GnuCOBOL Sample Programs

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This manual documents GnuCOBOL 2.2.rc0, 22July2017 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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```

```
GNU COBOL 2.1 23NOV2013 Source Listing                                        2014/03/27
                                  C:/Users/tda010/Documents/Programs/Samples/COBDUMP.cbl
Line    Statement                                                                Page: 3
====== =================================================================================
   99        01  WS-Output-SUB                       PIC 9(2) COMP-5.
  100
  101        >>SOURCE FORMAT IS FREE
  102        01  WS-Output-Header-1-TXT.
  103            05 VALUE '<-Addr-> Byte <--------------- Hexadecimal ''---------------> <---
       - Char ---->' PIC X(80).
  104
  105        01  WS-Output-Header-2-TXT.
  106            05 VALUE '======== ==== ============================================= ======
       ==========' PIC X(80).
  107        >>SOURCE FORMAT IS FIXED
  108
  109        LINKAGE SECTION.
  110        01  L-Buffer-TXT                        PIC X ANY LENGTH.
  111
  112        01  L-Buffer-Length-NUM                 USAGE BINARY-LONG.
  113
  114        PROCEDURE DIVISION USING L-Buffer-TXT,
  115                             OPTIONAL L-Buffer-Length-NUM.
  116        000-Main SECTION.
  117           IF NUMBER-OF-CALL-PARAMETERS = 1
  118               MOVE LENGTH(L-Buffer-TXT) TO WS-Buffer-Length-NUM
  119           ELSE
  120               MOVE L-Buffer-Length-NUM  TO WS-Buffer-Length-NUM
  121           END-IF
  122           MOVE SPACES TO WS-Output-Detail-TXT
  123           SET WS-Addr-PTR TO ADDRESS OF L-Buffer-TXT
  124           PERFORM 100-Generate-Address
  125           MOVE 0 TO WS-Output-SUB
  126           DISPLAY WS-Output-Header-1-TXT UPON SYSERR
  127           DISPLAY WS-Output-Header-2-TXT UPON SYSERR
  128           PERFORM VARYING WS-Buffer-SUB FROM 1 BY 1
  129                   UNTIL WS-Buffer-SUB > WS-Buffer-Length-NUM
  130               ADD 1 TO WS-Output-SUB
  131               IF WS-Output-SUB = 1
  132                   MOVE WS-Buffer-SUB TO WS-OD-Relative-Byte-NUM
  133               END-IF
  134               MOVE L-Buffer-TXT (WS-Buffer-SUB : 1)
  135                 TO WS-OD-ASCII-CHR (WS-Output-SUB)
  136                    WS-Buffer-Byte-CHR
  137               DIVIDE WS-Buffer-Byte-NUM BY 16
  138                   GIVING WS-Nibble-Left-SUB
  139                   REMAINDER WS-Nibble-Right-SUB
  140               ADD 1 TO WS-Nibble-Left-SUB
  141                       WS-Nibble-Right-SUB
  142               MOVE WS-Hex-Digit-CHR (WS-Nibble-Left-SUB)
  143                 TO WS-OD-Hex-1-CHR  (WS-Output-SUB)
  144               MOVE WS-Hex-Digit-CHR (WS-Nibble-Right-SUB)
  145                 TO WS-OD-Hex-2-CHR  (WS-Output-SUB)

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```

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

==

```
GNU COBOL 2.1 23NOV2013 Cross-Reference Listing                          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
```

```
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```

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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GNU COBOL 2.1 23NOV2013 Source Listing                                        2014/03/27
                                     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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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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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
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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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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  .
```

```
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.

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
```

```
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
```

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

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
```

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

```
    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      **
```

```
GNUCOBOL 2.2 20JUL2017  Source Listing                                      2017/07/22
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                               Page: 3
======  ====================================================================================
    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.
```

====== ==
       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).
```

===

```
GNUCOBOL 2.2 20JUL2017  Source Listing                              2017/07/22
                                          /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                           Page: 8
====== ========================================================================
  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'.
```

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

==
GCic for UNIX/Linux Copyright (C) 2009-2017, Gary L. Cutler, GPL   Page: 11

====== ===
```
  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    '.
```

===

```
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     '.
```

==
GCic for UNIX/Linux Copyright (C) 2009-2017, Gary L. Cutler, GPL   Page: 15

```
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.
```

====== ==

```
   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: "'
```

===

```
GNUCOBOL 2.2 20JUL2017  Source Listing                                     2017/07/22
                                          /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                              Page: 18
====== ======================================================================================
   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              .
```

```
GNUCOBOL 2.2 20JUL2017  Source Listing                              2017/07/22
                                      /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line   Statement                                                         Page: 19
====== =========================================================================

   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
```

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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             .
```

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

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

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```
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            .
```

```
  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            .
```

```
  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                .
```

```
GNUCOBOL 2.2 20JUL2017  Source Listing                                   2017/07/22
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                             Page: 31
====== ===============================================================================

  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.
```

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

====== ===
```
 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.
```

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   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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 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).
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 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).
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 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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 1844             05 VALUE 'VGO                     ' PIC X(33).
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 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).
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 1877             05 VALUE ' INSTALLATION           ' PIC X(33).      OBSOLETE
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 1879 GC1213      05 VALUE 'FINTEGER-OF-BOOLEAN     ' PIC X(33).      UNIMPLEMENTED
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 1892             05 VALUE ' JUST                   ' PIC X(33).
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 1894              05 VALUE ' KEPT                            ' PIC X(33).
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 1905   05 VALUE ' LC_TIME   ' PIC X(33).   UNIMPLEMENTED
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 1909   05 VALUE ' LEFTLINE   ' PIC X(33).
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 1925 GC1213   05 VALUE 'FLOCALE-DATE   ' PIC X(33).
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 1928   05 VALUE ' LOCK   ' PIC X(33).
 1929 GC1213   05 VALUE 'FLOG   ' PIC X(33).
 1930 GC1213   05 VALUE 'FLOG10   ' PIC X(33).
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 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).
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 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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 1953 GC1213        05 VALUE 'FMODULE-FORMATTED-DATE     ' PIC X(33).
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 1958 GC1213        05 VALUE 'FMONETARY-DECIMAL-POINT    ' PIC X(33).
 1959 GC1213        05 VALUE 'FMONETARY-THOUSANDS-SEPARATOR ' PIC X(33).
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 1961              05 VALUE ' MULTIPLE                  ' PIC X(33).
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 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).
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 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
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 1981              05 VALUE ' NUMBER                    ' PIC X(33).
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 1987 GC1213        05 VALUE 'FNUMERIC-THOUSANDS-SEPARATOR ' PIC X(33).
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 1992              05 VALUE ' OBJECT-COMPUTER           ' PIC X(33).
 1993              05 VALUE ' OBJECT-REFERENCE          ' PIC X(33).    UNIMPLEMENTED
 1994              05 VALUE ' OCCURS                    ' PIC X(33).
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 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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 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).
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 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).
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 2015              05 VALUE ' PACKED-DECIMAL         ' PIC X(33).
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 2018 GC1213       05 VALUE 'IPAGE-COUNTER           ' PIC X(33).
 2019              05 VALUE ' PARAGRAPH              ' PIC X(33).
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 2021              05 VALUE ' PF                     ' PIC X(33).
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 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).
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 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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 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).
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 2066          05 VALUE ' REFERENCES                  ' PIC X(33).
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 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).
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 2073          05 VALUE ' REMOVAL                     ' PIC X(33).
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 2094          05 VALUE ' RF                          ' PIC X(33).
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 2097          05 VALUE ' RIGHT-JUSTIFY               ' PIC X(33).    UNIMPLEMENTED
 2098          05 VALUE 'VROLLBACK                    ' PIC X(33).
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 2100          05 VALUE ' ROUNDING                    ' PIC X(33).    UNIMPLEMENTED
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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).
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 2114           05 VALUE ' SEGMENT-LIMIT             ' PIC X(33).
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 2117           05 VALUE 'VSEND                      ' PIC X(33).    OBSOLETE
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 2145           05 VALUE ' STANDARD-BINARY           ' PIC X(33).    UNIMPLEMENTED
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 2147           05 VALUE ' STANDARD-DECIMAL          ' PIC X(33).    UNIMPLEMENTED
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 2149           05 VALUE 'VSTART                     ' PIC X(33).
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 2151           05 VALUE ' STATIC                    ' PIC X(33).
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 2154           05 VALUE 'MSTDERR                    ' PIC X(33).
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 2157           05 VALUE ' STEP                      ' PIC X(33).
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 2159 GC1213    05 VALUE 'FSTORED-CHAR-LENGTH               ' PIC X(33).
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 2161              05 VALUE ' STRONG               ' PIC X(33).    UNIMPLEMENTED
 2162              05 VALUE ' SUB-QUEUE-1          ' PIC X(33).    OBSOLETE
 2163              05 VALUE ' SUB-QUEUE-2          ' PIC X(33).    OBSOLETE
 2164              05 VALUE ' SUB-QUEUE-3          ' PIC X(33).    OBSOLETE
 2165 GC1213       05 VALUE 'FSUBSTITUTE           ' PIC X(33).
 2166 GC1213       05 VALUE 'FSUBSTITUTE-CASE      ' PIC X(33).
 2167              05 VALUE 'VSUBTRACT             ' PIC X(33).
 2168 GC1213       05 VALUE 'FSUM                  ' PIC X(33).
 2169              05 VALUE ' SUPER                ' PIC X(33).    UNIMPLEMENTED
 2170              05 VALUE 'VSUPPRESS             ' PIC X(33).
 2171              05 VALUE 'MSW0                  ' PIC X(33).
 2172              05 VALUE 'MSW1                  ' PIC X(33).
 2173              05 VALUE 'MSW10                 ' PIC X(33).
 2174              05 VALUE 'MSW11                 ' PIC X(33).
 2175              05 VALUE 'MSW12                 ' PIC X(33).
 2176              05 VALUE 'MSW13                 ' PIC X(33).
 2177              05 VALUE 'MSW14                 ' PIC X(33).
 2178              05 VALUE 'MSW15                 ' PIC X(33).
 2179              05 VALUE 'MSW2                  ' PIC X(33).
 2180              05 VALUE 'MSW3                  ' PIC X(33).
 2181              05 VALUE 'MSW4                  ' PIC X(33).
 2182              05 VALUE 'MSW5                  ' PIC X(33).
 2183              05 VALUE 'MSW6                  ' PIC X(33).
 2184              05 VALUE 'MSW7                  ' PIC X(33).
 2185              05 VALUE 'MSW8                  ' PIC X(33).
 2186              05 VALUE 'MSW9                  ' PIC X(33).
 2187              05 VALUE 'MSWITCH-0             ' PIC X(33).
 2188              05 VALUE 'MSWITCH-1             ' PIC X(33).
 2189              05 VALUE 'MSWITCH-10            ' PIC X(33).
 2190              05 VALUE 'MSWITCH-11            ' PIC X(33).
 2191              05 VALUE 'MSWITCH-12            ' PIC X(33).
 2192              05 VALUE 'MSWITCH-13            ' PIC X(33).
 2193              05 VALUE 'MSWITCH-14            ' PIC X(33).
 2194              05 VALUE 'MSWITCH-15            ' PIC X(33).
 2195              05 VALUE 'MSWITCH-2             ' PIC X(33).
 2196              05 VALUE 'MSWITCH-3             ' PIC X(33).
 2197              05 VALUE 'MSWITCH-4             ' PIC X(33).
 2198              05 VALUE 'MSWITCH-5             ' PIC X(33).
 2199              05 VALUE 'MSWITCH-6             ' PIC X(33).
 2200              05 VALUE 'MSWITCH-7             ' PIC X(33).
 2201              05 VALUE 'MSWITCH-8             ' PIC X(33).
 2202              05 VALUE 'MSWITCH-9             ' PIC X(33).
 2203              05 VALUE ' SYMBOL               ' PIC X(33).    UNIMPLEMENTED
 2204              05 VALUE ' SYMBOLIC             ' PIC X(33).
 2205              05 VALUE ' SYNC                 ' PIC X(33).
 2206              05 VALUE ' SYNCHRONISED         ' PIC X(33).
 2207              05 VALUE ' SYNCHRONIZED         ' PIC X(33).
 2208              05 VALUE 'MSYSERR               ' PIC X(33).
 2209              05 VALUE 'MSYSIN                ' PIC X(33).
 2210              05 VALUE 'MSYSIPT               ' PIC X(33).
 2211              05 VALUE 'MSYSLIST              ' PIC X(33).
```

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

```
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).
```

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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).
```

```
GNUCOBOL 2.2 20JUL2017  Source Listing                                      2017/07/22
                                          /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                            Page: 55
======  ================================================================================

 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)
```

```
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
```

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

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

```
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Line    Statement                                                           Page: 62
====== =================================================================================
  2705              .
```

```
 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             .
```

```
  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            .
```

```
GNUCOBOL 2.2 20JUL2017  Source Listing                                      2017/07/22
                                            /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                           Page: 66
======  ================================================================================

  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             .
```

```
GNUCOBOL 2.2 20JUL2017  Source Listing                               2017/07/22
                                    /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line   Statement                                                      Page: 67
====== =========================================================================

   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            .
```

```
GNUCOBOL 2.2 20JUL2017  Source Listing                              2017/07/22
                                        /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                      Page: 68
======  ======================================================================================
  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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```
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                                            /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                              Page: 69
====== =================================================================================
  2904                EXIT SECTION
  2905            END-IF
  2906            .
```

```
GNUCOBOL 2.2 20JUL2017  Source Listing                                      2017/07/22
                                            /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                               Page: 70
======  ========================================================================================

 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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```
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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            .
```

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

```
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
```

===

```
GNUCOBOL 2.2 20JUL2017  Source Listing                                2017/07/22
                                    /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                        Page: 74
====== =========================================================================
 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
```

===

====== ===
```
 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)

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

```
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      .
```

```
GNUCOBOL 2.2 20JUL2017  Source Listing                                    2017/07/22
                                             /home/vince/cobolsrc/Cobol-Tools/ocic/GCic.cbl
Line    Statement                                                           Page: 82
======  =========================================================================================

   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
```

```
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.
```

```
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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```

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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
```

<pre>
                                                    1178   1179   1192

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</pre>

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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
GCic             RETURN-CODE                         PROCEDURE         1010    1043*   1057*
                                                                    1059
GCic             S-Blank-SCR                     437 SCREEN           683     1234    1263
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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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GCic             WS-I-SUB                        253 WORKING-STORAGE    755*    756      757
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                                                                        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*
```

```
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*

=================================================================================================
GCic for UNIX/Linux Copyright (C) 2009-2017, Gary L. Cutler, GPL                      Page: 100
```

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

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

===

```
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
```
==

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

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

6. STREAMIO

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

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

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

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

- Coding a GnuCOBOL subroutine

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

- Using hexadecimal alphanumeric literals

- Using the following statements:

    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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```

====== ===
   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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```
GNU COBOL 2.1 23NOV2013 Source Listing                                   2014/03/27
                            C:/Users/tda010/Documents/Programs/Samples/STREAMIO.cbl
Line    Statement                                                          Page: 5
======  =========================================================================
   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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```

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

```
GNU COBOL 2.1 23NOV2013 Source Listing                                      2014/03/27
                                    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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```

====== ===
        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

===

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

```
   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 =
```

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

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

```
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
                            C:/Users/tda010/Documents/Programs/Samples/STREAMIO.cbl
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
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                                                                      509    512     514*
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STREAMIO        L-SCB-Func-CLOSE-BOOL           379 [STREAMIOcb   ]   386
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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-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
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STREAMIO        L-SCB-Offset-NUM                379 [STREAMIOcb   ]   420C   425*    551*
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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*
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