213        ELSE                *> PORTRAIT
  3622 GC1213            MOVE WS-Version-TXT
  3623 GC1213              TO F-Listing-96-REC
  3624 GC1213            MOVE 'Source Listing'
  3625 GC1213              TO F-Listing-96-REC(25:14)
  3626 GC1213            MOVE WS-Formatted-DT
  3627 GC1213              TO F-Listing-96-REC(87:10)
  3628 GC1213            WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #1
  3629 GC1213            MOVE WS-Program-Path-TXT(40:96)
  3630 GC1213              TO F-Listing-96-REC
  3631 GC1213            WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #2
  3632 GC1213            MOVE 'Line   Statement'
  3633 GC1213              TO F-Listing-96-REC
  3634 GC1213            MOVE WS-Page-No-TXT
  3635 GC1213              TO F-Listing-96-REC(87:10)
  3636 GC1213            WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #3
  3637 GC1213            MOVE WS-Src-Dashes-TXT
  3638 GC1213              TO F-Listing-96-REC
  3639 GC1213            WRITE F-Listing-96-REC BEFORE 1 *> Page Header Line #4
  3640 GC1213        END-IF
  3641 GC1213        COMPUTE WS-Lines-Left-NUM = WS-Lines-Per-Page-NUM - 4
  3642 GC1213      END-IF
  3643 GC1213      IF L-Listing-CD = 1 *> LANDSCAPE
  3644 GC1213          EVALUATE WS-Src-Lines-NUM
  3645 GC1213          WHEN 1
  3646 GC1213              MOVE WS-Src-Detail-Line-TXT TO F-Listing-135-REC
```

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

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```
GNUCOBOL 2.2 20JUL2017  Source Listing                                      2017/07/22
                                         /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                                Page: 88
======  ==============================================================================
  3648 GC1213           SUBTRACT 1 FROM WS-Lines-Left-NUM
  3649 GC1213        WHEN 2
  3650 GC1213           MOVE WS-SDL-Statement-TXT TO WS-Src-Hold-TXT
  3651 GC1213           MOVE WS-Src-Detail-Line-TXT TO F-Listing-135-REC
  3652 GC1213           WRITE F-Listing-135-REC BEFORE 1 *> Prints chars 1-128 of stmnt
  3653 GC1213           MOVE SPACES TO WS-Src-Detail-Line-TXT
  3654 GC1213           MOVE WS-Src-Hold-TXT(129:128) TO WS-SDL-Statement-TXT
  3655 GC1213           MOVE WS-Src-Detail-Line-TXT TO F-Listing-135-REC
  3656 GC1213           WRITE F-Listing-135-REC BEFORE 1 *> Prints chars 129-256 of stmnt
  3657 GC1213           SUBTRACT 2 FROM WS-Lines-Left-NUM
  3658 GC1213        END-EVALUATE
  3659 GC1213      ELSE                 *> PORTRAIT
  3660 GC1213        EVALUATE WS-Src-Lines-NUM
  3661 GC1213        WHEN 1 *> Print only chars 1-89 of stmnt
  3662 GC1213           WRITE F-Listing-96-REC FROM WS-Src-Detail-Line-TXT
  3663 GC1213              BEFORE 1
  3664 GC1213           SUBTRACT 1 FROM WS-Lines-Left-NUM
  3665 GC1213        WHEN 2 *> Print only chars 1-89 and 90-178 of text
  3666 GC1213           MOVE WS-SDL-Statement-TXT TO WS-Src-Hold-TXT
  3667 GC1213           WRITE F-Listing-96-REC FROM WS-Src-Detail-Line-TXT
  3668 GC1213              BEFORE 1
  3669 GC1213           MOVE SPACES TO WS-Src-Detail-Line-TXT
  3670 GC1213           MOVE WS-Src-Hold-TXT(90:89) TO WS-SDL-Statement-TXT
  3671 GC1213           WRITE F-Listing-96-REC FROM WS-Src-Detail-Line-TXT
  3672 GC1213              BEFORE 1
  3673 GC1213           SUBTRACT 2 FROM WS-Lines-Left-NUM
  3674 GC1213        WHEN 3 *> Print chars 1-89, 90-178 and 179-256 of stmnt
  3675 GC1213           MOVE WS-SDL-Statement-TXT TO WS-Src-Hold-TXT
  3676 GC1213           WRITE F-Listing-96-REC FROM WS-Src-Detail-Line-TXT
  3677 GC1213              BEFORE 1
  3678 GC1213           MOVE SPACES TO WS-Src-Detail-Line-TXT
  3679 GC1213           MOVE WS-Src-Hold-TXT(90:89) TO WS-SDL-Statement-TXT
  3680 GC1213           WRITE F-Listing-96-REC FROM WS-Src-Detail-Line-TXT
  3681 GC1213              BEFORE 1
  3682 GC1213           MOVE SPACES TO WS-Src-Detail-Line-TXT
  3683 GC1213           MOVE WS-Src-Hold-TXT(179:78) TO WS-SDL-Statement-TXT
  3684 GC1213           WRITE F-Listing-96-REC FROM WS-Src-Detail-Line-TXT
  3685 GC1213              BEFORE 1
  3686 GC1213           SUBTRACT 3 FROM WS-Lines-Left-NUM
  3687 GC1213        END-EVALUATE
  3688 GC1213      END-IF
  3689           MOVE SPACES TO WS-Src-Detail-Line-TXT
  3690           .
  3691
  3692      END PROGRAM LISTING.
```

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```
GNUCOBOL 2.2 20JUL2017  Cross-Reference Listing                           2017/07/22
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
PROGRAM-ID      Identifier/Register/Function   Defn   Where Defined   References      Page: 89
===============  ===============================  ======  ===============  ========================
CHECKSRC        000-Main                        1315 PROCEDURE
CHECKSRC        L-A1-CHR                        1305 LINKAGE          1317    1329    1332
                                                                     1339
CHECKSRC        L-A2-IDENT-DIVISION-BOOL        1310 LINKAGE         1361*
CHECKSRC        L-A2-LINKAGE-SECTION-BOOL       1309 LINKAGE         1355*
CHECKSRC        L-A2-Nothing-Special-BOOL       1311 LINKAGE         1316*
CHECKSRC        L-Argument-1-TXT                1304 LINKAGE         1313
CHECKSRC        L-Argument-2-CHR                1308 LINKAGE         1314
CHECKSRC        WS-Compressed-Src-TXT           1291 WORKING-STORAGE 1326*   1349    1353
                                                                     1359
CHECKSRC        WS-CS-CHR                       1292 WORKING-STORAGE 1333*   1339*   1348
                                                                     1352    1358
CHECKSRC        WS-I-SUB                        1300 WORKING-STORAGE 1327*   1328    1329
                                                                     1332    1339    1345*
                                                                     1346    1348    1349
                                                                     1352    1352    1353
                                                                     1358    1358    1359
CHECKSRC        WS-J-SUB                        1302 WORKING-STORAGE 1325*   1331*   1333
                                                                     1338*   1339
CHECKSRC        WS-RS-Found-SPACE-CHR           1296 WORKING-STORAGE
CHECKSRC        WS-RS-Not-Skipping-SPACE-BOOL   1298 WORKING-STORAGE 1324*   1330    1337*
CHECKSRC        WS-RS-Skipping-SPACE-BOOL       1297 WORKING-STORAGE 1334*
CHECKSRC        WS-Runtime-Switches-TXT         1295 WORKING-STORAGE
```

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GNUCOBOL 2.2 20JUL2017  Cross-Reference Listing                        2017/07/22
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
PROGRAM-ID      Identifier/Register/Function   Defn  Where Defined   References      Page: 90
===============  ===============================  ======  ===============  ========================
GCic            000-File-Error                 654 PROCEDURE
GCic            000-Main                       675 PROCEDURE
GCic            100-Initialization             699 PROCEDURE             676
GCic            200-Let-User-Set-Switches      813 PROCEDURE             679
GCic            210-Run-Compiler               904 PROCEDURE             680
GCic            220-Make-Listing              1040 PROCEDURE             684
GCic            230-Run-Program               1071 PROCEDURE             688
GCic            240-Find-LINKAGE-SECTION      1173 PROCEDURE             747
GCic            250-Autoload-Listing          1212 PROCEDURE             690    1031    1065
GCic            900-Terminate                 1258 PROCEDURE             692     741     884
                                                                       1032    1166
GCic            COB-COLOR-BLACK                178 [screenio     ]      439     444     534
                                                                        544     554     559
                                                                        569     576     591
                                                                        606     622     629
                                                                        636
GCic            COB-COLOR-BLUE                 178 [screenio     ]      522
GCic            COB-COLOR-CYAN                 178 [screenio     ]      535
GCic            COB-COLOR-GREEN                178 [screenio     ]      445     560     607
                                                                        623
GCic            COB-COLOR-MAGENTA             178 [screenio     ]
GCic            COB-COLOR-RED                 178 [screenio     ]      528     592
GCic            COB-COLOR-WHITE               178 [screenio     ]      440     523     529
                                                                        545     555     570
                                                                        577     630     637
GCic            COB-COLOR-YELLOW              178 [screenio     ]
GCic            COB-SCR-ESC                   178 [screenio     ]      883
GCic            COB-SCR-F1                    178 [screenio     ]      830
GCic            COB-SCR-F10                   178 [screenio     ]
GCic            COB-SCR-F11                   178 [screenio     ]
GCic            COB-SCR-F12                   178 [screenio     ]      886
GCic            COB-SCR-F13                   178 [screenio     ]
GCic            COB-SCR-F14                   178 [screenio     ]
GCic            COB-SCR-F15                   178 [screenio     ]
GCic            COB-SCR-F16                   178 [screenio     ]
GCic            COB-SCR-F17                   178 [screenio     ]
GCic            COB-SCR-F18                   178 [screenio     ]
GCic            COB-SCR-F19                   178 [screenio     ]
GCic            COB-SCR-F2                    178 [screenio     ]      836
GCic            COB-SCR-F20                   178 [screenio     ]
GCic            COB-SCR-F21                   178 [screenio     ]
GCic            COB-SCR-F22                   178 [screenio     ]
GCic            COB-SCR-F23                   178 [screenio     ]
GCic            COB-SCR-F24                   178 [screenio     ]
GCic            COB-SCR-F25                   178 [screenio     ]
GCic            COB-SCR-F26                   178 [screenio     ]
GCic            COB-SCR-F27                   178 [screenio     ]
GCic            COB-SCR-F28                   178 [screenio     ]
GCic            COB-SCR-F29                   178 [screenio     ]
GCic            COB-SCR-F3                    178 [screenio     ]      842
GCic            COB-SCR-F30                   178 [screenio     ]
GCic            COB-SCR-F31                   178 [screenio     ]
```

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GCic              COB-SCR-F32                      178 [screenio    ]
===================================================================================================
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GNUCOBOL 2.2 20JUL2017  Cross-Reference Listing                          2017/07/22
                                                /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
PROGRAM-ID      Identifier/Register/Function   Defn   Where Defined   References      Page: 91
==============  ==============================  ======  ==============  ========================
GCic            COB-SCR-F33                     178 [screenio     ]
GCic            COB-SCR-F34                     178 [screenio     ]
GCic            COB-SCR-F35                     178 [screenio     ]
GCic            COB-SCR-F36                     178 [screenio     ]
GCic            COB-SCR-F37                     178 [screenio     ]
GCic            COB-SCR-F38                     178 [screenio     ]
GCic            COB-SCR-F39                     178 [screenio     ]
GCic            COB-SCR-F4                      178 [screenio     ]      848
GCic            COB-SCR-F40                     178 [screenio     ]
GCic            COB-SCR-F41                     178 [screenio     ]
GCic            COB-SCR-F42                     178 [screenio     ]
GCic            COB-SCR-F43                     178 [screenio     ]
GCic            COB-SCR-F44                     178 [screenio     ]
GCic            COB-SCR-F45                     178 [screenio     ]
GCic            COB-SCR-F46                     178 [screenio     ]
GCic            COB-SCR-F47                     178 [screenio     ]
GCic            COB-SCR-F48                     178 [screenio     ]
GCic            COB-SCR-F49                     178 [screenio     ]
GCic            COB-SCR-F5                      178 [screenio     ]      854
GCic            COB-SCR-F50                     178 [screenio     ]
GCic            COB-SCR-F51                     178 [screenio     ]
GCic            COB-SCR-F52                     178 [screenio     ]
GCic            COB-SCR-F53                     178 [screenio     ]
GCic            COB-SCR-F54                     178 [screenio     ]
GCic            COB-SCR-F55                     178 [screenio     ]
GCic            COB-SCR-F56                     178 [screenio     ]
GCic            COB-SCR-F57                     178 [screenio     ]
GCic            COB-SCR-F58                     178 [screenio     ]
GCic            COB-SCR-F59                     178 [screenio     ]
GCic            COB-SCR-F6                      178 [screenio     ]      859
GCic            COB-SCR-F60                     178 [screenio     ]
GCic            COB-SCR-F61                     178 [screenio     ]
GCic            COB-SCR-F62                     178 [screenio     ]
GCic            COB-SCR-F63                     178 [screenio     ]
GCic            COB-SCR-F64                     178 [screenio     ]
GCic            COB-SCR-F7                      178 [screenio     ]      865
GCic            COB-SCR-F8                      178 [screenio     ]      871
GCic            COB-SCR-F9                      178 [screenio     ]      877
GCic            COB-SCR-FATAL                   178 [screenio     ]
GCic            COB-SCR-KEY-DOWN                178 [screenio     ]
GCic            COB-SCR-KEY-UP                  178 [screenio     ]
GCic            COB-SCR-MAX-FIELD               178 [screenio     ]
GCic            COB-SCR-NO-FIELD                178 [screenio     ]
GCic            COB-SCR-OK                      178 [screenio     ]
GCic            COB-SCR-PAGE_DOWN               178 [screenio     ]
GCic            COB-SCR-PAGE_UP                 178 [screenio     ]
GCic            COB-SCR-PRINT                   178 [screenio     ]
GCic            COB-SCR-TIME-OUT                178 [screenio     ]
GCic            F-Cobc-Output-FILE             171 FILE              162     1008    1026
GCic            F-Cobc-Output-REC              172 FILE             1009    1014*    1015
                                                                   1023*    1024
GCic            F-Source-Code-FILE             174 FILE              165      655    1174
```

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                                                  1178     1179     1192
==================================================================================================
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GNUCOBOL 2.2 20JUL2017  Cross-Reference Listing                          2017/07/22
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
PROGRAM-ID       Identifier/Register/Function  Defn  Where Defined  References      Page: 92
===============  ==============================  ======  ===============  ========================
                                                                  1193    1200
GCic             F-Source-Code-REC              175 FILE            1183C   1197C
GCic             F1                                 WORKING-STORAGE  206
GCic             F12                                WORKING-STORAGE  200
GCic             F2                                 WORKING-STORAGE  213
GCic             F3                                 WORKING-STORAGE  209
GCic             F4                                 WORKING-STORAGE  207
GCic             F5                                 WORKING-STORAGE  210     257
GCic             F6                                 WORKING-STORAGE  211
GCic             F7                                 WORKING-STORAGE  214
GCic             F8                                 WORKING-STORAGE  208
GCic             F9                                 WORKING-STORAGE  212
GCic             LD-Horiz-Line                  433 SCREEN          801
GCic             LD-LL-Corner                   428 SCREEN          456     486     502
                                                                   516
GCic             LD-Lower-T                     432 SCREEN          488
GCic             LD-LR-Corner                   430 SCREEN          458     490     504
                                                                   518
GCic             LD-UL-Corner                   427 SCREEN          446     460     492
                                                                   506
GCic             LD-Upper-T                     431 SCREEN          462
GCic             LD-UR-Corner                   429 SCREEN          448     464     494
                                                                   508
GCic             LD-Vert-Line                   434 SCREEN          450     451     453
                                                                   454     466     467
                                                                   468     470     471
                                                                   472     474     475
                                                                   476     478     479
                                                                   480     482     483
                                                                   484     496     497
                                                                   499     500     510
                                                                   511     513     514
GCic             LPP                                PROCEDURE        1051C
GCic             LPPP                               PROCEDURE        1052C
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GCic             WS-Cmd-TXT                     227 WORKING-STORAGE  905*    1000*   1005*
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GCic            WS-CS-Filenames-Table-TXT          192  WORKING-STORAGE
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                                                                       658*    658*    658*
                                                                       658*    658*    658*
                                                                       658*    658*    658*
                                                                       658*    658*    658*
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GCic             WS-FSM-Status-CD                247 WORKING-STORAGE    167     658     660
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                                                                      2671     2674
LISTING         WS-Dummy-TXT                     1490 WORKING-STORAGE 2467*    2712*    2741*
                                                                      2774*    2779*    2780
                                                                      3467*
LISTING         WS-Expanded-Src-Fn-TXT           1492 WORKING-STORAGE 1412     2472*    2473C
LISTING         WS-Filename-TXT                  1494 WORKING-STORAGE 2466*    2469     2740*
                                                                      2743
LISTING         WS-Flags-TXT                     1496 WORKING-STORAGE
LISTING         WS-Formatted-DT                  1499 WORKING-STORAGE 2490*    3350     3373
                                                                      3607     3626
```

```
LISTING          WS-GI-Prog-ID-TXT                    1502 WORKING-STORAGE   3277    3283    3288*
```

```
===============================================================================================
GCic for UNIX/Linux Copyright (C) 2009-2017, Gary L. Cutler, GPL                    Page: 99
```

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

```
LISTING        WS-RS-Duplicate-CHR              2304 WORKING-STORAGE   3264*   3279*   3294*
```

```
=====================================================================================================
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```

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

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

```
===============================================================================================
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```

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

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

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

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:

    o "ACCEPT FROM ENVIRONMENT" statement

    o "INSPECT" statement

    o "STRING" statement

- Using the following built-in subroutines:

    o "C$PARAMSIZE" built-in system subroutine

    o "CBL_CLOSE_FILE" built-in system subroutine

    o "CBL_DELETE_FILE" built-in system subroutine

    o "CBL_EXIT_PROC" built-in system subroutine

    o "CBL_OPEN_FILE" built-in system subroutine

    o "CBL_READ_FILE" built-in system subroutine

    o "CBL_WRITE_FILE" built-in system subroutine

- Using the following intrinsic functions:

    o "RANDOM" intrinsic function

    o "TRIM" intrinsic function

First, here is the STREAMIOcb.cpy copybook:

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

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

GNU COBOL 2.1 23NOV2013 Source Listing   2014/03/27
                                 C:/Users/tda010/Documents/Programs/Samples/STREAMIO.cbl
Line   Statement   Page: 1
====== ==
     1   >>SOURCE FORMAT IS FIXED
     2   IDENTIFICATION DIVISION.
     3   PROGRAM-ID. STREAMIO.
     4   *>**
     5   *> Author: Gary L. Cutler   **
     6   *>   **
     7   *> This routine centralizes all bytestream file I/O functions **
     8   *> into one routine. The manner in which this routine is   **
     9   *> CALLed is as follows: **
    10   *>   **
    11   *>   CALL "STREAMIO" USING control-block [, arg2]   **
    12   *>   **
    13   *> where 'control-block' is defined by the "STREAMIOcb.cpy"   **
    14   *> copybook and 'arg2' will vary, depending upon the function **
    15   *> specified in the control block.   **
    16   *>   **
    17   *> The STREAMIO routine has an advantage over the various   **
    18   *> "CBL_xxxxxx_FILE" routines in that: **
    19   *>   **
    20   *> 1. It automates the establishment and on-going adjustment of **
    21   *>   the file-offset value in such a way as to simplify the   **
    22   *>   sequential processing of a bytestream file (you may still **
    23   *>   specify a file-offset manually on each read or write, if **
    24   *>   you wish)   **
    25   *>   **
    26   *> 2. It auto-detects the size of the I/O buffer you supply to **
    27   *>   STREAMIO, using that as the byte-count of all read and   **
    28   *>   write operations.   **
    29   *>   **
    30   *> 3. Not only does it support the raw input and output of data **
    31   *>   that the CBL_READ_FILE and CBL_WRITE_FILE routines do,   **
    32   *>   but on input it is also capable of delivering just a   **
    33   *>   single newline-delimited or carriage-return/newline de- **
    34   *>   limited record to the caller.   **
    35   *>   **
    36   *> 4. On output, STREAMIO can optionally append either a new- **
    37   *>   line or carriage-return/newline sequence (your choice) to **
    38   *>   the end of every record it writes.   **
    39   *>   **
    40   *> 5. STREAMIO can automatically generate filenames for output **
    41   *>   files if you wish, simplifying the process of creating   **
    42   *>   scratch or work files.   **
    43   *>   **
    44   *> 6. The STREAMIO routine also allows you to (optionally) re- **
    45   *>   gister a general error-handling routine to be given con- **
    46   *>   trol should a fatal error be detected with STREAMIO.   **
    47   *>   **
    48   *>   This routine can be "turned on" and "turned off" at will. **
    49   *>   **

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```
GNU COBOL 2.1 23NOV2013 Source Listing                                       2014/03/27
                                 C:/Users/tda010/Documents/Programs/Samples/STREAMIO.cbl
Line    Statement                                                               Page: 2
======  =================================================================================
  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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```

```
GNU COBOL 2.1 23NOV2013 Source Listing                                      2014/03/27
                              C:/Users/tda010/Documents/Programs/Samples/STREAMIO.cbl
Line    Statement                                                              Page: 3
====== ================================================================================
    99        *> SCB-Function-CD                                     **
   100        *>------------------------------------------------------------**
   101        *>                                                     **
   102        *> The appropriate subordinate level-88 must be set to TRUE to **
   103        *> select a function you'd like to execute against a file.  You **
   104        *> may also simply move one of the string values listed on the **
   105        *> level-88 items to "SCB-Function-CD".                **
   106        *>                                                     **
   107        *> Available functions are as follows:                 **
   108        *>                                                     **
   109        *> SCB-Func-OPEN-BOOL                                  **
   110        *>                                                     **
   111        *>      This must be the function specified the first time you **
   112        *>      call STREAMIO for any given file.  It opens the file & **
   113        *>      makes it available for use according to the    **
   114        *>      "SCB-Mode-CD" specification.                   **
   115        *>                                                     **
   116        *>      The filename being opened must be specified in the **
   117        *>      "SCB-Filename-TXT" field.                      **
   118        *>                                                     **
   119        *>      The SCB-Offset-NUM field will be initialized to ZERO. **
   120        *>                                                     **
   121        *>      If "arg2" is specified in conjunction with this funct- **
   122        *>      ion, it will be ignored.                       **
   123        *>                                                     **
   124        *> SCB-Func-CLOSE-BOOL                                 **
   125        *>                                                     **
   126        *>      This function should be the one specified the LAST time **
   127        *>      you call STREAMIO against a specific file.  After this **
   128        *>      function has been executed, you'll have to re-open the **
   129        *>      file if you wish to use it with STREAMIO again. **
   130        *>                                                     **
   131        *>      The SCB-Handle-NUM item will be reset to ZERO. **
   132        *>                                                     **
   133        *>      If "arg2" is specified in conjunction with this funct- **
   134        *>      ion, it will be ignored.                       **
   135        *>                                                     **
   136        *> SCB-Func-DELETE-BOOL                                **
   137        *>                                                     **
   138        *>      This function will delete the file specified in the **
   139        *>      control block (see SCB-Filename-TXT).          **
   140        *>                                                     **
   141        *>      This function should not be performed against a file **
   142        *>      that is open.                                  **
   143        *>                                                     **
   144        *>      If "arg2" is specified in conjunction with this funct- **
   145        *>      ion, it will be ignored.                       **
   146        *>                                                     **
   147        *> SCB-Func-READ-BOOL                                  **

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```

```
GNU COBOL 2.1 23NOV2013 Source Listing                                    2014/03/27
                             C:/Users/tda010/Documents/Programs/Samples/STREAMIO.cbl
Line    Statement                                                            Page: 4
======  ===============================================================================
  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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Line    Statement                                                            Page: 6
====== =================================================================================
   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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```

```
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                                      C:/Users/tda010/Documents/Programs/Samples/STREAMIO.cbl
Line    Statement                                                                   Page: 7
======  ===================================================================================
   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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```

```
GNU COBOL 2.1 23NOV2013 Source Listing                                    2014/03/27
                              C:/Users/tda010/Documents/Programs/Samples/STREAMIO.cbl
Line    Statement                                                              Page: 8
====== =================================================================================
   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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```

```
GNU COBOL 2.1 23NOV2013 Source Listing                                        2014/03/27
                                    C:/Users/tda010/Documents/Programs/Samples/STREAMIO.cbl
Line    Statement                                                               Page: 9
====== =========================================================================================
        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"0D0A" 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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```

Line   Statement   Page: 10
====== ===
```
    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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Line   Statement   Page: 11
====== ==
   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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```
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Line    Statement                                                              Page: 12
====== =================================================================================
   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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```

```
GNU COBOL 2.1 23NOV2013 Source Listing                                       2014/03/27
                                   C:/Users/tda010/Documents/Programs/Samples/STREAMIO.cbl
Line    Statement                                                                 Page: 13
====== ====================================================================================
   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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```

```
GNU COBOL 2.1 23NOV2013 Source Listing                                      2014/03/27
                              C:/Users/tda010/Documents/Programs/Samples/STREAMIO.cbl
Line    Statement                                                            Page: 14
====== =================================================================================
   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"0A"
   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"0A"
   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"0A"
   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"0D"
   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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```
GNU COBOL 2.1 23NOV2013 Cross-Reference Listing                           2014/03/27
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PROGRAM-ID      Identifier/Register/Function   Defn   Where Defined   References      Page: 15
=============== ============================== ====== =============== ========================
STREAMIO        000-Main                       383 PROCEDURE
STREAMIO        020-Validate-Handle-Zero       432 PROCEDURE          392
STREAMIO        030-Validate-Handle-NonZero    438 PROCEDURE          387     395     398
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STREAMIO        040-Check-WRITE-SCB-Return-CD  444 PROCEDURE          424     570
STREAMIO        050-Check-READ-SCB-Return-CD   455 PROCEDURE          582     594
STREAMIO        060-Identify-TEMP              466 PROCEDURE          493     508
STREAMIO        099-ERROR-Return               478 PROCEDURE          417     428     435
                                                                      441     447     451
                                                                      458     489     535
                                                                      544     548     557
                                                                      614
STREAMIO        100-OPEN                       485 PROCEDURE          393
STREAMIO        200-CLOSE                      553 PROCEDURE          388
STREAMIO        300-WRITE                      562 PROCEDURE          402     407     412
STREAMIO        400-READ                       573 PROCEDURE          396
STREAMIO        500-READ-Delim                 585 PROCEDURE          399
STREAMIO        L-Arg2-TXT                     380 LINKAGE            382     569C    576*
                                                                      581C    588*    593C
                                                                      599     600*    640
                                                                      652*    655*
STREAMIO        L-SCB-DELIM-Unix-BOOL          379 [STREAMIOcb   ]    405
STREAMIO        L-SCB-DELIM-Windows-BOOL       379 [STREAMIOcb   ]    410
STREAMIO        L-SCB-Delimiter-Mode-CD        379 [STREAMIOcb   ]
STREAMIO        L-SCB-Error-Routine-NUM        379 [STREAMIOcb   ]    479
STREAMIO        L-SCB-Error-Routine-PTR        379 [STREAMIOcb   ]    379     480C
STREAMIO        L-SCB-Filename-TXT             379 [STREAMIOcb   ]    390C    487     492
                                                                      494*    506*    507
                                                                      509     512     514*
                                                                      524*    537C
STREAMIO        L-SCB-Func-CLOSE-BOOL          379 [STREAMIOcb   ]    386
STREAMIO        L-SCB-Func-DELETE-BOOL         379 [STREAMIOcb   ]    389
STREAMIO        L-SCB-Func-OPEN-BOOL           379 [STREAMIOcb   ]    391
STREAMIO        L-SCB-Func-READ-BOOL           379 [STREAMIOcb   ]    394
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STREAMIO        L-SCB-Func-WRITE-BOOL          379 [STREAMIOcb   ]    400
STREAMIO        L-SCB-Func-WRITE-Delim-BOOL    379 [STREAMIOcb   ]    403
STREAMIO        L-SCB-Function-CD              379 [STREAMIOcb   ]
STREAMIO        L-SCB-Handle-NUM               379 [STREAMIOcb   ]    419C    433     439
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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
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PROGRAM-ID      Identifier/Register/Function   Defn  Where Defined   References      Page: 16
=============== ============================== ====== =============== ========================
                                                                     608C    623*    629*
                                                                     638*
STREAMIO        L-SCB-Return-CD                 379 [STREAMIOcb   ]   384*    416*    427*
                                                                     434*    440*    446*
                                                                     450*    453*    457*
                                                                     461*    464*    488*
                                                                     534*    543*    547*
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                                                                     603*    613*
STREAMIO        L-StreamIO-Control-Block-TXT    377 LINKAGE          381
STREAMIO        RETURN-CODE                         PROCEDURE        445     449     456
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STREAMIO        WS-Buffer-TXT                   369 WORKING-STORAGE  606*    611C
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```

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